2012 Merit Review
Clean Cities Learning Program (CCLP)

Principal Investigator/Presenter:

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- **National Alternative Fuels Training Consortium (NAFTC)**
- **Clean Cities Learning Program Principal Investigator**

Presenter:

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- **National Alternative Fuels Training Consortium (NAFTC)**
- **Clean Cities Learning Program Project Coordinator**

May 15, 2012

Project ID: TI017

Overview

- **Timeline**
  - Start: September 24, 2009
  - End: December 31, 2013 **
  - 75% Complete

  ** *Extended due to awarding of additional funds.*
- **Budget**
  - Total project funding $1,780,890
    - *FY10 Funding $819,463*
    - *FY11 Funding $780,537*
    - *FY12 Funding $180,890*
- **Barriers Addressed**
  - Consumer Reluctance to Purchase New Technologies
  - Lack of Knowledge and Technical Experience with New Fuels and Vehicle Technologies
- **Partners**
  - 12 NAFTC National Training Centers (NTCs)
  - 12 U.S. DOE Clean Cities Coalitions
  - 10 Industry Partners

Relevance

- The NAFTC *Clean Cities Learning Program* will support the mission of the DOE Vehicle Technologies Program by **raising awareness** and fostering a **greater understanding** of alternative fuels and advanced technology vehicles.

- Provides Clean Cities Coalitions, and other stakeholders, with state-of-the-art **curricula and training**, **outreach and education materials**, and a concentrated **marketing and communications plan**, including resources available from an **Online Toolbox**.

- Provides awareness and technical education to **encourage consumer decisions** to adopt vehicles and fuels that will significantly reduce the consumption of petroleum-based fuels.

Objectives
(March 2011 – March 2012)

1. Implement developed ***First Responder Safety Training*** to help reduce risk when responding to incidents involving alternative fuels, AFVs, and advanced technology vehicles **STATUS – ORIGINAL OBJECTIVE COMPLETED. ADD-ON OBJECTIVE – IN PROGRESS**

2. Develop ***Petroleum Reduction Technologies*** curricula to help raise awareness and increase understanding of alternative fuels, AFVs, and advanced technology vehicles **STATUS – IN PROGRESS**

3. Develop and execute a comprehensive **Marketing and Communications Plan** **STATUS – ONGOING**

Milestones

Completed / In Progress (March 2011 – March 2012)

- Milestone 2: Completion of Marketing and Communications Plan Anticipated FY12
- Milestone 5: Completion of *Clean Cities Learning Program* Toolbox Materials
  First Responder Safety Training Completed.
  Petroleum Reduction Technologies completion -- Anticipated FY12
- Milestone 6: Completion of Petroleum Reduction Technologies Curriculum Development Anticipated FY12
- Milestone 8: Petroleum Reduction Technologies Webinars Conducted Anticipated FY12
- Milestone 9: 2010 National Alternative Fuel Vehicle Day Odyssey Program Report ☑ COMPLETED
- Milestone 10: Completion of First Responder Safety Training Completed.
  Add-on training completion -Anticipated FY12
- Milestone 11: Completion of Petroleum Reduction Technologies Training Anticipated FY12

Approach / Strategy
Petroleum Reduction Technologies Curriculum

9 Modules		
Biodiesel		***Part A*** Lesson 1: What is Biodiesel Lesson 2: Biodiesel Production, Infrastructure, and Sustainability Lesson 3: Biodiesel Vehicles
Ethanol		
Natural Gas		
Propane		
Hydrogen		
Electric Drive		***Part B*** The Importance of Biodiesel *(This is the Awareness/Outreach component.)*
Fuel Economy		
Idle Reduction		
Fleet Applications	*See next slide for Fleet Applications module details.*	

for example

***Each* MODULE includes**

Approach / Strategy
Petroleum Reduction Technologies Curriculum

Module 9 – FLEET APPLICATIONS STRUCTURE		
Chapter Topics		
Biodiesel		
Ethanol		***Section 1*** Understanding Fleets and Alternative Fuels
Natural Gas		
Propane		
Hydrogen		
Electric Drive		***Section 2*** Specific Fleet Applications
Fuel Economy		***Divided into 8 Chapters***
Idle Reduction		

Specific Chapters cover

and include case studies

Approach / Strategy
Petroleum Reduction Technologies Training

REGIONAL PILOT TRAINING - DAY ONE		
WHO	*ROLE*	*AUDIENCE*
CCC Partner (as lead) in coordination with NTC Partner	**Recruits other** Clean Cities Coalition members in region to attend	**Clean Cities Coalition members** in the region.
NTC Partner (as lead) in coordination with CCC Partner	Conducts **Train-the-Trainer**	

Approach / Strategy
Petroleum Reduction Technologies Training

REGIONAL PILOT TRAINING – DAY TWO		
WHO	*ROLE*	*AUDIENCE*
CCC Partner (as lead) in coordination with NTC Partner	Selects 2 workshop topics to conduct as part of **End-User Training**	**Citizens, key decision makers, stakeholders, etc.** in the region.
NTC Partner (as lead) in coordination with CCC Partner	**Provides assistance** (may include, facilities, vehicles, etc.) for End-User Training	

Approach / Strategy Summary

Training and Workshops

- **Number of First Responder Safety Training Workshops / Webinars = 53 Total***
  - 45 Workshops (includes Train-the-Trainer and End-User)
  - 2 First Responder Safety Training Webinars
  - 6 Anticipated Additional Trainings (due to add-on funding)

- **Number of Petroleum Reduction Technologies Workshops / Webinars = 46 Total**
  - 24 End-user Workshops (4 per each region)
  - 14 Train-the-Trainer Workshops (2 per region + 2 original Train-the-Trainers)
  - 8 Petroleum Reduction Technologies Webinars

*** Note: Includes Add-on Funded Workshops**

Previous Accomplishments

- ***First Responder Safety Training*** **Status: COMPLETED**
  - Materials developed and distributed for the four modules (Biofuels; Gaseous Fuels; Hydrogen; and Electric Drive), including Presentation Guide, Instructor Manual, Workshop Booklets, and Quick Reference Guide.
  - Additional Train-the-Trainer workshops, end-user trainings, and promotional webinars offered.
- ***Marketing – Clean Cities Learning Program*** **Status: COMPLETED AND ONGOING**
  - Website and Online Toolbox publicly hosted. Promotional and highlight first responder videos are completed.
  - Program promoted at numerous conferences and meetings.
- ***National AFV Day Odyssey 2010*** **Status: COMPLETED**
  - Conducted nationwide on October 15, 2010
  - 131 event sites, nearly 230,000 attendees, more than 98 million reached

FY 11 Accomplishments and Progress

- **Task 3.0 Curriculum Development – Petroleum Reduction Technologies**

Status: NEAR COMPLETION

  - Curricula for the eight modules, including educational modules, **awareness & outreach** components, **fleet applications** module, and **fleet case studies** are being reviewed by industry experts and DOE representatives and on track for completion, per grant deliverables.

Module Topics include:

1. *Biodiesel*
2. *Ethanol*
3. *Natural Gas*
4. *Propane*
5. *Hydrogen*
6. *Electric Drive*
7. *Fuel Economy*
8. *Idle Reduction*

Barriers Addressed:

- **Lack of Knowledge and Technical Experience with New Fuels and Vehicle Technologies**
- **Consumer Reluctance to Purchase New Technologies**

This curricula will inform consumers about petroleum reduction technologies and new technologies, while educating auto technicians, fleet managers, and decision makers regarding new fuels and vehicle technologies.

FY 11 Accomplishments and Progress

- **Task 5.0 Delivery of Training – Petroleum Reduction Technologies**
  - Plans for conducting Train-the-Trainer workshops, as well as the pilot end-user workshops are all in progress and on track for completion, per grant deliverables.

  Status: IN PROGRESS
- **Subtask 5.5 Petroleum Reduction Technologies Webinars**
  - Two beta webinars, **above and beyond grant deliverables**, have been delivered as part of the U.S. DOE Intern Program. Topics included Biodiesel (November 2011) and Natural Gas (December 2011).

  Status: IN PROGRESS

Barriers Addressed:

- **Lack of Knowledge and Technical Experience with New Fuels and Vehicle Technologies**
- **Consumer Reluctance to Purchase New Technologies**

This training will inform consumers about petroleum reduction technologies and new technologies, while educating auto technicians, fleet managers, and decision makers regarding new fuels and vehicle technologies. Training to be disseminated nationwide.

FY 11 Accomplishments and Progress

- **Task 6.0 Marketing**

  Clean Cities Learning Program

  – The Online Toolbox **continues to be updated** as new material is available.

  – The NAFTC continues to actively promote the Clean Cities Learning Program:
    - Nationally via **conferences and meetings**
    - Monthly column in **NAFTC eNews** publication
    - **Social media**, including Facebook, Twitter, YouTube

  – The NAFTC received national media exposure from mobile application for first responders www.afvsafetytraining.com

Barriers Addressed:

- **Lack of Knowledge and Technical Experience with New Fuels and Vehicle Technologies**
- **Consumer Reluctance to Purchase New Technologies**

This training will inform consumers about petroleum reduction technologies and new technologies, while educating auto technicians, fleet managers, and decision makers regarding new fuels and vehicle technologies. Training to be disseminated nationwide.

Status: IN PROGRESS

Collaboration – Training Partners

National Training Centers (NTCs)

- *Rio Hondo Community College*
- *Gateway Community College*
- *Ivy Tech Community College – Lafayette*
- *Lawson State Community College*
- *Nashville Auto-Diesel College*
- *NAFTC / West Virginia University*
- *Onondaga Community College*
- *Shoreline Community College*
- *Tyler Junior College*
- *Utah Valley University*
- *Yuba College*

Clean Cities Coalitions

- *Alabama Clean Fuels Coalition*
- *Clean Cities of Middle Tennessee*
- *Clean Communities of Central New York*
- *Dallas-Fort Worth Clean Cities Coalition*
- *East Texas Council of Governments*
- *Greater Indiana Clean Cities Coalition*
- *Greater Sacramento Regional Clean Air Coalition*
- *Las Vegas Regional Clean Cities Coalition*
- *New Haven Clean Cities Coalition*
- *Puget Sound Clean Cities Coalition*
- *State of WV Clean Cities*
- *Utah Clean Cities Coalition*

Collaboration: Industry Partners

- ***AC & S, Inc.***
  www.acandsinc.com
- ***Advanced Vehicle Research Center (AVRC)***
  www.avrc.com
- ***Cabaire, Inc.***
  www.controlmod.com/cabaire
- ***WVU Mechanical & Aerospace Engineering***
  www.cemr.wvu.edu
- ***Clean Fuels Development Council***
  www.cleanfuelsdc.org
- ***Electric Drive Transportation Association***
  www.electricdrive.org
- ***ICF International, Inc.***
  www.icif.com
- ***Gas Technology Institute, Inc.***
  www.gastechnology.org
- ***Sustainable Biodiesel Alliance***
  http://sustainablebiodieselalliance.com
- ***WVU Fire Service Extension***
  http://fireservice.ext.wvu.edu

Proposed Future Activities

Additional Funding:

Original Task Completed. Add-on Funding Tasks In Progress.

- **Subtask 2.7** First Responder Safety Training Workshop Booklets and Quick Reference Guides
  - As part of the awarding of additional funds, this subtask will be revised to **develop additional material** specifically for **vehicle recovery operators** and **salvage yard workers**, as pertaining to alternative fuel and advanced technology vehicles.

Proposed Future Activities

- **Milestone 8**: Petroleum Reduction Technologies Webinars Conducted
  - Expected Number of Webinars = **8**
    - One for each of the module topics: Biodiesel, Ethanol, Natural Gas, Propane, Hydrogen, Electric Drive, Hydrogen, Fuel Economy, Idle Reduction

- **Milestone 11**: Petroleum Reduction Technologies Training Completion
  - Expected Number of Workshops Nationwide = **38**
    - 24 End-user Workshops (4 per each region)
    - 14 Train-the-Trainer Workshops (2 per region + 2 original Train-the-Trainers)

Note: Total Workshops/Webinars = 46

Summary

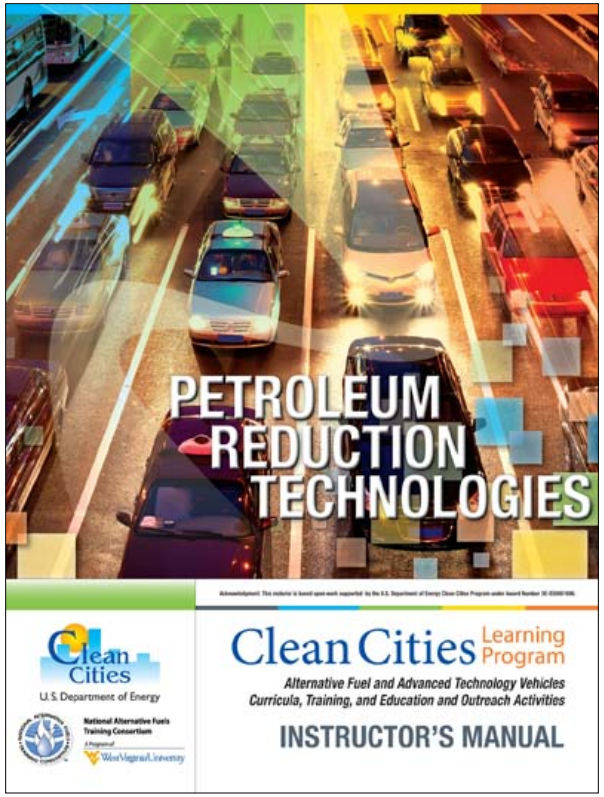
The **NAFTC Clean Cities Learning Program** is complementary to the U.S. DOE Vehicle Technologies Program's mission to

"…develop more energy efficient and environmentally friendly highway transportation technologies that enable America to use less petroleum … that will provide Americans with greater freedom of mobility and energy security, with lower costs and lower impacts on the environment."

- **Relevance:**
  - The NAFTC *Clean Cities Learning Program* **raises awareness** and fosters a **greater understanding** of alternative fuels and advanced technology vehicles
- **Accomplishments/ Progress:**
  - Number of FR Training Workshops/Webinars = **53**
  - Number of PRT Training Workshops/Webinars = **46**
- **Approach:**
  - Face-to-face workshops, webinars, and printed marketing material
- **Collaborations:**
  - 12 NAFTC National Training Centers (NTCs)
  - 12 U.S. DOE Clean Cities Coalitions
  - 10 Industry Partners

Technical Back-Up Slides (Visuals)

Petroleum Reduction Technologies



Consumer Friendly Curricula with Interactive Features

Icons for Visualization of Module Topic Benefits

Petroleum Reduction Technologies

Clean Cities Learning Program
Petroleum Reduction Technologies
Biodiesel

- **Biodiesel Color**
  - Water white to pale gold and dark brown
  - Depends upon the feedstock used to make the fuel
- **Biodiesel Smell**
  - Pure biodiesel (B100) is odorless
  - Blends that are 5% conventional diesel or more begin to smell like petro-diesel
- **Biodiesel Identification**
  - Renewable Inventory Numbers (RINs)

Clean Cities Learning Program
Petroleum Reduction Technologies
Biodiesel Fleet Applications

Test Your Knowledge

- **True or False:** The cost of biodiesel depends on the biodiesel blend. (Ex: B20 costs less than B100)
- Biodiesel is produced from feedstocks such as soy bean oil and vegetable oil. New research also suggests that _____ can be made into biodiesel.
- **True or False:** The biggest obstacle for widespread biodiesel use in fleets, and other alternative fuels, is lack of infrastructure.
- List one of the three reasons mentioned in the text as to why the U.S. should use biodiesel.
- **True or False:** Fleet managers should expect to change fuel filters after the first tank of biodiesel runs through their vehicle.

Biodiesel Case Study

CASE STUDY

Location: Morgantown, WV
Company: Monongalia County Schools' Transportation Department
Study: Biodiesel

In West Virginia, Monongalia County Schools' Transportation Department started using biodiesel in its fleet of school buses beginning in 2003. The school system's experience in adopting biodiesel included the benefits of reduced emissions, lower fuel costs, and budget savings. The challenges, however, also involved pumping fuel tanks that were improperly blended and achieving driver buy-in during the transition.

Shortly after state legislation created incentives for counties and municipalities to use alternative fuels, officials committed to the use of B20 biodiesel in refueling the school bus fleet. The fleet's experience with biodiesel was one of the first in the state, and Irv Schuetzner, the school system's transportation director, said their use of biodiesel has been successful in multiple ways.

Decision Points

As fleet managers decide to use alternative fuels, these decisions are often driven by economic incentives, government mandates, and/or the benefits of green branding and emissions reductions. All these factors played a role in influencing the Monongalia County Board of Education.

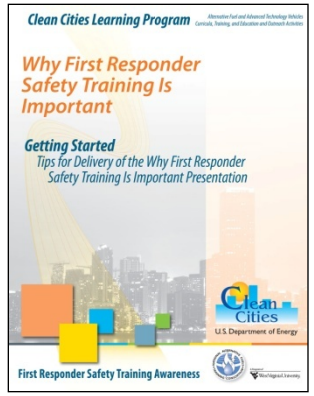
As mentioned, members of the Monongalia County Board of Education encouraged the use of biodiesel after the West Virginia State Legislature created budget incentives for local governments. The school board qualified for these incentives, starting the momentum toward adopting alternative fuels in the school bus fleet.

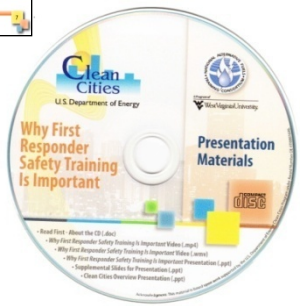
After state incentives were put in place, Schuetzner explained that Monongalia County was the first school bus fleet in West Virginia to implement the use of biodiesel. Two counties were early adopters of alternative fuels in West Virginia – Monongalia County adopted biodiesel, and Wood County adopted natural gas. Biodiesel provided Monongalia County immediate returns because it did not have to invest in new buses, conversions, or refueling infrastructure.

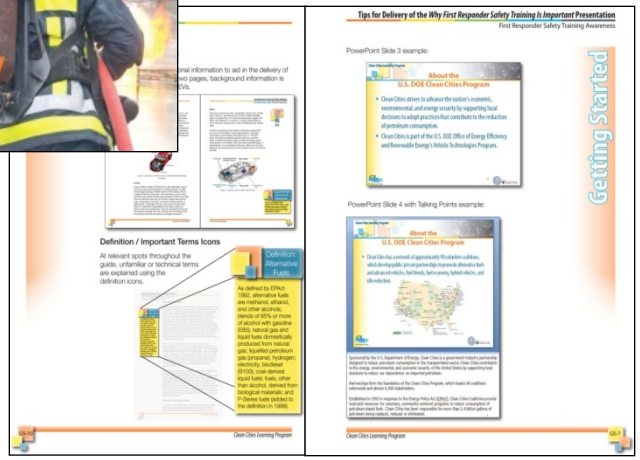
Petroleum Reduction Technologies © NAFTC 2012 Page 1

First Responder Safety Training

Instructor Manual, Presentation Guide and Supplemental Materials







First Responder Safety Training

Photographs from nationwide end-user training workshops