New Strategies in Purchasing Transportation Services

Warren G. Lavey May 2015

SPLC Guidance for Leadership v1.0

Understanding

Why do we care?

- **Greenhouse gas emissions.** Transportation-related activities contribute 28% percent of emissions in the United States
- **Air pollution.** Fossil fuel combustion produces emissions—including criteria pollutants—that impact the health of people.
- **Workers are exposed** to carcinogenic substances. Production projects can cause mass relocations, and infringement of indigenous lands.
- **National security** are exacerbated by the import of petroleum, 75 % of which is used of transportation.

SPLC Guidance for Leadership v1.0

Action

How can we exercise leadership?

- Reduce the need for fuels through fuel optimization.
- Use low carbon fuels.
- Use sustainable biofuels.

SPLC Guidance for Leadership v1.0

Results

What are the benefits?

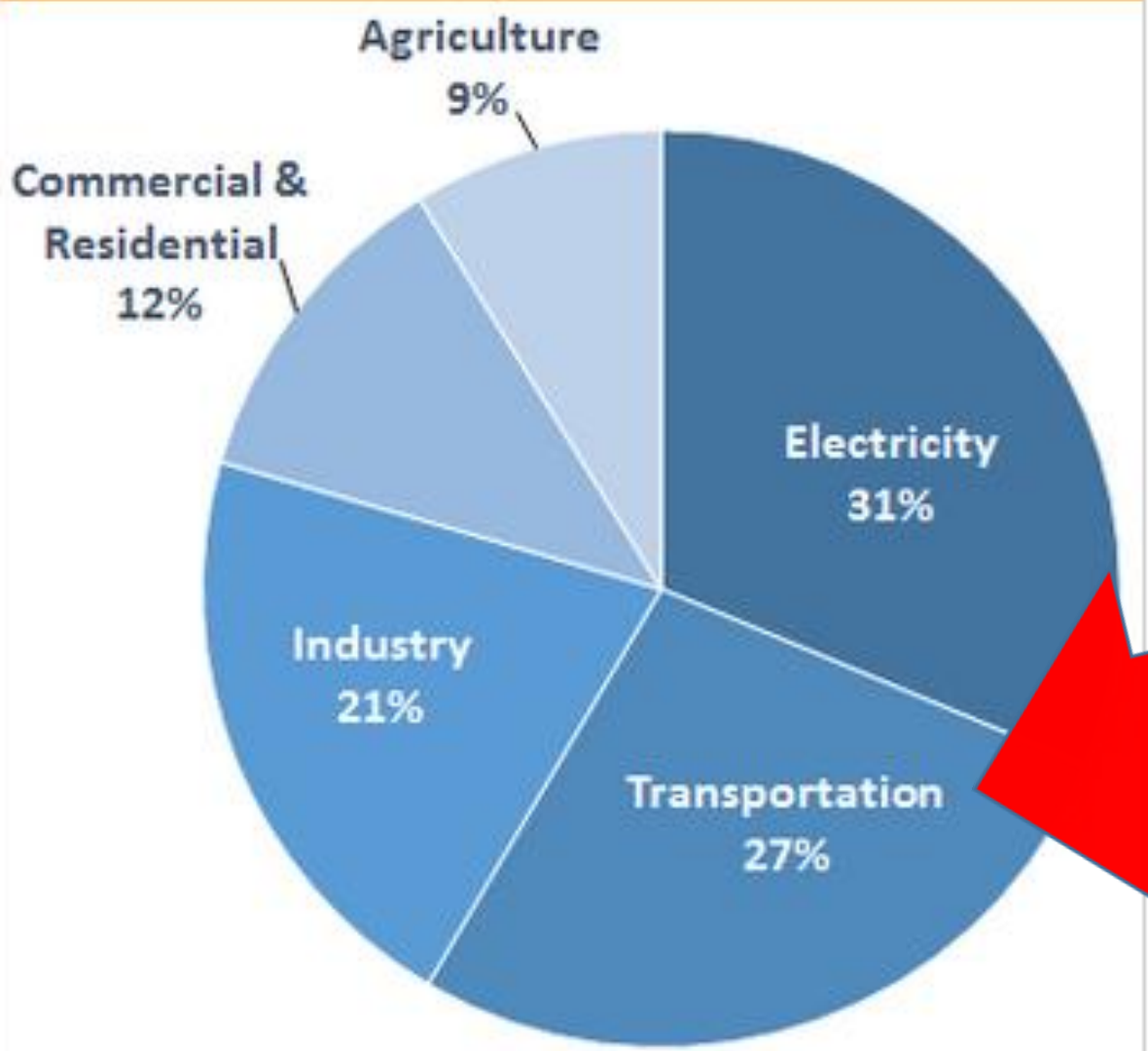
External

- Increased national security.
- Lower greenhouse gas emissions and criteria pollutants.

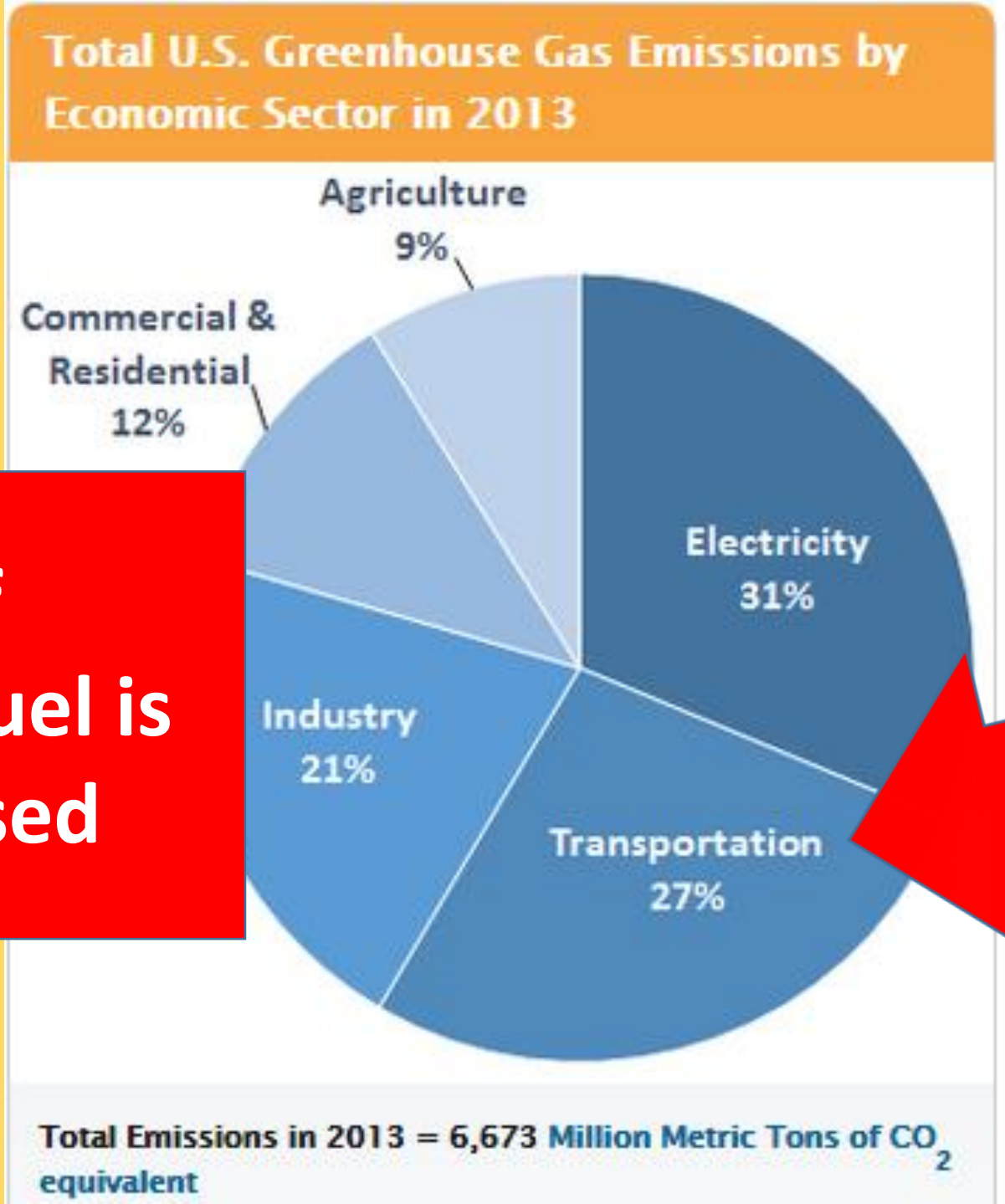
Internal

- Cost savings.
- If less fuel use is coupled with alternative forms of transportation, benefits could include improved health from physical activity of employees.
- Lower carbon footprint.

Total U.S. Greenhouse Gas Emissions by Economic Sector in 2013



Total Emissions in 2013 = 6,673 Million Metric Tons of CO_2 equivalent



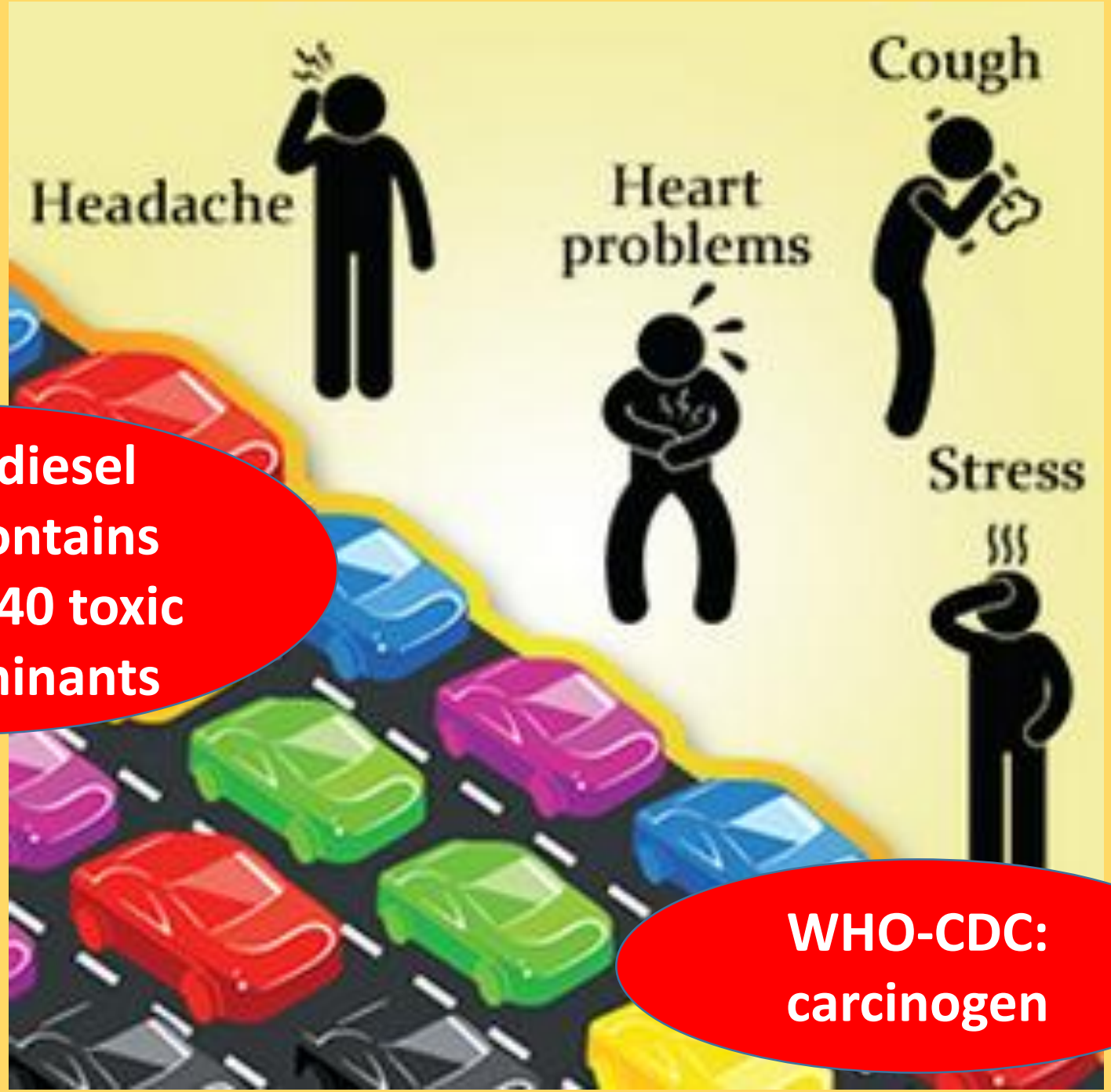
over 90% of transportation fuel is petroleum-based

GHGs

PM

CO

Cal/EPA: diesel exhaust contains more than 40 toxic air contaminants



NOx

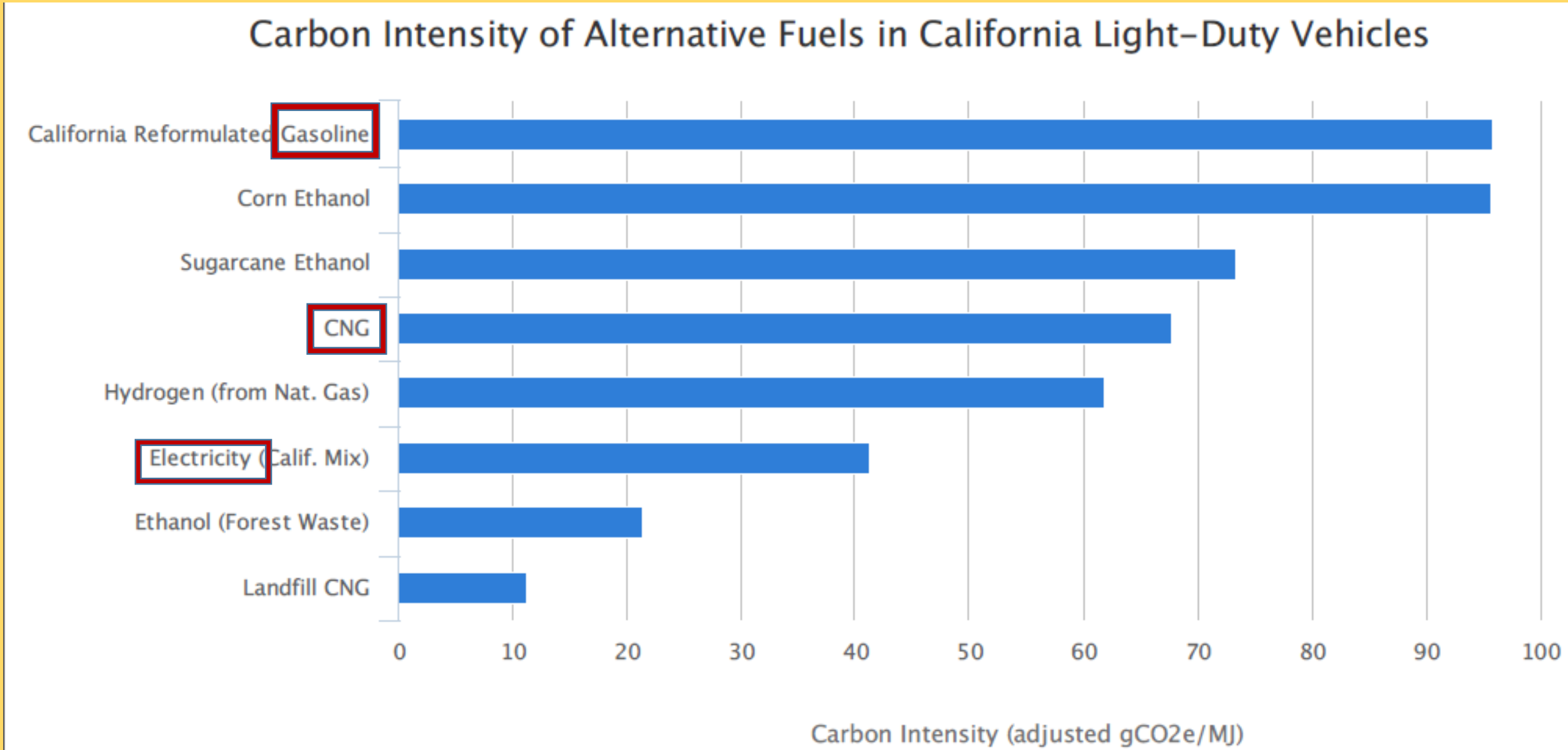
VOCs

WHO-CDC: carcinogen

HC

Many Ways to Cut Your Transportation Environmental Footprint

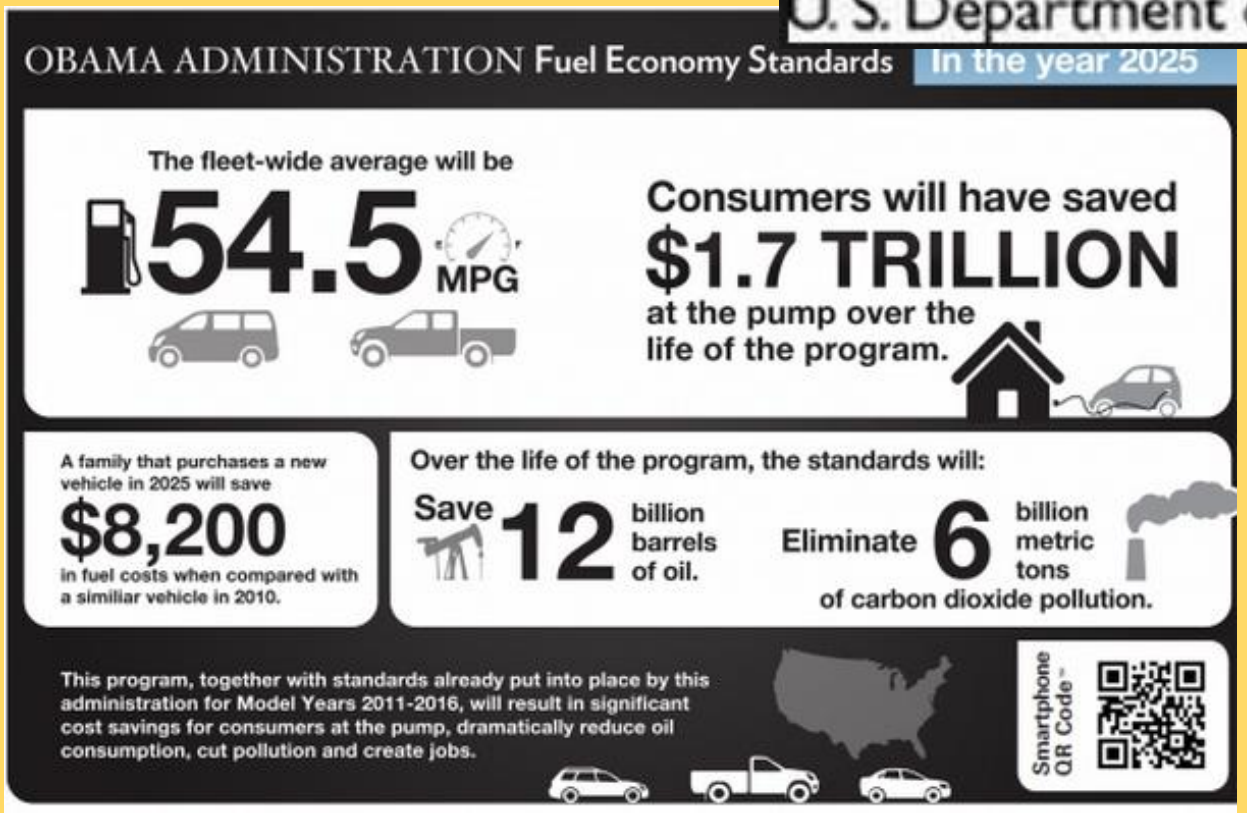
Fuels Matter – Life-cycle CO2 Emissions



Buyers Have Options – Fleets and Contractors

- Non-petroleum (alternative) fuel vehicles
  - Biofuel/flex fuel
  - Natural gas (CNG, LNG)
  - Plug-in electric
  - Hybrid electric
  - Propane
  - Hydrogen fuel cell
- Fuel efficient vehicles
  - Engine
  - Aerodynamics
- Diesel filters

Clean Cities
U.S. Department of Energy



Buyers Have Options – Fleets and Contractors

- Optimize
  - Trips
  - Routes
  - Shipments
  - Loading
  - Backhaul
  - Fleet size
- Cut idling
- Switch modes, intermodal hauls

Buyers Have Options – Employee Travel

- Electronic communications
- Ride sharing
- Public transportation
- Bikes

Why Focus on Sustainable Purchasing of Trucking Services?

- 233.7 million light-duty vehicles
- 10.6 million trucks

U.S. Dept. Transportation, 2012

Why Focus on Sustainable Purchasing of Trucking Services?

- 233.7 million light-duty vehicles
- 10.6 million trucks

4%

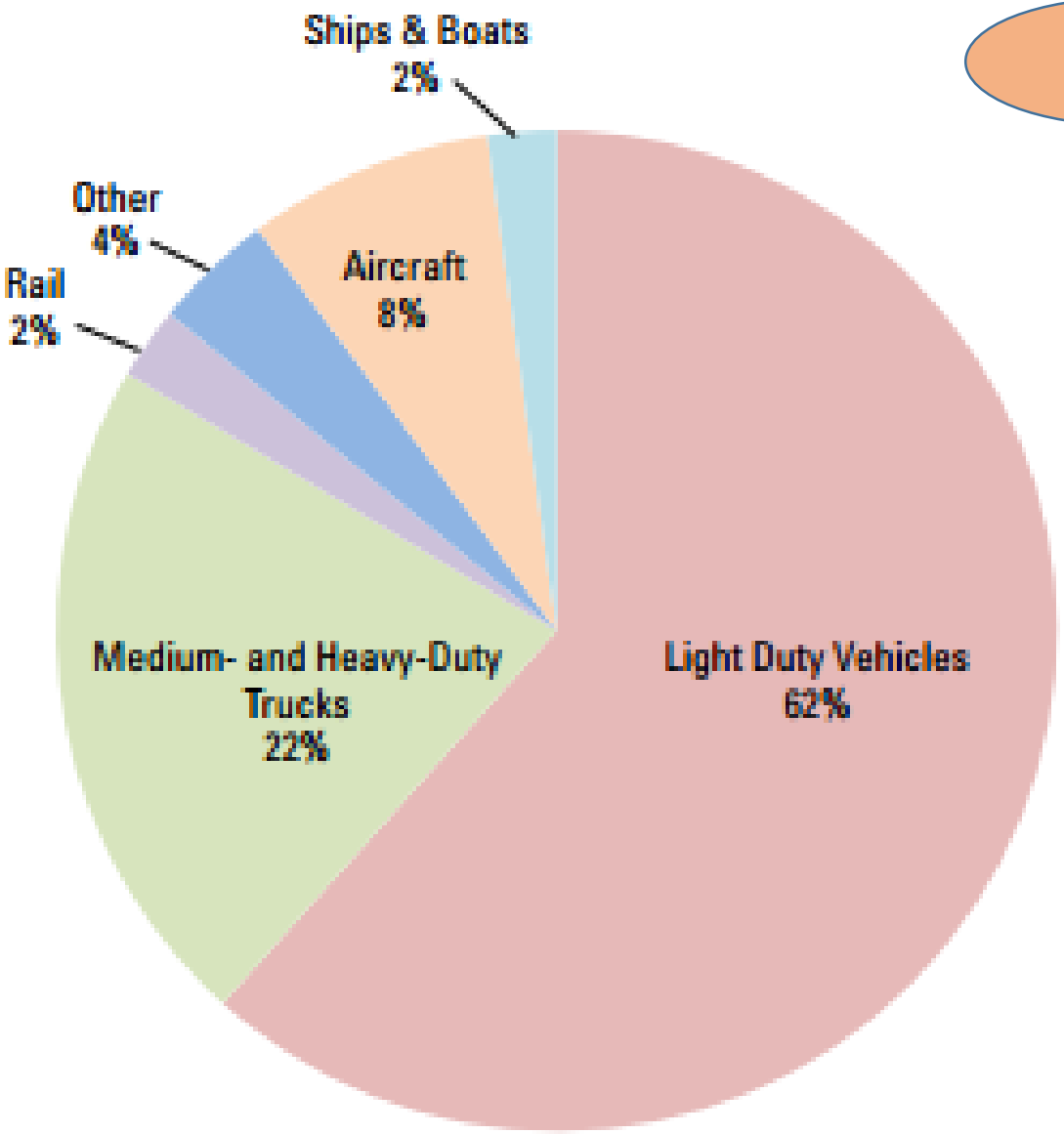
U.S. Dept. Transportation, 2012

Cleaner Trucks Matter for GHGs

29% in 2014

U.S. EPA, 2015

2012



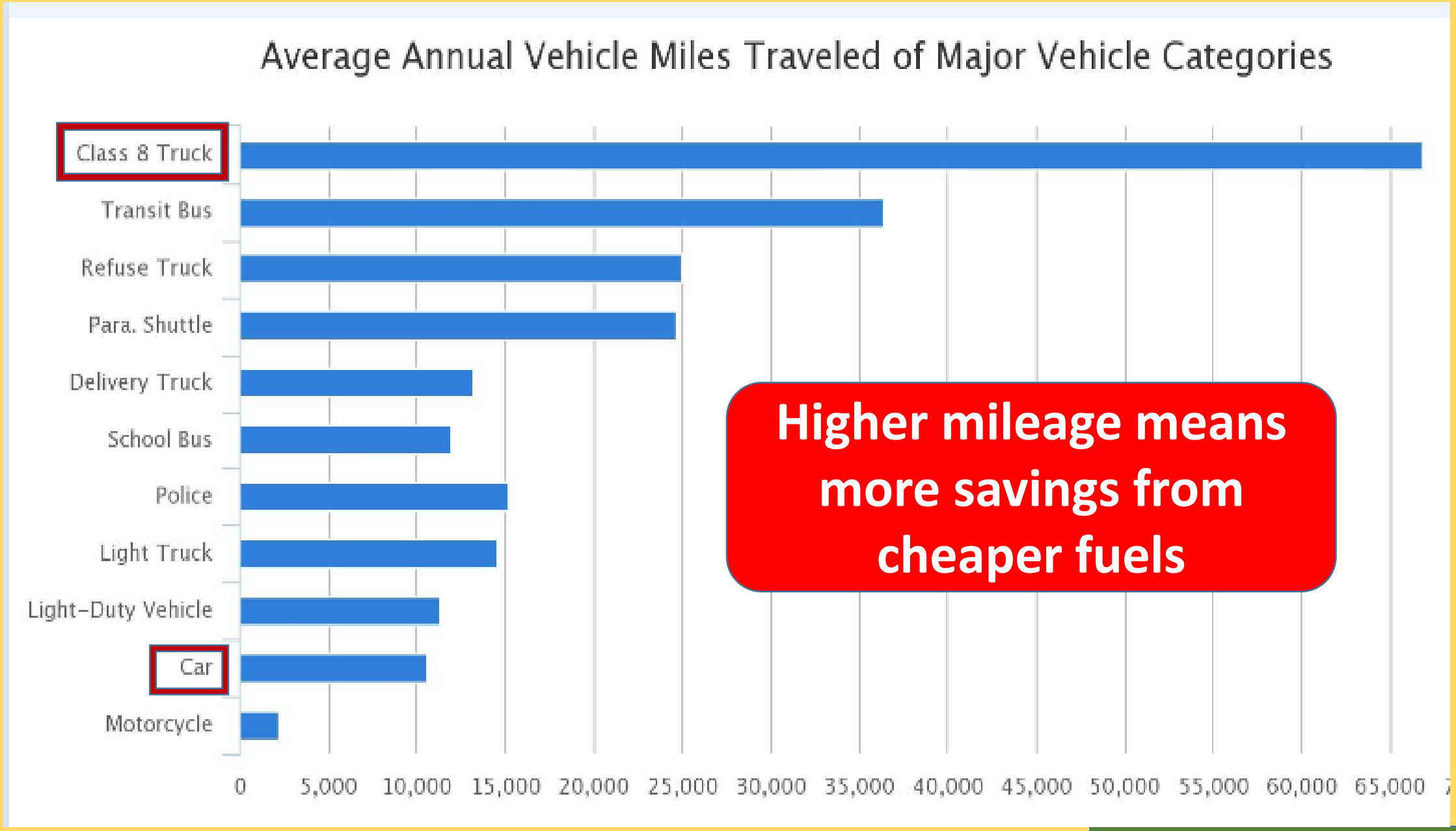
Share of U.S. Transportation Sector GHG Emissions by Source[4,5]

Trucks -- Growing Focus for Environmental Preferences

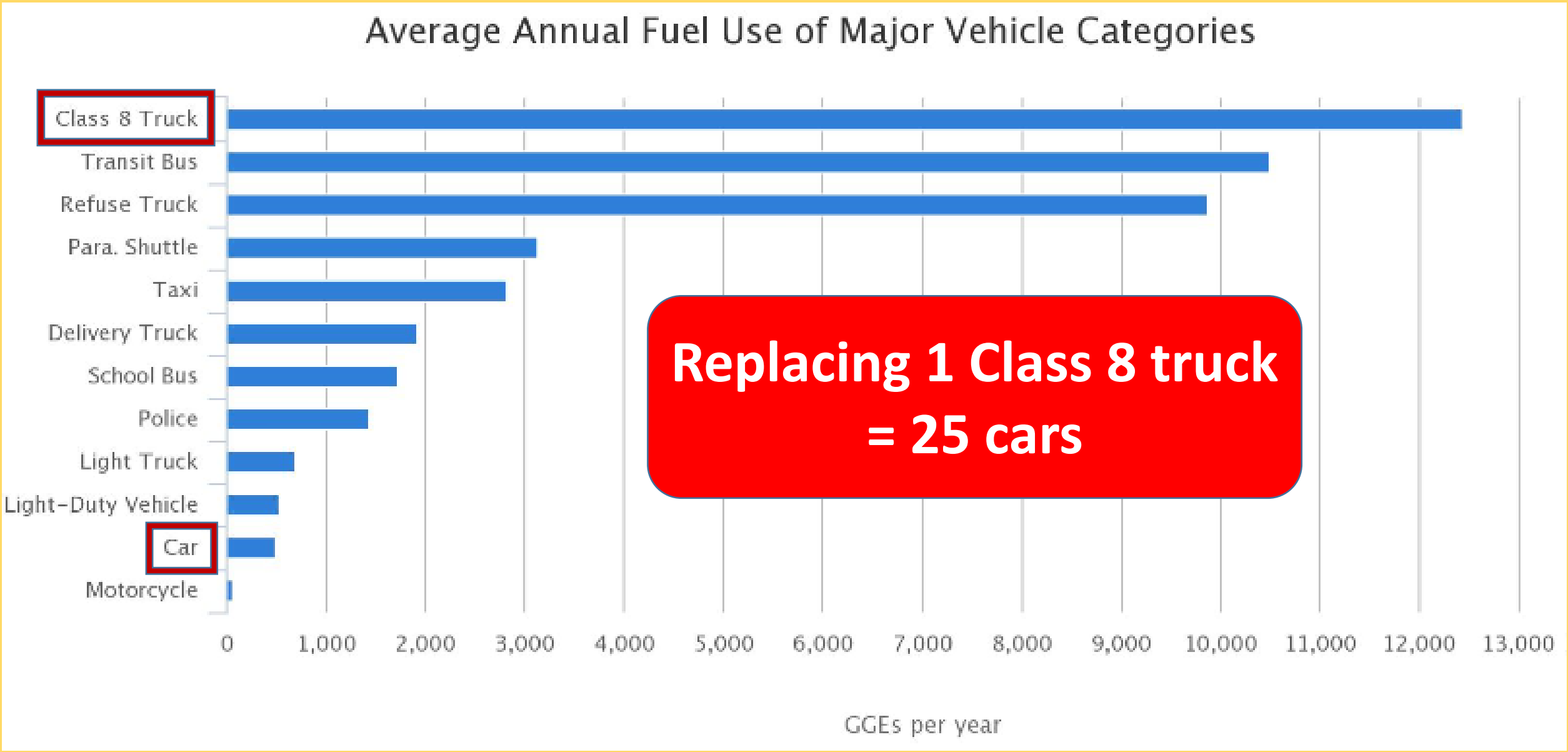
U.S. transportation GHG emissions, 1990-2012

- **Trucks +74.5%**
- Light-duty vehicles +13.9%
- Aircraft -22.6%

U.S. EPA, 2015

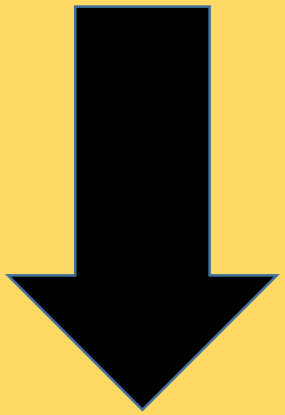


U.S. DOE, Alt. Fuels Data Center



U.S. DOE, Alt. Fuels Data Center

Long Vehicle Lives, More Miles Traveled



Buyers Must Apply Preferences for Better Vehicles and Contractors

Key Indicators in DOE's Annual Energy Outlook 2015

Freight trucks (greater than 10,000 lbs.)

- Billion vehicle miles traveled
  - 2015: 284
  - **Growth rate through 2040: 1.5%**
- Miles per gallon
  - 2015: 6.8
  - **Growth rate through 2040: 0.6%**
- Energy use (quadrillion Btu)
  - 2015: 5.77
  - **Growth rate through 2040: 0.9%**

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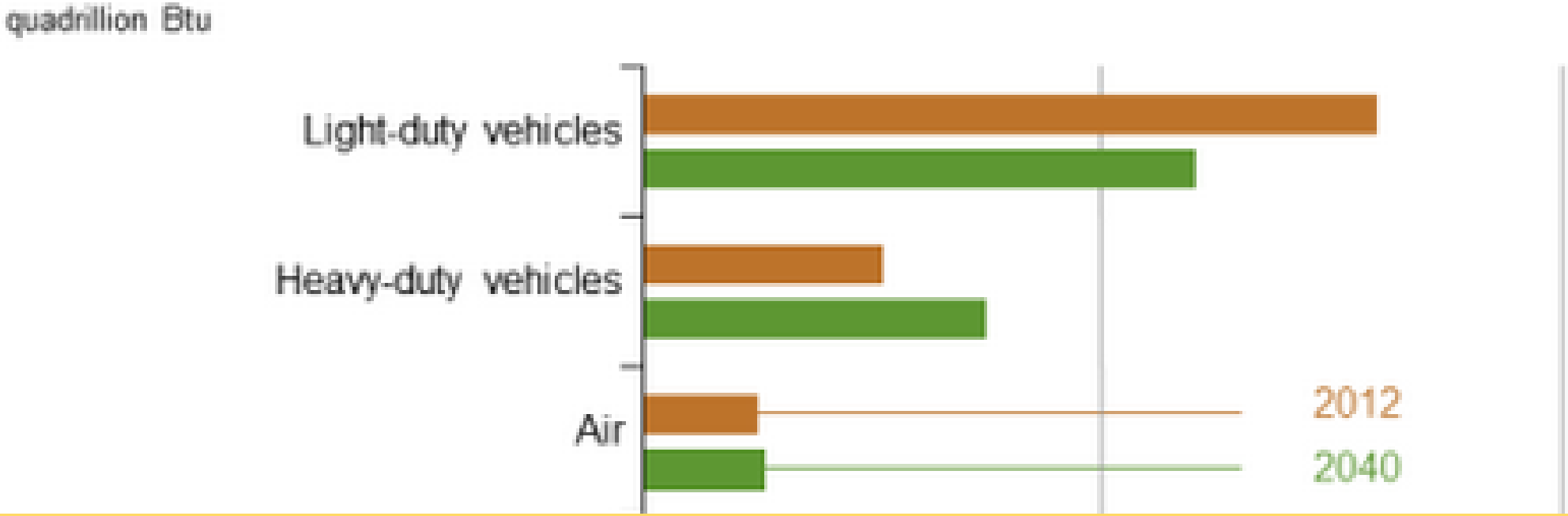
Light-Duty Vehicles

1.1%

1.7%

-0.8%

Figure MT-24. Delivered energy consumption for transportation by mode in the Reference case, 2012 and 2040



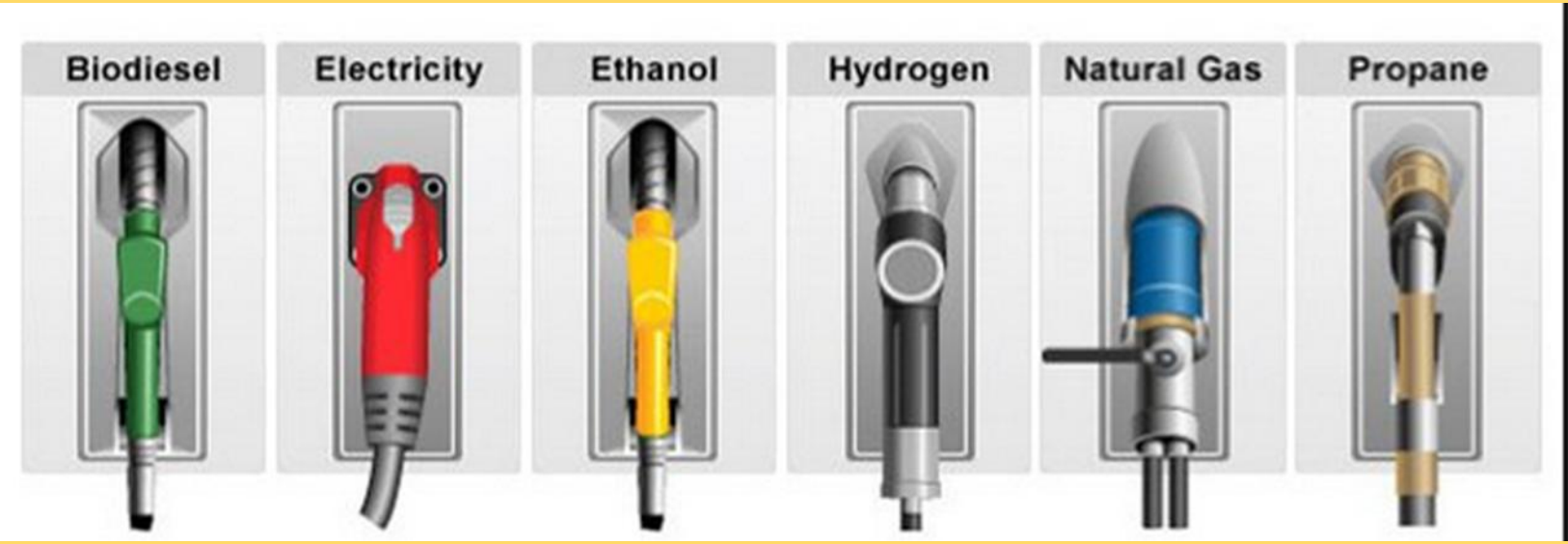
U.S. EIA, 2015

Slow Growth in Alternative Fuel Light-Duty Vehicles-2040

- Gas 78% (82% in 2012)

U.S. EIA, 2014

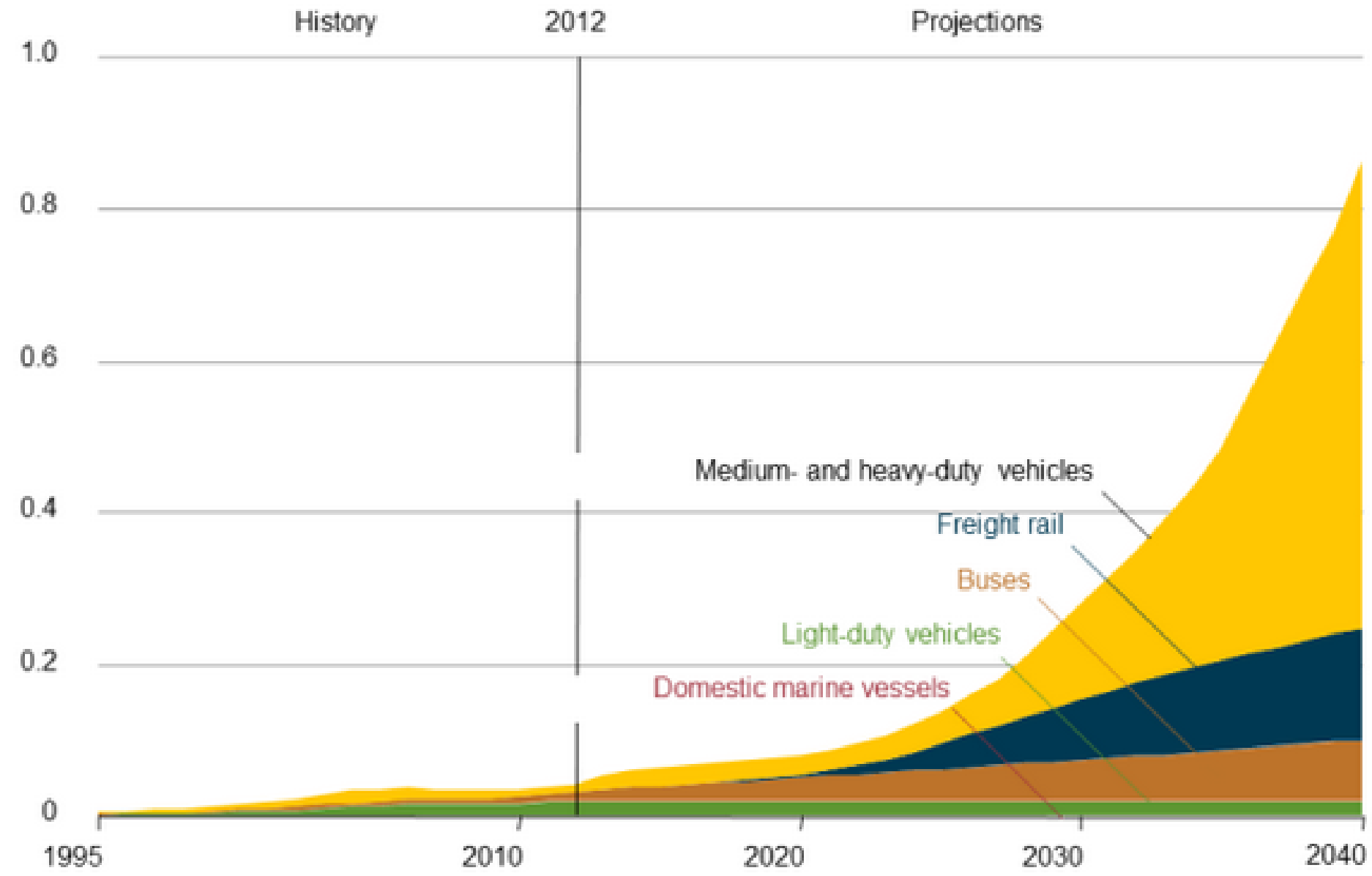
- Ethanol Flex-fuel 11%
- Hybrid electric 5%
- Diesel 4%
- Plug-in hybrid 1%
- Electric 1%



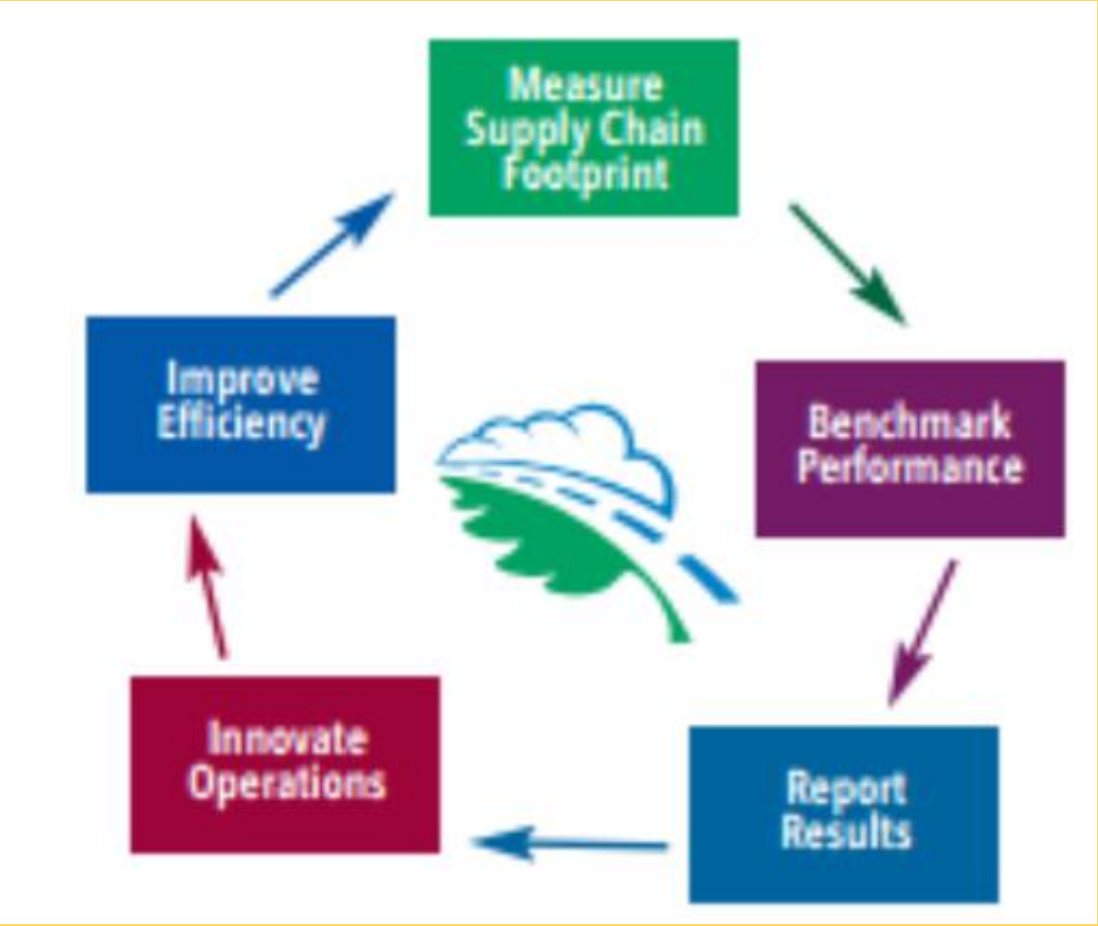
Fuel Switching for Heavy-Duty Vehicles

Figure MT-28. Natural gas consumption in the transportation sector in the Reference case, 1995-2040

U.S. EIA, 2015



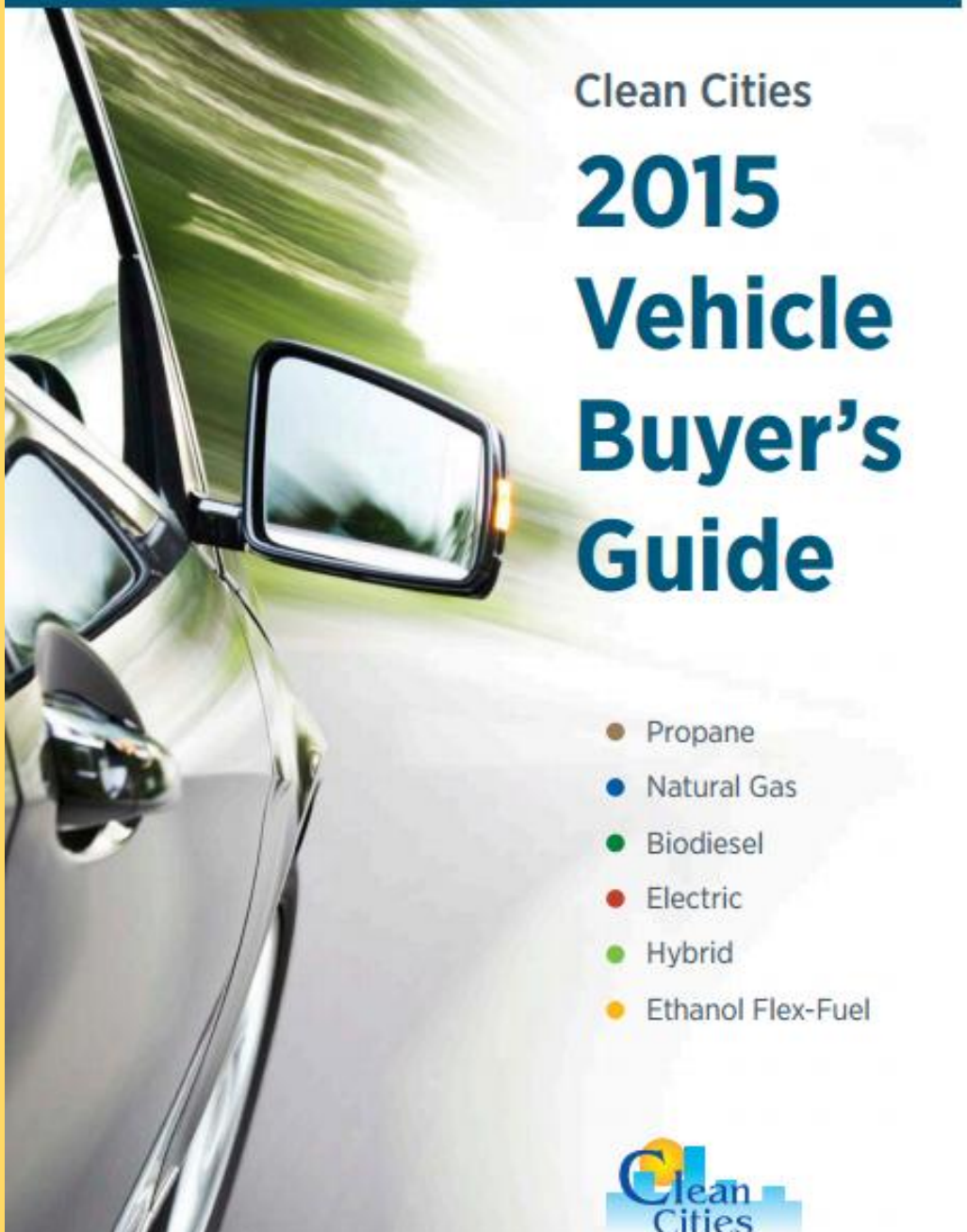
Metrics and Certification Available



SmartWay® Transport Partnership
U.S. Environmental Protection Agency

Grams per Mile								Grams per Ton-Mile							
g/mile CO2 Rank	g/mile CO2	g/mile NOx Rank	g/mile NOx	g/mile PM10 Rank	g/mile PM10	g/mile PM2.5 Rank	g/mile PM2.5	g/tm CO2 Rank	g/tm CO2	g/tm NOx Rank	g/tm NOx	g/tm PM10 Rank	g/tm PM10	g/tm PM2.5 Rank	g/tm PM2.5

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy



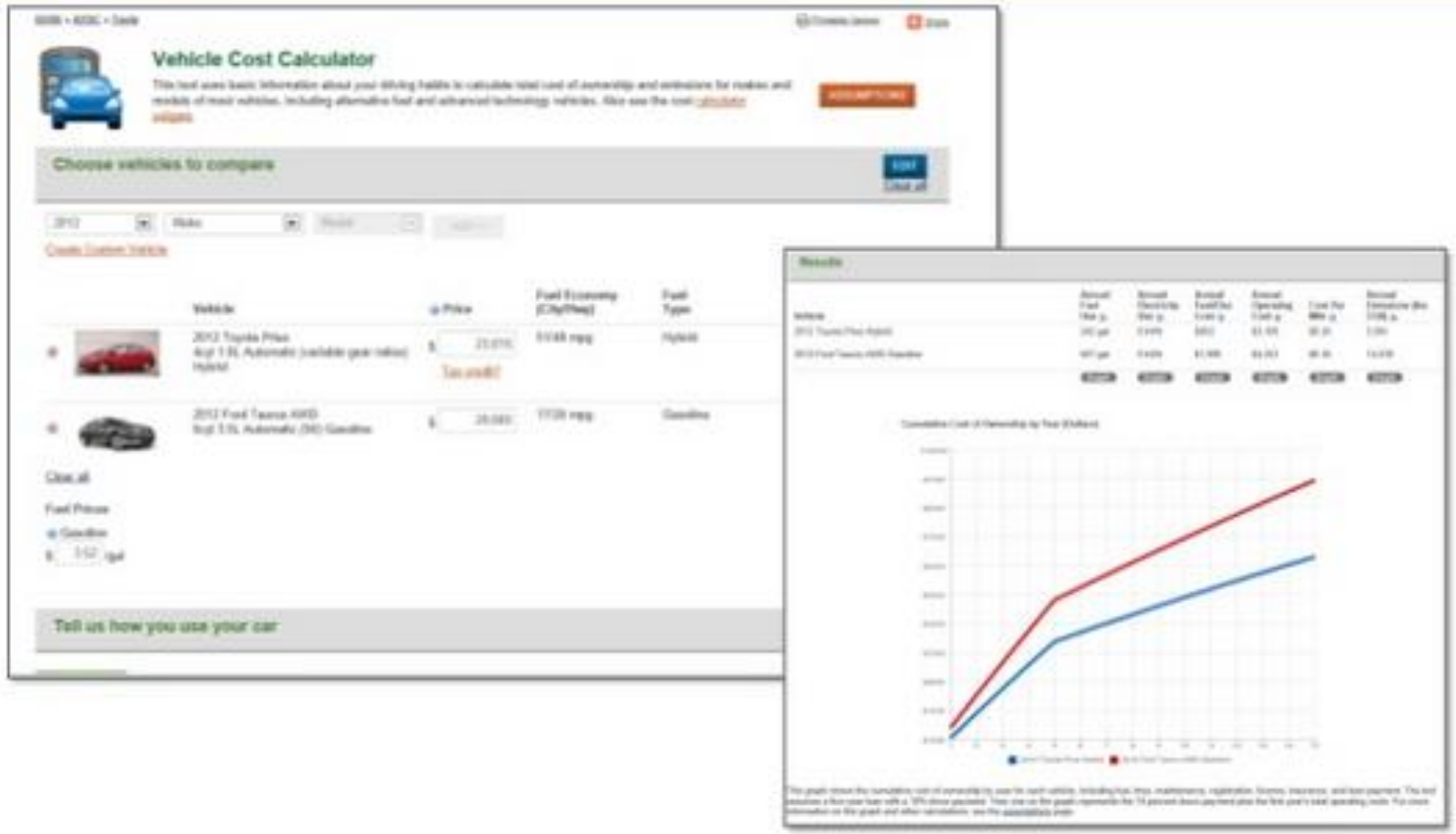
Clean Cities

2015 Vehicle Buyer's Guide

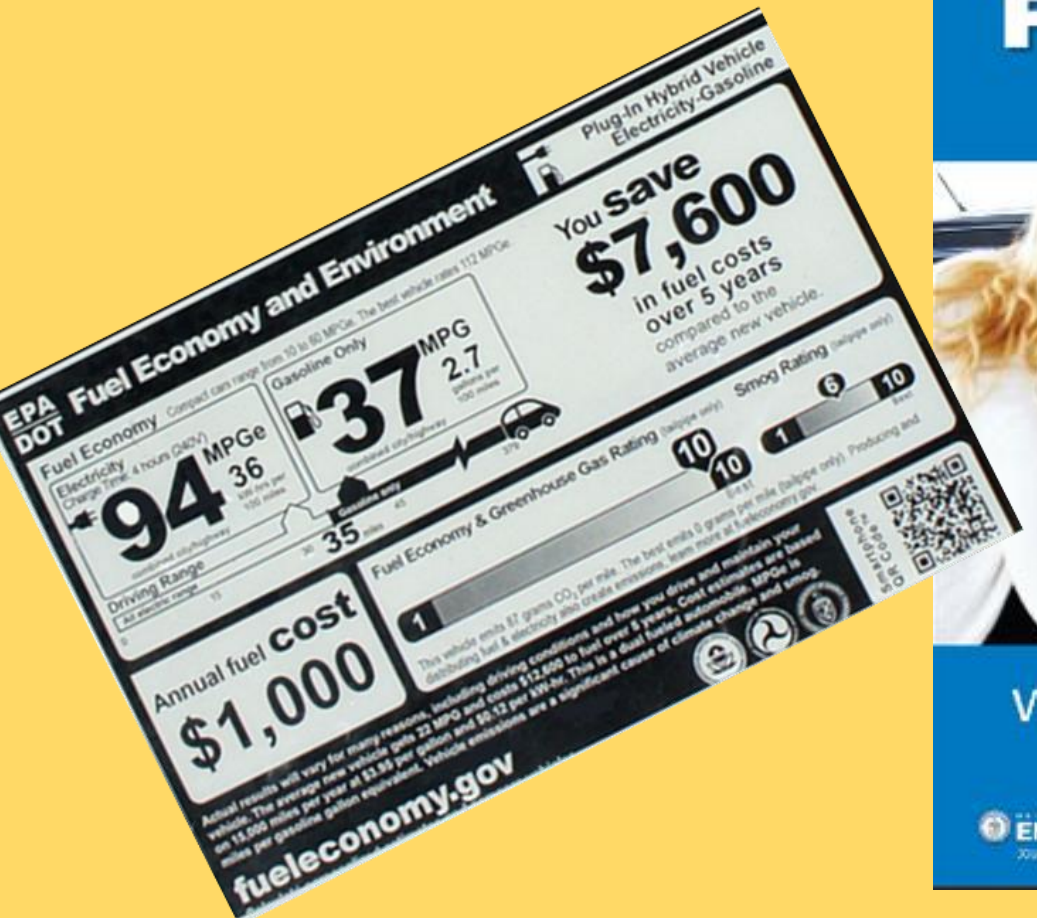
- Propane
- Natural Gas
- Biodiesel
- Electric
- Hybrid
- Ethanol Flex-Fuel

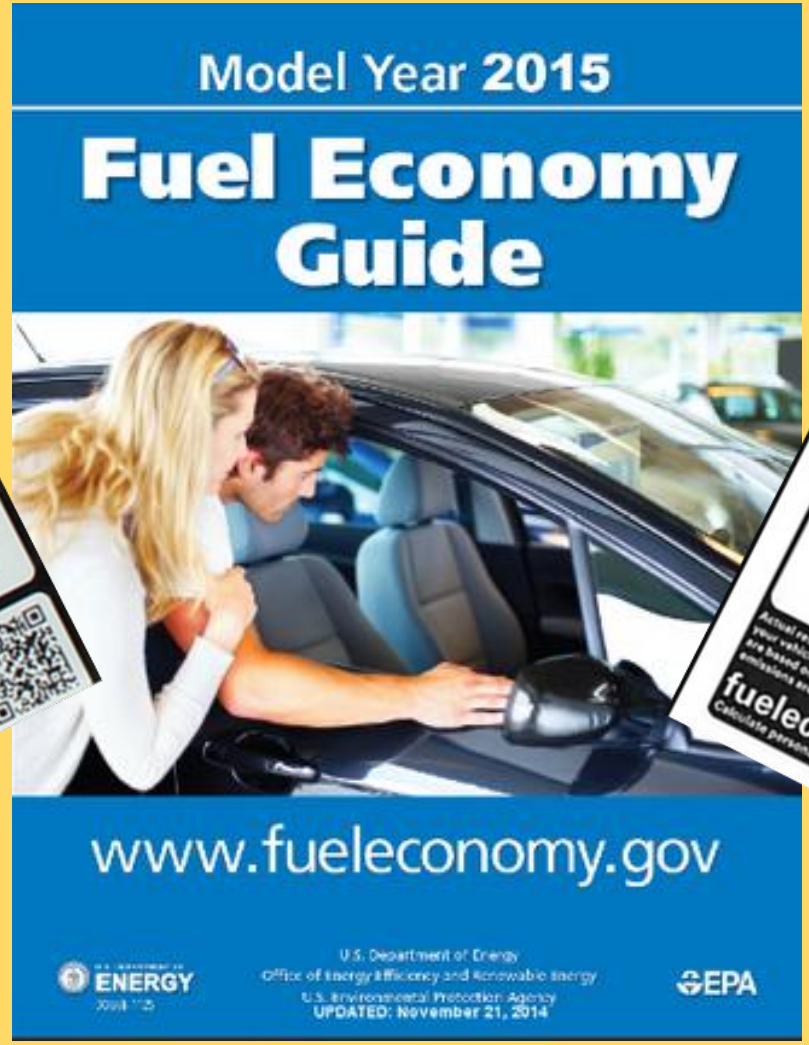
Clean Cities

AFDC Vehicle Cost Calculator



Metrics for Light-Duty Vehicles



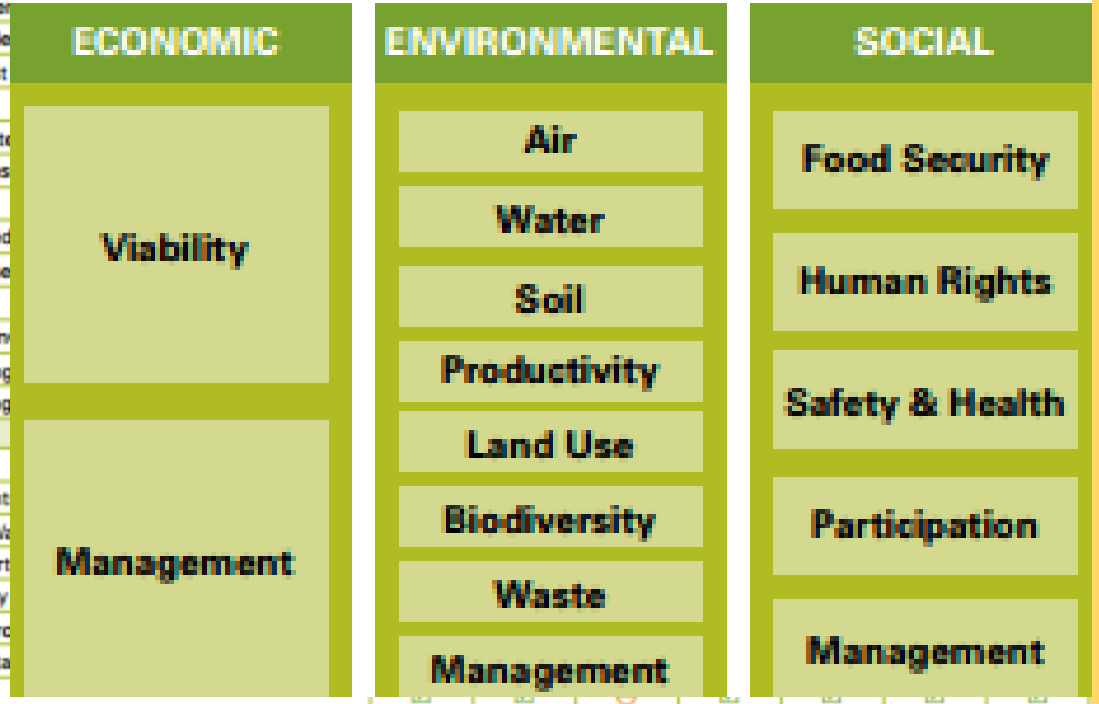


Certified Sustainable Biofuels

Table 2. Standards Evaluation Results Summary

	RSB	CSBP	ISCC	RSPO	RTRS[28]	Bonsucro	FSC
Life Cycle Focus*	1-3	1	1	1-2	1	1-2	1
Key Attributes							
Consistent	☑	☑	⊖	☑	☑	☑	☑
Balanced and Consensus Driven	☑	⊖	☑	☑	☑	☑	☑
Transparent	☑	☑	⊖	☑	☑	☑	☑
Objective and Traceable	☑	☑	☑	☑	☑	☑	☑
Assured and Accredited	☑	⊗	⊗	⊖	⊗	⊖	☑
Relevant	☑	☑	⊖	☑	☑	☑	☑
Economic Pillar							
Financial Viability	☑	⊗	⊗	☑	⊗	⊖	☑
Compliance with Financial Laws and Regulations	☑	☑	⊖	☑	☑	☑	☑
Environmental Pillar							
Air Quality	☑	☑	⊖	☑	⊗	☑	☑
GHG Emissions	☑	⊖	⊖	⊖	⊖	⊖	⊖
Water Quality	☑	☑	⊖	☑	⊖	☑	☑
Water Quantity							
Soil Health							
Nutrient Requiremer							
Pesticides/Herbicide							
Sustainable Harvest							
Land Use—Direct							
Endangered, Threate							
Native Habitat /Ecos							
Invasive Species							
Genetically Modified							
Minimization, Reuse							
Hazardous Waste							
Compliance with En							
Planning, Monitoring							
Supply Chain Manag							
Social Pillar							
Food Security							
Equity/Gender Right							
Labor Rights/Fair W							
Land Tenure/Propert							
Occupational Safety							
Public Health /Enviro							
Public Outreach/ Sta							
Transparency							
Compliance with Safety, Health, and Participation Laws	☑	☑	⊖	☑	☑	☑	☑

Figure 1. Sustainability Framework, Pillars, and Criteria



Other Standards and Metrics

SUSTAINABILITY ACCOUNTING METRICS – ROAD TRANSPORTATION

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Environmental Footprint of Fuel Use	Gross global Scope 1 emissions	Quantitative	Metric tons CO_2-e	TR0402-01
	Description of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	Discussion and Analysis	n/a	TR0402-02
	Total fuel consumed, percentage renewable	Quantitative	Gigajoules, Percentage (%)	TR0402-03
	Air emissions for the following pollutants: NO_x, SO_x, and particulate matter (PM)	Quantitative	Metric tons (t)	TR0402-04
Driver Working Conditions	Employee turnover by (1) voluntary and (2) involuntary for all employees	Quantitative	Rate	TR0402-05
	Description of approach to managing short-term and long-term driver health risks	Discussion and Analysis	n/a	TR0402-06
Accidents & Safety Management	Number of accidents and incidents	Quantitative	Number	TR0402-07
	(1) Total recordable injury rate and (2) fatality rate for (a) full-time employees and (b) contract employees	Quantitative	Rate	TR0402-08
	Safety Measurement System BASIC percentiles for: (1) Unsafe Driving, (2) Hours-of-Service Compliance, (3) Driver Fitness, (4) Controlled Substances/Alcohol, (5) Vehicle Maintenance, and (6) Hazardous Materials Compliance	Quantitative	Percentile (%)	TR0402-09
	Number and aggregate volume of spills and releases to the environment	Quantitative	Number, Cubic meters (m^3)	TR0402-10

Other Standards and Metrics

CDP
DRIVING SUSTAINABLE ECONOMIES

Carbon Disclosure Project
Transport Report

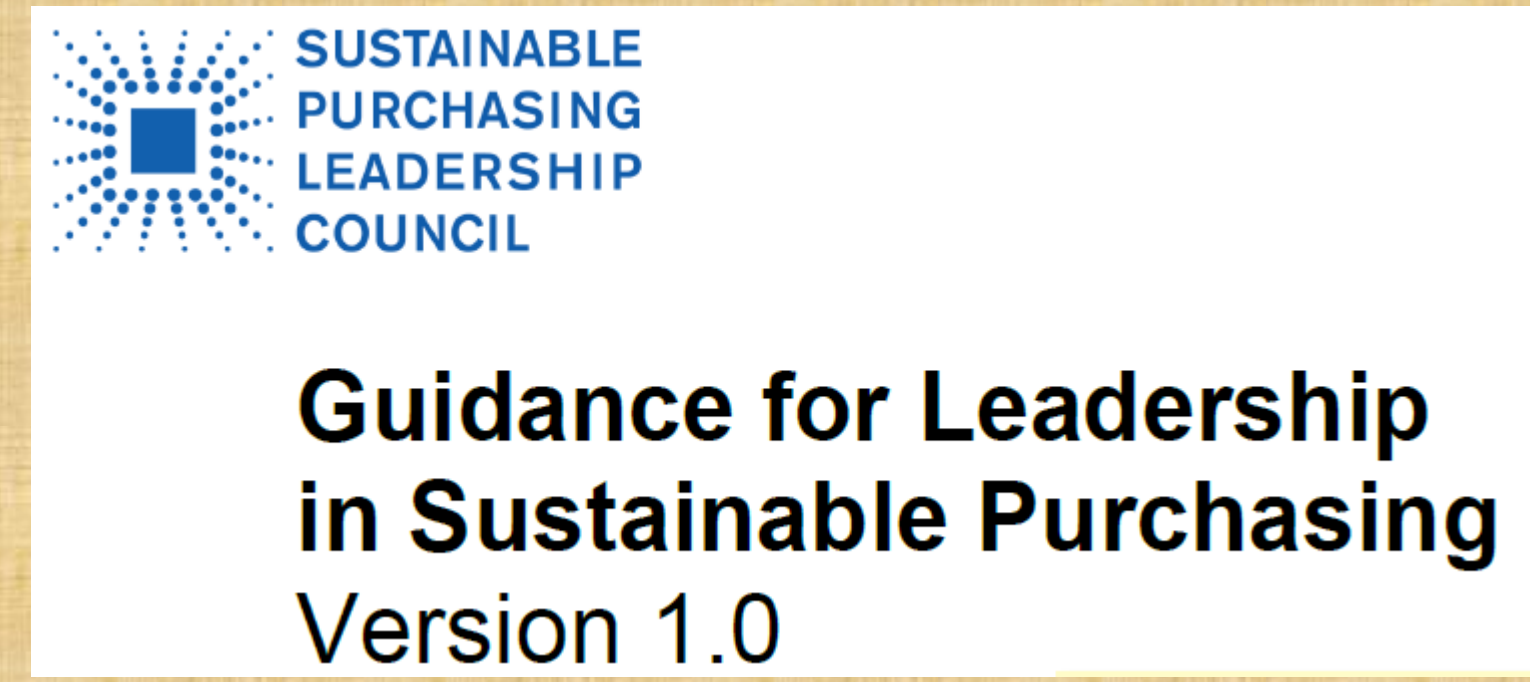
LOGISTICS AND TRANSPORTATION

The pilot version of the Logistics and Transportation Sector Supplement can benefit reporting organizations in the sector.

Global Reporting Initiative™

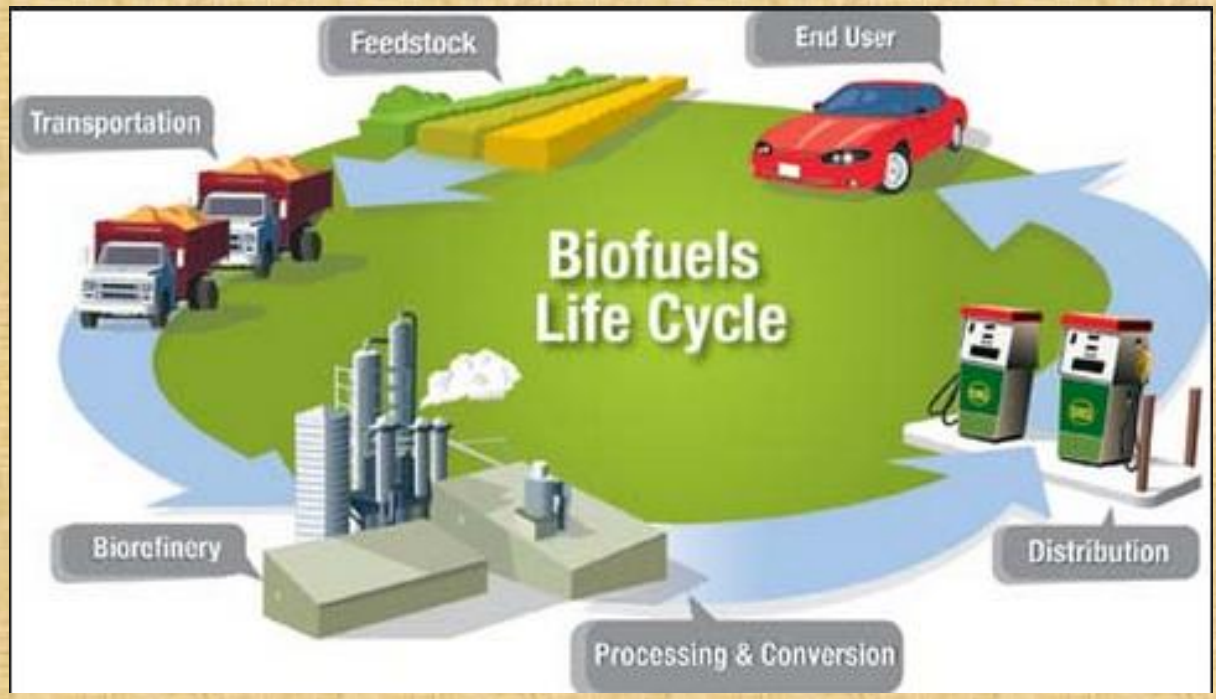
SPLC Guidance for Transportation and Fuels

1. Fuels
2. Institutional vehicle fleets
3. Local delivery service
4. Long haul transport
5. Travel (employee and other)



1. Fuels

- Scope
  - Direct – institutional fleet
  - Indirect – contractors
- Life-cycle analysis
  - Tailpipe emissions
  - Production, refining, distribution



Dimensions of Impacts

- Air pollution
- Public health
- Worker health and human rights
- Land use and biodiversity
- National security

SPLC Guidance for Fuels

- Reduce need for fuels
- Use low carbon fuels
- Use certified sustainable biofuels

SPLC Guidance for Fuels

- Reduce need for fuels
- Use low carbon fuels
- Use certified sustainable biofuels

METRICS

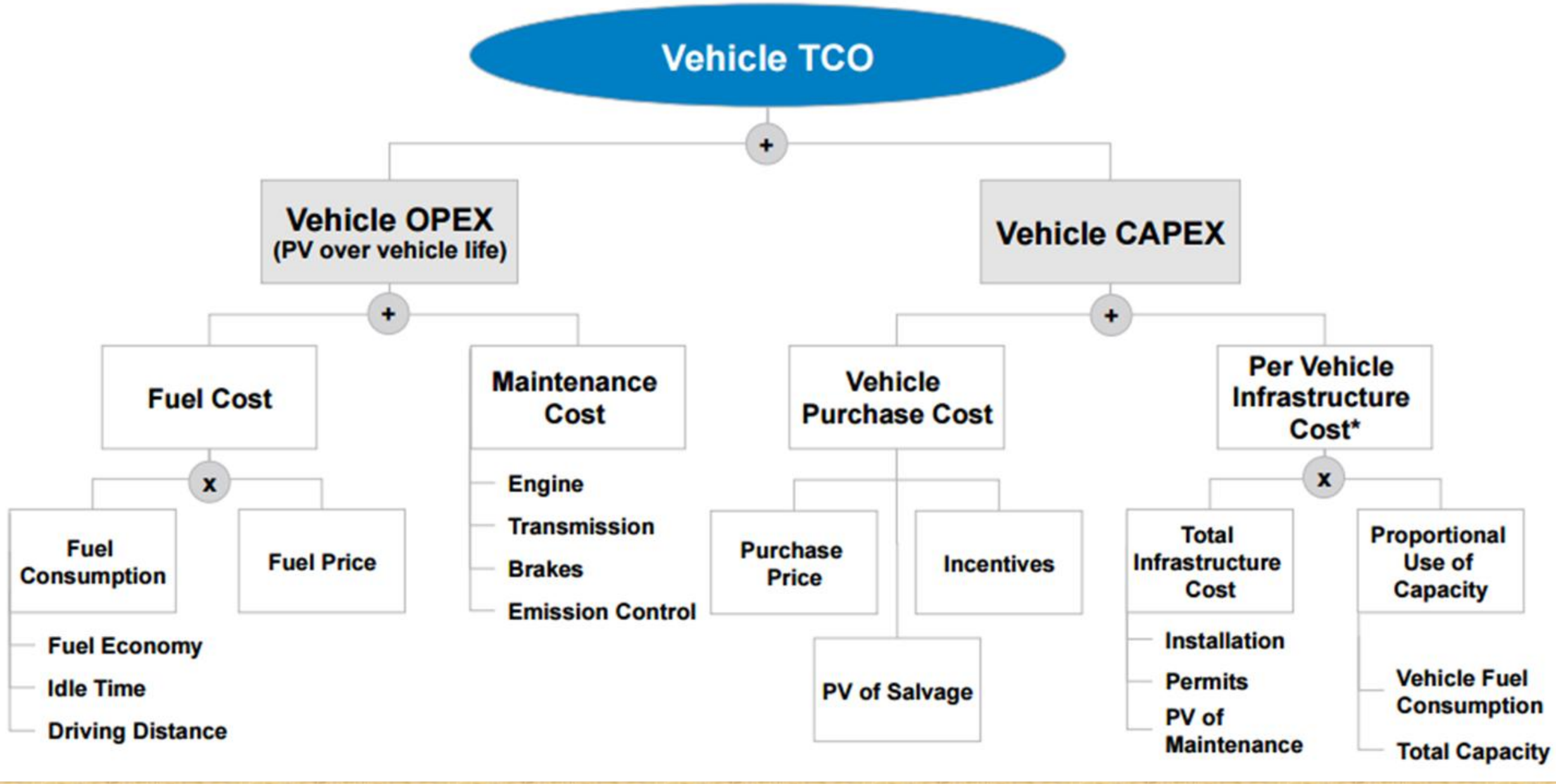
1. Gallons of fuel consumed, by type
2. Emissions produced
3. Embedded water in fuel

2. Institutional Vehicle Fleets - Guidance

- Explore whether purchasing new vehicles can be avoided
  - Reallocate existing vehicles
  - Car sharing program
  - Right-sizing best practices
  - Alternative fuel conversions

2. Institutional Vehicle Fleets - Guidance

- Seek AFVs; explore investing in fueling infrastructure
  - Collaborate with end-user departments
  - Prioritize renewable fuel sources
  - Tax credits and other incentives
  - Identify AFVs that work for you – **total cost of ownership**
  - Train maintenance department


Vehicle TCO
+
Vehicle OPEX
(PV over vehicle life)
+
Fuel Cost
x
Fuel Consumption
Fuel Economy
Idle Time
Driving Distance
Fuel Price
Maintenance Cost
Engine
Transmission
Brakes
Emission Control
Vehicle CAPEX
+
Vehicle Purchase Cost
Purchase Price
Incentives
PV of Salvage
Per Vehicle Infrastructure Cost*
x
Total Infrastructure Cost
Installation
Permits
PV of Maintenance
Proportional Use of Capacity
Vehicle Fuel Consumption
Total Capacity

2. Institutional Vehicle Fleets - Guidance

- Purchase full HEVs
- If AFVs not reasonable for conditions, pursue fuel efficiency

2. Institutional Vehicle Fleets - Guidance

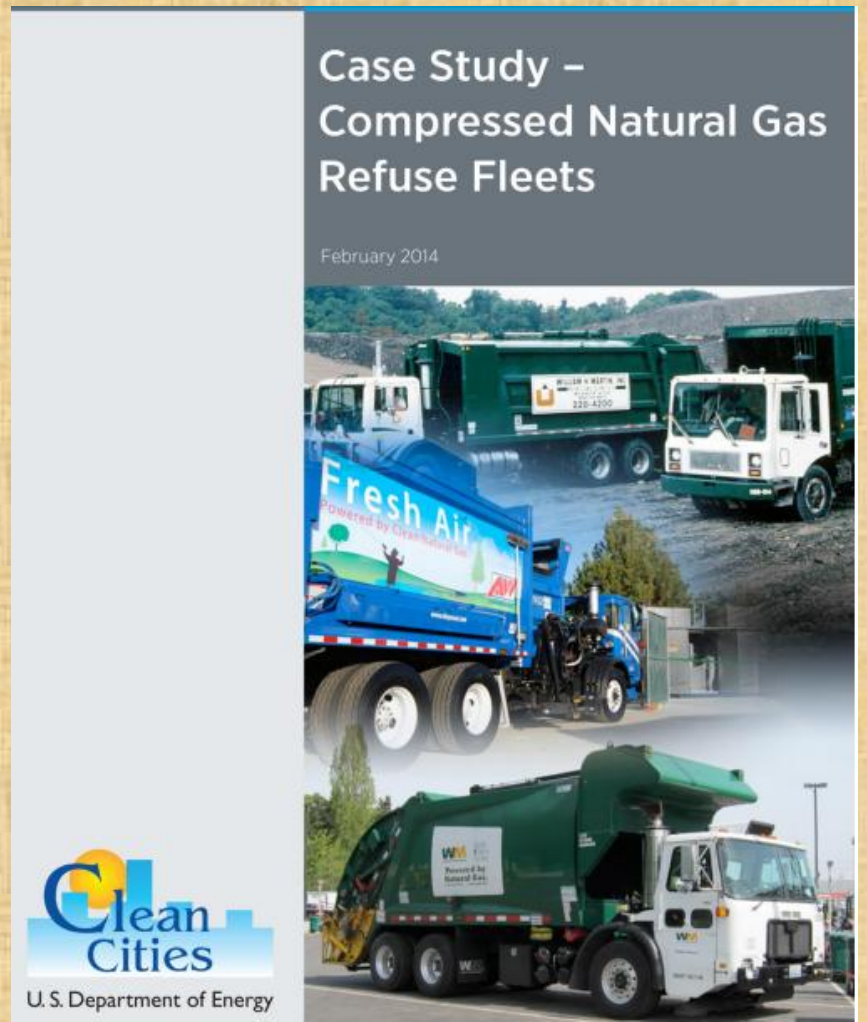
- Cut purchases
- Seek AFVs
- Purchase full HEVs
- Fuel efficiency

METRICS

1. Fleet fuel usage
2. Fleet MPG
3. Fuel costs
4. Fleet emissions
5. Fleet composition by fuel type
6. Contracts with “green fleet” requirements

3. Local Delivery Service - Guidance

- Optimize delivery service utilization and logistics
- Procure zero-emission, low-emission or AFV services
- Promote safety



3. Local Delivery Service - Guidance

- Optimize delivery service utilization and logistics
- Procure zero-emission, low-emission or AFV services
- Promote safety

METRICS

1. **Gallons of fuel saved**
2. **Renewable fuels used**
3. **Emissions reduced**

4. Long Haul Transport - Guidance

- Optimize transport utilization and logistics
  - Select low-impact mode
  - Consolidate shipments
  - Schedule for efficiency
- Prefer vendors with low environmental impacts (EPA SmartWay partners)
- Join SmartWay as a “shipper partner”

Contractors Offering Cleaner Long Haul Trucks

P&G to Convert 20 Percent of Its For-Hire Truck Loads to Natural Gas

P&G Invests in Growth of Natural Gas Industry by Awarding Loads to Eight Natural Gas Transportation Carriers

Thursday, June 27, 2013 8:00 am EDT

4. Long Haul Transport - Guidance

- Optimize transport utilization and logistics
  - Select low-impact mode
  - Consolidate shipments
  - Schedule for efficiency
- Prefer vendors with low environmental impacts
- Join SmartWay as a "shipper partner"

METRICS

1. **GHG emissions**
2. **PM emissions**
3. **Fuel use by type**

5. Travel (Employee and Other) - Guidance

- Develop employee travel policy focused on environmental, social, and economic impact reduction
- Invest in operational improvements that allow for reduced travel
- Develop methods to measure and compensate for employee- and contractor-related travel impacts

Companies Address Travel Impacts

macmillan SUSTAINABILITY

Home : Transportation : Employee and Author Travel

EMPLOYEE AND AUTHOR TRAVEL

5. Travel (Employee and Other) - Guidance

- Develop employee travel policy focused on environmental, social, and economic impact reduction
- Invest in operational improvements that allow for reduced travel
- Develop methods to measure and compensate for employee- and contractor-related travel impacts

METRICS

1. Reduced miles traveled by vehicle, air, rail
2. Reduced GHG emissions from travel
3. Increase in number of remote meetings

SPLC Guidance for Transportation and Fuels

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