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

2016 Transportation Technology Deployment Report:

Massachusetts Clean Cities

Expanded Edition

March 2017

Clean Cities
U.S. Department of Energy

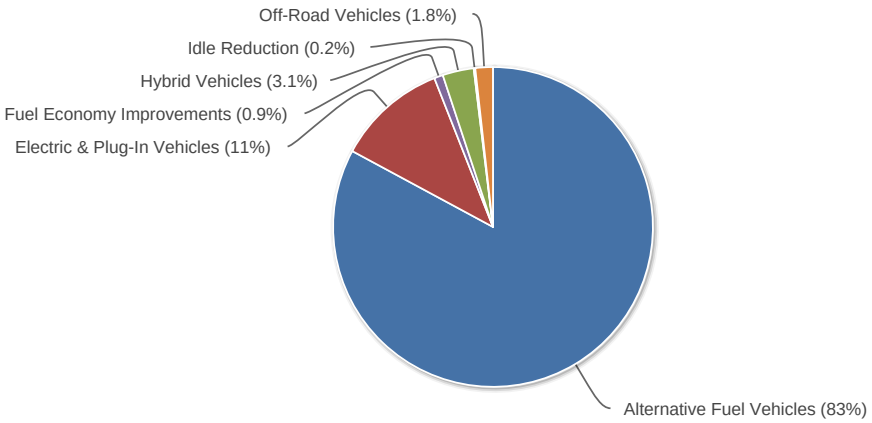
The U.S. Department of Energy's (DOE) Clean Cities program advances the nation's economic, environmental, and energy security by supporting local actions to reduce petroleum use in transportation. A national network of nearly 100 Clean Cities coalitions brings together stakeholders in the public and private sectors to deploy alternative and renewable fuels, idle-reduction measures, fuel economy improvements, and new transportation technologies, as they emerge.

Every year, each Clean Cities coalition submits to DOE an annual report of its activities and accomplishments for the previous calendar year. Coalition coordinators, who lead the local coalitions, provide information and data via an online database managed by the National Renewable Energy Laboratory (NREL). The data characterize membership, funding, projects, and activities of the coalitions. The coordinators also submit data on the sales of alternative fuels, deployment of alternative fuel vehicles and hybrid electric vehicles, idle-reduction initiatives, fuel economy activities, and programs to reduce vehicle miles traveled. NREL and DOE analyze the data and translate them into petroleum-use and greenhouse gas reduction impacts for individual coalitions and the program as a whole. This report summarizes those impacts for Massachusetts Clean Cities.

To view aggregated data for all local coalitions that participate in the Clean Cities program, visit cleancities.energy.gov/accomplishments.

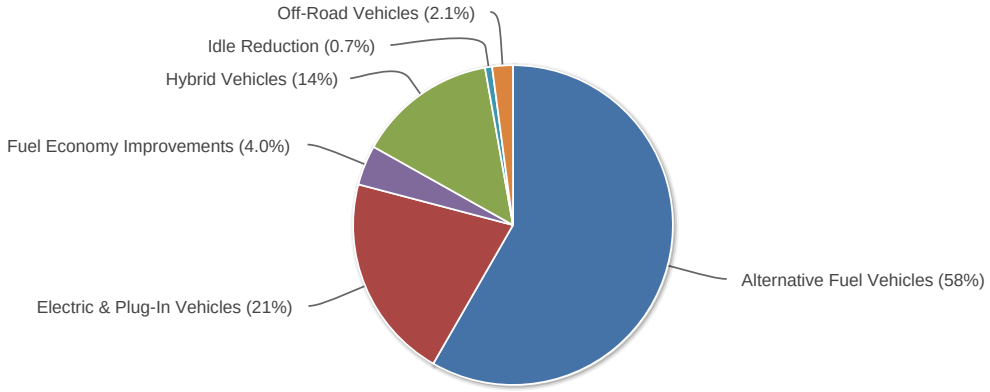
2016 Gallons of Gasoline Equivalent Reduced

9,261,222 gallons

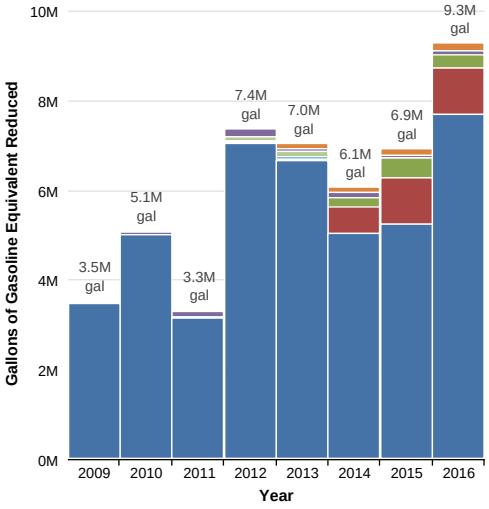


2016 Greenhouse Gas Emissions Reduced

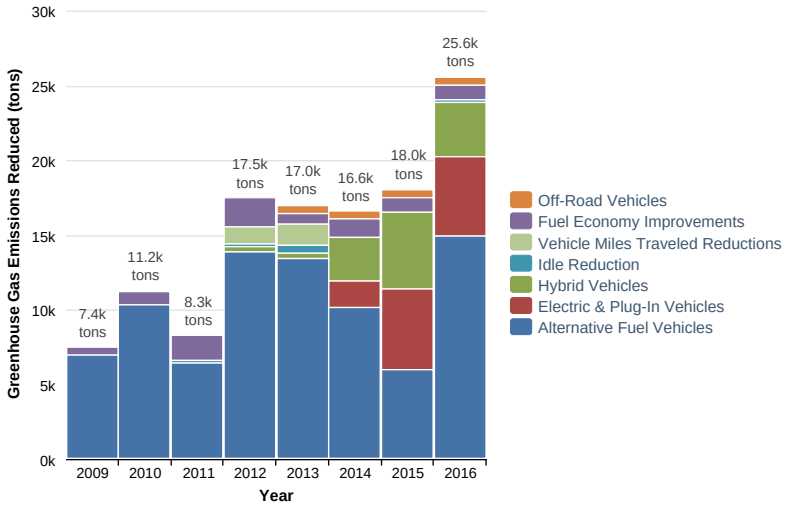
25,567 tons



Historical Gallons of Gasoline Equivalent Reduced

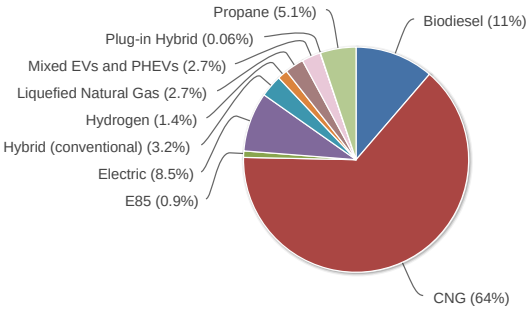


Historical Greenhouse Gas Emissions Reduced



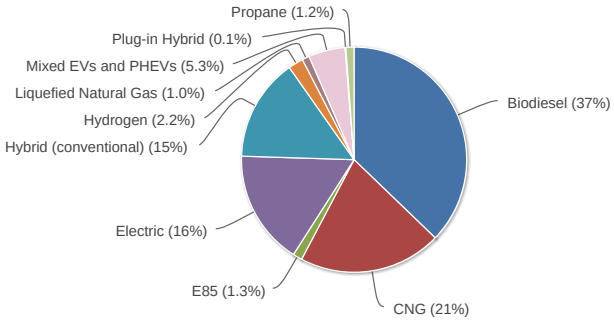
2016 Gallons of Gasoline Equivalent Reduced by Fuel Type for Alternative Fuel Projects

9,162,965 gallons



2016 Greenhouse Gas Emissions Reduced by Fuel Type for Alternative Fuel Projects

24,349 tons



Criteria Pollutant Emissions Reduced

Criteria pollutants are chemicals that have been linked to human health effects and therefore regulated in the Clean Air Act of 1970. The Clean Cities annual report calculates them using the same assumptions and default values as AFLEET 2016, with some adjustments to fit specific data inputs. They are quantified at vehicle tailpipes, as those are the emissions contributing to the regulated “ambient” air quality of a given city. This means that they omit emissions from sources such as electric power plants, refineries, and biofuel feedstock farms (where emissions are sufficiently removed from populations in order to minimize health effects). When a specific pollutant surpasses a given threshold for a given area, the area is considered to be in “nonattainment” for that pollutant. Nonattainment areas for given pollutants can be viewed at www.epa.gov/green-book. To learn more about what your emissions numbers mean, please take the Understanding Emissions or Emissions Compliance courses at Clean Cities University.

Reductions by Fuel Type*	NOx	VOC	CO	PM10	PM2.5
Biodiesel	0 lb	0 lb	0 lb	0 lb	0 lb
CNG - Compressed Natural Gas	108,065 lb	153 lb	-1,322,275 lb	0 lb	0 lb
E85 - 85% Ethanol	0 lb	40 lb	0 lb	0 lb	0 lb
Electric (all-electric)	7,384 lb	6,780 lb	76,818 lb	160 lb	153 lb
Hybrid (conventional)	409 lb	1,220 lb	2,255 lb	0 lb	0 lb
Hydrogen	63 lb	1 lb	9 lb	0 lb	0 lb
LNG - Liquefied Natural Gas	31,308 lb	3,199 lb	-172,707 lb	0 lb	0 lb
Mixed EVs and PHEVs	905 lb	1,639 lb	12,541 lb	24 lb	23 lb
Plug-in Hybrid	179 lb	150 lb	2,891 lb	5 lb	5 lb
Propane	0 lb	0 lb	0 lb	0 lb	0 lb
Total:	**148,314 lb**	**13,182 lb**	**-1,400,467 lb**	**189 lb**	**181 lb**

* This table accounts for criteria pollutants from alternative fuel vehicle, hybrid vehicle, and VMT reduction projects only. It does not include fuel economy, idle reduction, or off-road projects. Negative values indicate an increase in emissions.

COALITION

Massachusetts Clean Cities - MA

http://www.mass.gov/energy/cleancities

Designated: 03/18/1994
Boundaries: Entire state of Massachusetts

COORDINATORS

	Address	Telephone	Fax
Mike Manning	C-6 Shipway Pl Boston, MA 02129		
Stephen Russell	100 Cambridge St, Ste 1020 Boston, MA 02114		

Number of coordinators	2
Coordinator(s) hours per week on Clean Cities	50 hours
Other staff hours per week on Clean Cities	10 hours
How long have you been the coordinator?	8 years

OPERATING INFORMATION

Host organization	Government - State

Stakeholders

Number of stakeholders	480
Number of private stakeholders	245
Does the State Energy Office provide any financial support to the coalition or stakeholders?	Yes
Explain State Energy Office's support	
They provide an office, Financial support in the way of salary, admin support and all the benefits afforded a State employee	
How would you rate the quality of the data on your survey?	Good
How do you obtain most of your data for the survey?	Paper, e-mail, or spreadsheet questionnaire to stakeholders
Has your coalition registered with www.grants.gov?	Yes

2016 Outside Funding

Stakeholder dues collected	$0
How much funding is obtained from other sources to cover coalition operating expenses?	$50,000
Non-DOE or ARRA grant and matching funds spent in 2016	$6,925,000
Total non-DOE or ARRA funding in 2016	$6,975,000

Alternative Fuel & Vehicles

Fleet/Station Name	Vehicle Class	Fuel	Number of Vehicles	Fuel Used	GGE Reduced	GHG Reduced
AVSG	Heavy-Duty	CNG	25	259,000 GGE	233,100 gal	196.3 tons
Market: Corporate Fleet **Vehicle type:** Truck: Refuse **Percentage from coalition:** 100% **National Clean Fleets Partnership:** No						
This stakeholder supplies natural gas to several fleets in Massachusetts. The Mass Steamship Authority, Lowell RTA, Charles River transportation, Stop and Shop,Willow Run transport and Mass Highway (not reported above)						
Cape Cod Biofuels	Heavy-Duty	Biodiesel (100%)	650	20,000 gal	21,320 gal	186.7 tons
Market: General/Unknown **Vehicle type:** Unknown/Other **Percentage from coalition:** 100% **National Clean Fleets Partnership:** No						
This operation sold 20,000 gallons of B-100 that was used exclusively in the transportation sector. They are a a small biodiesel produced that collects used cooking oil from restaurants on Cape Cod. They received a grant form Massachusetts DOER/ Clean Cities to expand their operation.						
Cape Cod RTA	Heavy-Duty	Biodiesel (20%)	-	168,000 gal	35,818 gal	313.7 tons
Market: Government - Local **Vehicle type:** Bus: Transit **Percentage from coalition:** 100% **National Clean Fleets Partnership:** No						
CCRTA began use of Biodiesel based on information provided by the Clean Cities coalition						
Charles River TMA	Heavy-Duty	CNG	12	100% of time	55,556 gal	46.8 tons
Miles traveled per vehicle: 30,126 mi **Average vehicle fuel economy:** 7 MPGde **Market:** Corporate Fleet **Vehicle type:** Bus: Shuttle **Percentage from coalition:** 100% **National Clean Fleets Partnership:** No						
City of Boston Central Fleet	Light-Duty	Propane	15	3,657 gal	1,384 gal	2.0 tons
Market: Government - Local **Vehicle type:** Pickup/SUV/Van **Percentage from coalition:** 50% **National Clean Fleets Partnership:** No						
City of Boston School bus fleet	Heavy-Duty	Propane	172	100% of time	333,047 gal	130.6 tons
Miles traveled per vehicle: 14,000 mi **Average vehicle fuel economy:** 6 MPGde **Market:** Government - Local **Vehicle type:** Bus: School **Percentage from coalition:** 75% **National Clean Fleets Partnership:** No						
This fleet is on its way to convert all 700 of their school buses to Propane						
Clean Vehicle Program CNG conversions	Heavy-Duty	CNG	58	100% of time	16,044 gal	13.5 tons
Miles traveled per vehicle: 25,000 mi **Average vehicle fuel economy:** 100 MPGde **Market:** Corporate Fleet **Vehicle type:** Truck: Refuse **Percentage from coalition:** 100% **National Clean Fleets Partnership:** No						
this grant provided grants for 10 fleets to covert to CNG						

Fleet/Station Name	Vehicle Class	Fuel	Number of Vehicles	Fuel Used	GGE Reduced	GHG Reduced
Clean Vehicle Program propane conversions	Light-Duty	Propane	30	100% of time	23,424 gal	33.1 tons
Miles traveled per vehicle: 11,712 mi **Average vehicle fuel economy:** 15 MPGge **Market:** Government - Local **Vehicle type:** Pickup/SUV/Van **Percentage from coalition:** 100% **National Clean Fleets Partnership:** No *This represents two fleets coverted to propane*						
Courtyard by Marriot	Heavy-Duty	CNG	4	52,000 GGE	46,800 gal	39.4 tons
Market: Airport **Vehicle type:** Bus: Shuttle **Percentage from coalition:** 100% **National Clean Fleets Partnership:** No *This Hotel continues to use CNG in their shuttle buses that serve Logan Airport*						
Dennis K Burke	Heavy-Duty	Biodiesel (100%)	150	295,786 gal	157,654 gal	1,380.6 tons
Market: General/Unknown **Vehicle type:** Unknown/Other **Percentage from coalition:** 50% **National Clean Fleets Partnership:** No *This is B 100 biodiesel sold to various fleets in Massachusetts in various percentages including the state fleet recorded separately last year. I do not know the number of vehicles that used this fuel. It does include Boston Coach, the Duck Boats and some small buses used at hotels in Eastern MA. Communities using biodiesel include Towns of: Cambridge, Somerville, Marblehead, City of Boston, Uxbridge,Hanover, Kingston , Water Resources and Harvard University.*						
Dennis K Burke	Light-Duty	E85 (blender pump)	100	100% of time	27,510 gal	107.3 tons
Miles traveled per vehicle: 11,244 mi **Average vehicle fuel economy:** 18 MPG **Market:** General/Unknown **Vehicle type:** Car **Percentage from coalition:** 75% **National Clean Fleets Partnership:** No *This is both retail sales and wholesale sales of E-85 by Dennis K Burke, a stakeholder.*						
Dennis K Burke retail station	Heavy-Duty	Biodiesel (20%)	-	19,000 gal	4,051 gal	35.5 tons
Market: General/Unknown **Vehicle type:** Unknown/Other **Percentage from coalition:** 100% **National Clean Fleets Partnership:** No *In addition to selling B-20 at their retail station Dennis K Burke has the Statewide Biodiesel contract and those b- 20 volumes are reported under Their wholesale #s. Those deliveries are done to centrally fueled fleets across the State and are not purchased at the retail station.*						
Dennis K Burke retail station	Light-Duty	E85	50	82,000 gal	35,547 gal	138.7 tons
Market: General/Unknown **Vehicle type:** Car **Percentage from coalition:** 75% **National Clean Fleets Partnership:** No *Dennis K Burke is an Active Stakeholder and promotes the use of Alternative fuels. He sells it at the pumps*						
Department of Environmental Protection	Light-Duty	CNG	8	100% of time	2,882 gal	3.7 tons
Miles traveled per vehicle: 11,244 mi **Average vehicle fuel economy:** 23 MPGge **Market:** Government - State **Vehicle type:** Car **Percentage from coalition:** 75% **National Clean Fleets Partnership:** No *These are vehicles are used to support staff in the various DEP offices.*						

Fleet/Station Name	Vehicle Class	Fuel	Number of Vehicles	Fuel Used	GGE Reduced	GHG Reduced
Gulf/Cumberland Farms	Heavy-Duty	LNG	44	100% of time	250,044 gal	250.8 tons
Miles traveled per vehicle: 66,768 mi **Average vehicle fuel economy:** 7 MPGde **Market:** General/Unknown **Vehicle type:** Truck: Semi-trailer **Percentage from coalition:** 50% **National Clean Fleets Partnership:** No						
Gulf Oil Cumberland Farms	Light-Duty	E85	72	48,243 gal	20,913 gal	81.6 tons
Market: General/Unknown **Vehicle type:** Car **Percentage from coalition:** 75% **National Clean Fleets Partnership:** No *This is the total fuel sold at the 3 E-85 retail stations on the Mass Pike. Gulf/ cumberland farms is an active stakeholder in the coalition.*						
Knight's Airport Limo service	Light-Duty	Propane	45	127,268 gal	72,256 gal	102.1 tons
Market: Airport **Vehicle type:** Pickup/SUV/Van **Percentage from coalition:** 75% **National Clean Fleets Partnership:** No *They converted 45 vans to run on propane and have a request in 2016*						
Lowell RTA	Heavy-Duty	CNG	6	55,890 GGE	25,151 gal	21.2 tons
Market: Government - Local **Vehicle type:** Bus: Transit **Percentage from coalition:** 50% **National Clean Fleets Partnership:** No						
Massachusetts DOT (highway)	Heavy-Duty	CNG	2	100% of time	1,831 gal	1.5 tons
Miles traveled per vehicle: 13,239 mi **Average vehicle fuel economy:** 12 MPGde **Market:** Government - State **Vehicle type:** Truck: No Trailer **Percentage from coalition:** 75% **National Clean Fleets Partnership:** No *Mass highway is now moving back to CNG now that there are manufacturers producing the CNG option*						
Massachusetts DOT (highway)	Light-Duty	CNG	123	100% of time	112,207 gal	145.4 tons
Miles traveled per vehicle: 14,596 mi **Average vehicle fuel economy:** 12 MPGge **Market:** Government - State **Vehicle type:** Pickup/SUV/Van **Percentage from coalition:** 75% **National Clean Fleets Partnership:** No						
MassPort (Logan Airport)	Heavy-Duty	CNG	21	100% of time	58,694 gal	49.4 tons
Miles traveled per vehicle: 23,576 mi **Average vehicle fuel economy:** 7 MPGde **Market:** Airport **Vehicle type:** Bus: Transit **Percentage from coalition:** 75% **National Clean Fleets Partnership:** No *MassPort use to have 90 CNG buses now they have 21 due to new Vehicle rental center and the elimination of 69 buses*						
MassPort (Logan Airport)	Light-Duty	CNG	9	50% of time	1,054 gal	1.4 tons
Miles traveled per vehicle: 11,244 mi **Average vehicle fuel economy:** 24 MPGge **Market:** Airport **Vehicle type:** Car **Percentage from coalition:** 50% **National Clean Fleets Partnership:** No						

Fleet/Station Name	Vehicle Class	Fuel	Number of Vehicles	Fuel Used	GGE Reduced	GHG Reduced
MBTA - Massachusetts Bay Transportation Authority **Market:** Government - State **Vehicle type:** Bus: Transit **Percentage from coalition:** 100% **National Clean Fleets Partnership:** No	Heavy-Duty	CNG	344	5,879,323 GGE	5,291,391 gal	4,455.4 tons
MBTA - Massachusetts Bay Transportation Authority **Market:** Government - State **Vehicle type:** Bus: Transit **Percentage from coalition:** 100% **National Clean Fleets Partnership:** No	Heavy-Duty	Hydrogen	1	930 kg	1,811 gal	7.2 tons
Newport Biodiesel **Miles traveled per vehicle:** 25,594 mi **Average vehicle fuel economy:** 6 MPG **Market:** General/Unknown **Vehicle type:** Unknown/Other **Percentage from coalition:** 75% **National Clean Fleets Partnership:** No *This is the Amount of B-99 sold to Peterson oil company in Massachusetts for use in Vehicles. They have several contracts with cities and Town in Massachusetts. Have asked for specifics from Peterson but have not recieved them yet.*	Heavy-Duty	Biodiesel (99%)	450	50% of time	815,696 gal	7,143.1 tons
Schwan's - Medium-duty Propane **Market:** Corporate Fleet **Vehicle type:** Truck: No Trailer **Percentage from coalition:** 100% **National Clean Fleets Partnership:** Yes	Heavy-Duty	Propane	2	8,599 gal	5,858 gal	2.3 tons
Steamship Authority **Market:** Government - State **Vehicle type:** Bus: Shuttle **Percentage from coalition:** 100% **National Clean Fleets Partnership:** No	Heavy-Duty	CNG	5	25,500 GGE	22,950 gal	19.3 tons
Transaction **Market:** Corporate Fleet **Vehicle type:** Pickup/SUV/Van **Percentage from coalition:** 100% **National Clean Fleets Partnership:** No	Light-Duty	CNG	1	480 GGE	456 gal	0.6 tons
Total:			**2,399**		**7,674,448 gal**	**14,909 tons**

Electric, Hybrid & Plug-in Vehicles

Fleet/Station Name	Vehicle Class	Fuel	Number of Vehicles	GGE Reduced	GHG Reduced
Aerovironment charging stations **Electricity used:** 20,344 kWh **Market:** Government - Local **Vehicle type:** Car **Percentage from coalition:** 50% **National Clean Fleets Partnership:** No **Workplace Charging Challenge:** No *This represents 40 charging stations installed under a grant from Clean Cities. AV has stopped collecting data so I am assuming that usage is the same even though we have more EVs registered in the State in 2016.* *Breaking this down it is 203.43 MWh - 348 KWh per outlet and average of 209 sessions - 4.26 KWh per session* *the number of vehicles listed are the number of rebates issued by our office to consumers.*	Light-Duty	EV-PHEV	1,453	1,453 gal	7.5 tons

Fleet/Station Name	Vehicle Class	Fuel	Number of Vehicles	GGE Reduced	GHG Reduced
Brauns Express	Heavy-Duty	HEV	1	938 gal	11.6 tons
Average vehicle fuel economy: 8 MPG **Miles traveled per vehicle per year:** 42,526 mi **Market:** Corporate Fleet **Vehicle type:** Truck: No Trailer **Percentage from coalition:** 100% **National Clean Fleets Partnership:** No **Workplace Charging Challenge:** No					
Massachusetts Clean Cities funded the hybrid technology addition to this truck.					
Cambridge Landscape	Heavy-Duty	HEV	2	493 gal	6.1 tons
Average vehicle fuel economy: 8 MPG **Miles traveled per vehicle per year:** 15,326 mi **Market:** Corporate Fleet **Vehicle type:** Truck: No Trailer **Percentage from coalition:** 80% **National Clean Fleets Partnership:** No **Workplace Charging Challenge:** No					
Mass Clean Cities provided funding for the purchase of this technology.					
Chargepoint	Light-Duty	EV-PHEV	3,273	245,938 gal	1,278.3 tons
Electricity used: 1,722,254 kWh **Market:** General/Unknown **Vehicle type:** Car **Percentage from coalition:** 100% **National Clean Fleets Partnership:** No **Workplace Charging Challenge:** No					
ChargePoint is a stakeholder in the Massachusetts coalition. They reported 75,506 GWh used in the 293 EVSEs they operate in Massachusetts. Massachusetts has 9,656 EVs registered in the State but the number used above is the rebated vehicles. The number of vehicles listed above is the total number of EVs rebated since the program began in 2014. [This number had very unreasonable kWh/vehicle and kWh/EVSE ratios, Mass didn't respond, so Caley had to change kWh based on the kWh/EVSE ratio reported last year, a generous 5,878 kWh/EVSE]					
City of Boston	Heavy-Duty	HEV	8	1,936 gal	23.9 tons
Average vehicle fuel economy: 15 MPG **Miles traveled per vehicle per year:** 5,000 mi **Market:** Government - Local **Vehicle type:** Truck: No Trailer **Percentage from coalition:** 75% **National Clean Fleets Partnership:** No **Workplace Charging Challenge:** No					
The City of Boston has 4 bucket trucks that are now Electric hybrids					
City of Boston	Light-Duty	Electric	4	1,338 gal	7.0 tons
Miles traveled per vehicle per year: 10,345 mi **Market:** Government - Local **Vehicle type:** Car **Percentage from coalition:** 75% **National Clean Fleets Partnership:** No **Workplace Charging Challenge:** No					
The City of Boston continues to use battery electric vehicles in their fleet.					
City of Boston	Light-Duty	HEV	125	38,967 gal	480.0 tons
Average vehicle fuel economy: 32 MPG **Miles traveled per vehicle per year:** 10,345 mi **Market:** Government - Local **Vehicle type:** Car **Percentage from coalition:** 75% **National Clean Fleets Partnership:** No **Workplace Charging Challenge:** No					
The City of Boston has replaced all their Gasoline powered vehicles with Prius hybrids. They reduced their fleet using zip car technology by 20 vehicles using car share technology.					

Fleet/Station Name	Vehicle Class	Fuel	Number of Vehicles	GGE Reduced	GHG Reduced
City of Boston	Light-Duty	PHEV	10	2,371 gal	12.3 tons
Average vehicle fuel economy: 40 MPG **Miles traveled per vehicle per year:** 10,345 mi **Market:** Government - Local **Vehicle type:** Car **Percentage from coalition:** 75% **National Clean Fleets Partnership:** No **Workplace Charging Challenge:** No					
The City of Boston has continues to add Electric vehicles based on their duty cycle. These plug in Hybrids are new this past year.					
DCR - Enviornmental Police	Light-Duty	HEV	7	809 gal	10.0 tons
Average vehicle fuel economy: 21 MPG **Miles traveled per vehicle per year:** 12,138 mi **Market:** Government - State **Vehicle type:** Pickup/SUV/Van **Percentage from coalition:** 50% **National Clean Fleets Partnership:** No **Workplace Charging Challenge:** No					
This department added XL hybrid technology to their Vans					
Department of Conservation and Recreation(DCR)	Light-Duty	HEV	20	1,806 gal	22.2 tons
Average vehicle fuel economy: 21 MPG **Miles traveled per vehicle per year:** 12,138 mi **Market:** Government - State **Vehicle type:** Pickup/SUV/Van **Percentage from coalition:** 50% **National Clean Fleets Partnership:** No **Workplace Charging Challenge:** No					
DCR added Hybrid electric technology to 20 of their E350 Vans used by their Clean up program.					
Department of Enviornmental Protection	Light-Duty	HEV	11	2,077 gal	25.6 tons
Average vehicle fuel economy: 46 MPG **Miles traveled per vehicle per year:** 12,000 mi **Market:** Government - State **Vehicle type:** Car **Percentage from coalition:** 75% **National Clean Fleets Partnership:** No **Workplace Charging Challenge:** Yes					
These are state cars used in the various Department of Environmental Protection offices.					
Diesel Direct	Heavy-Duty	HEV	1	413 gal	5.1 tons
Average vehicle fuel economy: 9 MPG **Miles traveled per vehicle per year:** 13,239 mi **Market:** Corporate Fleet **Vehicle type:** Truck: No Trailer **Percentage from coalition:** 80% **National Clean Fleets Partnership:** No **Workplace Charging Challenge:** No					
Massachusetts Clean Cities funded the hybrid technology addition to this fuel delivery truck.					
EV school bus pilot	Heavy-Duty	Electric	3	11,340 gal	45.4 tons
Miles traveled per vehicle per year: 23,814 mi **Market:** Government - Local **Vehicle type:** Bus: School **Percentage from coalition:** 100% **National Clean Fleets Partnership:** No **Workplace Charging Challenge:** No					
We are just now collecting EV usage and also petroleum reduction numbers so stay tuned					

Fleet/Station Name	Vehicle Class	Fuel	Number of Vehicles	GGE Reduced	GHG Reduced
Massachusetts Clean Cities MOR-EV consumer rebate program	Light-Duty	Electric	1,540	698,230 gal	3,629.0 tons
Miles traveled per vehicle per year: 10,614 mi **Market:** General/Unknown **Vehicle type:** Car **Percentage from coalition:** 100% **National Clean Fleets Partnership:** No **Workplace Charging Challenge:** No					
This is the number of Plug - in vehicles that were either purchased or leased as a direct result of rebates issued. We do not know the mileage traveled.					
Massachusetts State light duty executive office fleet	Light-Duty	HEV	206	31,357 gal	386.2 tons
Average vehicle fuel economy: 50 MPG **Miles traveled per vehicle per year:** 11,788 mi **Market:** Government - State **Vehicle type:** Car **Percentage from coalition:** 55% **National Clean Fleets Partnership:** No **Workplace Charging Challenge:** No					
Massachusetts Clean Cities funded the installation of hymotion batteries into 10 of the 206 hybrid vehicles.					
Mass DOT Highway fleet	Heavy-Duty	HEV	13	1,908 gal	23.5 tons
Average vehicle fuel economy: 20 MPG **Miles traveled per vehicle per year:** 10,614 mi **Market:** Government - State **Vehicle type:** Truck: No Trailer **Percentage from coalition:** 75% **National Clean Fleets Partnership:** No **Workplace Charging Challenge:** No					
Construction support and Bucket trucks					
Mass DOT Highway fleet	Light-Duty	HEV	188	75,422 gal	929.0 tons
Average vehicle fuel economy: 9 MPG **Miles traveled per vehicle per year:** 13,239 mi **Market:** Government - State **Vehicle type:** Pickup/SUV/Van **Percentage from coalition:** 75% **National Clean Fleets Partnership:** No **Workplace Charging Challenge:** No					
these are a combination of sedans and Pick ups.					
Mass DOT Highway fleet	Light-Duty	PHEV	23	2,719 gal	14.1 tons
Average vehicle fuel economy: 42 MPG **Miles traveled per vehicle per year:** 13,239 mi **Market:** Government - State **Vehicle type:** Pickup/SUV/Van **Percentage from coalition:** 75% **National Clean Fleets Partnership:** No **Workplace Charging Challenge:** No					
These vehicles are Volts					
Mass Electric Vehicle Incentive Program(MAssEVIP)	Light-Duty	Electric	97	34,644 gal	180.1 tons
Miles traveled per vehicle per year: 11,048 mi **Market:** Government - Local **Vehicle type:** Car **Percentage from coalition:** 75% **National Clean Fleets Partnership:** No **Workplace Charging Challenge:** Yes					
This is a rebate program funded by Department of Environment Protection and the coalition was instrumental in putting this EV rebate program together for Cities and Towns across the State. These are funded through penalty funds levied by DEP					

Fleet/Station Name	Vehicle Class	Fuel	Number of Vehicles	GGE Reduced	GHG Reduced
MBTA bus fleet	Heavy-Duty	HEV	75	134,940 gal	1,662.2 tons
Average vehicle fuel economy: 6 MPG **Miles traveled per vehicle per year:** 36,424 mi **Market:** General/Unknown **Vehicle type:** Bus: Transit **Percentage from coalition:** 75% **National Clean Fleets Partnership:** No **Workplace Charging Challenge:** No					
Square One Daycare Center fleet	Light-Duty	HEV	5	464 gal	5.7 tons
Average vehicle fuel economy: 20 MPG **Miles traveled per vehicle per year:** 14,596 mi **Market:** General/Unknown **Vehicle type:** Pickup/SUV/Van **Percentage from coalition:** 75% **National Clean Fleets Partnership:** No **Workplace Charging Challenge:** No					
Mass Clean cities funded the conversion with funds from Mass DEP. XL hybrid technology was installed on 5 of their E 250 Vans and they are achieving a 20% savings					
Worcester Regional Transit Authority	Heavy-Duty	Electric	6	35,249 gal	141.1 tons
Average electric fuel economy: - kWh/100mi **Miles traveled per vehicle per year:** 36,424 mi **Market:** Government - Local **Vehicle type:** Bus: Transit **Percentage from coalition:** 50% **National Clean Fleets Partnership:** No **Workplace Charging Challenge:** No					
Worcester continues to operate these Battery Electric Proterra buses They are getting a second DCFC this year to reduce demand charges that take place when they have to charge rapidly.					
Total:			**7,071**	**1,324,812 gal**	**8,906 tons**

Off-Road Vehicles

Fleet Name	Application	Method	Fuel	Number of Vehicles	GGE Reduced	GHG Reduced
Martignetti's Beveridge distrbutor	Forklifts	Alternative fuel or vehicles	Hydrogen	39	3,680 gal	14.7 tons
Fuel used: 3,780 kg **Percentage from coalition:** 50% **National Clean Fleets Partnership:** No						
Our Stakeholder Nuvera fuels cells supplies the Hydrogen and builds the forklifts for Yale Hyster						
Massachusetts DOT	Forklifts	Alternative fuel or vehicles	Propane	21	33,479 gal	13.1 tons
Fuel used: 49,140 gal **Percentage from coalition:** 100% **National Clean Fleets Partnership:** No						
Sysco Foods	Forklifts	Alternative fuel or vehicles	Hydrogen	230	126,547 gal	506.4 tons
Fuel used: 260,000 kg **Percentage from coalition:** 25% **National Clean Fleets Partnership:** No						
Total:				**290**	**163,706 gal**	**534 tons**

FUEL ECONOMY

Fuel Economy Improvements

Fleet Name	Previous Fuel	Current Fuel	Number of Vehicles	Miles Traveled per Vehicle	GGE Reduced	GHG Reduced
Brauns express	7 MPG	8 MPG	185	22,000 mi	46,188 gal	572.7 tons
Method: Trailer aerodynamic packages **Vehicle class:** Heavy-Duty **Market:** Corporate Fleet **Vehicle type:** Truck: Semi-trailer **Percentage from coalition:** 50% **National Clean Fleets Partnership:** No						
This fleet uses SmartWay technology to reduce fuel use in his rolling stock.						
Staples	8 MPG	11 MPG	65	15,180 mi	37,219 gal	461.5 tons
Method: Other **Vehicle class:** Heavy-Duty **Market:** Corporate Fleet **Vehicle type:** Truck: No Trailer **Percentage from coalition:** 100% **National Clean Fleets Partnership:** Yes						
Staples uses a speed governor to achieve their Fuel Savings. 60 Miles per hour only.						
Total:			**250**	**37,180 mi**	**83,407 gal**	**1,034 tons**

IDLE REDUCTION

Idle Reduction

Project Name	Number of Vehicles	Idling Reduced per Vehicle	Fuel Saved per Vehicle	GGE Reduced	GHG Reduced
Idle-Reduction Signage project	1,000	15 mins/day 180 days/year	0 gal/hr	14,850 gal	184.1 tons
Type of project: Policies **Type of vehicle:** Heavy-Duty - Bus: School **Percentage from coalition:** 75% **National Clean Fleets Partnership:** No					
The coalition working with the region 1 EPA has acquired 300 Anti idling signs that will be distributed to all the public schools in Boston along with many of the MBTA transportation centers. Not able to quantify how much idling is reduced. so numbers above are estimates. *These signs were ordered in 2016.*					
Total:	**1,000**			**14,850 gal**	**184 tons**

FUEL STATIONS

New Stations

Fuel	Public Stations	Private Stations
Biodiesel	-	-
CNG - Compressed Natural Gas	-	-
E85 - 85% Ethanol	-	-
Electric Charging Outlets	74	64
Hydrogen	-	1
LNG - Liquefied Natural Gas	-	-
Propane	-	1
Total:	**74**	**66**

OUTREACH ACTIVITIES

Activity Name	Dates	Activity Type	Percentage from Coalition	Persons Reached
MOR-EV consumer rebate program	01/01/2016, 12/31/2016	Advertisement	100%	817
Technology: Electric vehicles **Audience:**				
Massachusetts Clean Cities manages the Electric vehicle rebate program MOR-EV.org for the state of Massachusetts and in 2016 we provided 817 incentive's for both battery electric and Plug in Hybrid vehicles.				
Booth at the New England Auto show Boston	01/14/2016, 01/18/2016	Media Event	75%	400
Technology: Electric vehicles **Audience:** General Public				
The Clean cities coalition sponsored a booth at the auto show to talk about the Electric vehicle rebate program that had begun in 2014. This year we invited EVSE companies and it added to booth.				
Electric School bus V2 G pilot	01/19/2016	Meeting - Other	100%	75
Technology: Electric vehicles **Audience:** Government				
This year the Massachusetts clean cities coalition kicked off the Electric vehicle Scool bus pilot. It has delivered 3 Battery Electric school buses.				
Fleet Manager Visits	01/21/2016, 03/10/2016, 04/21/2016, 05/17/2016	Meeting - Other	100%	9
Technology: Biodiesel, Electric vehicles, Fuel economy improvements, Hybrid electric vehicles, Hydrogen, Idle reduction, Natural gas vehicles, Propane **Audience:** Government, Private Fleets				
Met with 4 fleet managers across the state to discuss alternative fuels and fuel efficiency. Dept of Corrections, Dept of Mental health, Town of Greenfield and the City of Boston				
Stakeholder meeting	02/11/2016	Meeting - Stakeholder	100%	31
Technology: Electric vehicles, Hybrid electric vehicles, Natural gas vehicles **Audience:** Delivery, Government, Private Fleets, Waste				
This stakeholder meeting provided information on the EV rebate program and information about EVSEs				
Resource to state of Massachusetts Purchasing department developing state contract for ALT Fuel Technologies	02/22/2016	Meeting - Other	100%	10
Technology: Fuel economy improvements, Hybrid electric vehicles, Idle reduction, Natural gas vehicles **Audience:** Government				
Worked with the State Purchasing (OSD) Department as a resource for 10 months to develop a new alternative technology Contract for State agencies, cities and towns to purchase these technologies without going out to bid.				
Nafa fleet managers meeting	03/16/2016	Meeting - Other	50%	40
Technology: Electric vehicles, Fuel economy improvements, Idle reduction **Audience:** Delivery, Government, Private Fleets, Utility, Waste				
Monthly meeting of fleet managers				
Alternative fuel presentation	04/06/2016	Workshop held by coalition	100%	45
Technology: Biodiesel, E85, Electric vehicles, Hybrid electric vehicles, Hydrogen, Idle reduction, Natural gas vehicles **Audience:** General Public				
Did a presentation to a group of 7th graders at Hull memorial Middle school.				
Stakeholder Meeting	04/15/2016	Meeting - Stakeholder	100%	36
Technology: Fuel economy improvements, Hydrogen **Audience:** Government, Private Fleets, Utility				
This meeting featured EPAs Smartway program along with a tour of Nuvera Fuel cell a maker of Hydrogen fuel cells and hydrogen stations. - they are now owned by Hyster Yale and they are manufacturing Fuel cell Fork Lifts at their facility.				

Activity Name	Dates	Activity Type	Percentage from Coalition	Persons Reached
Northeast Gas association Vehicle meeting	04/29/2016	Meeting - Other	75%	20
Technology: Natural gas vehicles **Audience:** Utility				
This group is a regional group of Utilities that dicuss progress in the Vehicle sector using CNG.				
Motor Week Filming	05/18/2016	Advertisement	100%	200
Technology: Electric vehicles, Propane **Audience:** General Public, Government				
Motor week came to Boston and Worcester and filmed the Boston school department as well as Worcester Transit Authority to feature Propane school buses and Battery electric transit buses.				
International Fuel cell workshop	05/20/2016	Conference participation	50%	105
Technology: Hydrogen **Audience:** Government				
Coalition coordinator participated by invitation at the International Fuel Cell coalition meeting in Berkeley California				
Smart Charging workshop	06/02/2016	Meeting - Other	25%	53
Technology: Electric vehicles **Audience:** Government, Private Fleets, Utility				
This workshop was presented by The union of Concerned Scientist on Smart charging and the future of how BEV and PHEVs were to be charged in the future.				
Presentation at Granite State Clean cities.	06/10/2016	Conference participation	25%	150
Technology: Electric vehicles, Hydrogen **Audience:** Delivery, Government, Private Fleets, Utility				
Coalition coordinator presented twice on Hydrogen fuel cell vehicles and BEVs at this day long workshop in NH				
Massachusetts Hydrogen coalition meeting	06/17/2016	Meeting - Stakeholder	50%	15
Technology: Hydrogen **Audience:**				
This meeting was to bring the Hydrogen fuel cell stakeholders in Massachusetts up to date on progress by the Manufacturers to bring their vehicles to market in MA as well as review progress on infrastructure.				
Stakeholder meeting	07/29/2016	Meeting - Stakeholder	100%	23
Technology: Biodiesel, Hydrogen **Audience:** Government, Private Fleets, Transit, Waste				
This was a stakeholder meeting heldin Boston. Presentations were held on McPHY the start up making small Hydrogen fuel cell stations. and Optimus technologies that provide technology so that diesel trucks can burn ASTM B-100 90% of the time.				
EV ride and drive	07/30/2016	Media Event	75%	80
Technology: Electric vehicles, Hybrid electric vehicles **Audience:** General Public				
This was an EV ride and drive held in Northampton MA sponsored b a local radio station				
Fuel efficiency standard for Massachusetts state fleet.	08/01/2016	Meeting - Other	75%	30
Technology: Biodiesel, E85, Electric vehicles, Fuel economy improvements, Hybrid electric vehicles, Idle reduction, Natural gas vehicles, Propane **Audience:** Government				
Met with Department of Environmental Protection,Purchasing department and Department of Energy Resources to develop a statewide fuel efficiency standard for the state fleet. This standard was approved and adopted in 2016.				
Display and Northeast Propane association Expo	08/10/2016, 08/11/2016	Conference participation	50%	100
Technology: Propane **Audience:** Airport, Delivery, General Public, Government, Private Fleets, Utility, Waste				
Massachusetts Clean Cities along with NH, Maine, Vermont and CT Clean cities all participated in the Northeast Propane Association conference and expo in Boxboro MA. The Clean cities table answered question about Auto gas (LPG) in the transportation sector. It was a 2 day event.				

Activity Name	Dates	Activity Type	Percentage from Coalition	Persons Reached
National Drive Electric week	09/10/2016, 09/17/2016	Media Event	50%	150
Technology: Electric vehicles **Audience:** *Massachusetts Clean cities participated in 4 events across the state during the Sierra club drive electric week events.Boston Springfield, Worcester and Plymouth all had events*				
AltWheels Fleet day	09/19/2016	Workshop held by coalition	100%	275
Technology: Biodiesel, Electric vehicles, Fuel economy improvements, Hybrid electric vehicles, Hydrogen, Idle reduction, Natural gas vehicles, Propane **Audience:** Airport, Delivery, Government, Private Fleets, Transit, Utility, Waste *This annual event provides not only speakers and panels on various fuels but also a very large EXPO with many alternative fueled vehicles on display.In addition many clean cities coordinators assist in the event as moderators and panelists.*				
Northeast Natural Gas vehicle meeting	10/28/2016	Meeting - Other	25%	40
Technology: Natural gas vehicles **Audience:** Utility *Meeting of the Northeast Gas association to better understand what is happening in the CNG for vehicle sector - this group meets quarterly.*				
Meeting with Massachusetts State Auto Dealers Association (MSADA)	10/31/2016	Meeting - Other	100%	10
Technology: Electric vehicles, Hybrid electric vehicles **Audience:** Private Fleets *Meeting was held to discuss EV dealer training to assist with the sale of more EV s and educate dealers about the Consumer rebate.*				
EV ride and Drive	11/02/2016	Meeting - Other	25%	50
Technology: Electric vehicles **Audience:** General Public, Government, Private Fleets *Presented information about the consumer rebate Massachusetts offers.*				
Northeast diesel collaborative clean corridor workshop	11/03/2016, 11/04/2016	Conference participation	25%	95
Technology: E85, Electric vehicles, Hybrid electric vehicles, Natural gas vehicles, Propane **Audience:** Government, Transit, Utility *This meeting was held for the northeast region to announce the Clean vehicle corridor designations that Federal Highway has designated, DOT's and CC coordinators were present. Good Collaborative meeting.*				
EV Presentation at Energy conference in NH	11/12/2016	Conference participation	25%	30
Technology: Electric vehicles **Audience:** Government *This was a presentation on EVs so that energy officials in NH would understand how vehicles can be charged and what the advantages of BEVs are for the envirnoment*				
RMV EV school bus inspection meeting	11/29/2016	Meeting - Other	100%	45
Technology: Electric vehicles **Audience:** Government *This meeting was held for the Massachusetts State School bus inspectors so that they could learn about the newly introduce Battery electric school bus. Inspectors wer introduced to the Bus so they understood what needed to be inspected. Clean Cities hosted the meeting. It is part of the EV V2G school bus pilot*				
December Stakeholder meeting	12/10/2017	Meeting - Stakeholder	75%	12
Technology: Hydrogen **Audience:** Airport, Delivery, General Public, Government, Private Fleets, Transit, Utility *This meeting covered an update on Massachusetts Hydrogen coalition as well as what is happening with NFPAregarding alternative fuel safety tracining. the meeting took place at the NFPA Headquarters*				
Total:				**2,946**

GRANTS

Grantor	Total Grant Amount	Total Matching Funds	Total Project Funding	Grant Amount Spent in 2016	Matching Funds Spent in 2016	Total Project Funding Spent in 2016
CMAQ	$11,700,000	$0	$11,700,000	$5,950,000	$0	$5,950,000
Additional grant money added since start $0 **Additional matching funds added since start** $0 **Length of grant:** 6 **Year grant began:** 2014 **Sources of the grant:** Congestion Mitigation and Air Quality Improvement (CMAQ) Program **Technologies:** CNG - Compressed Natural Gas, Electricity, Fuel Economy Improvements, H2 - Hydrogen, Idle Reduction, Propane, Other **Purpose:** 11,700,000.00 to provide differential cost for adding Alternative fuel technology to LD,MD,and HD vehicles *This clean vehicle CMAQ grant opportunity is open to all public and private fleet operations. The grants will support Gaseous alternative fuels,Hybrid Electric vehicles and infrastructure projects.*						
Department of Energy Resources	$250,000	$0	$250,000	$0	$0	$0
Length of grant: 3 **Year grant began:** 2016 **Sources of the grant:** None of the above **Technologies:** Electricity **Purpose:** Provide low income folks assistance to purchase Electric vehicles *Working with CAP agencies on a low income EV rebate program*						
Department of Energy Resources	$1,800,000	$0	$1,800,000	$975,000	$0	$975,000
Additional grant money added since start $0 **Additional matching funds added since start** $0 **Length of grant:** 3 **Year grant began:** 2015 **Sources of the grant:** None of the above **Partners:** Regional Greenhouse Gas Initiative **Technologies:** Electricity **Purpose:** This is a pilot to do 4 electric buses in 4 communities in the state *This is to pilot vehicle to grid technology with Electric schoolbuses*						
Electric vehicle education and dealer training	$46,000	$23,000	$69,000	$0	$0	$0
Length of grant: 2 **Year grant began:** 2016 **Sources of the grant:** Department of Energy **Technologies:** Electricity **Purpose:** Expose fleets and consumers about electric vehicles *Massachusetts will hold 6 ride and drives over 2 years and provide dealers training on EVs*						
Total:	**$13,796,000**	**$23,000**	**$13,819,000**	**$6,925,000**	**$0**	**$6,925,000**