

T&E COMMITTEE #1  
June 21, 2012

**MEMORANDUM**

June 20, 2012

TO: Transportation, Infrastructure, Energy and Environment (T&E) Committee  
FROM: Susan J. Farag, Legislative Analyst *SJF*  
SUBJECT: Discussion – Fleet’s Use of Alternative Fuels

The following people are expected to attend today’s update and provide information to the Committee:

David E. Dise, Director, Department of General Services  
Bill Griffiths, Division of Fleet Management Services  
Peggy Lynch, Division of Fleet Management Services  
Calvin Jones, Division of Fleet Management Services

**Background:**

The County fleet has used alternative fuel vehicles since 1999, when it purchased its first Compressed Natural Gas (CNG) bus. Since then, it has added flex-fuel (E-85) and hybrid vehicles. The County also conducted a B20 biodiesel pilot project in 2009-2010. Overall, alternative fuel vehicles represent 23% of the total fleet. The use of these vehicles has helped reduce petroleum consumption by 4.9% from FY11 and has reduced green house gas emissions by 4.4% since FY09. The use of alternative fuel vehicles has also presented challenges, including unforeseen costs and limited or aging infrastructure that does not optimally support the use of alternative fuels.

Today DFMS will brief the Committee on the use of alternative fuels and vehicles, its green fleet strategy, infrastructure needs that support the use of alternative fuels, and its vision of an appropriate fleet composition of traditional and alternative fuel vehicles.

**Discussion Issues:**

- 1) What are the major factors considered for designing an optimal fleet that meets functional needs, is cost-effective, and green?
- 2) What are DFMS' short-term and long-term goals regarding fleet composition?
- 3) Can or should the County have an overall target for petroleum consumption or green house gas emission reductions? Or will that constrain DFMS from meeting service needs?

The packet contains the following attachments:

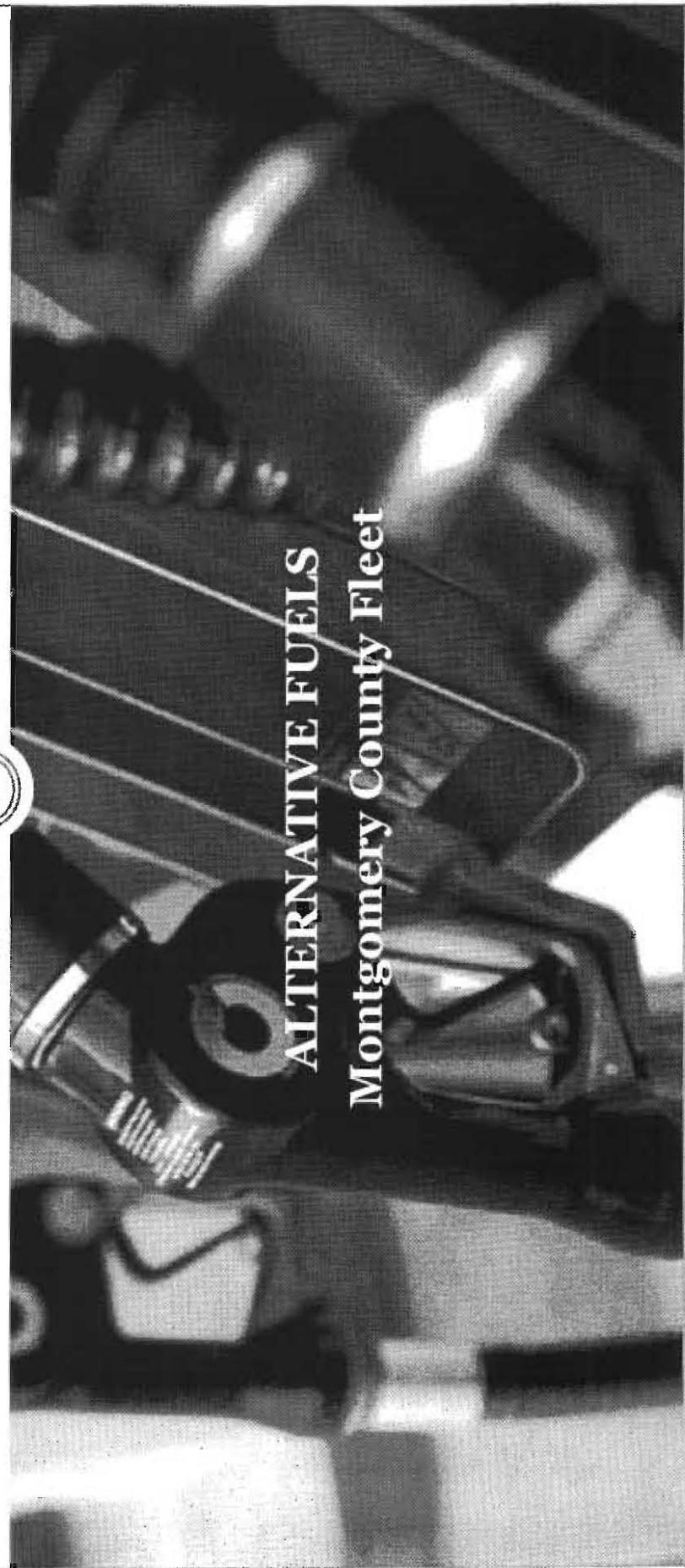
Alternative Fuels, Montgomery County Fleet (June 2012), DFMS

Circle #

1-11

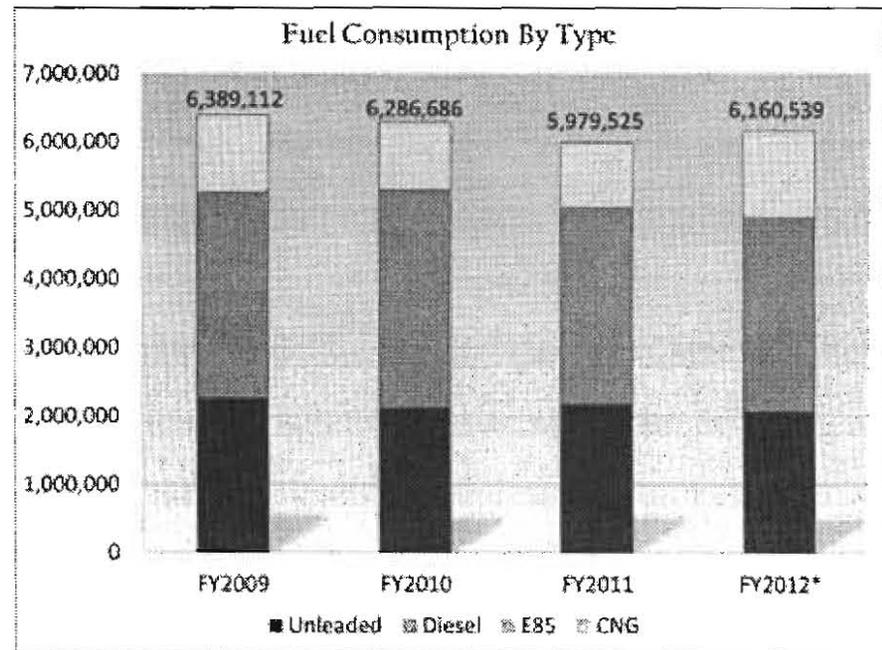
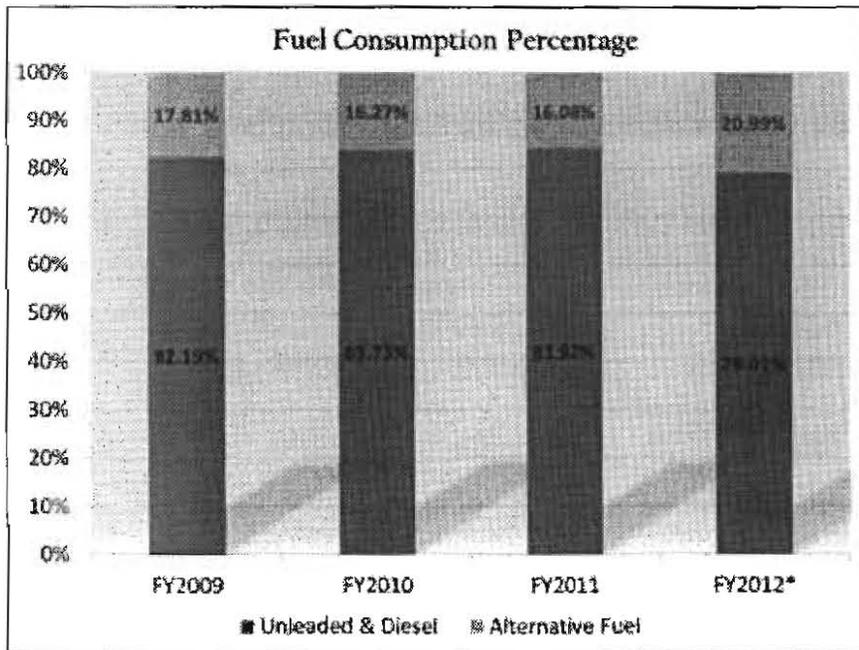
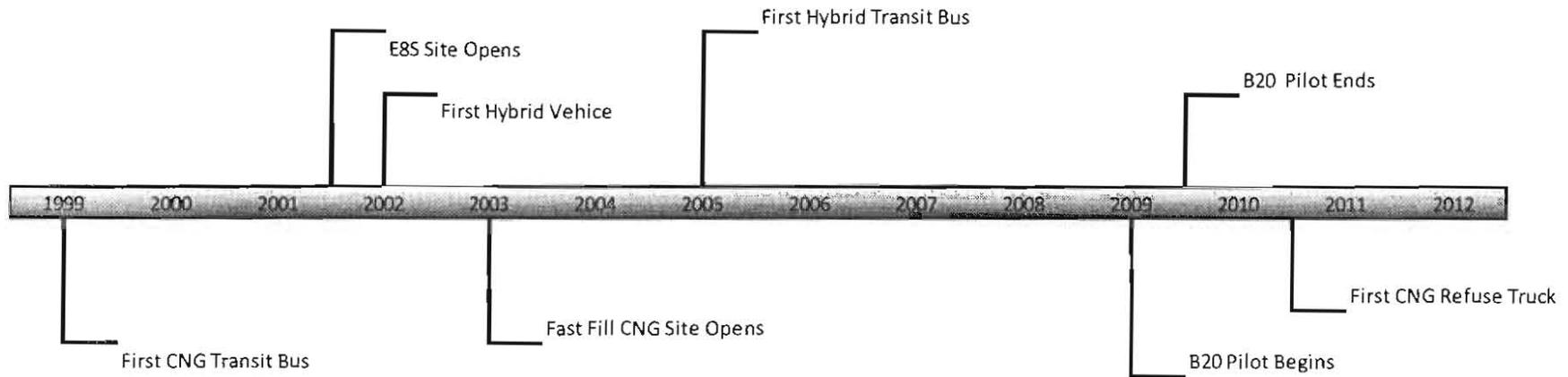
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# Division of Fleet Management Services



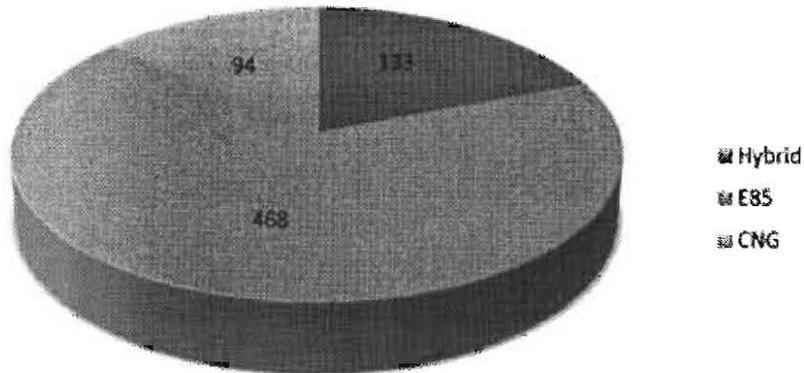
**ALTERNATIVE FUELS**  
**Montgomery County Fleet**

# Montgomery County Alternative Fuel History

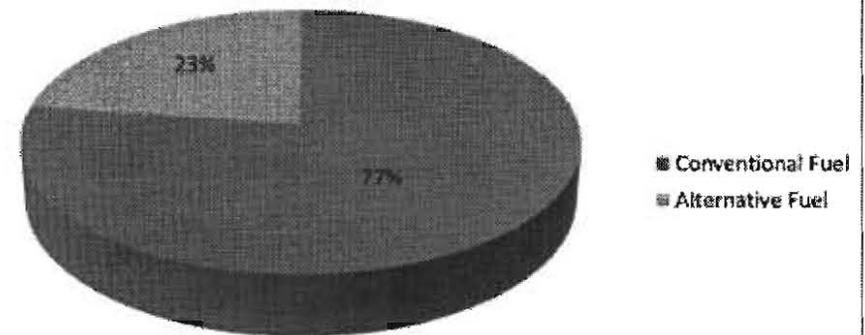


# Montgomery County Alternative Fuel History

Total Alternative Fueled Vehicles

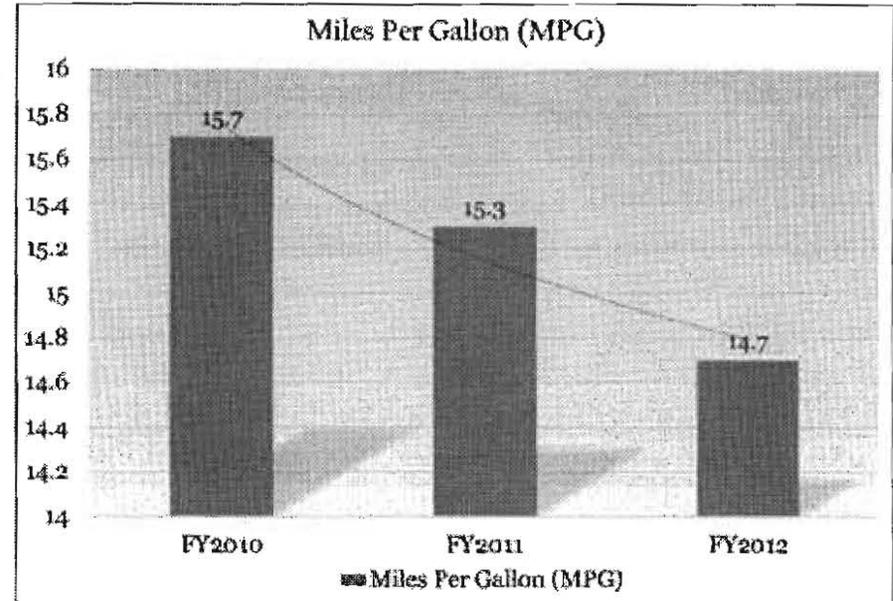
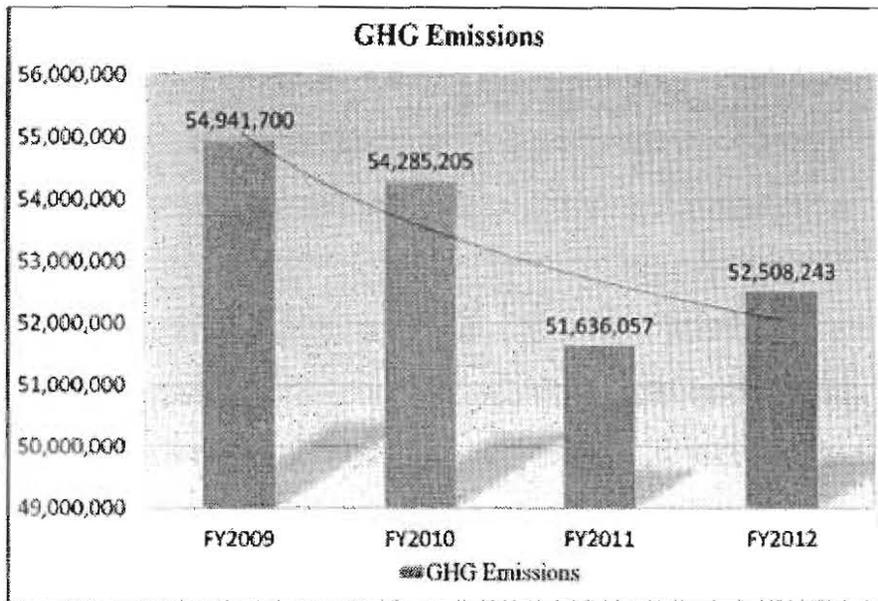


Percentage of AFV Fleet



- Montgomery County fleet has 3049 total units;
- Alternative fuel vehicles represent 23% of total fleet makeup;
- FY11 Montgomery County drove 35,158,000 Miles;
- Consumed 1,293,200 gallon equivalents of alternative fuel;
  - An increase of 34% from FY11
- Reduced petroleum consumption by 4.9% from FY11;
- Transit fleet avg 4.1 MPG – 32% better than national avg.

# Alternative Fuel Challenges & Benefits



- Reduced GHG Emissions by 4.4% since FY09.
- Limited capital resources (Vehicle Replacements)
  - Declining fuel economy with aging fleet;
  - Increased miles driven.
- Demonstrated good success with limited light duty hybrid.
  - Avg 47.2 mpg a 49% increase from conventional sedans.

# Alternative Fuel Challenges



- **Outdated fuel management system;**
  - FY13-14 CIP Fuel Master project.
- **B20 pilot -2009-2010;**
  - High cost of fuel and related maintenance;
  - Inexperience with biofuel integration.
- **Limited & aging CNG infrastructure;**
  - No backup fueling;
  - Only public access in Washington Metro Area.
- **E85 Environmental compliance;**
  - Public access;
  - Limited infrastructure, 2 County wide sites;
  - Limited use by County staff;
  - Unfunded regulatory mandates in 2011.

# FMS Green Fleet Strategy



Building a Smarter, Cleaner, more Sustainable Fleet

# FMS- Getting to Green

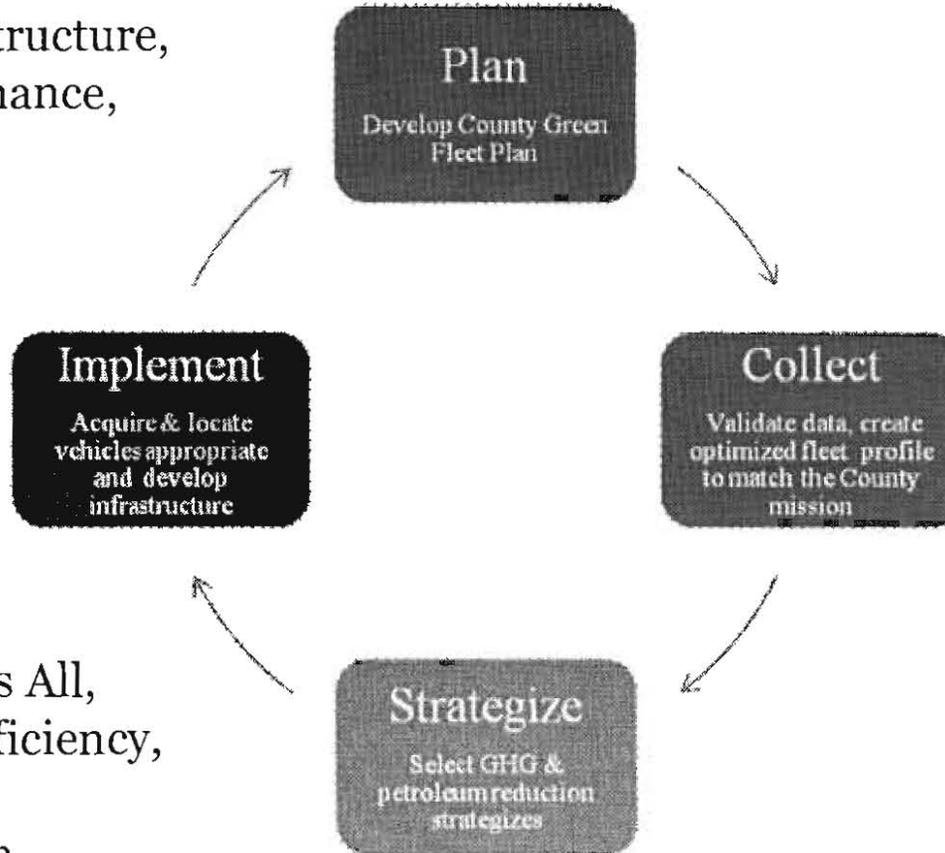


## Implement

- Installing Infrastructure,
- Monitor Performance,
- Refine

## Plan

- Reduce,
- Replace,
- Eliminate,
- Partnership,
- Centralization



## Strategize

- Fuel Neutral,
- Not One Size Fits All,
- Increase Fuel Efficiency,
- Reduce Idling,
- Driver Education

## Collect

- Optimize,
- Utilization,
- Flexibility,
- Match Mission

# Smart Choices - Vehicles



Average County Fleet Sedan –Driven 10,380 Miles annually

Make	Model	Avg Age	Avg Mileage	Est MPG	Est Gallons	Est Fuel Cost	Est GHG (CO2)
Chevy	Cavalier	10.3 Yrs	81,745	22.3	465	1,545	4081

Replacement model selection is critical

Make	Model	Est MPG	Est Cost	Est Gallons	Est Fuel Cost	Est GHG (CO2)	EST YRS ROI
Chevy	Eco-Cruze	35 MPG	\$23,000	296	\$984.00	2598	BASE
Honda	Civic CNG	31 MPG	\$27,000	334*	\$671.00	2213	5.91
Toyota	Prius Hybrid	47 MPG	\$30,000	230	\$765.00	2018	9.15
Ford	Focus Electric	110 MPGe	\$39,000	103*	\$419.00	0	38.18

\* GGE - Gasoline Gallon Equivents  
 1 Current Price of unleaded Fuel \$ 3.32 per Gallon

## Benefits of replacing in kind

- Increases fuel economy by 56%
- Lowers capital cost;
- Lower fuel cost;
- Reduces fuel consumption 36%
- Reduces GHG 36%

## Pro's & Cons of Replacing with AFV

- +Increased fuel economy,
- +Lower fuel costs;
- +Reduced GHG,
- Increased capital cost;
- Increased capital cost for infrastructure;

# Smart Choices - Vehicles



## Incremental Cost of Alternative Fueled Vehicles -AFV

Fuel Type	Light Duty Fleet Cost	Transit/Heavy Fleet Cost	Emissions Savings*	Comments
E85	-\$1K-\$5K	N/A	10- 20%	Not available for Heavy Vehicle Applications
B20	\$8-\$10K	\$0	10-20%	Fuel has life cycle. additional Maintenance required on startup, fuel quality critical, LDV cost is associated with the premium for a diesel vehicle compared to a gasoline vehicle
Hybrid	\$7-\$16K	\$20-\$200K	15-25%	Cost varies depending on the number of batteries required
EV	\$10-\$20K	\$100-\$200K	100%	Infrastructure required. limited range, cost varies depending on the number of batteries required
CNG	\$4-\$10K	\$30-\$50K	20-30%	Cost varies depending on the number of tanks and associated equipment required
Propane	\$3-\$6K	\$11K-\$15K	15-25%	Cost varies depending on the number of tanks and associated equipment required

\* Tailpipe GHG emissions only.

# Smart Choices – Infrastructure



Fuel Type		Cost	Maintenance Per Gallon Equivalent	Operating per Gallon Equivalent	Pros	Cons
<b>CNG</b> 	<i>Automotive Site</i>	\$ 300,000	\$ 0.100	\$ 0.120	Low GHG Emissions, readily available, low fuel cost, Fuel future projected cost low	High infrastructure cost, High O&M Cost, Wide variances in technical ability of equipment, Limited Availability of infrastructure
	<i>Heavy Vehicle Site</i>	\$ 3,200,000	\$ 0.180	\$ 0.120		
<b>Electric</b> 	<i>Level 1</i>	\$ 4,165	\$ 0.005	\$ 0.001	Operating and maintenance cost less than traditional fuel site, Electric cost less than traditional fuels, low to Zero GHG Emissions, relatively low infrastructure cost for Level 1 and Level 2 infrastructure	Range fear, limited public infrastructure, wide variances in the technical ability of equipment, cost of level 3 commercial applications can be high.
	<i>Level 2</i>	\$ 18,519	\$ 0.005	\$ 0.001		
	<i>Level 3</i>	\$ 200,000	\$ 0.005	\$ 0.001		
<b>Propane</b> <b>LPG</b>	<i>Small Site</i>	\$ 25,000	\$ 0.010	\$ 0.003	Operating and maintenance cost less than traditional fuel site, Fuel cost less than traditional fuels, low GHG Emissions, relatively low infrastructure cost for small site	Wide variances in the technical ability of equipment, cost of large sites that dispense high volumes of fuel can be expensive, Energy less dense than gasoline
	<i>Large Site</i>	\$ 175,000	\$ 0.010	\$ 0.003		
<b>E85</b> 	<i>Automotive Site</i>	\$ 200,000	\$ 0.010	\$ 0.005	Operating and maintenance costs are inline with traditional fuels, GHG Emissions are less than traditional fuels	Requires a separate tank, dispenser, pump, lines and fitting that are rated to dispense E85. fuel costs closely tied to the petroleum index, Energy less dense than gasoline
<b>B20</b> 	<i>Automotive Site</i>	\$ 1,000	\$ 0.010	\$ 0.005	Operating and maintenance costs are inline with traditional fuels, GHG Emissions are less than traditional fuels, does not require special equipment to dispense.	Fuel costs are closely tied to the petroleum index. Requires certified fuel supplier, fuel life, vehicle maintenance increased during integration. Warranty concerns, weather factors.

# Summary



- **Strategic approach to a Greener, Cleaner Fleet**
- **Right size & Optimize the Fleet**
  - Purchasing fleet equipment to match the mission;
  - Utilize data and technology.
- **Increased Partnerships & Centralization**
  - Reduced fuel sites and operating costs;
  - Shared resources and pooling of assets.
- **Limited Capital Resources**
  - Fleet Replacements;
  - Infrastructure development.

