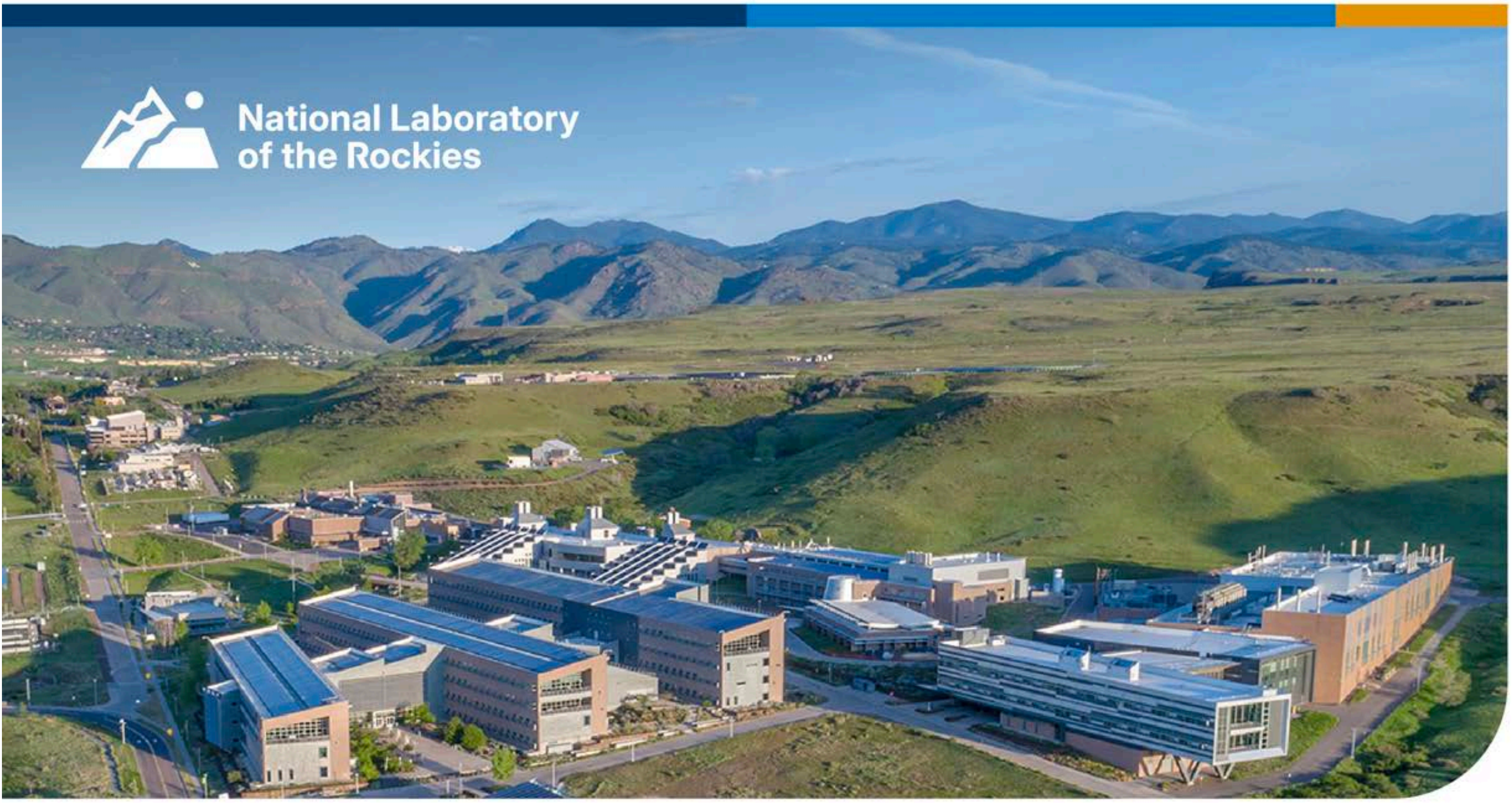

Clean Cities and Communities Partnership 2024 Activity Report

Mark Singer, Caley Johnson, Alana Wilson, Lauren Reichelt, and Muhammad Abdullah

National Laboratory of the Rockies

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Technical Report
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Acknowledgments

Clean Cities and Communities

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

This publication is part of a series. Past Clean Cities and Communities coalition activity reports and multiyear data compilations can be found at www.afdc.energy.gov.

List of Acronyms

AFV	alternative fuel vehicle
CC&C	Clean Cities and Communities
CNG	compressed natural gas
CO_2e	carbon dioxide equivalent
DOE	U.S. Department of Energy
E85	high-level ethanol blend
EPA	U.S. Environmental Protection Agency
EUI	energy use impact
EV	electric vehicle
GGE	gasoline gallon equivalent
GREET	Greenhouse gases, Regulated Emissions, and Energy use in Technologies
HDV	heavy-duty vehicle
HEV	hybrid electric vehicle
IR	idle reduction
LDV	light-duty vehicle
LNG	liquefied natural gas
MGGE	million gasoline gallon equivalents
NLR	National Laboratory of the Rockies
RIN	renewable identification number
RNG	renewable natural gas
TTO	Transportation Technologies Office
VMT	vehicle miles traveled

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Introduction

Clean Cities and Communities (CC&C) is a U.S. Department of Energy (DOE) partnership that fosters collaboration and innovation to advance transportation energy choices nationwide. More than 75 DOE-designated CC&C coalitions work in urban, suburban, and rural areas to deliver objective technical expertise based on a unique understanding of local markets. As partners with DOE's Transportation Technologies Office (TTO),[1] coalitions build bridges between national priorities and local needs to create transportation energy systems that are affordable, reliable, and secure. Together, coalitions create compounding impacts nationwide that support locally driven energy choices and benefit regional economic development and job growth. This report summarizes the success and impact of partnership activities based on data and information provided in their annual reports. Definitions of the CC&C partnership, coalition, coalition directors, stakeholders, and other terms are included in the Glossary.

CC&C coalitions work with DOE and its national laboratories to understand the latest industry breakthroughs and bring emerging transportation technologies to American fleets and consumers. Connecting stakeholders in the public and private sector, coalitions accelerate the U.S. transportation system by enabling deployment of advanced vehicle technologies, alternative fuels, idle reduction (IR) measures, and fuel economy improvements. Coalitions are backed by the expertise and resources made possible by DOE and its national laboratories. From technical assistance and handbooks to websites and targeted analyses, these resources have contributed to every facet of coalition success for more than 30 years.

Coalition activities are driven by the CC&C "Framework for Success," which shapes impact metrics, identifies best practices, and unifies DOE and coalitions on the definition of CC&C success. It is based on a set of four elements:

- Plan: Understand the transportation energy landscape to develop and evaluate strategies for CC&C impact at scale.
- Connect: Develop and maintain a collaborative coalition of public and private stakeholders working to achieve the CC&C mission.
- Inform: Share transportation expertise with stakeholders through analysis, training, and education.
- Deploy: Facilitate planning and deployment of vehicles, infrastructure, and new mobility solutions to implement and sustain efficient and convenient transportation solutions.

The framework serves as a tool for coalitions developing strategic programs and activities, as well as reporting coalition impact. This report uses DOE's Framework for Success to compile the accomplishments of all coalitions throughout the nation in calendar year 2024 to show how the partnership is shaping the American transportation industry.

The National Laboratory of the Rockies (NLR) analyzes data the coalitions gather to quantify metrics to measure the "deployment" activities of CC&C. The two main components of energy use tracked by NLR are (1) energy savings from efficiency projects, measured in gasoline gallon

[1] U.S. Department of Energy. n.d. "Technology Integration." Accessed Jan. 22, 2026. www.energy.gov/eere/vehicles/technology-integration.

equivalents (GGEs), and (2) alternative fuel use. Ultimately, these two components are combined and reported as energy use impact (EUI) in GGE. EUI is a metric that measures combined progress in energy savings from efficiency projects and increased use of alternative fuels. Both components provide consumers and businesses with more energy choices to achieve their own goals. As CC&C achieves increasing impact toward these goals, stakeholders and communities also see a multitude of additional benefits including cost savings, air quality improvement, and workforce development. When achieved at scale, CC&C strategies support DOE's mission to pursue more affordable, reliable, and secure energy choices. This report summarizes the EUI and related impacts of partnership activities.

Summary of Key Findings

Coalitions achieved an EUI of more than 1 billion GGE in 2024.

CC&C partnership activities in 2024 achieved an EUI of more than 1 billion GGE, comprising net alternative fuels used and energy savings from efficiency projects. Table 1 represents the combined results of all strategies to increase alternative fuel use and energy efficiency in the nation's fleets. CC&C coalitions continued strong participation in vehicle and infrastructure development projects and increased EUI in 2024.

Table 1. EUI of Each Portfolio Element

Project Type	Coalition Impact (MGGE [ab])	Percentage of Total Coalition Impact [b]	Change From 2023
Alternative fuel vehicles (AFVs)	824.8	79%	↑ 15%
Idle reduction	61.6	6%	↑ 5%
Hybrid electric vehicles (HEVs)	55.3	5%	↑ 14%
Fuel economy	40.6	4%	↑ 0%
Vehicle miles traveled (VMT) reduction	29.5	3%	↓ −18%
Off-road	33.4	3%	↑ 6%
Total EUI [c]	**1,045.1**	**100%**	↑ **2%**

[a] Million gasoline gallon equivalents.
[b] Totals and subtotals may differ from the sums due to rounding.
[c] This report focuses on the impacts of partnership activities and projects and excludes related DOE-led efforts that were included in this report series prior to 2016.

In addition to EUI, these projects supported 2.1 million advanced vehicles and markets spanning all nine technology types, all on-road vehicle classes, and numerous off-road vehicle types.

Coalitions are very active in securing project grant awards from numerous outside (non-DOE) sources. For other federal, state, and local agencies and private sector foundations, see the Funding section. $608 million in funds from coalition members and project partners, in addition to $25 million in DOE grant funds.[2] Coalitions also collected $1.4 million in stakeholder dues and $4.9 million in operational funds from host organizations. In macro terms, this non-DOE

[2] Information accurate as of April 2025. Some funds may have since been terminated.

supplemental funding represents a leveraging of more than 6:1 of the $101 million included in the TTO Technology Integration budget in 2024.

Coalition connecting and informing activities reached 3.3 million people in 2024.

Coalition directors and staff reported spending a total of 5,798 hours per week on CC&C coalition tasks, which is equivalent to nearly 290,000 total hours pursuing their coalitions' goals in 2024.[3] This translates into more than 145 full-time, experienced technical professionals working to increase the use of alternative fuels and reduce energy waste in transportation.

Coalitions also made much progress in pre-deployment activities meant to connect with, inform, and collaborate with stakeholders. Coalition activities reached people an estimated 3.3 million times, with 4,582 days of activities logged by the 75+ coalitions across the network over the course of 2024.

Methodology

CC&C coalitions use an online tool to report advanced vehicle technology activity, infrastructure development, and relevant energy/fuel use information for their regions.

Each year, coalition leaders work with their stakeholders to gather data on their activities and accomplishments to support annual reporting informed by the CC&C Framework for Success. Coalitions submit data and information via an online reporting tool that is maintained as part of the CC&C Coalition Toolbox by NLR. Coalition directors submit a range of data that characterize the membership, outreach, engagement, and training activities that relate to the "connect" and "inform" elements of the framework. They also submit data about funding, sales of alternative fuels, use of AFVs, IR initiatives, fuel economy improvement activities, and programs to reduce VMT. This includes quantitative data by which to measure the "deployment" activities of CC&C coalitions.

Coalition leaders assemble the data based on voluntary reports from their stakeholders—the private and public entities that are members of the coalitions. As such, each individual coalition report represents a subset of the national partnership's activities. Taken together, they are an important indicator of how the CC&C partnership leverages data, information, and resources to achieve significant results.

To compare deployment data across technology types, NLR converted data into an equivalent net quantity of gasoline for each element of the portfolio and reported the data in GGE. NLR adjusts the alternative fuel use numbers in this report 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. Analysis also accounts for the efficiency differences between AFVs and conventional vehicles.[4] To estimate the emissions reductions associated with partnership activities, NLR used a version of Argonne National Laboratory's Greenhouse gases,

[3] Assuming 50 work weeks per year.
[4] Net alternative fuel used and energy savings from efficiency projects are expressed in GGE in this report using the lower heating value ratio of the fuels.

Regulated Emissions, and Energy use in Technologies (GREET) model.[5] This model accounts for the fuel life cycle, or "well-to-wheels" factor of emissions for transportation fuels, which includes fuel production, transport, and usage in the vehicle. It does not consider emissions from indirect land use changes or vehicle manufacturing and decommissioning. Nationwide emission factors are used for every fuel except for electricity, which uses the same 10 regions as GREET.

To clarify the link between partnership activities and end results, this report includes an attribution factor that accounts for the percentage of a project's vehicle and infrastructure use data that is likely to be a direct result of partnership activities. It attempts to capture the inverse of the likelihood that an activity would have occurred without the efforts of the coalition (which includes staff and stakeholders). This attribution factor was used in the estimates of impacts for fuel economy, VMT reduction, IR, alternative fuel use, and outreach projects. Coalition directors estimated the percentage of each project's data that the coalition was responsible for, and then the project's overall data were multiplied by that percentage to determine the individual coalition's impact. To reduce the subjectivity of this factor, NLR provides a tool to help a coalition estimate its contribution to a given project.

DOE and NLR work to keep the annual report questions consistent from year to year to facilitate longitudinal comparison. However, this year DOE and NLR added a new set of questions to the reporting tool to assess the activities that coalitions undertake to engage with stakeholders in a variety of ways, and how those activities contribute to the overall impact of the CC&C partnership.

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

Alternative Fuels and Vehicles

The majority of EUI from coalition activities is the result of alternative fuels and vehicles deployed. The majority of AFVs on the road associated with CC&C are electric, while the largest EUI is associated with compressed natural gas (CNG) vehicles.

As shown in Figure 1, alternative fuels (used in AFVs, including electric vehicles [EVs], and in biodiesel blends) and fuel savings from HEVs collectively accounted for 880 MGGE, or 84% of the coalition-reported net alternative fuel use and energy savings from efficiency projects (excluding outreach in Table 1).

In 2024, coalition work accounted for a total inventory of 2.1 million AFVs on the road, split among nine fuel and technology types. Coalition-reported vehicles increased by 27% from 2023.

The EUI due to HEV use grew by 14% in 2024.

Among the fuel types reported with more than 50,000 vehicles, EVs increased the most by 84% to 1,095,753. Vehicles operating on ethanol blends decreased by 4% to 511,781. These vehicles are

[5] Argonne National Laboratory. 2024. "The Greenhouse gases, Regulated Emissions, and Energy use in Technologies (GREET) Model." Accessed 3/25/2025 at https://greet.anl.gov/afleet

dominated by a single coalition reporting an estimated 275,000 vehicles using mid-level ethanol blends. HEVs increased by 32% to 207,358. CNG vehicles increased by 1% to 143,905. Biodiesel vehicles decreased by 48% to 98,855. New for the 2024 report, vehicles operating on renewable natural gas (RNG), also called biomethane, are being reported in the larger CNG vehicle category, as RNG is often a large component of CNG use in transportation. Details on the CNG and RNG reporting methodology are available in the Renewable Natural Gas in CNG and LNG Projects: Updated Assumptions and Emissions Factors section.

Among vehicle technologies with lower vehicle counts, vehicles operating on renewable diesel grew by 41% to 47,456. Propane vehicles decreased by less than 1% to 33,763, while liquefied natural gas (LNG) vehicles decreased by less than 1% to 2,667 vehicles. The least common vehicle technology type found in CC&C coalitions, hydrogen vehicles, increased by 1% to 435.

The EUI increased by 3% across all vehicle technologies, driven by the increases for four specific technologies. The EUI of EVs increased by 101%, renewable diesel vehicles by 77%, hydrogen vehicles by 17%, and HEVs by 14%. EUI decreased for the remaining technologies, including from propane by 4%, ethanol (as reported as E85, a high-level ethanol blend) by 9%, CNG vehicles by 15%, biodiesel vehicles by 27%, and LNG vehicles by 50%.

Figure 1 shows the percentage of EUI according to fuel type. CNG remains at the top of the list, accounting for 42% of the EUI, even though only 7% of the total vehicle population uses CNG. This contrasts with E85, a high-level ethanol blend, which accounts for only 9% of the AFV EUI, although 24% of reported AFVs can use E85.

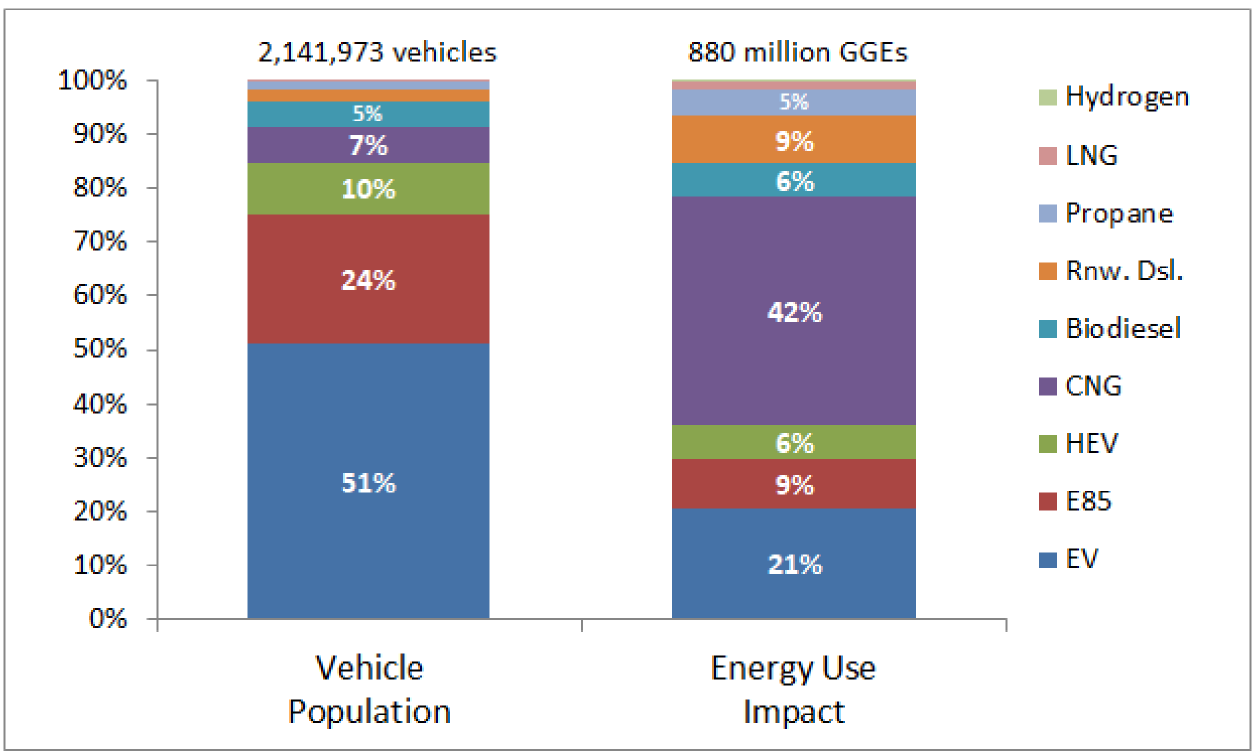

Figure 1. 2024 percentage of AFVs and EUI by fuel type

The average EUI per vehicle, shown in Table 2, reveals some interesting trends. For a given vehicle, this number is influenced by five factors:

1. Dedicated AFVs (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 fuel consumption per AFV. Large vehicles that are doing more work tend to consume more fuel. Therefore, Table 2 separates light-duty vehicles (LDVs) and heavy-duty vehicles (HDVs) to increase fidelity.
4. The amount of conventional fuel contained in an alternative fuel blend (e.g., biodiesel blends still contain conventional diesel, so only a portion of the fuel consumed counts toward the alternative fuel usage).
5. The amount of conventional fuel used to produce or transport the alternative fuel. For example, the diesel used in growing and harvesting the corn that is turned into ethanol is subtracted from the EUI.

Table 2. Average Annual EUI per Vehicle in 2024

Fuel	GGE per HDV	# of HDVs	GGE per LDV	# of LDVs
Hydrogen	9,795	145	809	290
LNG	4,424	2,667	NA	0
CNG	3,666	94,810	520	49,095
EV	3,539	5,558	148	1,090,195
HEV	3,491	7,707	142	199,651
Propane	1,812	19,123	713	14,640
Renewable diesel	1,669	44,273	885	3,183
Biodiesel	633	84,093	137	14,762
E85	218	4,399	156	507,382

The average EUI of an HDV in the Technology Integration Program is 13 times as much as an LDV.

High-impact fleets and vehicle segments: Although HDVs represented only 12% of the reported AFVs, these HDVs are responsible for 65% of the EUI from AFV and HEV projects. The average HDV that operates on alternative fuels impacts 13 times as much fuel use as the average LDV. The use of LNG is confined exclusively to HDVs. Likewise, the overwhelming majority of biodiesel, renewable diesel, CNG, and hydrogen is used by HDVs (96%, 96%, 93%, and 86%, respectively). Technologies with contributions more evenly split between LDVs and HDVs include propane vehicles and HEVs, where HDVs accounted for 77% and 49%, respectively. EVs and E85 were dominated by LDVs, with only 11% and 1%, respectively, coming from HDVs.

Geospatial Distribution of Alternative Fuel Use

The previous section discussed trends of what types of vehicles and fleets used which alternative fuels. This section investigates the locations where CC&C coalitions facilitated the use of various alternative fuels. To do so, coalitions tagged each project with a location based on the city, county, coalition, or state in which the project vehicles traveled. These location data reflect a composite of fuel availability, AFV availability, fuel-appropriate drive cycles, cultural enthusiasm of specific fuels, coalition connections, the necessity for coalition help, and more. As such, they do not tell a clear story of any one of these factors, but rather a complex story where these factors are weighted to various degrees in different locations. It is helpful to visualize what fuels coalitions—and their location-specific partners—are embracing and equipped to utilize.

Figures 2–7 show the national impact of CC&C alternative fuel projects, one fuel at a time. The methodology of how these maps were created is provided in Appendix C. A map of the combined impact of all six of these fuels and project types is also included in Appendix C as Figure C-1, and geography-level impact maps for projects at the coalition, state, and county level are shown in Figures C-2–C-4, respectively.

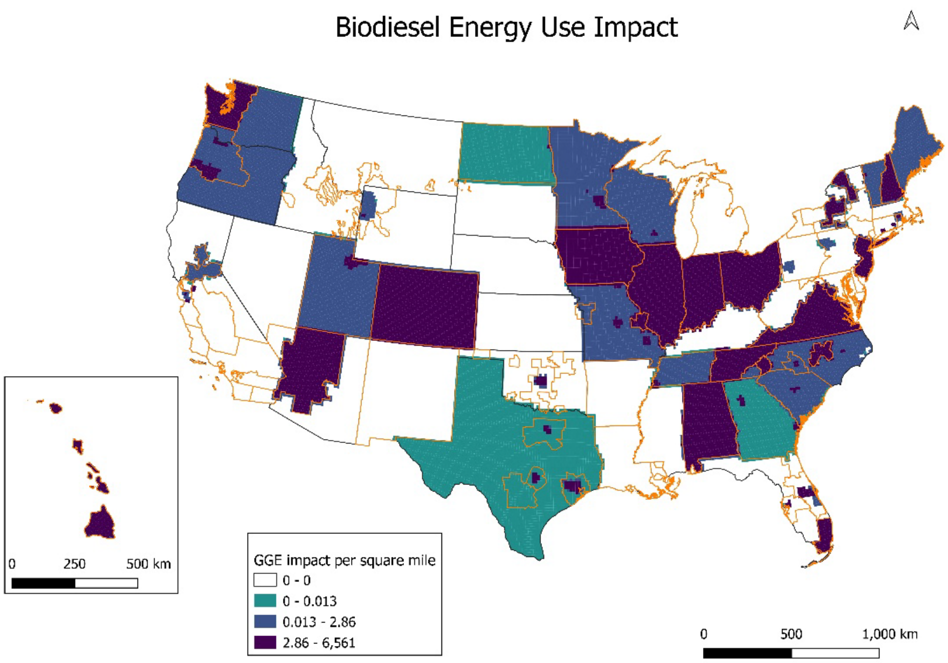

Figure 2. GGE impact per square mile in 2024 by coalition projects involving biodiesel.

Map uses the combination of all reporting geographies (coalition boundaries, city, county, and state). Data provided by coalitions included estimated operational area of the vehicles. Cell size is 10 miles, creating an edge effect along state borders.

Coalition stakeholders used heavy concentrations of biodiesel across Iowa, Illinois, Indiana, and Ohio, which are all large soybean-producing states. This could indicate the ability of CC&C coalitions to utilize local energy sources that are more secure. Large concentrations are also used in cities and counties far from biodiesel production, including southeast Florida and northwest Washington. This could display the ability to transport biofuels by rail throughout the country to provide opportunities to use a variety of fuels.

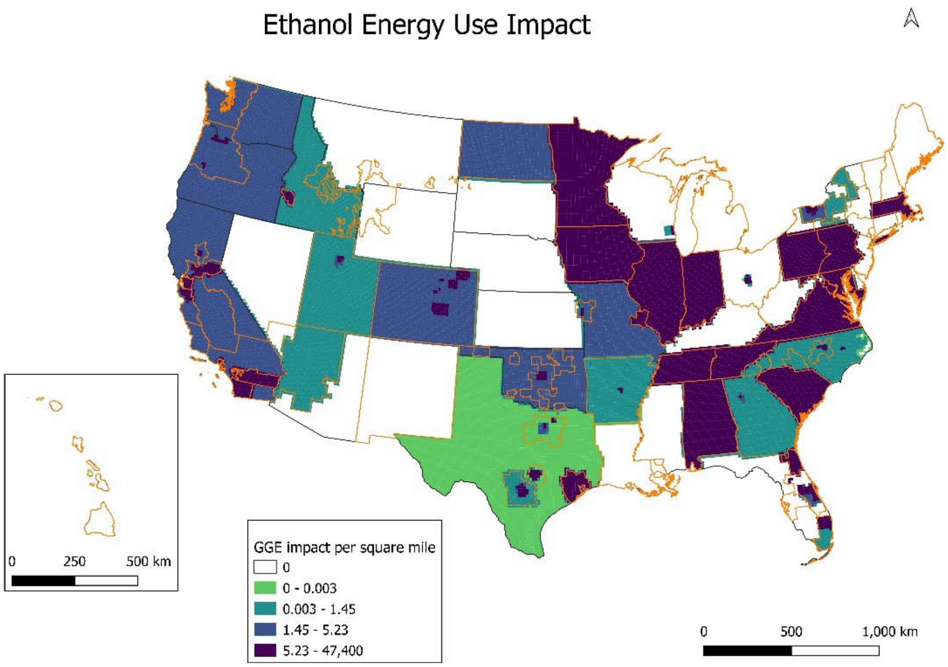

Figure 3. GGE impact per square mile in 2024 by coalition projects involving ethanol (E85).

Map uses the combination of all reporting geographies (coalition boundaries, city, county, and state). Data provided by coalitions included estimated operational area of the vehicles. Cell size is 10 miles, creating an edge effect along state borders.

Figure 3 shows that ethanol is used by CC&C coalitions in similar patterns as biodiesel, which makes sense given that both corn and soybean are grown in similar environments. However, there are some notable deviations from the biodiesel consumption patterns. For example, E85 is much less utilized by CC&C stakeholders in Michigan and Ohio and much more utilized in California.

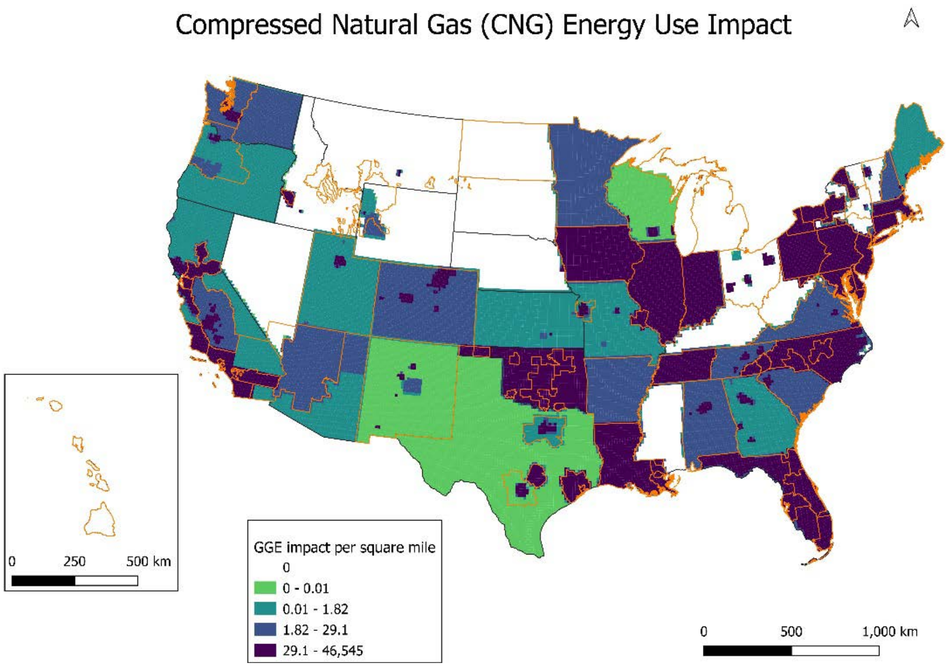

Figure 4. GGE impact per square mile in 2024 by coalition projects involving CNG.

Map uses the combination of all reporting geographies (coalition boundaries, city, county, and state). Data provided by coalitions included estimated operational area of the vehicles. Cell size is 10 miles, creating an edge effect along state borders.

In Figure 4, CNG appears to reflect more local boundaries and fewer state boundaries than biodiesel and ethanol. This could be because it is utilized more by fleets with smaller operating areas, whereas biodiesel and ethanol are reported more as fueling stations that serve fuel to vehicles with broader (often statewide) operating areas. This interpretation is supported by the data, where 93% of CNG was used by fleet (as opposed to fueling station) projects, as compared to 56% for biodiesel and 33% for ethanol.

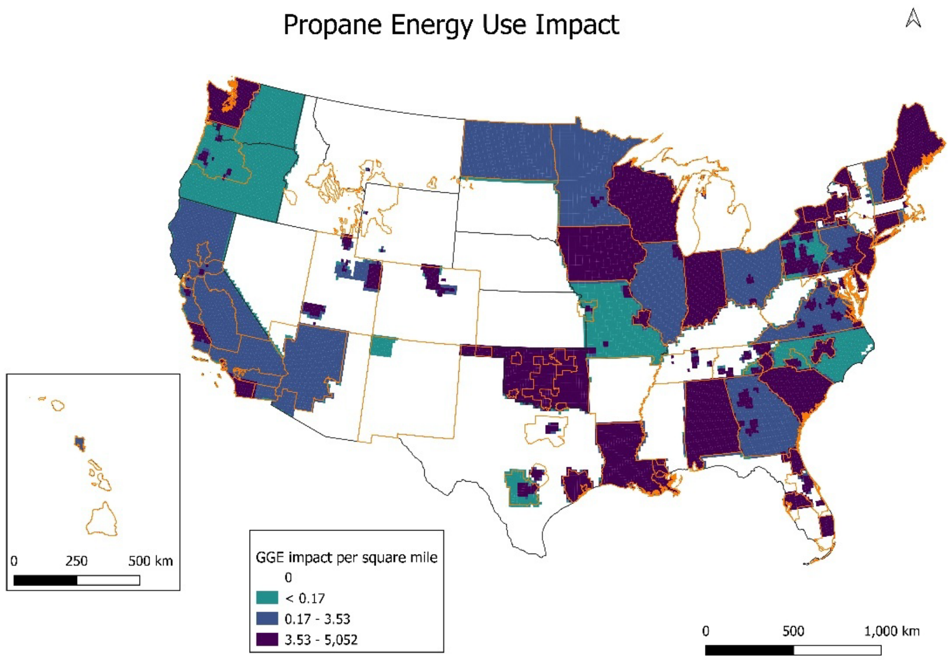

Figure 5. GGE impact per square mile in 2024 by coalition projects involving propane.

Map uses the combination of all reporting geographies (coalition boundaries, city, county, and state). Data provided by coalitions included estimated operational area of the vehicles. Cell size is 10 miles, creating an edge effect along state borders.

The map of propane EUI, Figure 5, shows more prevalent use of the fuel in coalition projects in the central and eastern part of the country. Because propane often comes from the same sources as natural gas, it is interesting to draw comparisons to the CNG map. Propane density is much lower than CNG in general, as shown in the legend units. Unlike CNG, it does not have statewide usage in Florida, Arkansas, Tennessee, Texas, New Mexico, or Colorado. This could be because propane is transported by truck rather than pipeline and therefore might be less widely distributed. Conversely, it does have statewide usage in Vermont and Ohio—two states lacking statewide CNG usage.

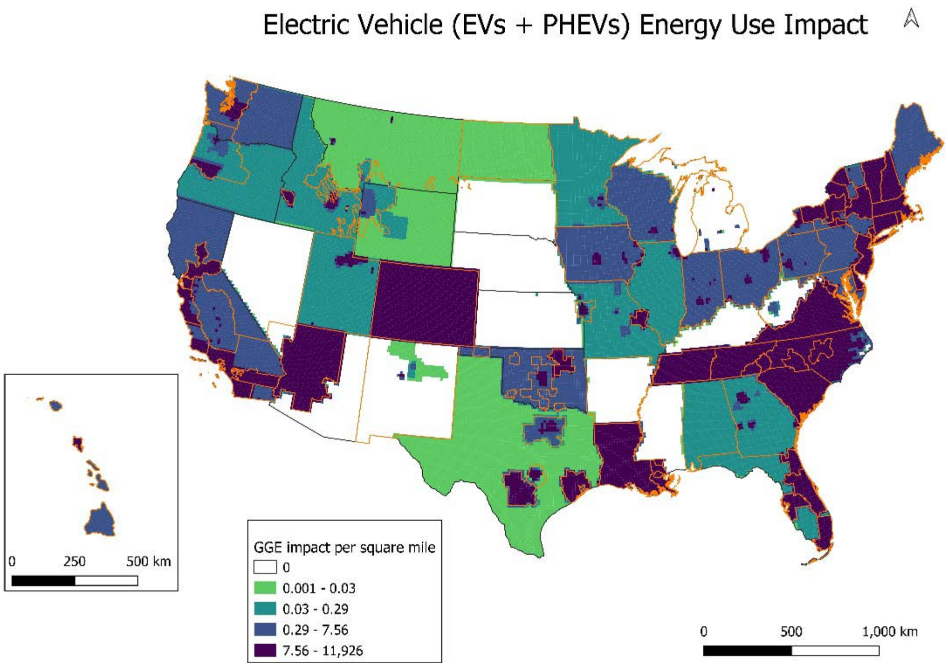

Figure 6. GGE impact per square mile in 2024 by coalition projects involving EVs and plug-in hybrid EVs.

Map uses the combination of all reporting geographies (coalition boundaries, city, county, and state). Data provided by coalitions included estimated operational area of the vehicles. Cell size is 10 miles, creating an edge effect along state borders.

Figure 6 contains some nonintuitive findings, likely because a smaller portion of total EV usage is reported by CC&C coalitions than other fuels. Therefore, the deviation between overall usage patterns and CC&C usage patterns is greater for EVs than other fuels. Coalitions in Louisiana, Virginia, North Carolina, South Carolina, and Tennessee show a particularly dense impact from their EV projects. At the same time, the EV strongholds of California, Oregon, and New York do not show strong statewide coalition impact. This could be because the latter three states have such strong support for EVs at the statewide level that CC&C coalitions are less likely to focus on statewide projects. It could also be a reflection of the fact that California and New York have numerous local coalitions, which results in more local projects being reported. This is visible from the numerous dark purple areas in those states, which show cities, counties, or sub-state coalition areas that are in the top 20% of GGE impact for EVs. Conversely, Louisiana, Virginia, North Carolina, South Carolina, and Tennessee have coalition geographies that cover the full state geography, so each state is in the top 20%.

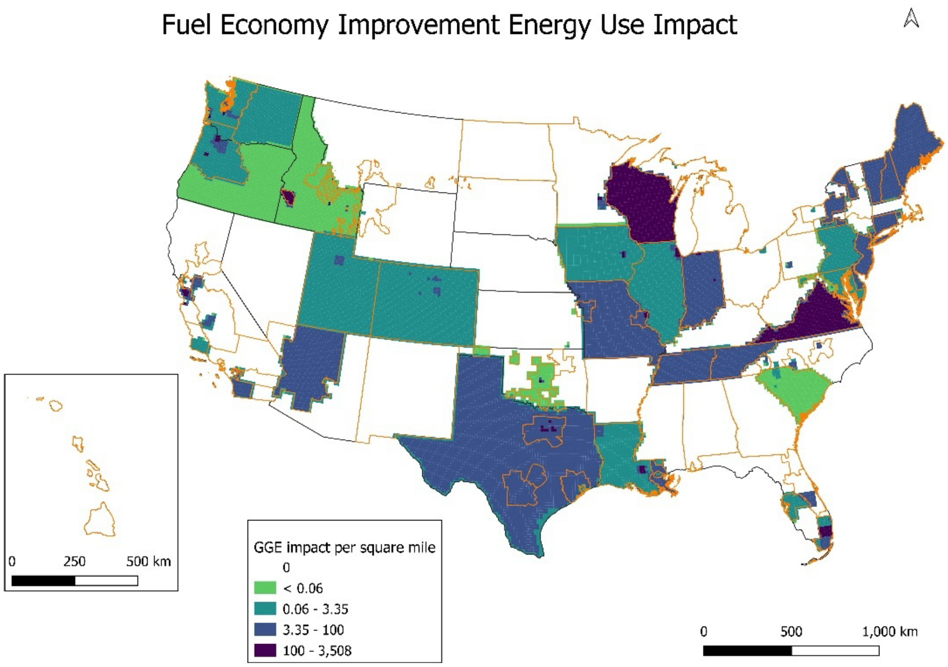

Figure 7. GGE impact per square mile in 2024 by coalition projects involving fuel economy improvement.

Map uses the combination of all reporting geographies (coalition boundaries, city, county, and state). Data provided by coalitions included estimated operational area of the vehicles. Cell size is 10 miles, creating an edge effect along state borders.

Figure 7 shows that fuel economy improvement projects were widely dispersed both geographically and across city, county, coalition, and state levels. The highest impact was at both the sub-state level (see locations in Florida, Louisiana, California, and Idaho) and the state level (Wisconsin and Virginia).

Idle Reduction

Savings resulting from idle reduction policies accounted for 41% of idle reduction savings in 2024.

IR represents a particularly valuable method of saving energy because the energy it saves is otherwise wasted on unproductive tasks while causing unintended side effects of pollution, noise, engine wear, and wasted money. The estimated energy savings in 2024 for IR technologies and policies was 61.6 MGGE. The number of IR projects increased 2% in 2024, and the quantity of energy that these projects saved increased 5%. As shown in Figure 8, at 25.0 MGGE, IR policies were responsible for the greatest percentage (41%) of energy savings from IR. Automatic engine shutoff at 13.0 MGGE, auxiliary power units at 11.3 MGGE, driver training at 5.1 MGGE, the "other" category at 2.8 MGGE, and onboard batteries at 2.5 MGGE followed with significant percentages (21%, 18%, 8%, 4%, and 4% respectively). Direct-fired heaters at 0.7 MGGE, truck-stop electrification at 0.6 MGGE, and thermal storage at 0.5 MGGE each represented 1% of the IR energy savings. The remaining methods combined to represent less than 1% of the total savings.

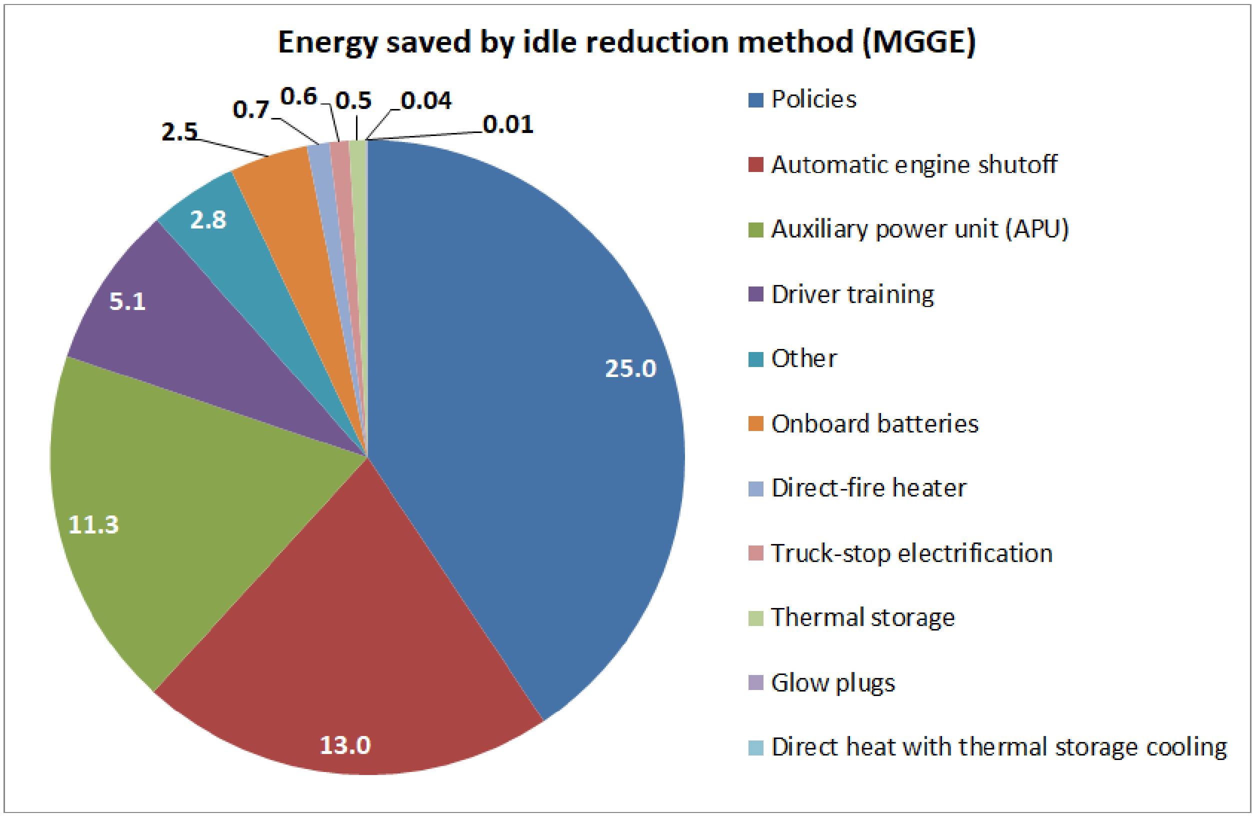

Figure 8. Energy savings measured in MGGE from IR projects, 2024

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 40.6 MGGE, which was equal to the reported 2023 savings. Figure 9 includes the range of fuel economy technologies advanced by coalitions. There were 93,763 vehicles in the non-HEV fuel economy technology category, equating to an average annual EUI of 433 GGE per vehicle. The figure shows the fuel economy improvement projects with the largest improvements were those from the "other" category and those replacing vehicles with more efficient vehicles. The "other" category comprised just 5% of reported fuel economy projects but included two relatively large projects that skewed the category. Hydraulic hybrid vehicles, automated tire inflation systems, lightweight materials, cylinder deactivation, and driver training all showed improvements of 400 GGE or more per year per vehicle.

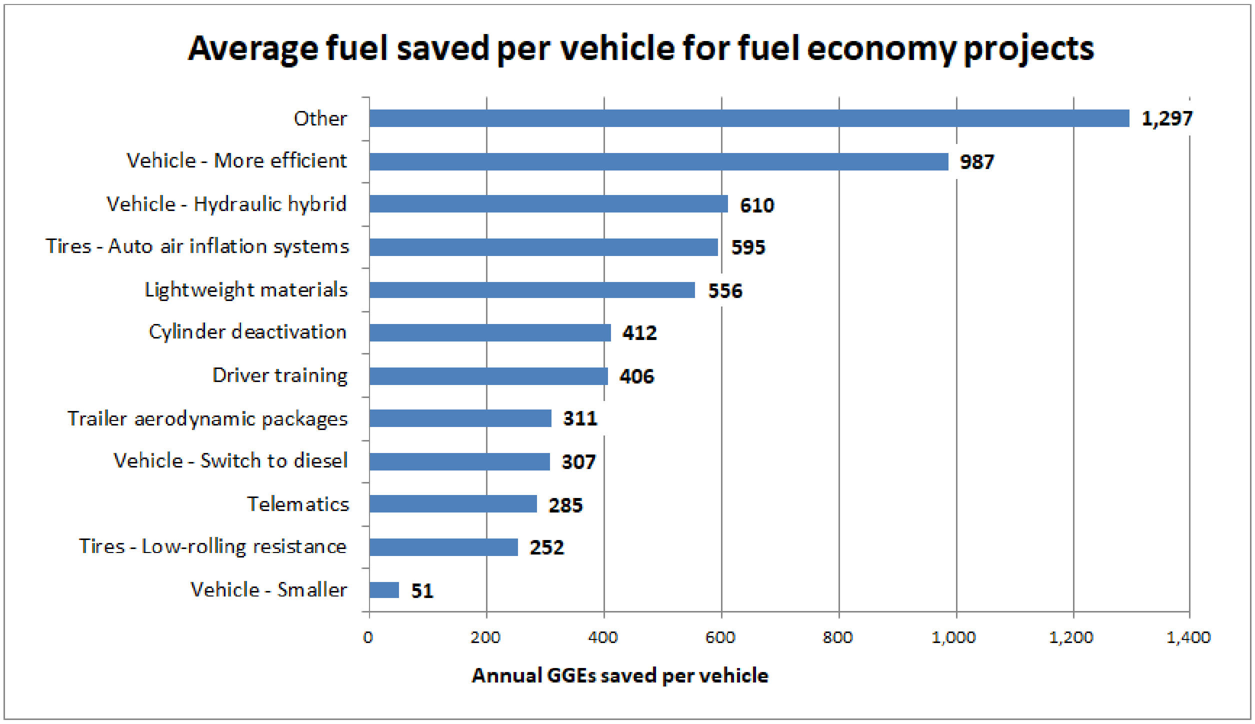

Figure 9. Average energy saved per vehicle for 2024 CC&C coalition fuel economy projects

Vehicle Miles Traveled Reduction

VMT reduction projects save fuel, and therefore money, while reducing pollution. These types of projects include strategies such as carpooling, biking, teleworking, and public transportation. Of the 74 reporting coalitions, 58 (78%) reported at least one VMT reduction project in 2024, with a total of 462 projects reported. VMT projects have historically been outside the traditional scope of advanced vehicle, fuel, and systems research addressed by TTO. Because the primary purpose of this report is to analyze and document the impact of CC&C coalition efforts related to TTO technologies, the contribution of VMT projects to this analysis has been limited to 30% of any given coalition's total energy savings. This cap affected four coalitions; however, even with this limit in place, coalitions saved 29.5 MGGE of fuel with VMT activities. The project types, numbers, and sizes of the VMT projects are shown in Table 3.

Table 3. VMT Reduction Project Types, Number, and Energy Savings in 2024

Project Type	Number of Projects	Change in Number of Projects Since 2023	GGE Saved per Project [a]	DOE-Capped GGE Saved per Project
Route optimization	120	6	49,224	44,603
Mass transit	71	5	206,613	154,656
Nonmotorized locomotion (e.g., bicycles)	61	−7	14,710	14,710
Carpooling	59	2	56,124	53,582
Telecommute	58	−4	42,061	42,058
Other [b]	29	3	340,143	122,661
Compressed work week	22	1	10,675	10,675
Car sharing (e.g., Zipcar)	19	2	23,558	22,254
Vanpooling	12	−1	190,808	192,550
Electric bikes and scooters	11	1	9,554	9,349
Grand Total	**462**	**8**	**86,940**	**63,765**

[a] GGE per project calculated before the 30% limit of coalition overall energy savings was implemented.

[b] This category is heavily influenced by large multimodal VMT reduction projects in Washington, D.C., and North Carolina.

Off-Road, Rail, Marine, and Aviation

Coalition impact extends beyond the road. Off-road project EUI was more than 33 MGGE in 2024.

As CC&C grows, coalitions are seeing increasing impact in off-road applications. This reflects TTO's increasing interest in making the most of energy used in transportation on and off the road. Many of these projects were born out of synergies with on-road projects with existing stakeholders using several of the same alternative fuels, technologies, and strategies. Table 4 shows the number of off-road vehicles (or pieces of equipment) reported by coalitions in 2024. These categories are self-descriptive, except for three. "Construction equipment" 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 improvements to hydraulic pump efficiency.

Table 4. Number of Off-Road Vehicles or Equipment and EUI in 2024

Application	Number of Vehicles	EUI (GGE)	EUI per Vehicle
Forklifts	8,592	2,908,131	338
Construction equipment	8,590	2,528,723	294
Other	4,170	6,503,366	1,560
Landscaping and lawn equipment	1,703	256,785	151
Recreational equipment	1,157	116,670	101
Farm equipment	351	265,376	756
Railroads	181	4,829,469	26,682
Street sweeper	179	111,119	621
Ships	133	15,341,831	115,352
Mining equipment	131	531,199	4,055
Planes	4	3,904	976
Total	**25,191**	**33,396,573**	**1,326**

Overall EUI contributions from off-road vehicles totaled 33.4 MGGE—a 6% increase from 2023. Vehicles using biodiesel accounted for 35% of the AFVs included in this category. Other fuels with large numbers of off-road vehicles include EVs (25%), propane vehicles (14%), and renewable diesel vehicles (14%). Biodiesel was primarily used in marine, construction equipment applications, and mining equipment. All-electric drivetrains had the largest EUI in "other equipment," forklifts, and construction equipment categories. Coalitions primarily reported propane vehicles as forklifts and landscaping equipment. Renewable diesel use was primarily reported for construction equipment, marine, and farm equipment. Applications varied widely in number of GGEs saved per vehicle, as shown in Table 4.

Outreach, Engagement, and Training Activities

CC&C is built on a foundation of people working with people to achieve collective goals. Outreach, engagement, and training activities are essential to the successful implementation of the CC&C partnership's mission to foster locally driven transportation energy choices that leverage domestic energy resources and innovative mobility technologies through collaborative partnerships with public and private stakeholders. Coalitions reported the total person-engagements through each activity, the number of activities, and the activity days that account for how many days each activity lasted.

Coalitions report the number of persons reached or engaged for each activity. When aggregating those activities, we use a "person-engagement" unit, which unit represents the quantity of times a coalition engaged with a person (and may reflect multiple engagements with the same person throughout the year). Coalitions engaging with an individual stakeholder multiple times throughout the year is critical to the process of helping stakeholders access the expertise, resources, and tools to identify the transportation energy choices that meet their needs. This collaborative approach requires multiple touch points for building trust, listening to stakeholders, providing tailored expertise, assisting stakeholders with the decision-making process, and continuing to learn from the stakeholder's experience using innovative transportation technologies.

Coalitions' outreach, education, and training activities were classified into the nine categories shown in Table 5. The categories reported in 2024 were updated from prior years to support the partnership's Framework for Success, as described in the introduction. In particular, the outreach, education, and training activities track to the "connect," "inform," and "deploy" elements of the Framework for Success. However, the impacts of projects documented throughout the other chapters of this report track to the "deploy" element more robustly than this section.

Table 5. Outreach, Education, and Training Activities

Activity Type	Number of Activities	Number of Activity Days	Person-Engagements
Participate in event (Connect)	825	1,351	449,465
Other notable outreach/engagement (Connect)	574	905	33,990
Coalition-organized event (Connect)	571	738	75,820
Stakeholder working group (Connect)	424	960	10,699
Digital communication channels (Connect)	206	NA	290,877
Media engagement (Connect)	86	NA	2,444,244
Provide tailored expertise (Inform)	323	485	4,479
Workforce/technical training (Inform)	71	143	5,710
Project funding application (Deploy)	81	NA	NA
Total	**3,161**	**4,582**	**3,316,291**

A total of 4,582 activity days were reported in 2024. Outreach activities were estimated to reach an audience of more than 3.3 million person-engagements, a 49% increase from 2023. Media engagements were estimated to reach 2.4 million people—by far the most far-reaching activity type. Figure 10 shows that *aside from* media engagements, coalitions were most active in the "participate in event (Connect)" activity category, which include conferences, and reached 449,465 people at these events. "Digital communication channels (Connect)" reached an additional 290,877 people. "Coalition-organized event (Connect)" efforts reached 75,820 people. Efforts including "stakeholder working group (Connect)" (10,699 people reached), "workforce/technical training (Inform)" (5,710 people reached), and "provide tailored expertise (Inform)" (4,479 people reached) provided focused action-oriented information to drive projects forward with engaged audience members.

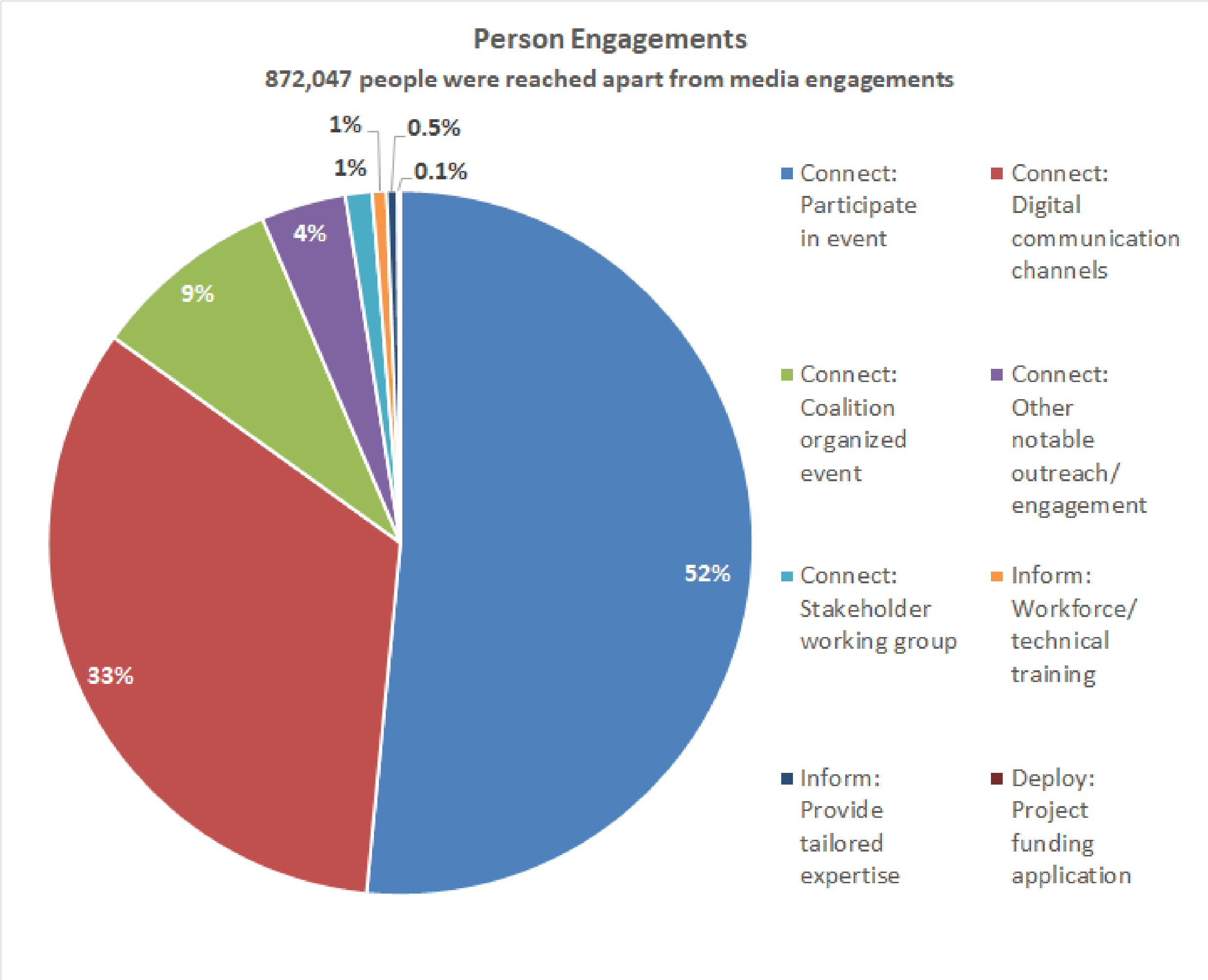

Figure 10. Percentage of person-engagements apart from media engagements

Coalitions have deep, long-lasting relationships with stakeholders throughout the transportation industry. Regular coalition activities created and reinforced those connections to the 20 stakeholder groups listed in Figure 11. The figure presents the portion of total activity stakeholder connections represented by each stakeholder group. The inclusion of a stakeholder group in a reported activity is considered an activity connection. Across all activity types, "government officials" and the "general public" were most often involved in coalition activities (15% and 13% of connections, respectively). "Private on-road fleets" and "industry/advocacy organizations" followed (9% and 8% of connections, respectively). The "other" stakeholder category, "utilities," "public on-road fleets," and "infrastructure manufacturers" followed. "Education institutions," "mechanics/technicians," and "first responders" were all more likely to be connected through the "workforce/technical training (Inform)" activity type than the other activity types.

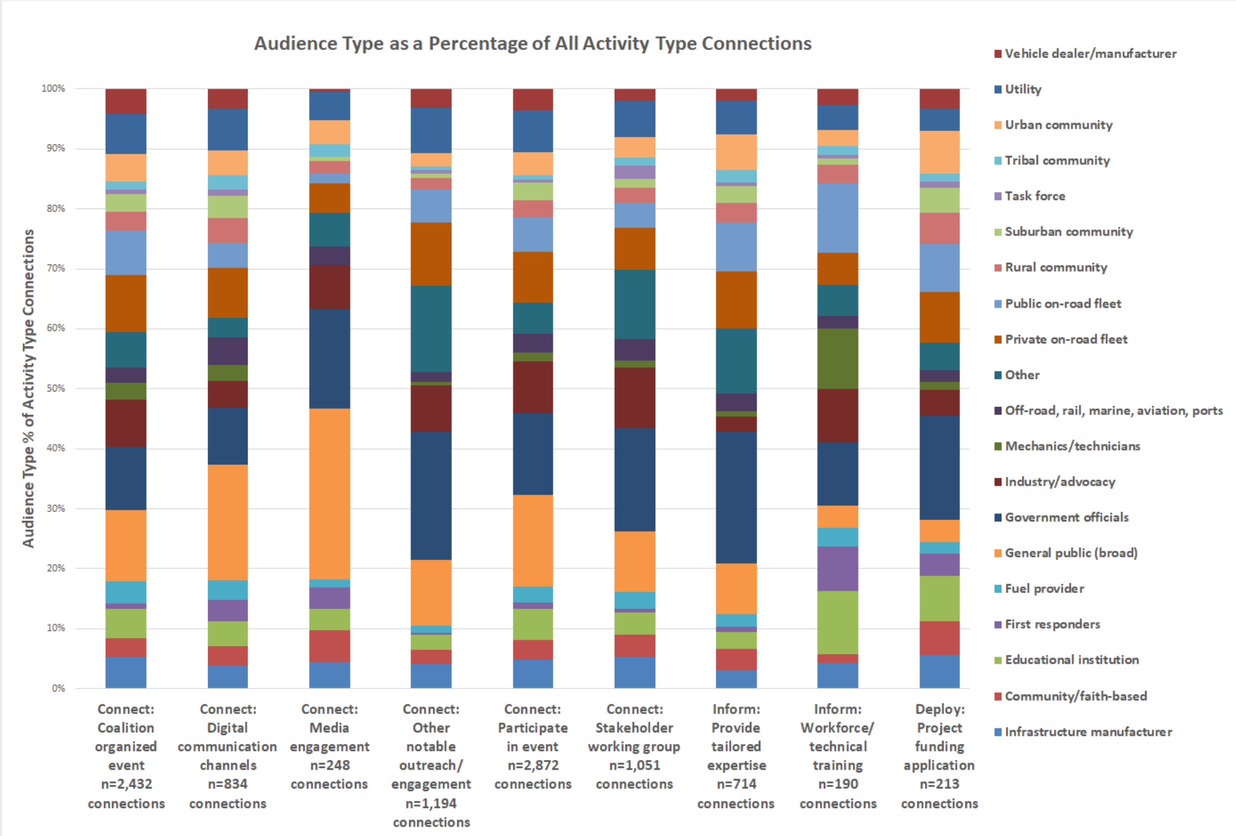

Figure 11. Audience type as a percentage of all activity type connections

Coalitions represent a valuable conduit for delivering DOE tools and resources to audiences with whom DOE does not typically have a direct line of connection. Coalitions reported when activities provided stakeholders with information about DOE tools and resources. In 2024, coalitions reported reaching 522,529 people with this information. Table 6 shows 60% of coalition outreach activities provided information about DOE tools and resources. "Media engagement (Connect)" and "stakeholder working group (Connect)" were the only activity types that did not provide information about DOE tools and resources through a majority of activities.

Table 6. Activities Providing Information About DOE Tools and Resources

Activity Type	Activities Reporting on Inclusion of DOE Resources	Activities Providing Information About DOE Resources	% of Activities Reporting on DOE Resources That Provided DOE Resources
Participate in event (Connect)	441	290	66%
Coalition-organized event (Connect)	304	204	67%
Other notable outreach/engagement (Connect)	197	123	62%
Stakeholder working group (Connect)	189	94	50%
Digital communication channels (Connect)	99	57	58%
Media engagement (Connect)	58	10	17%
Provide tailored expertise (Inform)	179	111	62%
Workforce/technical training (Inform)	44	37	84%
Project funding application (Deploy)	57	36	63%
Total	1,127	672	60%

CC&C coalitions convene working groups of stakeholders to further understanding of CC&C strategies and technologies, advanced deployment activities, and accelerate lessons learned from on-the-ground transportation projects. Table 5 shows that coalitions reported 960 "stakeholder working group (Connect)" activity days for an approximate 340 unique stakeholder working groups. An estimated 9,722 person-engagements were made with coalitions in working groups, with the mean working group including 29 people representing stakeholders and the median working group including 12 people representing stakeholders.

Coalitions regularly participate in stakeholder events and host events that provide education, hands-on experience, and opportunities to connect. These events represent the largest in-person outreach activities, covered under "participate in event (Connect)" and "coalition-organized event (Connect)." Table 5 shows that coalition-attended events were more numerous and resulted in more person-engagements than coalition-organized events. However, coalition-organized events allow coalitions to drive a message regarding the specific coalition's local technology opportunities. Figure 12 shows the percentage of total activities that included each technology. Both coalition-organized events and events coalitions participated in covered a wide-ranging set of technologies but had a focus on EV technologies. Generally, coalition-organized events were a little less likely to cover any single technology type. Overall, coalitions participating in events covered 3.9 technology types, while coalition-organized events covered 2.9 technology types, displaying that coalition-organized events tended to be more focused on specific technologies.

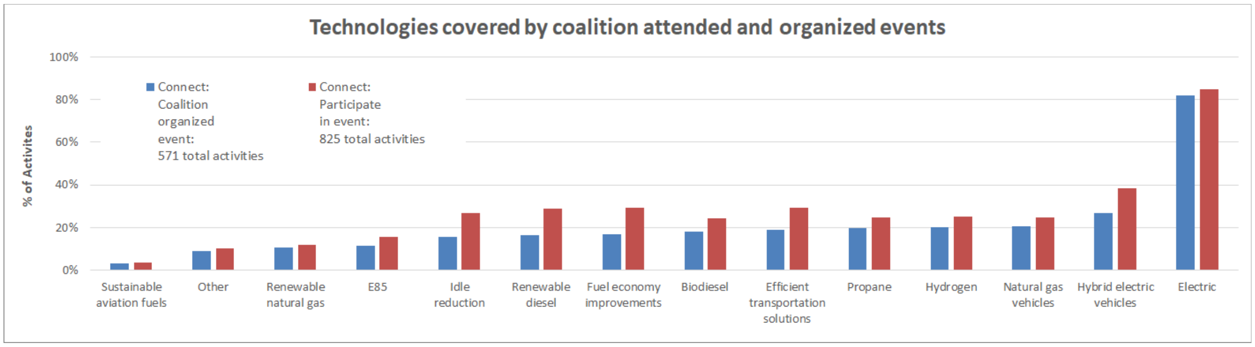

Figure 12. Technologies covered by coalition-attended and coalition-organized events

Coalition-organized events reached broad audiences, as displayed in Figure 13. These events provided opportunities for public and private entities to share lessons learned to improve alignment of technical, policy, and operational efforts. Aside from the general public, coalition-organized events most often included government officials (45% of events), private on-road fleets (40%), and industry advocacy groups (33%). Beyond these decision-making groups, coalition-organized events enabled broader technology acceptance by engaging Americans from urban, suburban, rural, and Tribal communities, as well as entities supporting the U.S. workforce such as education institutions and current mechanics and technicians.

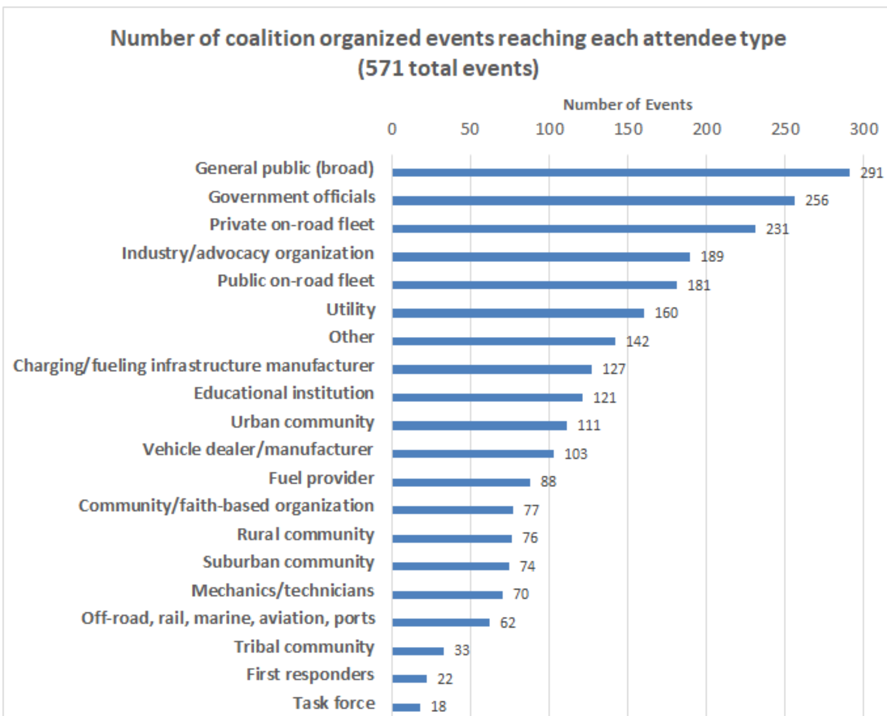

Figure 13. Number of coalition-organized events reaching each participant type.

Note: 571 total activities

Participants in coalition events represent a wide range of audiences and level of engagement. Coalitions reported the participant roles and types at each of the coalition-organized events. Figure 14 shows that of the events reporting stakeholder participation roles (33% of events did not report participant roles), the majority (59%) reported participation more engaged than simply receiving information. This included having a collaborative role, having their input gathered, having their input integrated in planning, and having a decision-making role. Events where stakeholders played a decision-making role were more likely to be attended by vehicle manufacturers, utilities, charging/fueling infrastructure, and education institutions.

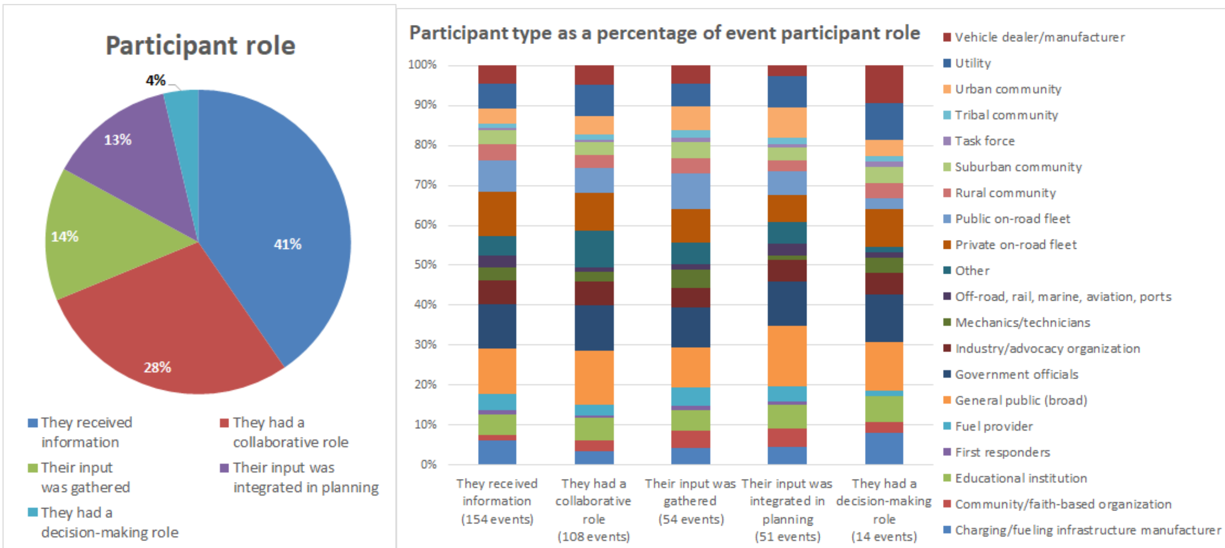

Figure 14. Participants in coalition-organized events by participant role and type.

Participant role is reported for a given event, not specifically for each participant type. No responses were logged for 190 events.

Coalitions also reported about event participants' level of involvement in the coalition. This is a helpful indicator of whether a coalition event is focused on educating current connections or forming new connections. Figure 15 shows that of the events reporting coalition involvement type (33% did not report coalition involvement levels), 60% reported the majority of participants being significantly involved in the coalition, and another 34% reported somewhat involved participants. Only 6% of coalition-organized events included a majority of participants with little to no involvement in the coalition. This shows coalition events are built on strong engagement with coalition stakeholders.

The events where the majority of participants had significant involvement in the coalition showed higher likelihood of including utilities, public and private on-road fleets, rural communities, off-road entities, and mechanics.

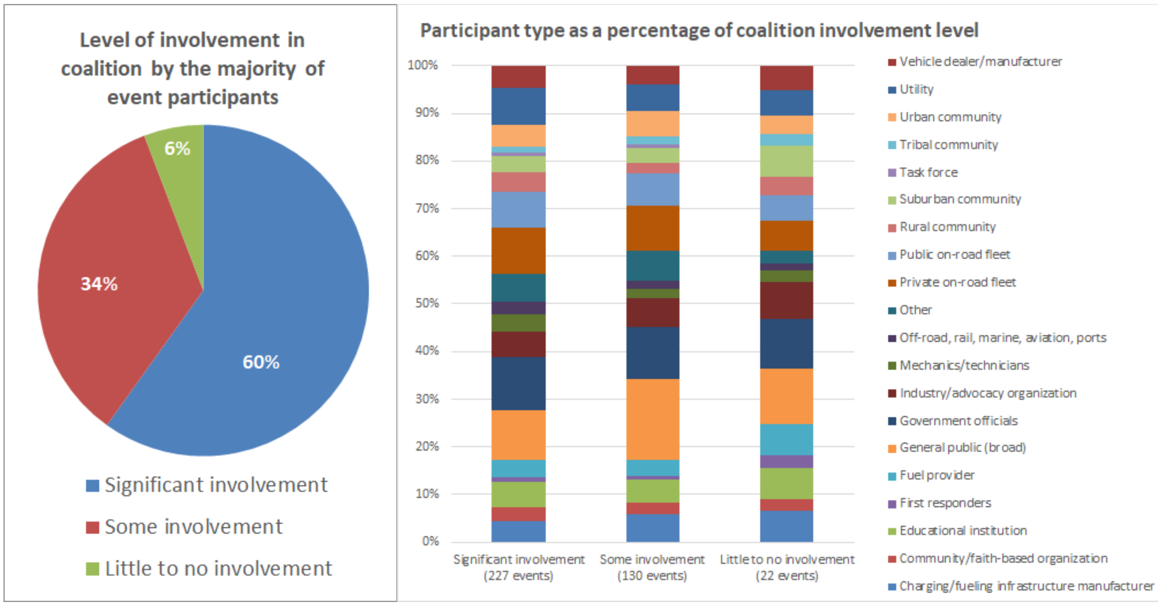

Figure 15. Level of involvement in coalition of participants in coalition-organized events.

No responses were logged for 190 events.

Cumulative Energy Use Impact

The CC&C partnership is well established, with more than 30 years of experience that has allowed coalitions to steadily increase their annual EUI as the partnership has expanded and built upon lessons learned each year. Figure 16 shows coalition annual EUI remained near its highest level in 2024. In the last 9 years of tracking (2016–2024), annual coalition EUI has been around 1 billion GGE. The 2024 reporting year showed the coalitions continued the trend and achieved an annual EUI of 1.05 billion GGE—a slight increase from 2023.

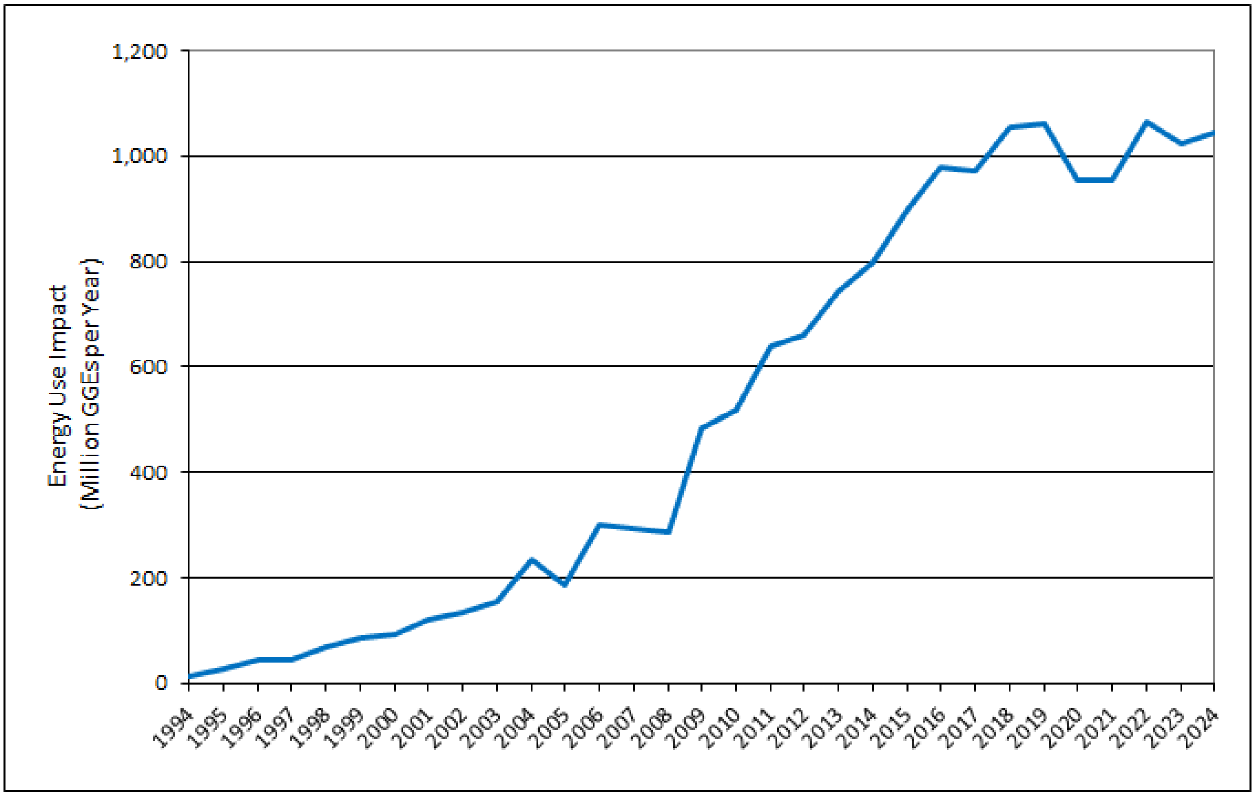

Figure 16. Annual EUI from coalitions over time

Together, coalitions create compounding impacts nationwide that support locally driven energy choices. The impacts of CC&C coalition efforts have added up considerably over the years. The full extent of the partnership's effect can be seen when the annual EUIs shown in Figure 16 are aggregated to a cumulative EUI. This cumulative measure, shown in Figure 17, is now nearly 16 billion GGE.

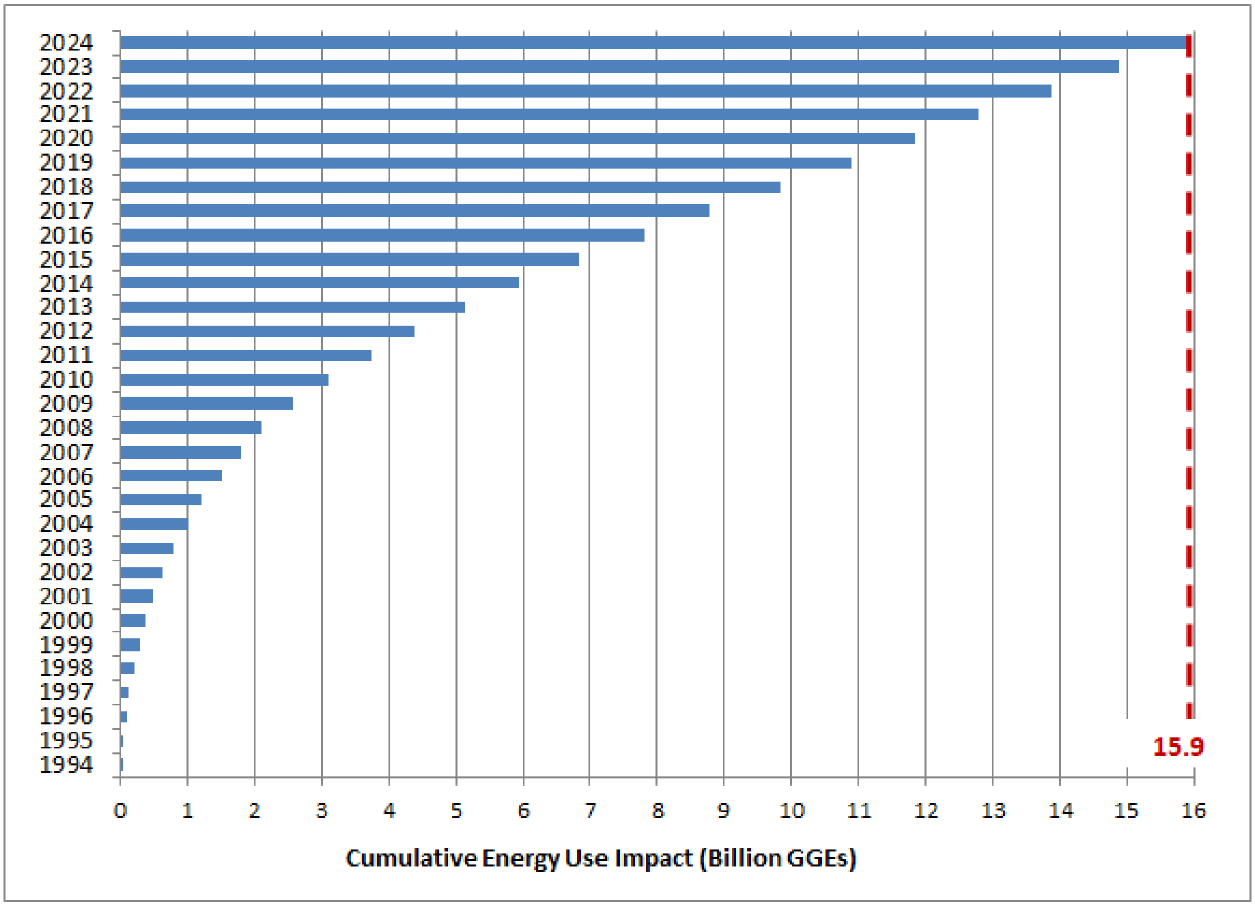

Figure 17. Cumulative accomplishments of all CC&C partnership activities

Air Pollution

Coalition activities reduced 9.3 million tons of emissions[6] in 2024. The emissions reduction grew by 70% from 2022 to 2023 in large part due to the change in accounting for RNG inclusion in CNG projects for 2023. The accounting was consistent in 2024, as described below.

Renewable Natural Gas in CNG and LNG Projects

90% of the natural gas reported as CNG or LNG projects in non-California states in 2024 was actually RNG, made available through the Renewable Fuel Standard's trading mechanism.

In 2024, we continued to utilize the enhanced methodology to accurately account for RNG consumption in CC&C projects that was introduced in 2023. The analysis addresses the challenge that RNG consumption remains under-reported in coalition data, as many coalition directors and fleet managers are possibly unaware that their vehicles utilize RNG supplied through various trading mechanisms. This necessitates updated investigation to determine the actual proportion of RNG in CNG and LNG, enabling appropriate adjustments to emission factors.

[6] Emissions measured include carbon dioxide, methane, and nitrous oxide, all converted to a CO_2e metric.

Four data sources are key to estimate the portion of CNG and LNG used in CC&C projects that was actually RNG:

- EPA's Renewable Fuel Standard and renewable identification numbers (RINs). The Renewable Fuel Standard sets up a trading mechanism that incentivizes and enables RNG to utilize the national pipeline system and be sold for vehicle use. This RNG is tracked based upon RINs, as posted by the EPA.[7]
- California's Low Carbon Fuel Standard. Similar to the Renewable Fuel Standard, the Low Carbon Fuel Standard has a trading mechanism that further incentivizes and enables the lowest-emission forms of RNG to be sold to fleets in California. Transactions done through this trading mechanism, including conventional natural gas sold to vehicles, can be tracked on the LCFS Data Dashboard.[8]
- The U.S. Energy Information Administration's Monthly Report of Natural Gas Purchases and Deliveries to Consumers estimates the total amount of natural gas (including RNG) consumed by on-road vehicles.[9]
- CC&C-reported RNG projects.

Using calculations described in Appendix D, we derived the percentage breakdown of RNG by various sources, reflected in Table 7. The emissions factors derived from GREET, in the right column, were weighted by the percentage of natural gas consumption in the left three columns to determine the weighted average emissions listed as the "unspecified natural gas emissions factor" in the second-to-last row. These emissions factors (−11.86 kg CO_2e/GGE for California and 3.54 kg CO_2e/GGE for non-California states) are applied to all natural gas projects that have not been specified by coalition directors as RNG and simply entered as CNG or LNG projects. California-based coalitions have the highest reduction in emission factor due to (1) an approximately 99% RNG mix and (2) a significantly higher mix of animal waste RNG. For the non-California states, landfill RNG is the dominant source of RNG.

Table 7. RNG Content (%) of CC&C-Reported CNG and LNG Projects

Fuel Category	U.S. (GGE)	California (GGE)	Non-California 49 States (GGE)	Greenhouse Gas Emissions Factors (kg CO_2e/GGE)
Fossil natural gas	7%	1%	10%	8.64
Landfill RNG	62%	22%	88%	2.92
Animal RNG	29%	74%	0%	−17.19
Wastewater RNG	2%	3%	2%	4.75
Total RNG	93%	99%	90%	N/A
Unspecified natural gas emissions factor	−2.44	−11.86	3.54	N/A
2023 unspecified natural gas emissions factor	0.19	−5.14	3.40	N/A

[7] EPA. 2025. "RINs Generated Transactions." Last updated Dec. 31, 2025. www.epa.gov/fuels-registration-reporting-and-compliance-help/rins-generated-transactions.
[8] California Air Resources Board. 2024. "LCFS Data Dashboard." ww2.arb.ca.gov/applications/lcfs-data-dashboard.
[9] U.S. Energy Information Administration. 2025. "Monthly Report of Natural Gas Purchases and Deliveries to Customers." December 2025. www.eia.gov/naturalgas/monthly/pdf/table_02.pdf

Notable Air Quality Trends

Using the updated emissions factors shows that coalition efforts have led to a cumulative emissions reduction of 90 million tons over the years. The relationship between the two has not always been consistent, as some technologies can be more effective at increasing EUI or reducing emissions than others (see Figure 1), and the Technology Integration Program portfolio evolves over time to stay relevant. An additional update in the reporting tool to be consistent with periodic updates of the GREET model resulted in a shift in the emissions calculations beginning in 2020.

The average coalition HDV reduced more than 14 times as much emissions as the average LDV. This is largely for the same reasons that HDVs have a larger EUI per vehicle ratio relative to LDVs. Other notable trends in emissions that have been mentioned in other sections have been called out in boxes in this section.

Conservation measures "eliminate" 100% of the air pollution that would have resulted from the fuel they save.

Coalition activities improve air quality by reducing nitrogen oxides and volatile organic compounds. These are two categories of emissions that react to form tropospheric (ground-level) ozone or smog and are frequently linked to health impacts and respiratory issues. Coalitions reduced more than 953 tons of nitrogen oxide emissions in 2024, with CNG, EVs, and HEVs being the dominant reduction technologies. The coalitions also reduced 3,197 tons of volatile organic compounds, with EVs, HEVs, CNG, and VMT reduction being the leading technologies achieving these reductions. Furthermore, they reduced more than 35,818 tons of carbon monoxide, 232 tons of 10-micron particulate matter (PM_{10}), and 40 tons of $PM_{2.5}$.

Alternative Fuel Vehicle Types and Applications

Through the online reporting tool, coalition directors can categorize their AFVs into key vehicle types and fleet applications. Figure 19 shows that the largest portion (41%) of AFVs were cars, and 78% of reported cars were EVs. Unknown LDVs—which are usually vehicles reported in conjunction with a CC&C coalition-supported fueling station—represented 28% of vehicles. Light trucks, vans, and SUVs represented 19% of vehicles. These were dominated by a coalition reporting an estimate of registered vehicles using high-level ethanol blends. Unknown HDVs—typically reported in conjunction with public biodiesel fueling stations—accounted for 6% of vehicles, while heavy-duty trucks without trailers, or delivery trucks, accounted for 3%. All remaining categories individually accounted for less than 2% of the vehicle population.

EVs in the car segment were the most frequently reported fuel/vehicle combination at 687,535. EVs in the unknown LDV segment were the next largest group, with 355,507 vehicles. E85 vehicles in the light truck segment followed at 314,335. E85-capable vehicles were the second largest portion (100,431 vehicles) of the unknown light-duty segment. EVs were the most common fuel type reported across all vehicle types (1,095,753 vehicles).

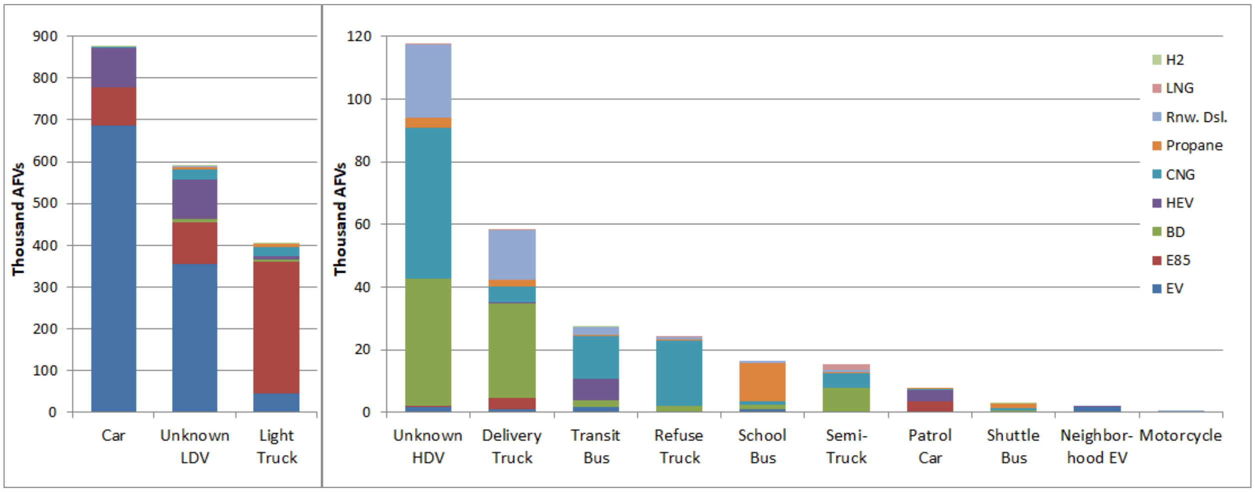

Figure 18. AFVs by vehicle and fuel type.

Chart is split to allow separate y-axis scales. Neighborhood EVs are small EVs only allowed on low-speed roads.

In addition to reporting vehicle types, coalition directors provided information about vehicle ownership and vehicle end-use applications. As shown in Figure 20, 66% of the reported vehicles were owned by the general public or an unknown entity. Many of these vehicles were reported by fuel retailers to the coalition director, 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 commuters, local government fleets, state government fleets, corporate fleets, and utility fleets at 19%, 6%, 3%, 3%, and 2% of the total vehicles, respectively. If commuters are combined with the general public category, 85% of vehicles are owned by the general public.

Two-thirds of coalition-reported vehicles are owned by the general public and have benefited from CC&C coalition projects.

Of the fleet application types composing more than 1% of reported vehicles, local government fleets decreased by 12% to 136,965, state government fleets decreased by 4% to 70,594, and corporate fleets increased by less than 1% to 60,708.

Flex-fuel vehicles and biodiesel vehicles were most often reported as being used by the general public. EVs and HEVs comprised 94% of commuter vehicles (84.7% and 9.7%, respectively). CNG and propane vehicles made up the largest portion of corporate vehicles at 68% combined (53.5% and 14.7%, respectively).

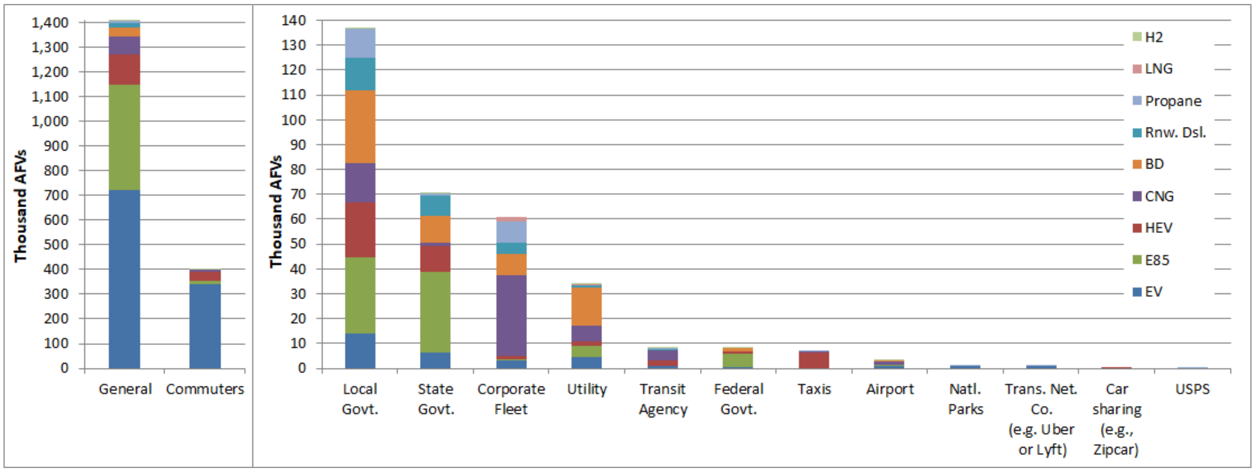

Figure 19. AFVs by application and fuel type.

Chart is split to allow separate y-axis scales.

Emerging Technologies—Experimental, Prototype, and Demonstration Vehicle Projects

CC&C also works with stakeholders who are innovating the U.S. transportation system by field-testing advanced vehicle technologies such as hydrogen and fuel cell EVs. Some of these projects involve limited-production, experimental, or prototype/demonstration models that vehicle manufacturers make available 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. This subset of vehicles represents less than 0.1% of the total number of alternative fuel or advanced technology vehicles reported by coalitions. In 2024, 435 hydrogen vehicles were reported, and the largest portion were for general public owners as reported for fueling stations. Data reported to CC&C coalitions for some of these vehicles show the noteworthy potential of these technologies for both energy and air quality benefits, but no significant market trends could be drawn from this limited dataset.

Coalition Directors and Coalition Types

Coalition directors spent more than 134,000 hours pursuing their coalitions' goals in 2024. NLR also gathered information on coalition director experience. Coalition directors have been on the job for an average of more than 8 years; 55% have held their position for 7 years or less, and 38%, or 28 coalition directors, have 10 years or more of experience as a coalition director.

The average CC&C coalition director has been in their position for over 8 years.

Table 8. Coalition Metrics by Coalition Type

Coalition Type [a]	Total # of Coalitions	Average # of Stakeholders	Average Funds Raised	Average Program Impact (GGE)	Average Person-Engagements
Stand-alone nonprofit	30	326	$13,052,927	17,028,951	15,611
Hosted in a nonprofit	6	148	$1,343,595	8,480,424	305,596
Hybrid – nonprofit	4	517	$296,677	9,093,570	1,933
Hosted in a planning organization	13	154	$10,078,475	14,494,124	61,586
Hosted in a state government	8	100	$131,983	12,259,807	4,915
Hybrid – state government	1	1,200	$0	11,059,767	11,599
Hosted in a city or county government	4	160	$116,189	7,382,580	24,470
Hybrid – city or county government	2	116	$188,956	3,802,741	16,543
Hosted in a university	5	154	$46,076	5,157,240	902
Hybrid – university	1	75	$20,317,864	38,062,564	19,652
Total/overall weighted average	**74**	**249**	**$7,490,581**	**13,468,537**	**44,815**

[a] Coalition types are defined in Appendix B. "Hybrid" coalitions are both legal nonprofits with a governing board and hosted by another organization, as indicated in the name.

NLR tracked coalition types and analyzed the relationships between coalition type and general metrics. The coalition types correspond to their host organizations (which generally pay the coalition director's salary) and are listed in the first column in Table 8 and defined in Appendix B. Stand-alone nonprofits are coalition types that are self-sustaining and do not operate as part of a larger host organization. Hybrid coalitions are both legal nonprofits with a governing board and hosted by another organization.

The number of coalitions in each grouping is listed in Table 8, followed by the average number of stakeholders, average funds (including grants and dues) received in 2024, average GGE of energy impacted, and average number of people reached through outreach events. The range of all metrics overlaps heavily between groups, and the low sample size means that any relationships can be swayed easily by a few coalitions. 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 stand-alone nonprofits had the highest average EUI and are the most common.

Stand-alone nonprofits were the most common coalition type. Hybrid nonprofit coalitions (meaning nonprofits hosted within a larger nonprofit) had the highest average number of stakeholders aside from the single coalition hosted in a state government with 1,200 reported stakeholders. Coalitions in stand-alone nonprofits had the highest average funding levels aside from a single coalition reported as hybrid university. Coalitions hosted in a nonprofit reached the most people, driven by a coalition that reached more than 1 million people in media engagements. Without these efforts, hosted nonprofit coalitions still would have averaged reaching 34,830 people. Stand-alone nonprofit coalitions had the largest average EUI aside from the single hybrid university coalition.

Funding

In 2024, 37 coalitions reported receiving 165 new project awards (project-specific grants) worth a total of nearly $507 million. These coalitions also reported garnering $128 million in leveraged or matching funds for a combined total of $634 million in new grant and matching contributions. Fifty-five of the 165 awards were at or above $1 million. Table 9 presents a breakdown of the number and value of awards reported by the coalitions without the matching funds.

Table 9. Breakdown of 2024 Project Awards by Number and Value

Grant Range	Number of Grants	Share of Total Number	Total Value	Share of Grand Total Value
<$50,000	33	20%	$708,274	0.1%
$50,000–$99,999	14	8%	$949,681	0.2%
$100,000–$499,999	33	20%	$8,706,116	1.7%
$500,000–$999,999	30	18%	$21,630,905	4.3%
≥$1,000,000	55	33%	$474,550,202	94%
Total	**165**	**100%**	**$506,545,177**	**100%**

Data accurate as of April 2025; some grants may have been rescinded since then.

Of the nearly $507 million in primary grant dollars received, $25 million (5%) was reported as coming from DOE. Of those DOE funds, 84% was awarded to coalitions by TTO through competitive funding opportunities intended for high-impact projects. In addition to these reported grants, TTO supports CC&C coalition success through a variety of other mechanisms:

- The CC&C **coalition cooperative agreement** is the core mechanism for TTO to provide funding to DOE-designated CC&C coalitions. With this funding, coalitions lead various technical assistance and outreach efforts within their regions, participate in program meetings, and track and report critical performance metrics. CC&C coalitions are expected to engage in activities that support the goals and objectives of TTO and the CC&C partnership.
- TTO provides paid internships for students and early-career professionals through **CC&C Accelerate**,[10] a workforce development initiative. Interns support coalition projects and receive hands-on experience with alternative fuels and vehicles, public infrastructure, community outreach, and technology integration, positioning them for success in a variety of career paths. Accelerate provided 189 semester-long intern

[10] Clean Cities and Communities. n.d. "Internship Opportunities." Accessed Jan. 26, 2026. cleancities.energy.gov/internship-opportunities/.

placements (spring, summer, and fall semesters) at 56 CC&C coalitions in 2024, with an average of 54 interns per semester.

- **Jumpstart** funding is an additional source of competitive funding for CC&C coalitions intended to enable coalitions to build an innovative trial project, execute a high-risk project on a small scale, educate peers about how to replicate a project, and/or respond to emerging opportunities or challenges. Jumpstart projects must demonstrate novel, added value to the coalition, including stakeholders and the national network.
- **Energy to Communities** is a place-based technical assistance program that helps utilities, local governments, and local nonprofit organizations meet the energy goals of their choice. CC&C coalitions were funded to provide technical assistance to participants from their regions, building on the strength of the network and bringing a unique local lens and transportation expertise to the experience.

The second largest federal contributor was the U.S. Department of Transportation's Federal Highway Administration, which contributed $268 million or 53% of the total. The largest nongovernment funding source was from the Volkswagen Clean Air Act Civil Settlement, which represented $9.3 million in grant funding. State governments awarded 1.9% of the funding. Other federal contributors included the U.S. Department of Transportation's Congestion Mitigation and Air Quality Improvement Program, the EPA, the U.S. Department of Agriculture, and a grouping of other federal agencies.

In addition to new 2024 awards, coalition directors reported the portions of previous multiyear awards spent during the calendar year. If a coalition failed to report the amount spent during 2024, the total amount of the award divided by the number of years of award duration was assumed. Coalitions reported spending $131 million, or 26% of the funds they were awarded in 2024, suggesting that projects start quickly after being awarded.

In 2024, coalitions leveraged the $101 million TTO Technology Integration Program budget to expand the impact of CC&C by bringing in more than $615 million of non-DOE funding for coalition operations and projects. Coalitions brought in this funding through non-DOE grants ($481 million), project matching funds ($127 million), stakeholder dues ($1.4 million), and other operational funds ($4.9 million).

Coalitions brought in more than $6.09 of project funding for every $1 in the TTO Technology Integration budget.

About the Stakeholders

Relationships with stakeholders are the cornerstone of the CC&C partnership. In 2023, 74 coalitions reported a total of 18,455 stakeholders, for an average of 249 stakeholders per coalition—above the average of 216 stakeholders in 2023. 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; vehicle dealers (of light-, medium-, and heavy-duty vehicles); fuel suppliers; public utilities; nonprofits; and

Coalitions included more than 18,000 stakeholders in 2024, with 50% of them from the private sector.

professional associations. Coalitions continued to report a balance between public and private stakeholders, as 50% of stakeholders were from the private sector in 2024—compared to 47% in 2023.

Data Sources and Quality

Coalitions rely on voluntary reporting from numerous stakeholders, which can pose a challenge. NLR's reporting tool asks coalition how they obtained their data, so that fellow coalitions can learn from network expertise. Coalitions could choose one or more of the following: online questionnaires (e.g., SurveyMonkey), written questions (paper, electronic, or spreadsheet based) to stakeholders, phone interviews with stakeholders, coalition records (e.g., from project participation earlier in the year), or coalition estimates. Figure 21 displays the percentage of coalitions that rely on each method and implies that each coalition uses a mix of methods to collect project data across varied projects.

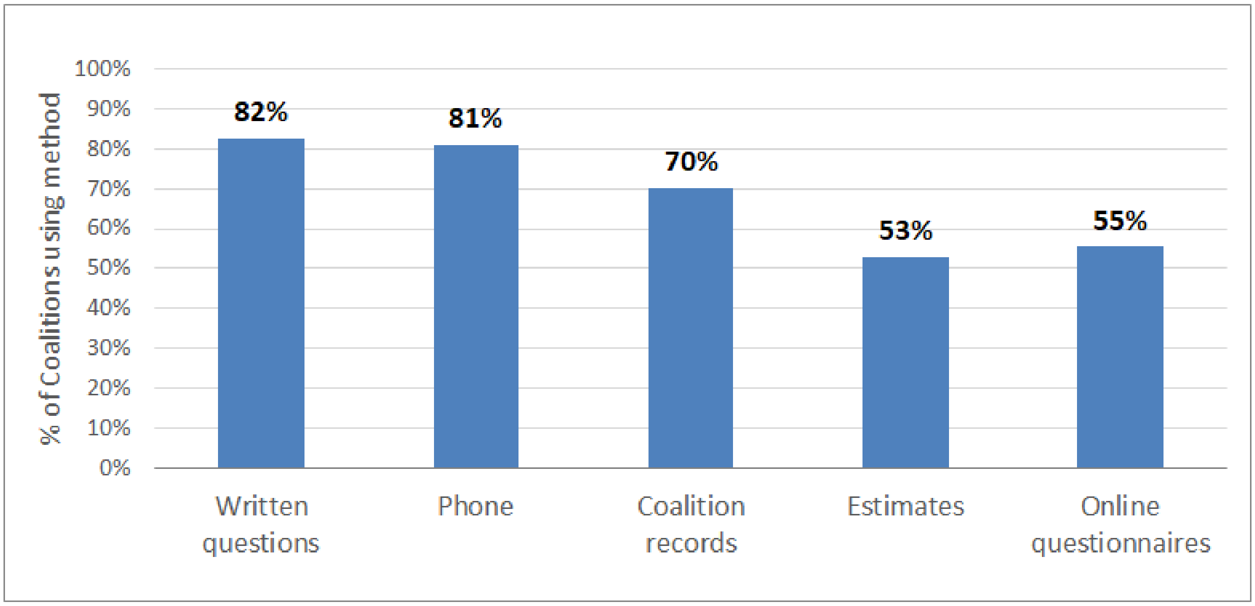

Figure 20. Project data sources

Conclusion

This report helps quantify the impact of the CC&C partnership and shows that CC&C coalitions had a year of many successful projects and activities. The data indicate that the EUI remained more than 1 billion GGE for projects reported by coalitions in 2024. Outreach, engagement, and training activities were estimated to reach more than 2.8 million person-engagements, which is a 28% increase from 2023.

Overall, CC&C coalitions maintained a high level of accomplishments. Coalition efforts continued to increase the number and variety of AFVs and advanced vehicles on U.S. roads in 2024. The combined efforts of local CC&C coalitions, DOE, and DOE national laboratories bring together otherwise disparate groups to leverage people, funding, and resources to accelerate the nation's progress in increasing affordable, reliable, and secure transportation energy choices.

Appendix A: Clean Cities and Communities Coalitions That Completed 2024 Annual Reports

State	Coalition
AL	Alabama Clean Fuels Coalition
AR	Arkansas Clean Cities
AZ	Valley of the Sun Clean Cities Coalition (Phoenix)
CA	Central Coast Clean Cities Coalition
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 and Communities
CA	Silicon Valley Clean Cities (San Jose)
CA	Southern California Clean Cities Coalition
CA	Western Riverside County Clean Cities Coalition
CO	Drive Clean Colorado
CT	Capitol Clean Cities of Connecticut
CT	Clean Transportation Coalition – Western Connecticut
CT	Clean Transportation Communities of Southern CT
DC, **VA**	Greater Washington Region Clean Cities Coalition
DE	Delaware Clean Cities Coalition
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
ID	Treasure Valley Clean Cities
ID, **MT**, **WY**	Yellowstone-Teton Clean Cities
IL	Illinois Alliance for Clean Transportation
IN	Drive Clean Indiana
KS, **MO**	Kansas City Regional Clean Cities Coalition
LA	Louisiana Clean Fuels
LA	Southeast Louisiana Clean Fuel Partnership
MA	Massachusetts Clean Cities
MD	Maryland Clean Cities and Communities Coalition
ME	Maine Clean Communities

State	Coalition
MI	Michigan Clean Cities
MN	Minnesota Clean Cities Coalition
MO	Eastern Missouri Alliance for Clean Transportation
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)
NV	Southern Nevada Clean Cities Coalition
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	Greater Long Island Clean Cities
NY	Greater Rochester Clean Cities
OH	Clean Fuels Ohio
OK	Central Oklahoma Clean Cities Coalition (Oklahoma City)
OK	Tulsa Area Clean Cities
OR, **WA**	Columbia-Willamette Clean Cities
PA	Eastern Pennsylvania Alliance for Clean Transportation
PA	Pittsburgh Region Clean Cities
RI	Ocean State Clean Cities
SC	Palmetto Clean Fuels Coalition
TN	East Tennessee Clean Fuels
TN	Middle-West Tennessee Clean Fuels
TX	Alamo Area Clean Cities (San Antonio)
TX	Central Texas Clean Cities
TX	Dallas-Fort Worth Clean Cities
TX	Houston-Galveston Clean Cities Coalition
UT	Utah Clean Cities
VA	Virginia Clean Cities
VT	Vermont Clean Cities
WA	Western Washington Clean Cities and Communities
WI	Wisconsin Clean Cities
WV	West Virginia Clean Cities Coalition

Appendix B: Definition of CC&C Coalition Types

Coalitions have categorized themselves into different types, depending on their organizational structures and relationships to hosts.[11] Some coalitions fit within multiple types. These types are:

- **Stand-alone nonprofit:** Nonprofits typically with 501(c)(3) status that operate with no or minimal oversight and management of a host organization.
- **Hosted in a nonprofit:** Hosted within a larger nonprofit or community service organization with 501(c)(3) status. The host organization's activities are broader in scope than the CC&C coalition, such as the American Lung Association.
- **Hosted in a state government agency:** 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.
- **Hosted in a city or county government agency:** Hosted by a city or county government such as a city department of transportation or municipally owned utility.
- **Hosted in a planning organization:** Hosted by a planning organization that may span multiple governments or government agencies for regional planning and coordination efforts.
- **Hosted in a university:** Hosted by a public or private university.
- **Hybrid:** Both legal nonprofits with a governing board and hosted by another organization, as described in the other coalition types.

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

Appendix C: Methodology of the Geospatial Analysis of Alternative Fuel Use

In 2024 we have expanded the geospatial analysis to assess where CNG, E85, biodiesel, propane, EVs, and fuel economy technologies have been deployed through coalition activities across the United States. To do this, we used updated location data that had been reported in previous years but used for different analyses. Coalitions provided information about the operational area of vehicles that were part of their alternative fuel and fuel efficiency projects. These operational areas were grouped into five categories:

- Cities: Project operated mainly within a set of cities or towns.
- Counties: Mainly within a set of counties.
- Coalition boundaries: Mainly within a coalition's boundaries.
- Statewide: A range of locations across one or more states.
- Unknown.

Out of a total of 7,830 projects submitted in 2024, 7,111 (91%) were submitted with an operation area assigned by coalition respondents, another 418 had "unknown" locations, and the remaining projects had no operation area assigned. This compares to a rate of 93% in the 2023 data. Respondents could list multiple cities, counties, and states if applicable. For some other projects, an operation area was assigned based on the project name. This was only done in cases where the operation area was clear, such as a specific city, county, or transit agency. Out of the 7,111 projects submitted with operating areas, 683 were manually updated during the data review process to be more specific, which included projects with "unknown" operation area types. Because of this, the number of projects ultimately used in the analysis is close to the number submitted with an operation area type.

For projects that were listed as covering an entire coalition's boundaries, geographical areas that were very large were excluded because the methodology distributes the impact of projects evenly across the reported operational area. The larger the area of operation, the more uncertainty is introduced into the analysis. Therefore, the analysis of the 2024 data for projects operating across a coalition area was limited to coalitions whose areas (including states) are smaller than the coalition area of Valley of the Sun in Phoenix, Arizona. Valley of the Sun is the Clean Cities coalition with the largest area that is not an entire state, covering 53,986 square miles. Projects within coalition boundaries that were reported by coalitions with an area smaller than that of Valley of the Sun were retained for this analysis, as were all coalitions with sub-state areas, including Valley of the Sun. Additionally, all projects with operations areas of a specific, city, county, or state were also retained.

Projects that operated in multiple cities, counties, or states (a total of 380 projects) were also excluded because of the additional resources that would be required to clean the data and conduct additional geospatial analyses for this relatively small proportion of projects (4.9% of total submitted).

Therefore 7,015 projects were used in the full analysis (89.6% of the total reported). This compares to 72% of the total projects in the 2021 report, 81.9% in 2022, and 82.3% in 2023 that were included in the full analysis, attributable to improved reporting processes and the higher threshold for exclusion of large-area projects.

In order to estimate the geographic distribution of the impacts of coalition projects, we developed a new Python-based methodology for impact per square mile. To do this, two types of input were prepared:

1. Coalition projects via CSV format.
2. Shapefiles for each operation area type. These included an internal shapefile of 2024 coalition boundaries and U.S. Census Bureau shapefiles for states, counties, and places (includes communities with populations greater than 1,000 people).

For the 2024 analysis, only projects involving CNG, ethanol (E85), biodiesel, and EVs (full battery-electric and plug-in hybrids) were included in the mapping.

Using Python, shapefiles were projected to EPSG 6933 and converted to geopackage format. A fuzzy matching process was used to match reported operation areas for coalition projects (name of city, county, state, or coalition area) with the names in the coalition shapefile. A fuzzy matching threshold of 90% was used for coalition names there was variability in the phrasing (e.g., San Joaquin Valley Clean Cities Coalition vs. San Joaquin Valley Coalition), while 100% was used for cities, counties, and states. The matching process for counties and cities used two matching keys: both the name of the county/city and the name of the state, since so many place names are shared across states.

After additional data cleaning (e.g., fixing typos in county names) and ensuring the coalition fuzzy matching threshold only produced accurate matches, the final count of projects matched to a location in the original shapefiles was 6,576, or 93.7% of the 7,015 projects with a location.

After merging the four geodatabase files (city, county, state, coalition) and matching them with the coalition metrics, those coalition impact metrics (e.g., GGE reduced) were divided by the total area (in square miles) of the project area to get impact per square mile.

The merged data were then converted to a national grid with cell sizes of 10 miles by 10 miles. This resolution is fine enough to capture city-level projects while also being computationally possible with existing computing resources. The matching was done through proportional intersection, so for example if a project area polygon was split evenly between two grid cells, then half of the GGEs per square mile would be assigned to each cell. The coalition impact metric of interest, GGE reduced per square mile, was then divided by 25 to account for the 5x5 mile cell size of the national grid. This ensured that the impact of each coalition project in the dataset was equally distributed across the operation area. Throughout the analysis, the fuel type and project type data categories were retained to allow for future analysis and mapping of the results by additional project type and/or fuel type.

In QGIS, the GGE reduced per square mile data was mapped by fuel type, excluding vehicle registrations. Vehicle registration projects were excluded, even though they include EVs, because their magnitude would otherwise strongly influence the visualizations. Note that when binning the data for map visualizations, the equal counts method was used for five bins, meaning each color on the map represents a quintile of the data (0%–20% of values, 20%–40% of values, etc.). Maps were generated for four fuel types: biodiesel, CNG, biodiesel, ethanol, and electric. The electric category includes full battery electric vehicles, plug-in hybrids, and EV mix (battery EVs and plug-in hybrids). The hybrid (traditional) vehicle type was not included.

It is important to keep in mind that the map visualizations do not capture projects that were filtered out for reasons discussed above, such as through the data cleaning process either because the location information was not provided or the location provided did not match the shapefile data. They also do not include impact from projects of other types (e.g., idle reduction) or other fuels (e.g., hydrogen, LNG, etc.). Another important consideration is that national maps of data that is primarily local—a majority of projects are reported at the city and county level—but includes state-level data (715 projects out of 7,015) will produce a natural visual bias toward the state-level data because that is what is most visible.

Fuel-specific maps showing a compilation of all geographical reporting levels are shown in the main report, Figures X-Y. A compilation of all six fuels/technologies is shown in Figure 20.

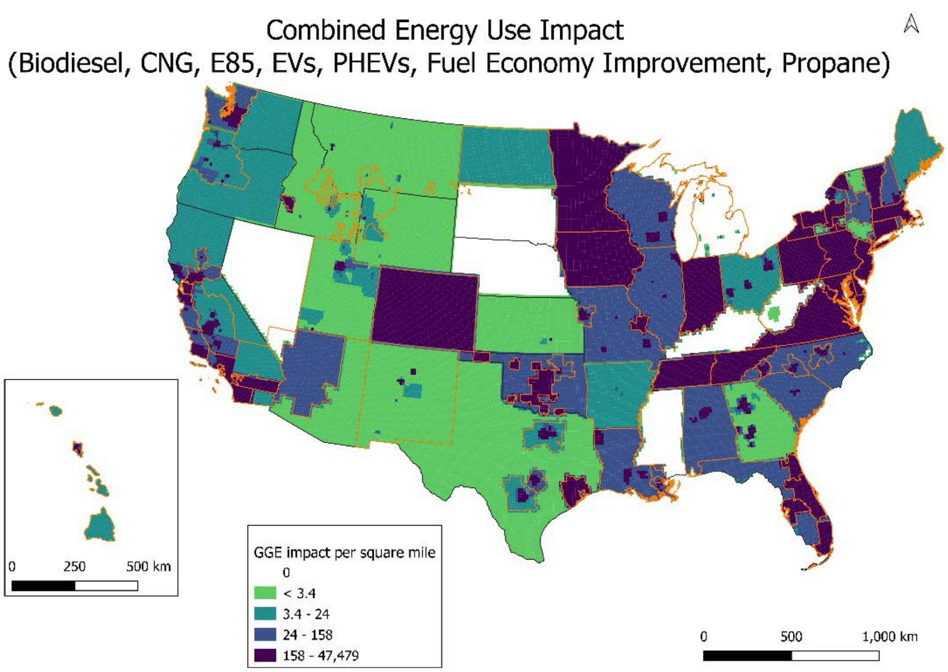

Figure 21. GGE impact per square mile in 2024 by coalition projects involving biodiesel, CNG, ethanol (E85), EVs, plug-in hybrids, fuel economy projects, and propane.

Note: Map uses the combination of all reporting geographies (coalition boundaries, city, county, state). Data provided by coalitions included estimated operational area of the vehicles. Cell size is 10 miles, creating an edge effect along state borders.

NLR also aggregated GGEs per square mile to the four operation area types and mapped three of them nationally (Figures 21–23). City-level data were not mapped as they do not show up at the national scale.

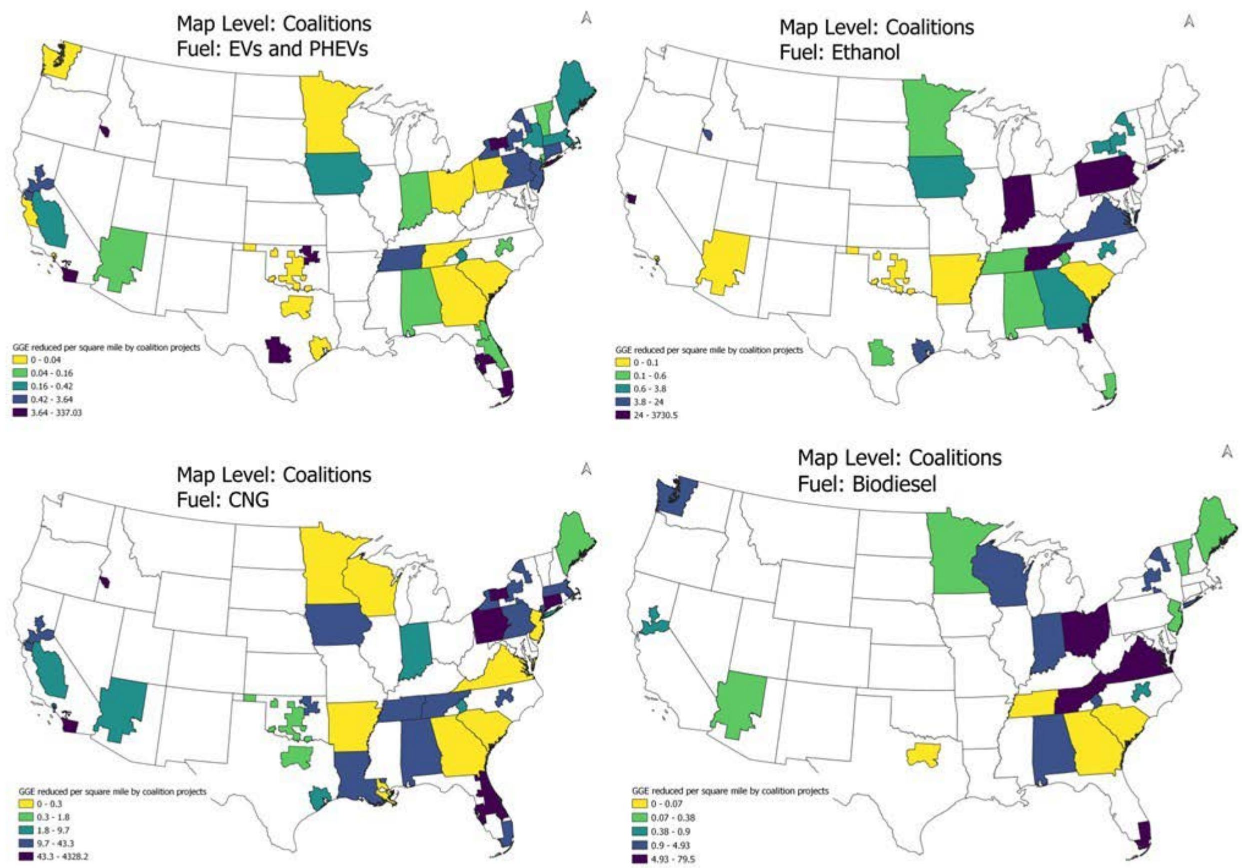

Figure 22. Coalition-level maps of GGEs per square mile reduced from coalition projects, by fuel type.

Note: Projects shown here had reported operation areas within a coalition's boundaries.

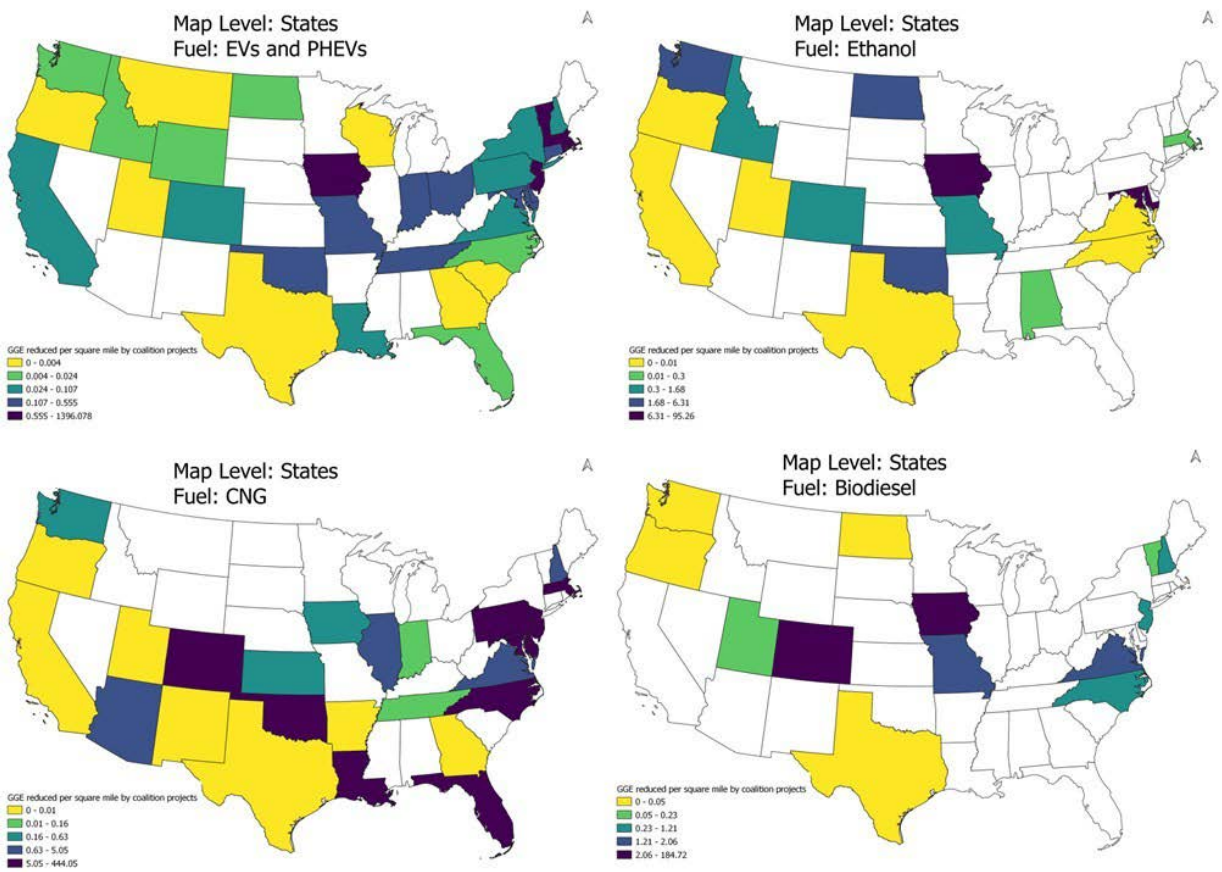

Figure 23. State-level maps of GGEs per square mile reduced from coalition projects, by fuel type.

Note: Projects shown here had reported operation areas within a state's boundaries

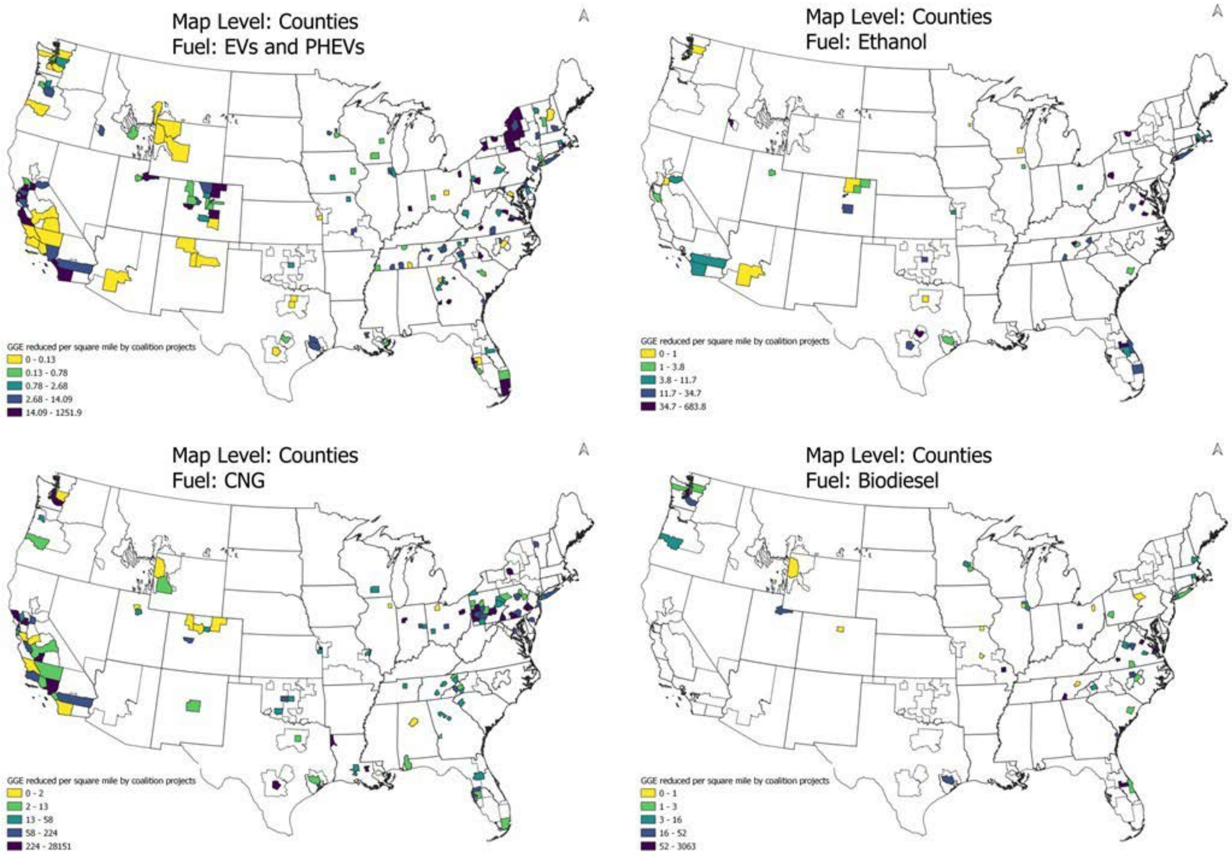

Figure 24. County-level maps of GGEs per square mile reduced from coalition projects, by fuel type.

Note: Projects shown here had reported operation areas within a specific county's boundaries.

Future geospatial analysis can further investigate these data, including geography-based statistical analysis by coalition, state, county, and/or city. For future years, the analysis pipeline is now established to generate the per-square-mile metrics and maps, noting that data cleaning before analysis will still be required.

Appendix D: Methodology of the Renewable Natural Gas Assumptions

To calculate the total U.S. natural gas and RNG consumption, we used the U.S. Energy Information Agency's data and EPA's RIN data, respectively. Because EPA's Renewable Fuel Standard specifies that all the renewable fuels are to be used solely by domestic transportation, and miniscule amounts are used by rail and shipping, we attributed the total RNG calculated from RINs toward vehicle fuel. Using Equation 1, we identified that approximately 93% of the U.S. natural gas consumption in the transportation sector is a mixture of RNG from various sources (landfill, animal waste, and wastewater):

$$RNG\_Mix = \frac{Total\ US\ RNG\ (from\ RINs)}{Total\ US\ NG\ (from\ EIA)}$$

Equation 1. Identifying RNG portion of U.S. natural gas consumption

For a more granular geographical attribution, the authors then utilized fuel consumption reports from California's Low Carbon Fuel Standard to identify RNG mixture in California and non-California 49 states to be about 99% and 90%, respectively. Equation 2 explains how we calculated the non-California 49 states RNG mix:

$$RNG\_Mix\ Non\ CA\ 49\ States = \frac{Total\ US\ RNG\ (RINs) - Total\ CA\ RNG (from\ LCFS)}{Total\ US\ NG (from\ EIA) - Total\ CA\ NG\ (from\ LCFS)}$$

Equation 2. Calculating non-California RNG mix

Additionally, before using this updated RNG mix to calculate the updated emissions factor, we accounted for the CC&C coalition-reported RNG consumption to avoid double counting of the credits. We subtracted the CC&C-reported RNG numbers for California and non-California 49 states from the respective RNG numbers and recalculated the RNG mix for the two geographical sectors using Equation 3:

$$Final\ RNG\_Mix\ California = \frac{RNG\ (from\ LCFS) - RNG_{CA} (from\ CC\&C)}{Total\ CA\ NG\ (from\ LCFS)}$$

Equation 3. Calculating California RNG mix

All equations above were also done based on the source-specific RNG, which have different emissions factors in GREET (as shown in Table 7). Note that the life cycle emissions factors are significantly lower for RNG coming from animal sources, followed by landfill, wastewater, and highest for fossil fuels. In fact, life cycle emissions from animals are negative because the reduction in methane outweighs the emissions from capturing, transporting, and combusting the RNG. Along with a further reduction in emissions factor for animal waste source, this year, we note that GREET changed the emissions factor for landfill from −11.89 in 2023 to 2.92 in 2024 under the assumption that the gas processing facilities are powered by grid electricity instead of on-site landfill gas.

The updated natural gas mix shown in Table 7 warranted updated, and significantly reduced, weighted emissions factors for both U.S. and California vehicles.

Appendix E: Glossary

Term	Definition
Clean Cities and Communities (CC&C) partnership	Umbrella term; includes DOE and national network of coalitions.
coalition	A group of stakeholders, led by an entity that manages coalition operations, committed to working collaboratively to advance the CC&C mission. The lead entity may be a stand-alone nonprofit, host organization (e.g., government agency, university, planning organization, nonprofit), or hybrid organizational structure.
coalition director	The coalition's main point of contact for DOE and coalition stakeholders. As the main points of contact, coalition directors are actively involved in the day-to-day work or management of a coalition. While DOE uses the term "coalition director" to refer to these individuals, coalitions and host organizations may use other titles.
coalition staff	Coalition director, co-director, and other staff of the DOE-designated organization working on coalition activities.
coalition stakeholder	Individuals or organizations that participate in coalition activities, guide strategic planning, take action to advance the CC&C mission, and contribute resources to the coalition (e.g., financial, staff time, event space).
national network of coalitions	Group of DOE-designated coalitions; does not include DOE or represent the entirety of the CC&C partnership.
partnership	Shorthand referring to the CC&C partnership, which includes DOE and coalitions.
Technology Integration Program team	Includes program staff, regional managers, lab staff supporting the program, and contractors.