Clean Cities Coalitions

2017 Activity Report

Caley Johnson and Mark Singer

National Renewable Energy Laboratory

NREL is a national laboratory of the U.S. Department of Energy
Office of Energy Efficiency & Renewable Energy
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Technical Report
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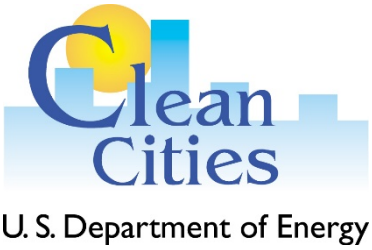
List of Acronyms

AFDC	Alternative Fuels Data Center
AFV	alternative fuel vehicle
CMAQ	Congestion Mitigation and Air Quality Improvement Program
CNG	compressed natural gas
BIM	Behavioral Impact Model
DMA	Direct Marketing Association
DOE	U.S. Department of Energy
E85	high-level ethanol blend
EPA	U.S. Environmental Protection Agency
EUI	energy use impact
EV	all-electric vehicles
FFV	flex fuel vehicle
GGE	gasoline gallon equivalent
GHG	greenhouse gas
GREET model	Greenhouse gases, Regulated Emissions, and Energy use in Transportation model
HDV	heavy-duty vehicle
HEV	hybrid electric vehicle
IR	idle reduction
LDV	light-duty vehicle
LNG	liquefied natural gas
MGGE	million GGE
NCFP	National Clean Fleets Partnership
NREL	National Renewable Energy Laboratory
ORNL	Oak Ridge National Laboratory
PEV	plug-in electric vehicle
RNG	renewable natural gas
USDA	U.S. Department of Agriculture
USPS	United States Postal Service
VMT	vehicle miles traveled
VTO	Vehicle Technologies Office

Acknowledgements



The authors would like to acknowledge the efforts of thousands of Clean Cities coalition stakeholders and coordinators, who provided the basis for this analysis by reporting data from their alternative fuel and energy-saving transportation projects.

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This publication is part of a series. Past Clean Cities Coalitions Activity Reports and multi-year data compilations can be found at *www.afdc.energy.gov*.

Introduction

The U.S. Department of Energy's Vehicle Technologies Office (VTO) works with local Clean Cities coalitions across the country as part of its Technology Integration Program. These efforts help businesses and consumers make smarter/more-informed transportation energy choices that can save energy, lower costs, reduce reliance on imported oil, and reduce emissions. This report summarizes the success and impact of coalition activities based on data and information provided in their annual progress reports.

A national network of nearly 100 Clean Cities coalitions, whose territory covers 80% of the U.S. population, brings together stakeholders in the public and private sectors to use alternative and renewable fuels, idle-reduction (IR) measures, fuel economy improvements, and new transportation technologies as they emerge. To ensure success, coalitions leverage a robust set of expert resources and tools provided by national laboratories and DOE. From technical assistance and handbooks to websites and targeted analysis, these resources contribute to every facet of coalition success. This strong national framework of resources, which facilitates consistent vision and informed coalitions, is a hallmark of the program.

Each year, Clean Cities coordinators submit annual reports of their activities and accomplishments for the previous calendar year. Data and information are submitted via an online reporting tool that is maintained as part of the Alternative Fuels Data Center (AFDC) at the National Renewable Energy Laboratory (NREL). Coordinators submit a range of data that characterize the membership, funding, projects, and activities of their coalitions. They also submit data about sales of alternative fuels; use of alternative fuel vehicles (AFVs), plug-in electric vehicles (PEVs), and hybrid electric vehicles (HEVs); IR initiatives; fuel economy improvement activities; and programs to reduce vehicle miles traveled (VMT).

Clean Cities Coalitions use an on-line tool to report advanced vehicle technology activity, infrastructure development, and relevant energy/fuel use information for their regions.

This report compiles the accomplishments of all coalitions throughout the nation in calendar year 2017. Coalition coordinators assembled the data based on voluntary reports from their stakeholders—the private and public entities that are members of the coalitions. As such, each of these coalition reports represents a subset of Clean Cities coalition activities. Taken together, they are an important indicator of how data, information, and resources can be effectively leveraged through the national network of Clean Cities coalitions and stakeholders, to achieve significant results. Accomplishments from the National Clean Fleets Partnership (NCFP) are also reported directly by the national partners.

NREL analyzes the submitted data to determine how broadly energy use in the U.S. has shifted due to coalition activities. The two main components of energy use tracked by NREL are (1) energy savings from efficiency projects, measured in gasoline gallon equivalents (GGE), and (2) alternative fuel use. The alternative fuel use numbers in this report have been adjusted to account for any gasoline or diesel content (e.g., with biodiesel or ethanol blends) as well as for any conventional fuels used upstream to produce, distribute, or deliver alternative fuels. Efficiency

differences between AFVs and conventional vehicles are also taken into account[1]. Ultimately, these two components are combined and reported as Energy Use Impact (EUI) in GGE. The EUI is a metric that measures combined progress in both energy savings from efficiency projects and increased fuel diversity, through use of domestic alternative fuels. Both these components provide consumers and businesses with more energy choices. When achieved at-scale, these strategies support DOE's mission to pursue more secure, reliable, and affordable energy choices. This report summarizes the EUI as well as the related emission reduction impacts of coalition activities.

A compilation of data from this report, along with reports from previous years, can be accessed on the AFDC's Maps and Data page (*afdc.energy.gov/data/categories/clean-cities*). Previous years' reports can be downloaded in their entirety at *www.afdc.energy.gov*.

Summary of Key Findings

Clean Cities coalition activities resulted in an EUI of nearly 1 billion GGE, comprised of net alternative fuels used and energy savings from efficiency projects, in 2017. Table 1 represents the combined results of all strategies to increase fuel diversity and energy efficiency in the nation's fleets. Participation in vehicle and infrastructure development projects remained strong, as did alternative fuel use and resulting overall EUI.

Table 1. Energy Use Impact of Each Portfolio Element

Project Type	Program Impact (MGGE)	Percent of Total Coalition Impact [a]	Change from Last Year
Alt. Fuels and Vehicles	**730.4**	**75%**	**-1%**
HEVs, PHEVs, & EVs	**83.4**	**9%**	**-17%**
Idle Reduction	**44.2**	**5%**	**14%**
Fuel Economy	**43.3**	**4%**	**1%**
VMT Reduction	**28.8**	**3%**	**1%**
Off-Road	**14.9**	**2%**	**-11%**
Estimated Outreach Impact	**27.6**	**3%**	**92%**
Total Energy Use Impact [2]	**972.6**	**100%**	**-1%**

[a] Totals and subtotals may differ from the sums due to rounding.

[1] Net alternative fuel used, and energy savings from efficiency projects, in this report are expressed in gasoline gallon equivalents (GGE), using the lower heating value ratio of the fuels.

[2] The *2017 Clean Cities Coalitions Activity Report* is focused on the impacts of coalition activities and projects and excludes related DOE-led efforts that were included in this report in years prior to 2016.

Clean Cities coalition activities reduce emissions as they impact energy use. Table 2 shows coalition-reported activities prevented 4.5 million carbon dioxide-equivalent tons of emissions (only greenhouse gas [GHG] emissions are reported here; criteria pollutants and other emissions are not included in this report).

Overall coalition Energy Use Impact of nearly 1 billion GGE is the second highest since the coalitions began reporting in 1994.

Table 2. Emissions Reduced by Clean Cities Coalitions in 2017

Project Type	Tons of GHG Emissions Averted	Equivalent of Conventional Cars Removed [a]	Percent of Coalition Total
Alternative Fuels and Vehicles	**1,909,846**	**427,492**	**43%**
HEVs	**702,854**	**157,324**	**16%**
Idle Reduction	**544,029**	**121,773**	**12%**
Fuel Economy Improvements	**536,346**	**120,054**	**12%**
VMT Reduction	**355,538**	**79,582**	**8%**
EVs and PHEVs	**118,819**	**26,596**	**3%**
Off-Road Vehicles	**108,478**	**24,281**	**2%**
Outreach Events Estimate	**216,835**	**48,535**	**5%**
Coalition Total	**4,492,746**	**1,005,639**	**100%**

[a] Calculated as total passenger car GHG emissions (Table 2–13 in the U.S. Environmental Protection Agency's (EPA's) *Inventory of GHG Emissions and Sinks:1990-2015*) divided by total short wheelbase light-duty vehicles (Table VM-1 in the Federal Highway Administration's *Highway Statistics*, 2015).

Coalitions were successful in securing project grant awards from numerous (non-DOE) outside sources. For other Federal, State, and local agencies and private sector foundations, see project funding section on page 24. The 83 project grant awards in 2017 generated $53.1 million in funds from coalition members and project partners along with $3.9 million in DOE grant funds. Coalitions also collected $1.3 million in stakeholder dues and $4.9 million in operational funds from host organizations. In macro terms, this supplemental funding represents a 2:1 leveraging of the $28.9 million that DOE contributed through grants and operational support in Fiscal Year 2017.

Clean Cities coordinators spent nearly 122,000 hours pursuing their coalitions' goals in 2017. The average coordinator is quite experienced and has held his or her position for at least eight years. Coordinators logged more than 3,100 outreach, education, and training activities in 2017, which reached an estimated 10 million people.

Outreach, education, and training activities in 2017 reached an estimated 10 million people

Attribution and Fuel Use Factors

To clarify the link between coalition activities and end results, this Clean Cities Coalitions Activity Report includes an attribution factor that accounts for the percentage of a project's outcome that may be due to coalition activities, rather than to the activities of other project participants. This attribution factor was used in the estimates of impacts for fuel economy, VMT reduction, IR, alternative fuel use, and outreach projects. Coordinators estimated the percentage of each project's outcome that the coalition was responsible for, then the project's overall outcome was multiplied by that percentage to determine the individual coalition's impact. Although subjective, this method attempts to address the issue of attribution where a coalition is one of several partners involved in a project. To reduce the subjectivity of this factor, NREL provides a tool to help a coalition estimate its contribution to a given project.

Coalition-Reported Data

Coordinators submitted information about their stakeholders' alternative fuel use and energy savings, broken down according to the technologies in the Technology Integration portfolio, using an on-line reporting tool. NREL analyzed the data, converted it into an equivalent net quantity of gasoline for each element of the portfolio, and reported the data in units of GGE—the amount of energy contained in a gallon of gasoline. As shown in Table 1, about 973 million GGE (MGGE) of energy were impacted through Clean Cities coalition efforts in 2017.

Clean Cities coalitions' work with local fleets led to a substantial reduction in emissions. To estimate the GHG reductions resulting from Clean Cities coalition activities, NREL used a variation of the GREET model.[3] This model accounts for the fuel life-cycle, or "well-to-wheels" factor of GHG emissions for transportation fuels, which includes fuel production, transport, and usage in the vehicle. It does not consider the emissions from indirect land use changes or vehicle manufacturing.

Alternative Fuels and Vehicles

As shown in Figure 1, alternative fuels (used in AFVs and in biodiesel blends) and fuel savings from HEVs collectively accounted for approximately 814 million GGE, or 86% of the coalition-reported net alternative fuel use and energy savings from efficiency projects.

[3] Argonne National Laboratory. 2015. The Greenhouse gases, Regulated Emissions, and Energy use in Transportation (GREET) Model.

In 2017, coalitions reported a total inventory of over 960,000 AFVs, split among 10 fuel and technology types.

Alternative fuels and vehicles account for 86% of the Energy Use Impact reported by coalitions in 2017.

Coordinators reported large increases in some vehicle technologies. The number of vehicles using renewable natural gas (RNG, or bio-methane) grew by 50%. Propane vehicle numbers saw a 47% increase, and HEVs were reported to grow by 37%.

The EUI from RNG use increased 75%. E85, a high-level ethanol blend, EUI increased 21%, despite a reduction in the number of flex fuel vehicles (FFVs) using high-level ethanol blends.

Figure 1 shows the percentage of EUI according to fuel type. Compressed natural gas (CNG) remains at the top of the list, accounting for 52% of the EUI, even though only 10% of the total vehicle population uses CNG. This contrasts with E85, which accounts for only 11% of the alternative fuel vehicle EUI, although 34% of reported AFVs can use E85. This is because most E85-capable vehicles are light duty and use less fuel per vehicle.

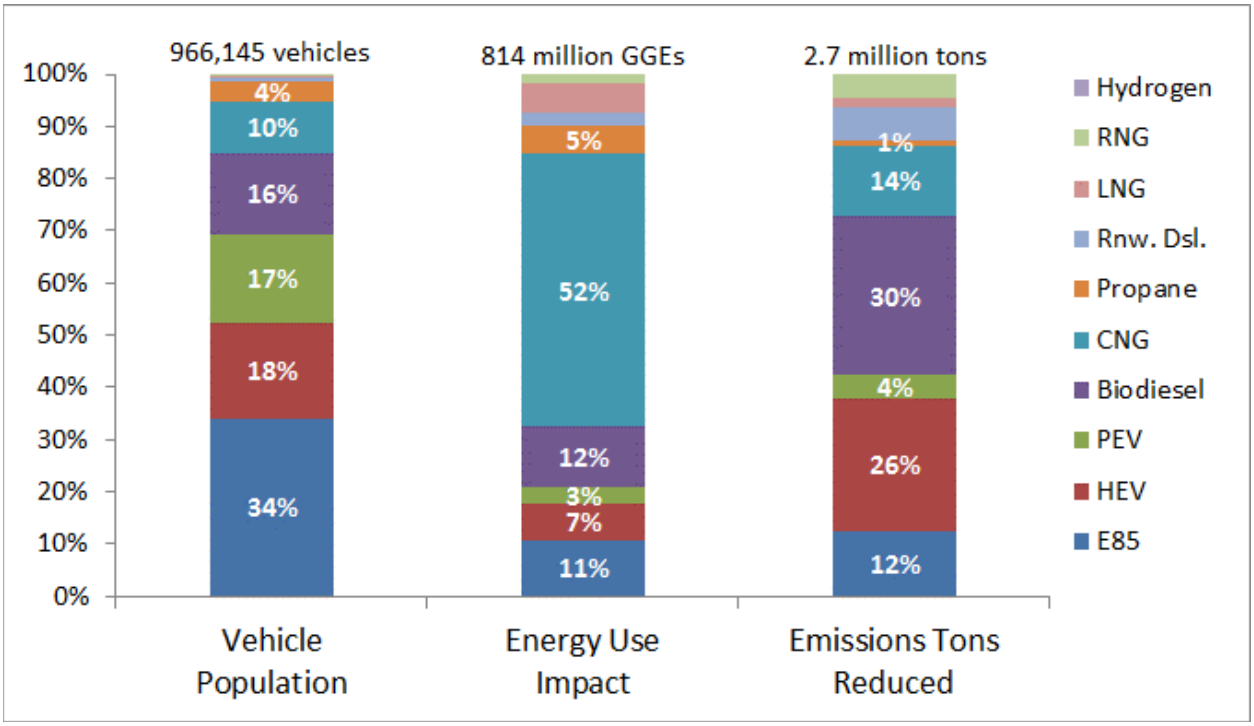

Figure 1. 2017 percentage of AFVs, EUI, and emissions reductions by fuel type

The average EUI per vehicle, shown in Table 3, reveals some interesting trends. For a given vehicle, this number is influenced by four factors:

1. Dedicated alternative fuel vehicles (those that can only operate on alternative fuel) have a higher EUI than flex-fuel, dual-fuel, or bi-fuel vehicles that can switch between fuels. Simply stated, dedicated AFVs use alternative fuel 100% of the time, while those with interchangeable fuel systems may only use alternative fuel some of the time.

2. The number of miles per year that the AFV travels (higher mileage uses more alternative fuel).
3. The AFV's fuel consumption. Large vehicles that are doing more work tend to consume more fuel. Therefore, Table 3 shows light-duty vehicles (LDVs) and heavy-duty vehicles (HDVs) separated to increase fidelity.
4. The amount of conventional fuel contained in an alternative fuel blend (e.g., B20 still contains 80% conventional diesel, so only a portion of the B20 fuel consumed counts toward the alternative fuel usage).

Table 3. Average Annual EUI per Vehicle in 2017

Fuel	GGE per HDV	# of HDVs	GGE per LDV	# of LDVs
LNG	9,292	5,070	0	0
RNG	7,821	1,649	1,633	85
CNG	7,484	52,322	773	44,949
Hydrogen	7,061	38	343	78
HEV	3,104	8,228	186	169,783
Renewable Diesel	2,523	7,158	1,527	661
PEV	2,412	6,230	72	156,581
Propane	1,367	24,053	1,079	10,700
Biodiesel	792	96,775	318	53,920
E85	156	10,323	267	317,542

Alternative fuels and AFVs were responsible for more GHG emissions reductions than any other coalition-reported activity. These reductions were calculated by subtracting the life-cycle GHG emissions resulting from the use of an alternative fuel in a vehicle from the life-cycle GHG emissions resulting from the use of gasoline or diesel fuel in an equivalent vehicle. For these calculations, gasoline is considered the baseline fuel for all LDVs, except in the case of biodiesel, for which conventional diesel fuel is used as the baseline fuel. Gasoline is considered the baseline fuel for HDVs using E85, CNG, liquefied natural gas (LNG), and propane, because these vehicles are equipped with spark-ignition (gasoline-like) engines. For all other alternative fuel HDVs, we used conventional diesel fuel as the baseline.

The average Energy Use Impact of a heavy-duty vehicle in the Technology Integration program is more than eleven times as much as a light-duty vehicle.

As shown in Figure 1, the emissions reductions are not necessarily proportional to the alternative fuel used, because the various alternative fuels emit different levels of life-cycle emissions. RNG is a prime example of a fuel that has extremely low life-cycle emissions because it has the net effect of reducing methane (a GHG) emissions from landfills, wastewater treatment facilities, and farms. It is also worth noting that VMT reduction, HEVs, IR, and fuel economy improvement projects have a disproportionately high emissions reduction compared to their EUI because these conservation measures "eliminate" 100% of the emissions that would have resulted from the fuel they save. Alternative fuel vehicles generally demonstrate a net "reduction" in emissions compared to vehicles that use conventional fuels.

High Impact Fleets and Vehicle Segments - Although heavy-duty vehicles represented only 22% of the reported AFVs, these HDVs are responsible for 76% of the alternative fuel use. The average HDV that operates on alternative fuels impacts 11.5 times as much fuel use as the average LDV. Likewise, the overwhelming majority of renewable diesel, hydrogen, CNG, RNG, and biodiesel is used by HDVs (95%, 91%, 92%, 99%, and 82%, respectively). The use of LNG is confined exclusively to HDVs, and HDVs accounted for 74% of all propane use. Contributions from PEVs were more evenly split between LDVs and HDVs (43% and 57%, respectively). The only technology whose contributions were dominated by LDVs was E85 (with only 2% from HDVs). For HEVs, 55% of the EUI impact was from LDVs.

Fuel Economy

Coalitions completed a range of fuel economy projects aimed at using energy more efficiently. Non-HEV coalition-reported fuel economy projects accounted for a total savings of over 43 million GGE, making it the second fastest-growing technology category. Figure 2 includes the range of fuel economy technologies advanced by coalitions. There were nearly 92,000 vehicles in the non-HEV technology category, equating to an average annual EUI of 471 GGE per vehicle. Figure 2 shows that some fuel economy improvement projects were much more effective than others. The "hydraulic hybrid vehicles" category showed a significant opportunity for additional growth, as it provides such high energy-use savings per vehicle, yet it is not widely utilized by fleets participating in Clean Cities coalitions at this time.

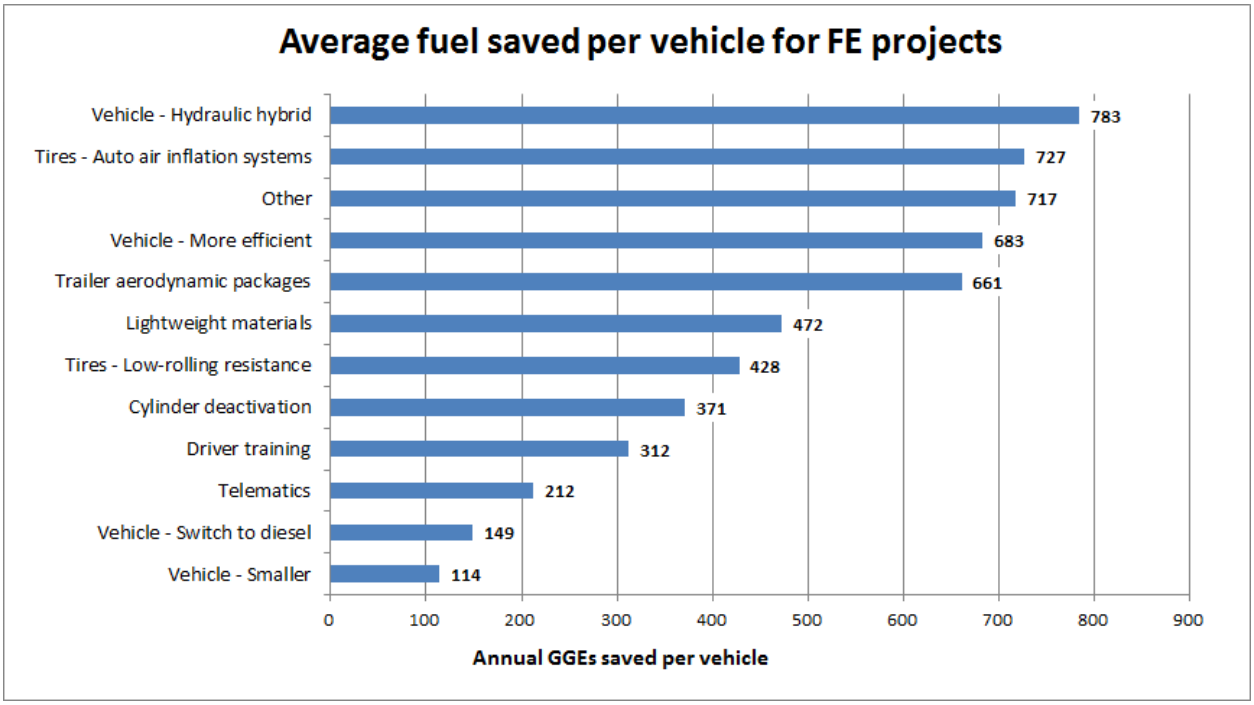

Figure 2. Average energy saved per vehicle for 2017 Clean Cities coalition fuel economy projects

Vehicle Miles Traveled Reduction

VMT-reduction projects save fuel and therefore money, while simultaneously curbing emissions. These types of projects include strategies such as carpooling, biking, teleworking, and public transportation. Sixty-eight of the 84 reporting coalitions (81%) reported at least one VMT-reduction project in 2017, with a total of 388 projects reported. VMT projects are generally outside the scope of advanced vehicle, fuel, and systems research addressed by VTO. Since the primary purpose of this report is to analyze and document the impact of Clean Cities coalition efforts related to VTO technologies, the contribution of VMT projects is limited to 10% of any given coalition's total energy savings. This cap affected 19 coalitions; however, even with this limit in place, coalitions saved 28.8 million GGE of fuel with VMT activities. The project types, numbers, and sizes of the VMT projects are shown in Table 4.

Table 4. VMT-Reduction Project Types, Number, and Energy Savings in 2017

Project Type	Number of Projects	Increase in # of Projects over 2016	GGE Saved per Project [a]	DOE-claimed GGE Saved per Project
Carpooling	75	-1	181,925	79,347
Mass transit	73	4	239,276	132,555
Route Optimization	69	6	303,302	95,842
Non-motorized locomotion (e.g., bicycles)	53	-13	19,973	18,474
Other	37	-17	90,306	45,089
Telecommute	27	1	19,275	17,668
Car sharing (e.g., Zipcar)	22	-1	17,262	14,515
Vanpooling	17	7	306,229	182,090
Compressed work week	15	3	3,128	3,004
Total	**388**	**-11**	**161,320[a]**	**74,291**

[a] GGE per project calculated before the 10% limit of coalition overall energy savings was implemented.

Idle Reduction

The average Idle Reduction project saved more energy in 2017 than in 2016.

The estimated energy savings in 2017 for IR technologies and policies was 44 million GGE. The number of IR projects decreased 4% in 2017, yet the quantity of energy that these projects saved increased 14%. As shown in Figure 3, at 14 million GGE, auxiliary power units were responsible for the greatest percentage (32%) of energy savings. Automatic engine shutoff, at 8.2 million GGE; IR policies, at 5.1 million GGE; and direct-fire heaters, at 4.7 million GGE, followed with significant percentages (19%, 12%, and 11%, respectively). The "other" category, at 3.9 million GGE; driver training, at 3.6 million GGE; and truck-stop electrification, at 2.7 million GGE, had similar impacts (9%, 8%, and 6% respectively). The remaining methods combined to represent 5% of the total savings.

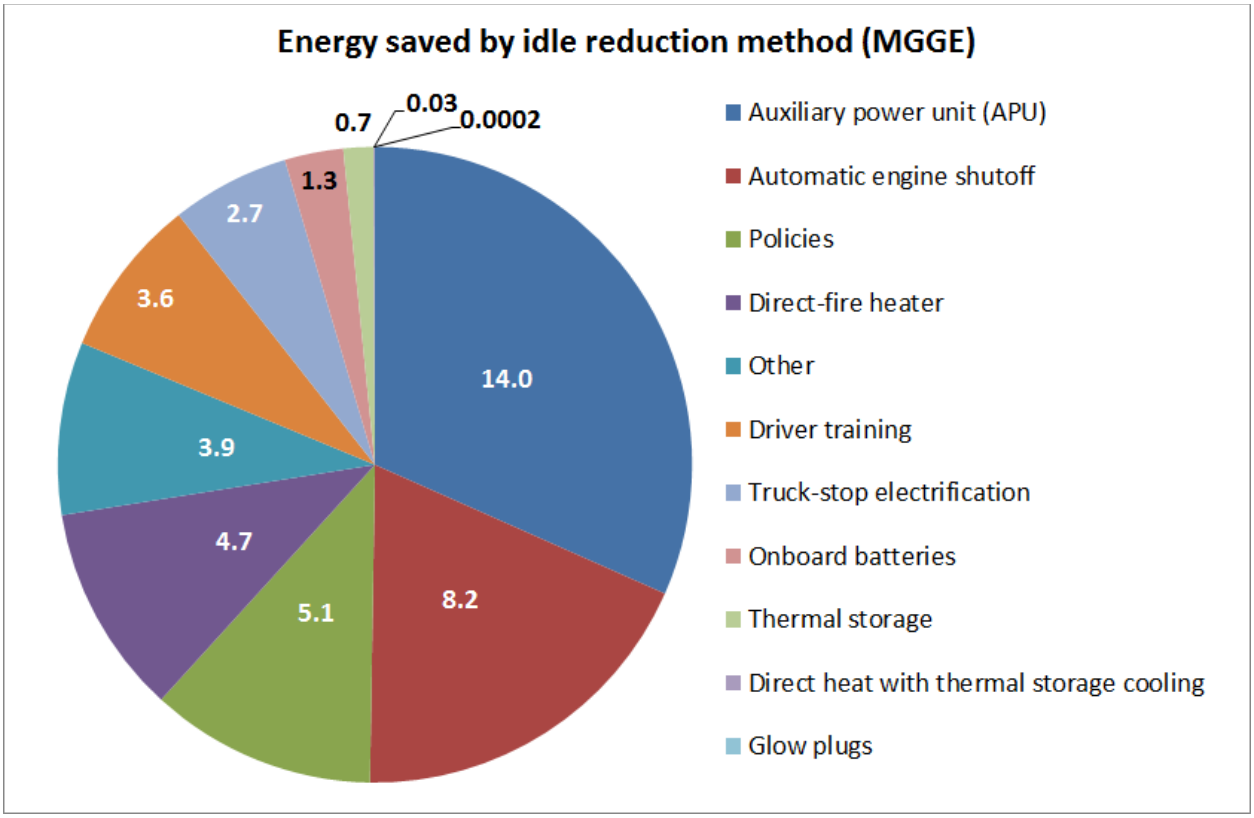

Figure 3. Energy savings measured in MGGE from IR projects, 2017

Off-Road Vehicles

Vehicles used in off-road applications contributed to the overall accomplishments reported by coalitions. Many of these projects were born out of synergy with on-road projects, utilizing many of the same alternative fuels, technologies, and strategies. Table 5 shows the number of off-road vehicles (or pieces of equipment) reported by coalitions in 2017. These categories are self-descriptive, except for "construction equipment," which includes cranes, earth movers, and similar equipment. The "recreation equipment" application includes jet skis, snowmobiles, and all-terrain vehicles. The "other" category includes vehicle speed limitations and changes to hydraulic pumps.

Coalition impact extends beyond the road. Off-road project Energy Use Impact was nearly 15 million GGE in 2017.

Table 5. Number of Off-Road Vehicles or Equipment and EUI in 2017

Application	Number of Vehicles	Energy Use Impact (GGE)	GGE saved per Vehicle
Other	9,558	5,185,860	543
Forklifts	5,565	2,085,860	375
Construction equipment	3,837	668,029	174
Landscaping and lawn equipment	1,125	358,969	319
Mining equipment	1,015	755,470	744
Recreational equipment	502	51,184	102
Street sweeper	179	107,463	600
Ships (Maritime)	138	3,958,705	28,686
Railroads	89	1,566,812	17,605
Farm equipment	76	171,928	2,262
Planes	3	3,243	1,081
Total	22,087	14,913,523	52,491

Overall EUI contributions from off-road vehicles totaled 14.9 million GGE. Vehicles using biodiesel accounted for 48% of the AFVs included in this category. Vehicles using other fuels in off-road applications included propane (25%) and electric vehicles (EVs) (14%). The other six fuels and technologies together accounted for 13% of the total vehicles. Biodiesel use was focused in ships, mining equipment, other equipment, and construction equipment applications. EVs were primarily used in the other equipment, railroads, and forklifts. Propane vehicles were primarily reported as forklifts, landscaping equipment, and farm equipment. Applications varied widely in number of GGE saved per vehicle, as shown in Table 5.

National Clean Fleets Partnership Contributions

Thirteen national fleets have partnered with Clean Cities coalitions, sharing data reflecting efforts that span geographic areas larger than that of any single coalition.

In April 2011, DOE began partnering with national fleets that operate in more expansive geographic areas than any one coalition covers. The NCFP currently has 28 partners, who lead by example and are pace-setters for local stakeholder fleets. Fourteen of them reported their fuel use data directly to NREL. NREL then allocated NCFP data to 78 individual coalitions based on fleet garage locations, refueling locations, and partner estimates. The coordinators then verified that they did assist the NCFP fleets operating in their regions and claimed full, partial, or no credit for the partner's alternative fuel use that was attributed to them. National partners worked with an average of 14.4 coalitions as they implemented new technologies across the country. Table 6 shows the contributions to total Clean Cities EUI that were attributed to national partners.

Table 6. Vehicles, EUI, and Emissions Reduction from National Partners

Fuel	Vehicles	Energy Use Impact (GGE)	GHG Reduced (tons)
CNG	22,945	132,665,783	113,951
LNG	1,942	35,984,342	36,092
Fuel Economy	27,154	15,742,801	195,208
Propane	3,896	10,989,259	4,308
PEV	5,585	9,322,498	37,747
Biodiesel	2,157	8,646,280	75,734
HEV	2,248	4,497,224	55,396
Renewable Diesel	485	964,682	8,450
Idle Reduction	5,218	359,834	4,462
Hydrogen	15	100,588	403
E85	2,466	33,571	123
Off-Road	357	6,359	23
TOTAL	74,468	219,313,221	531,896

Estimated Contributions from Outreach Activities

This category measures impact from behavior changes such as vehicle purchases, fuel choice, driving habits, vehicle maintenance, and transportation patterns that were influenced by coalition outreach activities. Calculating these contributions involves a fair degree of uncertainty, but it is nevertheless important to quantify the impacts of educational and outreach activities as much as possible. Not doing so would imply that these activities had no impact, which is inaccurate. This section outlines our approach and provides the results.

Methods Used to Estimate Energy Use Impact from Outreach Activities

To estimate net alternative fuel use and emission reductions from outreach events, NREL and Oak Ridge National Laboratory (ORNL) developed the Behavioral Impact Model (BIM) and added related functionality to the Clean Cities coalition annual reporting tool to make it compatible with the BIM.

Impacts from coalition outreach events are estimated using standard analytical methods derived from advertising and marketing industries.

Clean Cities coordinators reported the type of outreach event, the number of people reached by each event, the technologies presented, and the percent that should be attributed to the coalition. To determine the number of people reached by a given event, the total number of people attending the event was multiplied by the percent of the event that the coalition claimed credit for. When multiple technologies were presented at a given event, the annual report assumed the number of people reached to be divided evenly among the technologies. These data are then entered into the BIM as "persons reached by the coalition about a given technology."

The BIM multiplies this persons-reached number by the probability a person will take an action as a result of the outreach (defined as purchasing an AFV or more efficient vehicle, or as changing driving or fueling behavior). This probability is derived by comparing the outreach event and technology to comparable marketing media and products. Ten of these media-product combinations have a "customer conversion rate" that is recorded by various marketing firms, as shown in Table 7. The customer conversion rate is the ratio of purchases made (desired action) divided by the total number of people contacted through the outreach activity. The code column in Table 7 is provided for trackability through the calculation process, as continued to Table 9.

Table 7. Benchmark Customer Conversion Rates and Their Sources

Code	Benchmark Conversion Rate	Reference
1	0.6% for electronics (expensive, complicated) websites	Fireclick.com, accessed June 16, 2011
2	1.3% for environmentally related, incremental cost purchase	Bird, Lori. 2004. *Utility Green Pricing Programs: Design, Implementation, and Consumer Response*
3	2% for common websites and website ads	Nielsen and Facebook, 2010. *Advertising Effectiveness: Understanding the Value of a Social Media Impression*. And Fireclick.com, accessed June 16, 2011
4	2.5% for industry-specific mail	Direct Marketing Association (DMA). 2011
5	3.2% for email	Fireclick.com, accessed June 16, 2011
6	7% for affiliates and 8% for "social ads" that are endorsed by peers	Fireclick.com, accessed June 16, 2011. Nielsen and Facebook, 2010. *Advertising Effectiveness: Understanding the Value of a Social Media Impression*.
7	0.6% AdMeasure product: LDVs	GfK Mediamark Research & Intelligence, LLC. 2011
8	5.5% AdMeasure product: Gasoline	GfK Mediamark Research & Intelligence, LLC. 2011
9	17% AdMeasure smoking cessation "actions taken"	GfK Mediamark Research & Intelligence, LLC. 2011
10	2% for direct mail to current customers	Eisenberg, B. "The Average Conversion Rate: Is it a Myth?" ClickZ. February 1, 2008

For activity-type/audience-action combinations that were not directly addressed by research, NREL adjusted the customer conversion rates based on the Ostrow Model of Effective Frequency, Krugman's Three Exposure Theory, and the authors' assumptions. Table 8 lists a set of relationships that increase or decrease the impact of advertisements.

Table 8. Relationships for Media Effectiveness and Their Sources

Code	Relationships	Source
A	Degree of media interactivity increases impact	Ostrow Model of Effective Frequency
B	Brand recognition increases impact	Ostrow Model of Effective Frequency
C	Long purchase cycle increases impact	Ostrow Model of Effective Frequency
D	Less frequent usage of item increases impact	Ostrow Model of Effective Frequency
E	Affordability of item increases impact	Ostrow Model of Effective Frequency
F	Simple message increases impact	Ostrow Model of Effective Frequency
G	Media clarity (not cluttered) increases impact	Ostrow Model of Effective Frequency
H	Message in relevant environment increases impact	Ostrow Model of Effective Frequency
I	Audience attentiveness increases impact	Ostrow Model of Effective Frequency
J	More steps in processing the media increases impact	Krugman's Three Exposure Theory
K	Availability of item increases impact	Author's Assumption
L	Length of vigilance required decreases impact	Author's Assumption

We adjusted the benchmark conversion rates shown in Table 7 by the relationships for media effectiveness shown in Table 8. The direct application of these rates and relationships is shown in Table 9, where the number relates to the code in Table 7 and the letters relate to the code in Table 8. The final customer conversion rates used are displayed in Table 10.

Table 9. Combination of Benchmarks and Relationships

Activity Type	Purchase New AFV	Use Alt. Fuel in Existing Vehicle	Use Biodiesel Blends in Diesel Vehicle	Purchase More Efficient Car	Operate Vehicle More Efficiently	Purchase HEV	Reduce Idling	IR HDV (Equipment Purchase)	Reduce VMT
Advancing the Choice	6+H+I +J-E	6+H+I+ J	6+H+I+J	6+H+I +J	6+H+I+J	6+H+I +J-E	6+H+I +J	6+H+I+J-E	6+H+I+J
Advertisement	7-K	8-K-L	8-K-L	7+E	9-G-L	7-K	9-L	7+E	9-L
Conference	6+H+J-E	6+H+J	6+H+J	6+H+J	6+H+J	6+H+J -E	6+H+ J	6+H+J-E	6+H+J
Literature Distribution	4+B+H -E	4+B+H	4+B+H	4+B+H	4+B+H	4+B+H -E	4+B+ H	4+B+H-E	4+B+H
Media Event	7-E-G-H-K	8-G-H-K	8-G-H-K	7-G-H+E-K	9-G-H-K	7-E-G-H+B-K	9-G-H-K	7-E-G-H-K	9-G-H-K
Meeting	6+A+B +I-E	6+A+B+ I	6+A+B+I	6+A+B +I	6+A+B+I	6+A+B +I-E	6+A+ B+I	6+A+B+I-E	6+A+B+ I
Website	1+B+J	3+B+J	3+B+J	3+B+J	3+B+J	1+B+J	3+B+ J	1+B+J	3+B+J

Table 10. Customer Conversion Rates Used in the BIM

Activity Type	Purchase New AFV	Use Alternative Fuel in Existing Vehicle	Use Biodiesel Blends in Diesel Vehicle	Purchase More Efficient Car	Operate Vehicle More Efficiently	Purchase HEV	Reduce Idling	HDV IR Equipment Purchase	Reduce VMT
Advancing the Choice	2.0%	6.0%	6.0%	5.0%	7.0%	2.0%	5.0%	4.0%	8.0%
Advertisement	0.6%	5.5%	5.5%	2.0%	10.0%	2.0%	10.0%	3.0%	4.0%
Conference	2.0%	6.0%	6.0%	5.0%	7.0%	2.0%	5.0%	4.0%	8.0%
Literature Distribution	2.0%	3.0%	3.0%	2.5%	3.0%	2.5%	3.0%	2.5%	5.0%
Media Event	0.6%	2.5%	3.0%	1.2%	3.0%	1.2%	4.0%	2.0%	2.0%
Meeting—Other	2.0%	7.0%	6.0%	5.0%	7.0%	2.0%	5.0%	4.0%	8.0%
Website	2.0%	4.0%	3.0%	3.0%	4.0%	3.0%	3.0%	3.0%	3.0%

The number of people reached multiplied by the appropriate customer conversion rate (from Table 10) results in the number of people assumed to take the intended action. After the conversion factors have been applied, the BIM is like the Clean Cities coalition annual reporting tool, as it converts the estimated number of vehicles purchased or number of people changing their driving habits into an EUI. We make downward adjustments of 30%–40% to the estimates to account for probable overlaps between audiences attending outreach events and entities reporting their own petroleum savings via a Clean Cities coalition. We apply the estimated petroleum savings only to the reporting year in question, even though many of the vehicle purchases and behavioral changes will likely last beyond that year.

Estimated Outreach Accomplishments

Coalitions' outreach, education, and training activities were classified into nine categories, as shown in Table 11. A total of 3,161 activity days were reported, which were estimated to have reached more than 10 million people. The average size of events increased from last year—from 1,413 persons per event to 3,249. The estimated number of people reached through advertisements and websites increased enormously in 2017. Media events continued to be the activity that reached the most people (4.3 million).

Table 11. Outreach, Education, and Training Activities

Activity type	Number of Activities	Share of total activities	Activities increase since 2016	Persons reached	Share of total persons reached	Persons increase since 2016
Meeting - Other	739	23.4%	-28%	713,641	6.9%	425%
Meeting - Stakeholder	666	21.1%	7%	18,498	0.2%	37%
Conference participation	631	20.0%	22%	700,921	6.8%	22%
Workshop held by coalition	321	10.2%	-2%	41,617	0.4%	-56%
Literature Distribution	299	9.5%	-44%	588,839	5.7%	34%
Media Event	230	7.3%	-19%	4,343,990	42.3%	43%
Social Media	208	6.6%	41%	87,054	0.8%	-21%
Advertisement	44	1.4%	-61%	1,674,565	16.3%	189%
Website	23	0.7%	-28%	2,101,369	20.5%	1781%
TOTAL	**3,161**	**100.0%**	**-12%**	**10,270,494**	**100.0%**	**101%**

Figure 4 illustrates the types of audiences reached through the 3,161 outreach activities. Each activity could be aimed at multiple audiences; in fact, each activity targeted an average of 3.8 different audiences. Government fleets were the most-cited target audience, followed by the general public and private fleets. Utility trucks, mass transit, and the other audience groups were reached by similar percentages of activities. Delivery trucks, waste management, and airports were identified as audiences in less than 30% of the outreach activities. The composition of outreach activities was consistent with 2016.

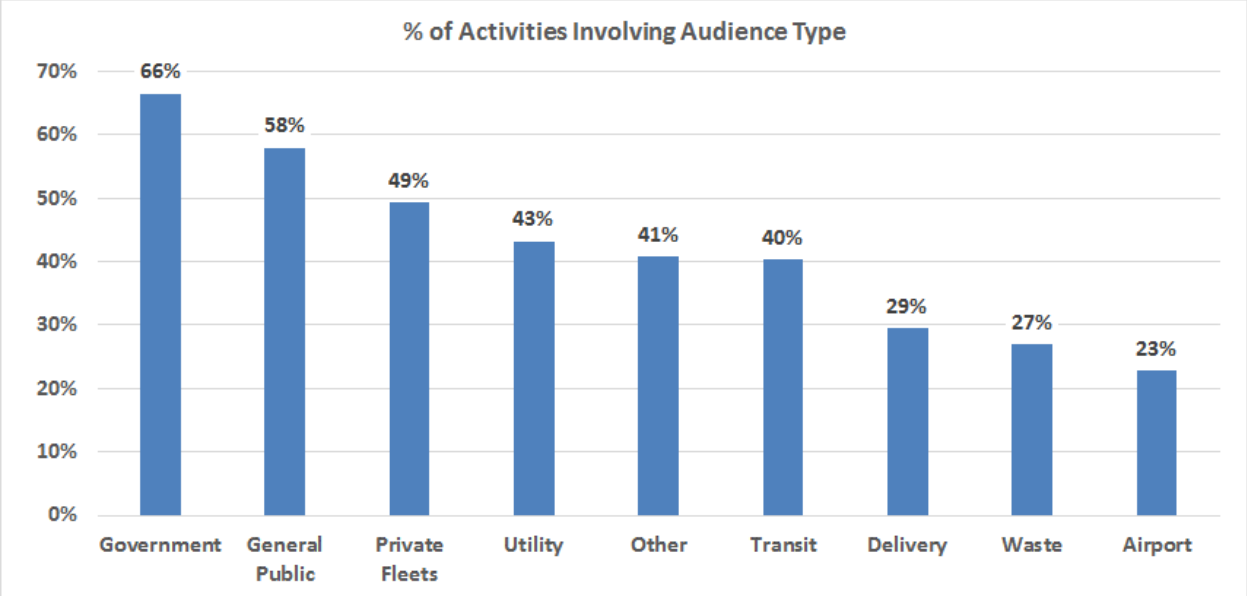

Figure 4. Percentage of outreach activities reaching each audience type

Coalitions' outreach events featured a relatively even mix of technologies, as illustrated in Figure 5, but EVs were covered more than any of the other technology types. Just as with audience types, any one activity could address more than one technology; each activity featured an average of 4.8 different technologies.

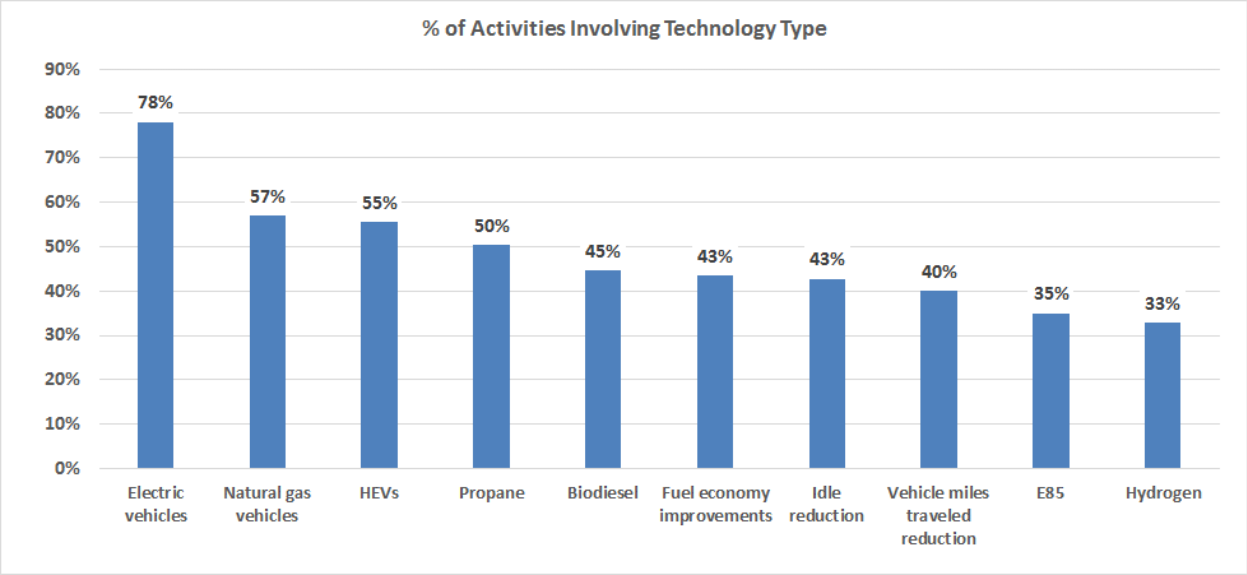

Figure 5. Percentage of outreach activities by technology type

Using the BIM, NREL estimates that Clean Cities coalition outreach events prompted and enabled actions that impacted 27.6 million GGE of energy use in 2017, after accounting for a substantial overlap with reported impacts.

Electric vehicles were the most common topic of coalition outreach events.

Cumulative Energy Use Impact

Clean Cities coalitions have steadily increased their annual EUI as projects have been expanded and built upon each year. Figure 6 shows coalition annual EUI has reached new levels in recent years. During the first ten years of tracking (1994-2003) coalitions increased the annual EUI by an average of 16 million GGE per year. In the last five years of tracking (2013-2017) coalitions have increased their annual EUI by an average of 62 million GGE per year. The 2017 reporting year showed the coalitions maintaining annual EUI of nearly a billion GGE.

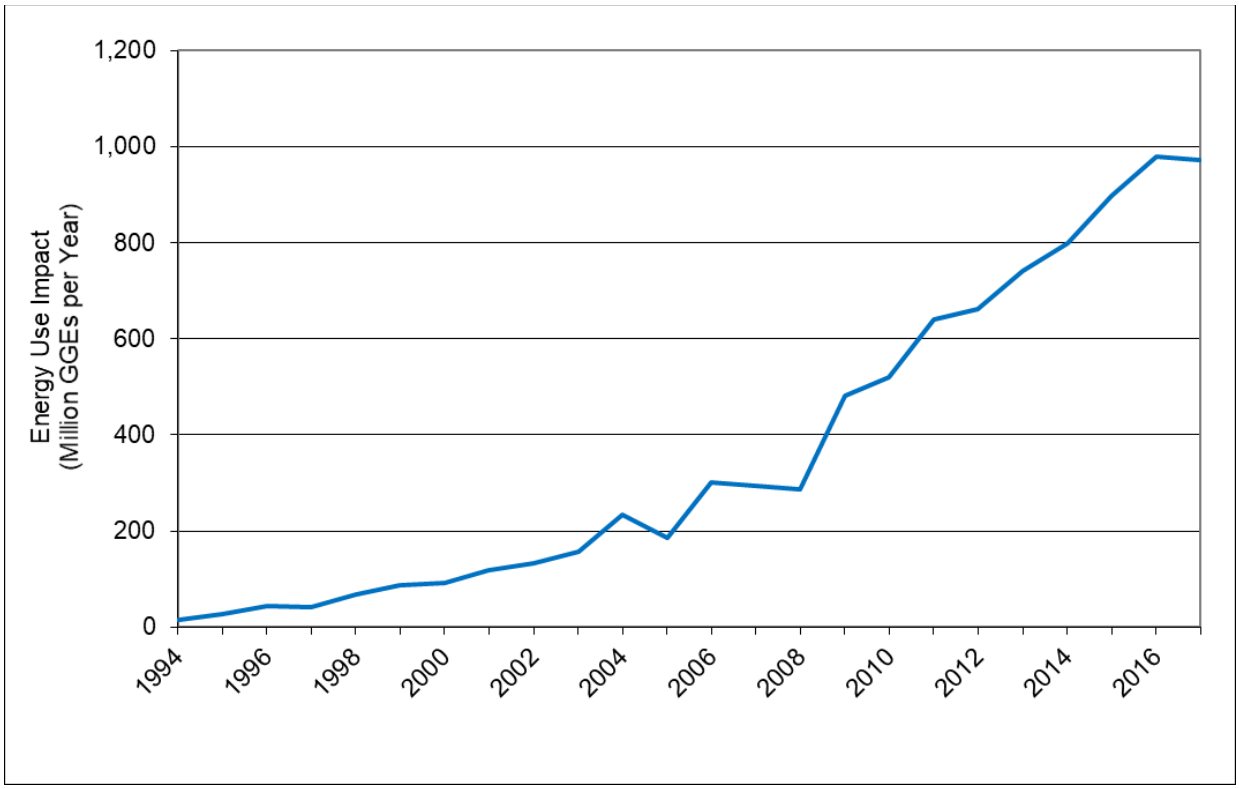

Figure 6. Increasing Energy Use Impact from coalitions

The impacts of Clean Cities coalition efforts have added up considerably over the years. The full extent of the program's effect can be seen when the annual EUIs shown in Figure 6 are aggregated to a cumulative EUI. This cumulative measure, shown in Figure 7, is now nearly 8.8 billion GGE.

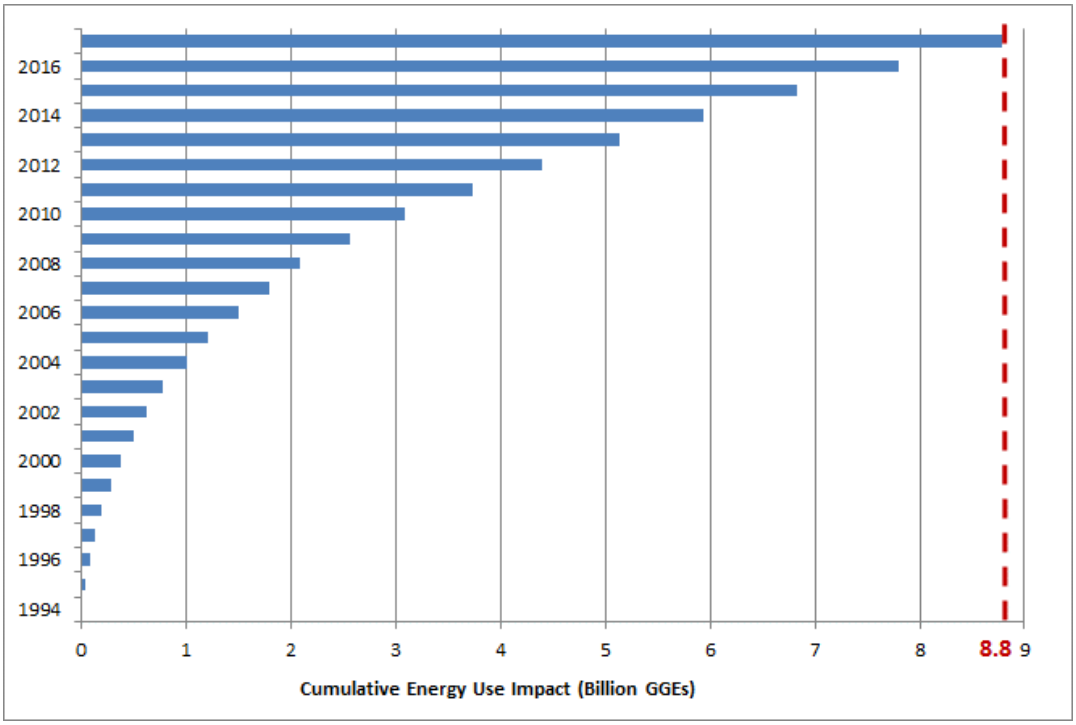

Figure 7. Cumulative accomplishments of all Clean Cities coalition activities

These efforts have also led to a cumulative emissions reduction of 47 million tons over the years, as shown in Figure 8. The relationship between the two has not always been consistent, since different technologies can be more effective at increasing energy impact or reducing emissions (see Figure 2), and the Technology Integration portfolio continues to stay relevant by evolving over time. Furthermore, there was a shift in the emissions calculations in 2015 as the reporting tool was updated, along with the 2015 GREET model. Therefore, Figure 7 and Figure 8 do not reflect one another exactly.

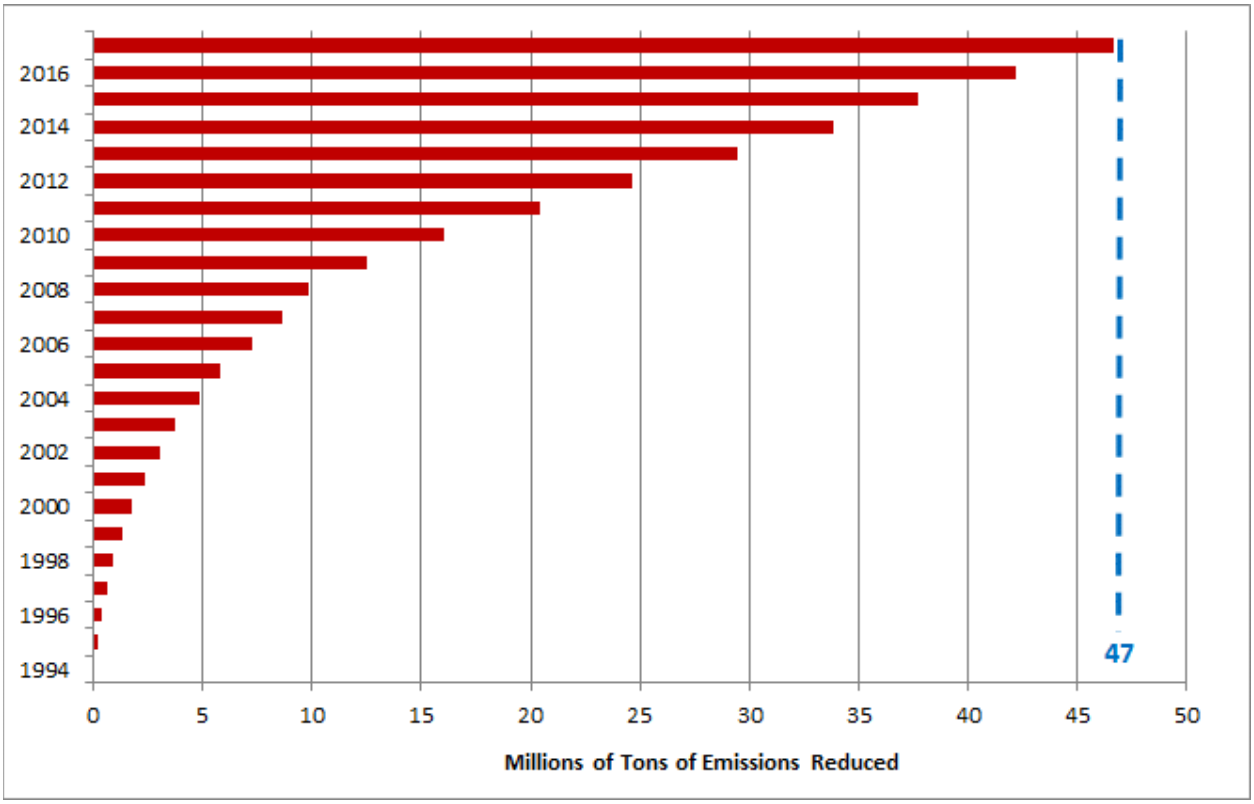

Figure 8. Cumulative emissions reductions from all Clean Cities coalition activities

Alternative Fuel Vehicle Types and Applications

The online reporting tool allows coordinators to categorize their AFVs into key vehicle types and fleet applications. Figure 9 shows that the largest portion (34%) of AFVs were cars. Unknown LDVs, which are usually vehicles reported in conjunction with a Clean Cities coalition-supported fueling station, were the second most reported vehicle type (29%). Light trucks/vans/sport utility vehicles represented 11% of vehicles. Unknown HDVs, typically reported in conjunction with public biodiesel fueling stations, accounted for 7% of vehicles, while heavy duty trucks without trailers, or delivery trucks, accounted for 6%. All remaining categories individually accounted for 3% or less of the vehicle population.

E85 LDVs were the most frequently reported fuel/vehicle combination. E85 vehicles in the unknown light-duty segment (180,000 vehicles), the car segment (45,000 vehicles), the light trucks/vans/sport utility vehicles segment (65,000 vehicles), and the patrol car segment (27,000 vehicles) together comprised 33% of all vehicles.

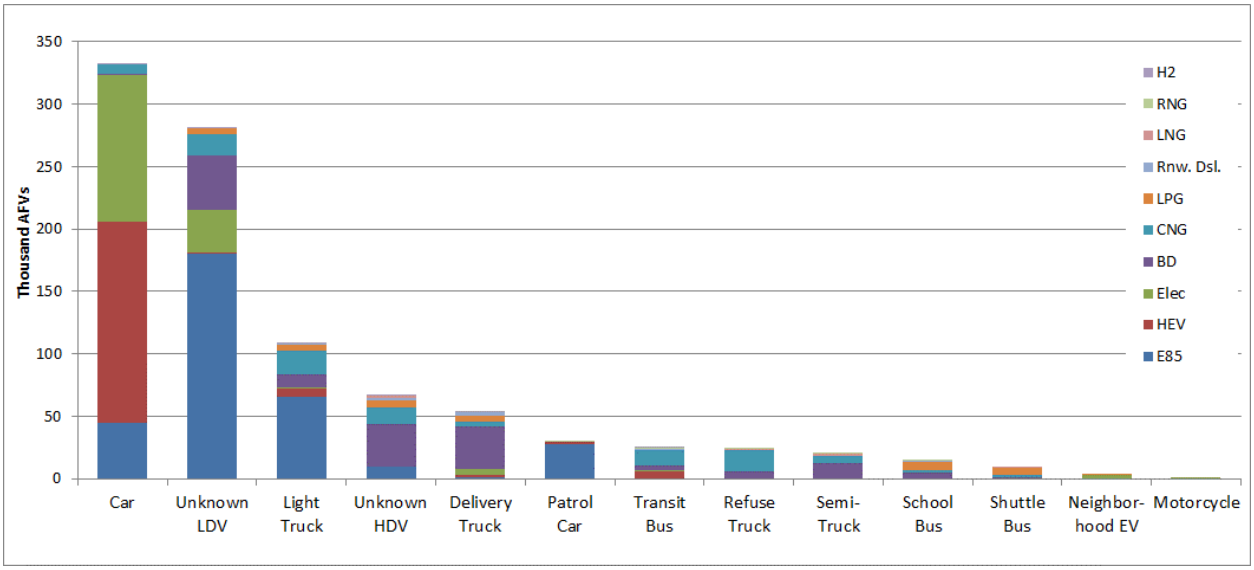

Figure 9. AFVs by vehicle and fuel type

**Neighborhood EVs are small EVs only allowed on low-speed roads.*

In addition to reporting vehicle types, coordinators also provided information about vehicle ownership and vehicle end use applications. As shown in Figure 10, more than half of the reported vehicles (53%) were owned by the general public or an unknown entity. Many of these vehicles were reported by fuel retailers to the coordinator, often back-calculated from fuel sales and an assumption for how much fuel the average car uses per year. The next largest ownership groups of AFVs were local government fleets, state government fleets, and corporate fleets, at 17%, 13%, and 18%, respectively.

State fleets, local fleets, utility vehicles, and U.S. Postal Service (USPS) vehicles did not significantly change from 2016. FFVs or E85-capable vehicles and biodiesel vehicles were most often reported for the general public, state fleets, and local fleets. HEVs and PEVs were most often reported for general public and commuter vehicles. Corporate fleets largely focused on CNG and propane vehicles.

53% of coalition-reported vehicles are owned by the general public and now have access to alternative fuel infrastructure because of Clean Cities coalition projects.

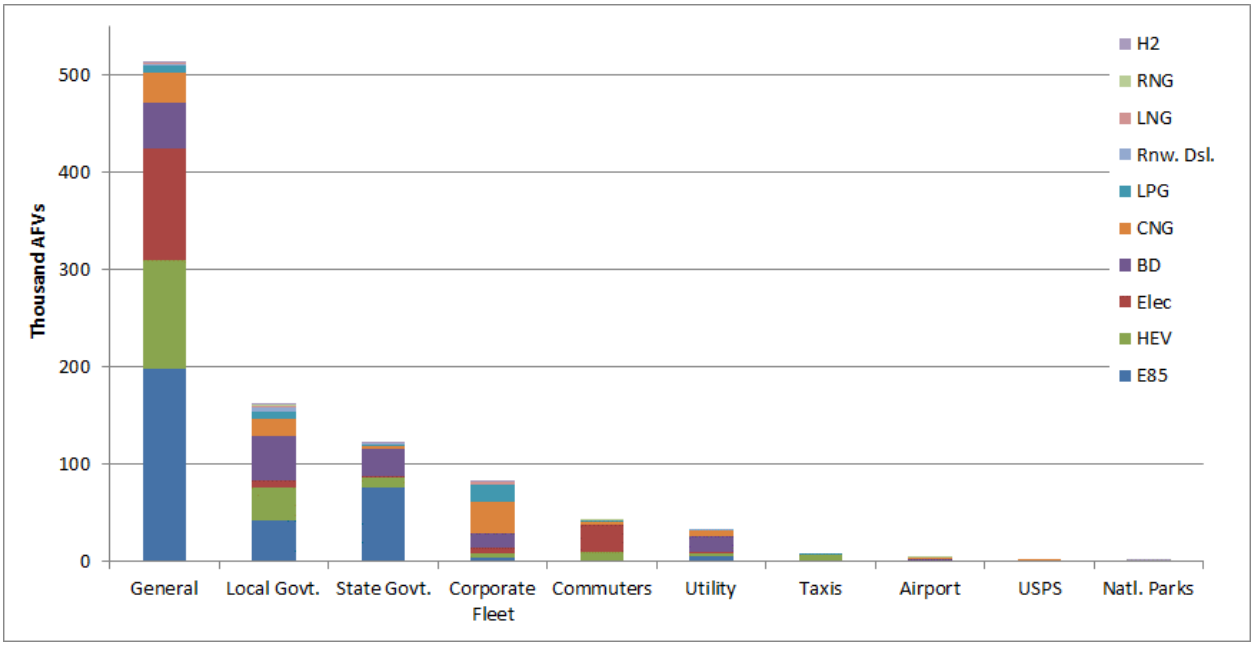

Figure 10. AFVs by application and fuel type

Emerging Technologies—Experimental, Prototype, and Demonstration Vehicle Projects

A small number of Clean Cities coalitions have worked with fleets and stakeholders who have an interest in field-testing advanced vehicle technologies (e.g., hydrogen and fuel cell vehicles). This subset of vehicles represents just 0.01% of the total number of alternative fuel or advanced technology vehicles reported by coalitions. Some of these projects involve limited production, experimental, or prototype/demonstration models that are made available from vehicle manufacturers under special lease arrangements. This is a way for the manufacturers to gather in-use performance data, evaluate durability, and refine engineering designs for future vehicle models that may be under development. Data reported to Clean Cities coalitions for some of these vehicles show the noteworthy potential these technologies have for both energy and environmental benefits, but no significant market trends could be drawn from this limited data set.

Coordinators and Coalition Types

The average Clean Cities coordinator has 8 years of experience.

Collectively, coordinators reported spending a total of 2,435 hours per week on Clean Cities coalition tasks, which is equivalent to more than 122,000 total hours during the year.[4] This translates into 61 full-time, experienced technical professionals working to increase the use of domestic alternative fuels and reduce wasted energy. For an individual coalition, the average amount of time spent coordinating Clean Cities coalition business per week was 29 hours, and the median was 26 hours. The average decreased from 33 hours in 2015, while the median dropped from 30 hours. The reporting tool also gathered information on coordinator experience. Coordinators have been on the job for an

[4] Assuming 50 work weeks per year.

average of 8 years. Forty-four percent of coordinators have held their position for 5 years or less. Thirty-seven percent, or 31 coordinators, have 10 years or more of experience coordinating.

Coalition types were tracked, and the relationships between coalition type and general metrics were analyzed. The coalition types correspond to their host organizations (which generally pay the coordinator's salary) and are listed in the first column in Table 12 and defined in Appendix B. Standalone nonprofits are coalition types that are self-sustaining and do not operate as part of a larger host organization.

The number of coalitions in each grouping is listed in the second column of Table 12, followed by metrics such as the average number of stakeholders, average funds (including grants and dues) received in 2017, the average GGE of energy impacted, and the average number of persons reached through outreach events. The range of all metrics overlaps heavily between groups, and the low sample size precludes statistical significance. Furthermore, many variables affecting the metrics in this table were not controlled for, so no cause/effect relationships can be inferred between coalition type and specific metrics.

Coalitions based in standalone nonprofits were the most successful in terms of Energy Use Impact and raising funds, but those based in regional governing bodies were the most successful at outreach.

Coalitions that reported the highest number of stakeholders tended to be standalone nonprofits, while those reporting the fewest stakeholders were hosted by city and county governments. Coalitions that raised the most funds on average were hosted by city or county governments. Coalitions that brought in the least amount of funding were generally based at universities. Standalone nonprofit coalitions also tended to have the greatest EUI, on average. Coalitions that reached the most people in outreach events were generally from regional governing coalitions, such as metropolitan planning organizations. Coalitions hosted by nonprofits had the lowest total EUI, and coalitions hosted by city or county governments reached the fewest people.

Table 12. Coalition Metrics by Coalition Type

Coalition Type [a]	Total # of Coalitions	Average # of Stakeholders	Average Funds Raised	Average Program Impact (GGE)	Average Persons Reached
Nonprofit - Standalone	32	188	$1,539,415	13,353,007	48,442
Regional Governing Coalition	17	134	$1,731,500	9,123,470	347,749
Nonprofit - Hosted	14	105	$1,886,835	5,471,144	173,727
Government - State	9	169	$2,214,849	5,575,963	27,976
Government - City or County	7	86	$11,795,118	13,151,922	3,508
University	5	135	$550,254	6,504,591	20,016
Total/Overall Weighted Average	84	149	$2,504,324	9,925,730	122,268

[a] Coalition types are defined in Appendix B.

Funding

In 2017, 42 coalitions reported receiving 83 new project awards (project-specific grants) worth a total of $31 million. These coalitions also reported garnering $26 million in leveraged or matching funds for a combined total of $57 million in new grant and matching contributions. The value of 10 of the 83 awards met or exceeded $1 million each. Table 13 presents a breakdown of the number and value of awards reported by the coalitions.

Table 13. Breakdown of 2017 Project Awards by Number and Value

Grant Range	Number of Grants	Share of Total Number	Total Value	Share of Grand Total Value
<$50,000	41	49%	$709,087	2%
$50,000 - $99,999	13	16%	$963,735	3%
$100,000 - $499,999	15	18%	$3,351,450	11%
$500,000 - $999,999	4	5%	$2,643,525	8%
$1,000,000 +	10	12%	$23,460,748	75%
Grand Total	83	100%	$31,128,545	100%

Of the $31 million in primary grant dollars received, $3.9 million (13%) was reported as from the DOE. Other large federal contributors included the Congestion Mitigation and Air Quality Improvement Program (CMAQ) with $4.3 million (14%), the U.S. Department of Agriculture (USDA) Biofuel Infrastructure Partnership with $3.2 million (10%), the EPA with $1 million (3%), and a grouping of other federal agencies with $11.3 million (36%). The largest non-federal contributors were state governments with $6.8 million (22%).

Coalitions leveraged $2 of project funding for every $1 in the Clean Cities program budget.

In addition to new 2017 awards, coordinators reported the portions of previous multiyear awards spent during the calendar year. If a coordinator failed to report the amount spent during 2017, the total amount of the award divided by the number of years of award duration was assumed. Coalitions reported spending 34% of the funds they were awarded in 2017, suggesting that projects start quickly after being awarded. In 2017, coalitions utilized a total of $43 million in project funds that were awarded and matched between 2013 and 2017.

In addition to project-related funds, coalitions reported collecting $1.3 million in stakeholder dues and receiving $4.9 million in operational funds, primarily from their host organizations. Combining these funds with non-DOE grant and matching funds totaled $59.4 million. This total represents a more than 2:1 leveraging of $28.9 million in DOE funds directed to the coalitions as programmatic assistance (the $25 million in the Technology Integration program budget and $3.9 million in competitive funding opportunity awards from DOE).

About the Stakeholders

Coalitions included 12,599 stakeholders in 2017, with half of them from the private sector.

In 2017, 84 coalitions reported a total of 12,599 stakeholders, for an average of 150 stakeholders per coalition, which is similar to the average of 152 stakeholders in 2016. Coalitions drew local stakeholders from the public, private and nonprofit sectors. Stakeholders included local, state, and federal government agencies, large and small businesses, auto manufacturers, car dealers, fuel suppliers, public utilities, nonprofits, and professional associations. Coalitions reported that 50% of stakeholders were from the private sector. This composition is similar to the 54% reported in 2016 and shows a consistent balance between public and private stakeholders.

Data Sources and Quality

Gathering data is often challenging for coordinators because they rely on voluntary reporting from their numerous stakeholders. Therefore, the annual report website contains some questions related to data sources and quality. In these questions, coordinators were asked to rate the quality of their data as excellent, good, fair, or poor. The "cumulative" bar in Figure 11 presents the response breakdown for the 84 coordinators who answered the question. Twenty-nine percent of the respondents classified their data as excellent, 68% as good, and 3% as fair. No respondents reported their data as poor.

The reporting tool also asked coordinators how they obtained their data. They could choose one or more of the following: online questionnaires (e.g., Survey Monkey), written (paper or electronic) questions to stakeholders, phone interviews with stakeholders, coalition records, or coalition estimates. Phone interviews were the most used method of data gathering, accounting for 27%. The second most common method was written questions (26%), then coalition records (17%), estimates (16%), and finally online questionnaires (14%). Figure 11 shows that all collection methods resulted in similar levels of reliability.

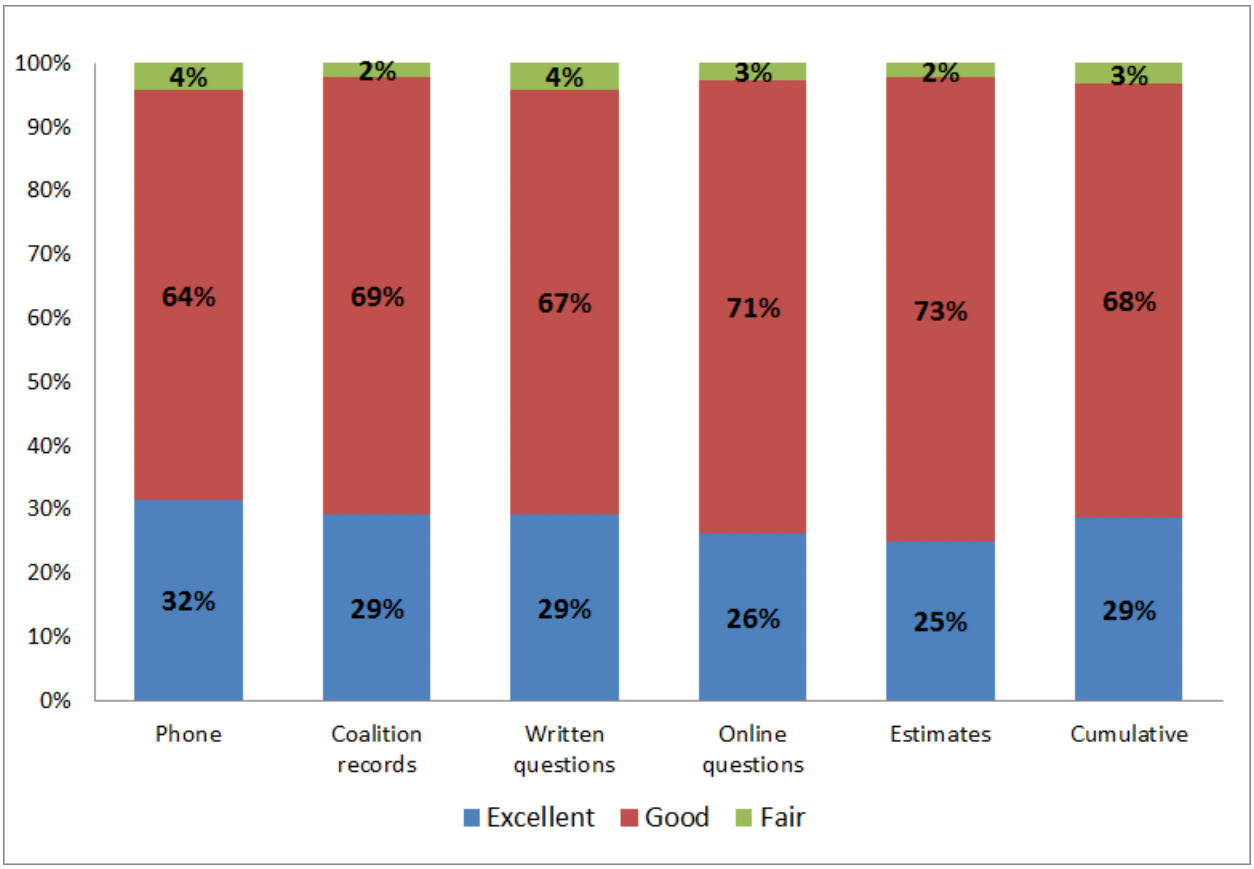

Figure 11. Data quality responses by data source

Conclusion

The 2017 *Clean Cities Coalitions Activity Report* helps quantify accomplishments and the impact of the coalitions. The report shows that Clean Cities coalitions had a year of many successful projects. The data indicates that the EUI is nearly 1 billion GGE for activities reported by coalitions in 2017.

Overall, Clean Cities coalition accomplishments maintained a high level, consistent with last year. Clean Cities coalition efforts continued to increase the number and diversity of AFVs and advanced vehicles on U.S. roads in 2017. The combined efforts of local Clean Cities coalitions, DOE, and its national laboratories bring together otherwise disparate groups to leverage people, funding, and resources, to accelerate the nation's progress in increasing domestic fuel use, improving energy security, and reducing emissions.

Appendix A: Clean Cities Coalitions that Completed 2017 Annual Reports

State	Coalition
AL	Alabama Clean Fuels Coalition
AR	Arkansas Clean Cities
AZ	Tucson Clean Cities
AZ	Valley of the Sun Clean Cities Coalition (Phoenix)
CA	Central Coast Clean Cities
CA	Clean Cities Coachella Valley Region
CA	East Bay Clean Cities Coalition (Oakland)
CA	Long Beach Clean Cities
CA	Los Angeles Clean Cities Coalition
CA	Sacramento Clean Cities Coalition
CA	San Diego Regional Clean Cities Coalition
CA	San Francisco Clean Cities Coalition
CA	San Joaquin Valley Clean Cities
CA	Silicon Valley Clean Cities (San Jose)
CA	Southern California Clean Cities Coalition
CA	Western Riverside County Clean Cities Coalition
CO	Denver Metro Clean Cities Coalition
CO	Northern Colorado Clean Cities Coalition
CO	Southern Colorado Clean Cities Coalition
CT	Capitol Clean Cities of Connecticut
CT	Connecticut Southwestern Area Clean Cities
CT	Greater New Haven Clean Cities Coalition
CT	Norwich Clean Cities
DC	Greater Washington Region Clean Cities Coalition
DE	State of Delaware Clean Cities
FL	Central Florida Clean Cities Coalition
FL	North Florida Clean Fuels Coalition
FL	Southeast Florida Clean Cities Coalition
FL	Tampa Bay Clean Cities Coalition
GA	Clean Cities-Georgia
HI	Sustainable Transportation Coalition of Hawaii
IA	Iowa Clean Cities Coalition

State	Coalition
ID	Treasure Valley Clean Cities
ID MT WY	Yellowstone-Teton Clean Cities Coalition
IL	Chicago Area Clean Cities
IN	Greater Indiana Clean Cities Coalition
IN	South Shore Clean Cities
KS MO	Kansas City Regional Clean Cities
KY	Kentucky Clean Cities Partnership
LA	Louisiana Clean Fuels
LA	Southeast Louisiana Clean Fuel Partnership
MA	Massachusetts Clean Cities
MD	State of Maryland Clean Cities
ME	Maine Clean Communities
MI	Ann Arbor Clean Cities Coalition*
MI	Detroit Area Clean Cities
MI	Greater Lansing Area Clean Cities
MN	Twin Cities Clean Cities Coalition
MO	St. Louis Clean Cities
NC	Centralina Clean Fuels Coalition
NC	Land of Sky Clean Vehicles Coalition (Western North Carolina)
NC	Triangle Clean Cities (Raleigh, Durham, Chapel Hill)
ND	North Dakota Clean Cities
NH	Granite State Clean Cities Coalition
NJ	New Jersey Clean Cities Coalition
NM	Land of Enchantment Clean Cities (New Mexico)
NY	Capital District Clean Communities Coalition (Albany)
NY	Clean Communities of Central New York (Syracuse)
NY	Clean Communities of Western New York (Buffalo)
NY	Empire Clean Cities
NY	Genesee Region Clean Communities (Rochester)
NY	Greater Long Island Clean Cities
OH	Clean Fuels Ohio
OH	Northeast Ohio Clean Cities Coalition (Cleveland)*
OK	Central Oklahoma Clean Cities (Oklahoma City)
OK	Tulsa Clean Cities

State	Coalition
OR	Columbia-Willamette Clean Cities
OR	Rogue Valley Clean Cities
PA	Eastern Pennsylvania Alliance for Clean Transportation
PA	Pittsburgh Region Clean Cities
RI	Ocean State Clean Cities
SC	Palmetto State Clean Fuels Coalition
TN	East Tennessee Clean Fuels Coalition
TN	Middle-West Tennessee Clean Fuels Coalition
TX	Alamo Area Clean Cities (San Antonio)
TX	Dallas-Fort Worth Clean Cities
TX	Houston-Galveston Clean Cities
TX	Lone Star Clean Fuels Alliance (Central Texas)
UT	Utah Clean Cities
VA	Virginia Clean Cities
VT	Vermont Clean Cities
WA	Western Washington Clean Cities
WI	Wisconsin Clean Cities
WV	State of West Virginia Clean Cities

*Coalition merged into a neighboring coalition during 2017

Appendix B: Definition of Clean Cities Coalition Types

Coalitions have categorized themselves into six different types, depending on their organizational structures and relationship to hosts.[5] Some coalitions fit within multiple types. These types are as follows:

1. "Government—City or County" coalitions are hosted by a city or county government such as a city department of transportation or municipally owned utility.
2. "Government—State" coalitions are hosted by a state government. This is generally in the state department of energy or department of environment. Coalitions hosted by a state university are not included in this category.
3. "Hosted in a Nonprofit" coalitions are hosted within a larger nonprofit or community service organization with 501c3 status. The host organization's activities are broader in scope than the Clean Cities coalition, such as the American Lung Association.
4. "Standalone Nonprofit" coalitions are nonprofits typically with 501c3 status and operate with no or minimal oversight and management of a host organization.
5. "Regional Governing Coalition" coalitions are hosted in a multi-governmental body such as a council of governments, municipal planning organization, or regional planning commission.
6. "Hosted in a University" coalitions are hosted by a university (public or private).

[5] The relationship between a host organization and the coalition varies across the country. Typically, the coordinator of the coalition is an employee of the host organization, and the coalition benefits from the resources available at the host organization.