Volkswagen Environmental Mitigation Trust

Recommendations for the State of Kansas

Contents

BY THE CLEAN CITIES COALITIONS OF KANSAS CITY REGION AND CENTRAL KANSAS

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Overview of VW Settlement

The U.S. EPA filed a complaint against Volkswagen, AG alleging that the defendants violated the Clean Air Act with regard to approximately 580,000 model year 2009 to 2016 motor vehicles containing 2.0- and 3.0-liter diesel engines. EPA's complaint alleges that each vehicle contains computer algorithms that cause the emissions control system of those vehicles to perform differently during normal vehicle operation and use than during emission testing, and that during normal operation and use the vehicles emit levels of nitrogen oxides (NOx) significantly in excess of EPA's compliance levels.

Volkswagen agreed to spend $14.7 billion to settle these allegations (the Settlement). $10 billion of Settlement funds will be used to buy back and/or modify vehicles through dealerships; $2 billion will support national projects to increase Zero Emission Vehicle Infrastructure and reduce NOx emissions (VW's ZEV Investment); and $2.7 billion for state projects.

The $2.7 billion will be placed in an Environmental Mitigation Trust (the Trust), and will be allocated to beneficiaries (states, tribes, and certain territories) based on the number of impacted VW vehicles in their jurisdictions. The Trust will support projects that reduce NOx emissions where the VW vehicles were, are, or will be operated.

According to the Settlement, for 2009 to 2016 vehicles using 2.0-liter diesel engines registered in the state, Kansas is slated to receive an allocation of $14,791,372 from the Trust. After being designated as a beneficiary, states must submit a high-level Beneficiary Mitigation Plan that summarizes how the funds will be spent in the state.

Kansas City Regional and Central Kansas Clean Cities Coalitions (the Coalitions) respectfully submit this white paper and recommendations in support of this planning effort.

Considerations for Use of Funds

We offer the following considerations for creating a program plan to fund projects with Trust dollars:

- Long-Term Economic Impacts
- Alternative Fuel Planning
- Areas of Concentrated Diesel Exhaust
- Upgrade Public Fleets
- Include Private Fleet Operators
- Improve Transportation Systems
- Leverage Planned State and Local Program Investments

Long-Term Economic Impacts

Transportation and Manufacturing Sector Opportunities

Kansas straddles two of America's most important interstate highways, and its central location makes it a strategic site for freight operations. Of America's 30 largest truck transportation companies in 2015, five were headquartered in Kansas.[1] More than 50,000 Kansans, or 3.6% of the state's total workforce, were employed directly in transportation

[1] http://www.joc.com/joc-top-50-trucking_20150416.html

and warehousing.[2] The Kansas Department of Commerce estimates that total direct and indirect jobs created and sustained through the state's surface transportation investments at 175,000 for the ten-year period through 2020.[3]

Kansas-based trucking and transportation companies include YRC, the 4th-largest company in the nation; along with Old Dominion (10th largest) based in Edwardsville; and in the top 30 are Estes Express (12th in Kansas City, KS), Knight Transportation (22nd also in KCK), and Alliance Shippers (30th in Mission).

Alternative Fuel Planning

The Trust offers an unprecedented opportunity to incorporate American alternative fuels[4] into Kansas' public and private fleets through comprehensive planning and strategic expenditures. A preliminary test of a survey, described later in this paper, shows a substantial interest in using the Trust to invest in alternative fuel vehicle purchases. Through a series of planned stakeholder forums, the Coalitions will use the survey and on-site dialogues to enhance our knowledge of current use of alternative fuels by state fleets and assess the appetite for increased use by existing and new alternative fuel users.

This opportunity complements a national priority for alternative fuel corridors. Section 1413 of the Fixing America's Surface Transportation Act (FAST Act) calls on the U.S. Department of Transportation (USDOT) to designate zero-emission and alternative fuel corridors to ensure our nation's transportation system meets the modern and future needs of fleets and drivers. Missouri, Oklahoma, Colorado and Nebraska have all designated Alternative Fuel Vehicle Highway Corridors.[5] Kansas has an opportunity to link up with the designated alternative fuel corridors in neighboring states, particularly along I-70 and I-35, to expand jobs, fueling infrastructure and transportation options along these routes.

The state can use the Trust to directly invest only in electric or hydrogen corridors and supplement the 6 DC Fast Charging (not including Tesla-only) stations concentrated around Kansas City and one in McPherson. However, the Trust can be leveraged to increase use of existing, and create a market for new, CNG and propane stations. There are already 12 public natural gas stations around the state, serving truck markets in southwest Kansas and along I-35 and I-70, as well as many propane stations available on its highways and in metro areas that can easily be upgraded to encourage more use of propane as a transportation fuel. The following strategies will strengthen the marketplace for American-produced alternative fuels, and raise our nation's energy security while reducing air pollution:

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[2] http://data.bls.gov/pdq/querytool.jsp?survey=sm

[3] http://www.kansascommerce.com/index.aspx?NID=469

[4] The Energy Policy Act of 1992 defines an alternative fuel as: Biodiesel (B100); Natural gas and liquid fuels domestically produced from natural gas; Propane (liquefied petroleum gas); Electricity; Hydrogen; Blends of 85% or more of methanol, denatured ethanol, and other alcohols with gasoline or other fuels; Methanol, denatured ethanol, and other alcohols; Coal-derived, domestically produced liquid fuels; Fuels (other than alcohol) derived from biological materials; P-Series fuels

[5] www.whitehouse.gov/the-press-office/2016/11/03/obama-administration-announces-new-actions-accelerate deployment

- Judicious distribution of vehicle replacement funds around areas with established stations will start new and enhance existing alternative fuel fleets.
- With deliberate planning involving station installers and fleet operators, encourage third-party investment in new CNG and propane stations along heavily traveled corridors. Such third-party investments will increase the number of locations across the state where fleets can use American alternative fuels.

Areas of Concentrated Diesel Exhaust

Expressed in terms of Cancer Risk per million people, the USEPA's National Air Toxics Assessment tool shows air toxins in counties in the State of Kansas. Cancer risk specific to on-road diesel emissions for several Kansas communities are as follows, sorted from lowest to highest:

	On-road Heavy Duty Diesel emissions:	**On-road Light Duty Diesel emissions:**	**Total On-road Diesel emissions:**	**% of Heavy Diesel Exhaust**
Hays/Ellis Co	0.89	0.04	0.93	95.70%
Salina/Saline Co	0.88	0.18	1.06	83.02%
Johnson County	0.97	0.28	1.25	77.60%
Wichita/Sedgwick Co.	1.05	0.46	1.51	69.54%
Shawnee Co./Topeka	1.17	0.46	1.63	71.78%
Wyandotte Co	2.16	0.46	2.62	82.44%

Highway Corridors

Predictably, less densely populated communities further west in the state have lower overall emissions; however, along major highway corridors, heavy duty diesel engines used in long-haul trucking make up a higher percentage of total diesel emissions. The neighborhoods and business districts adjacent to major highway corridors are disproportionately impacted by diesel emissions, since vehicles drive through the community. Reducing diesel emissions in these communities will have a disproportionate impact on the population's health and air quality. This can be accomplished by the following strategies:

- Building out the fueling infrastructure to allow long-haul trucking to make the switch to alternate fuels
- Replacing older local diesel vehicles, including municipal and utility vehicles, delivery vehicles, public transit and school buses. While these vehicles may not be the worst emission sources, their frequent and prolonged presence in communities can result in more concentrated exposures to diesel emissions over time.
- Replacing diesel vehicles with American-fueled vehicles, i.e. natural gas, propane or electric vehicles. Many communities either have alternative fuel refueling available or can attract an alternative fuel retailer with a concentration of customers.

Since aging diesels cannot all be individually improved, another excellent solution is to reduce overall emissions from diesels along major highway corridors by increasing the use of biodiesel through incentives or mandates requiring higher biodiesel blends be sold at

diesel retail locations. Six U.S. states require a year-round minimum 5% biodiesel blend[6] with diesel sold within their states and offer several different models for state regulation. Biodiesel is primarily manufactured from soybean oil, and increasing its use would also undoubtedly have a positive impact on Kansas' agricultural economy.

Kansas' natural gas suppliers have been investing steadily in expanding the number of natural gas vehicles in the state and building out the CNG fueling infrastructure to support them. Funds from the Trust cannot be directly used to fund CNG fueling infrastructure; however, the funds can be used to replace diesel vehicles with natural gas vehicles. The State has experienced and enthusiastic partners in growing the number of natural gas vehicles in Kansas and should coordinate planning regarding the allocation of Trust dollars with the gas utilities to leverage and focus resources.

Freight Handling Clusters

Another area of concentrated impact from diesel emission are freight handling facilities, such as ports, airports, rail yards, and intermodal facilities. With a constant flow of high-emitting truck, barge, or rail traffic, as well as numerous smaller diesel vehicles loading or unloading freight, these facilities represent major opportunities for targeted reductions in diesel emissions.

We recommend investments that represent systemic upgrades at these locations, such as investments to electrify freight handling equipment at a facility. The Burlington Northern railyard in Kansas City, KS and the new intermodal facility in Edgerton, KS are two locations in which the electrification of freight handling could have a dramatic impact. In addition, electrification of yard trucks will not only decrease emissions but may have a direct impact on economic development in the state, since one of only 2 market-ready solutions nationwide is headquartered and manufacturing vehicles across the Missouri River in Riverside, MO,[7] and has a business partnership with Kalmar in Ottawa, KS.

Improve Transportation Systems

Maximize Investment in Transportation Electrification

States may use up to 15% of Trust funds on electric vehicle charging and hydrogen fuel stations. The electrification of I-70 is a major component of the Missouri Department of Transportation's Road2Tomorrow initiative (R2T), as well as Colorado's similar RoadX project. Kansas has an opportunity to build on these initiatives by extending I-70 electrification to Salina or even to the Colorado border. Additional DC Fast Charging is also necessary in metropolitan areas to support electrified high-utilization fleets such as taxis, livery, Transportation Network Companies (e.g. UBER, Lyft), and delivery vehicles.

We encourage the State to maximize this unprecedented opportunity to invest in a state-wide network of charging stations, especially along key transportation routes such as I-70, I-35 and I-135. An electrified transportation system will greatly reduce diesel emissions, as well as greenhouse gases and other pollutants, invest in domestic fuel industries, and reduce vehicle operating and fueling costs. Electrifying travel routes in Kansas can expand

[6] Found by performing a search of Alternative Fuels Data Center's Federal and State Laws and Incentives tool, using the parameters "All" (deselect "federal"), "biodiesel", and "renewable fuel standard or mandate". http://www.afdc.energy.gov/laws/

[7] Orange EV Pure Electric Terminal Truck Solution: https://orangeev.com/

access through much of the State's most urbanized communities and would accelerate the EV market, which will be powered increasingly by Kansas-produced wind power.

EV drivers do not expect a free ride, and simultaneous implementation of smart policies will ensure the state does not lose income for transportation infrastructure maintenance due to electrification. A coalition of neighboring states is planning coordinated electrification of the I-70 corridor and will be sharing best practices for policy development, among other key concepts.

VW is also required to spend an additional $2 billion nationwide on Zero Emission Vehicle Infrastructure under the ZEV Investment section of the Settlement. It is recommended that any work we do with the I-70 Corridor Coalition be offered to influence its plans, so that we can leverage VW's ZEV Investment to the maximum extent (if allowed) before expending funds from the Trust.

Upgrade Public Fleets

The structure of the Trust is clearly intended to favor the upgrade or replacement of public fleets. The Trust will pay up to 100% of the costs to purchase or repower government-owned Class 8 Large Trucks or Class 4-8 busses (including school busses) as compared to 25% - 75% of privately owned vehicles, depending upon vehicle types.

The State of Kansas should use this opportunity to upgrade government fleets in Kansas, but with a local match requirement to maximize impact and strategically in areas of greater need, whether financial or emission-related.

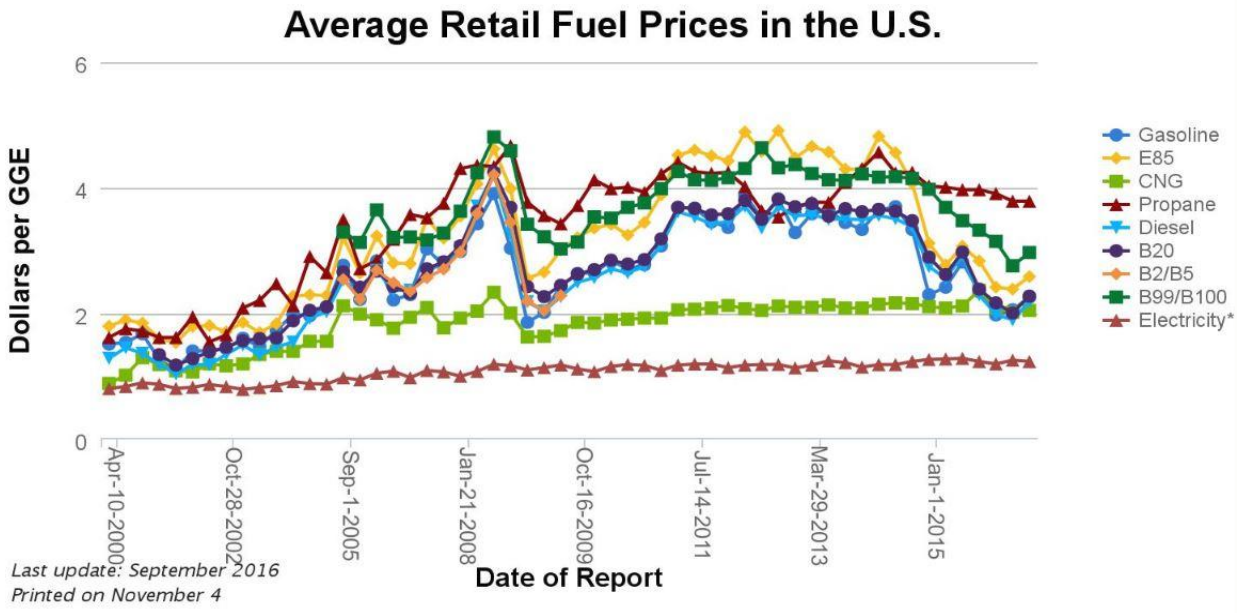
Diversify Fuels Used

Rather than simply purchasing new diesel vehicles to replace aging ones, Kansas has an opportunity to diversify fuel types to include electric, natural gas, biofuels, and propane vehicles where it makes sense to do so. Alternative fuel vehicles reduce or remove diesel emissions and also stabilize fueling costs in times of volatile fuel prices. Figure 1 (see next page) shows that electricity and natural gas, in particular, have a relatively low and very stable price compared to other fuel options.

Integrate with Fleet Planning

Many government fleets are unable to purchase all of their planned replacements in a year due to unforeseen losses during operations, causing interruptions and delays. These add up over time, and often fleets are years behind their purchasing schedule, operating aging equipment well beyond its typical planned lifetime. Additionally, funding a portion of the planned vehicle replacements through Trust funds reduces pressure on general fund sources for state and local governments, allowing some fleets to get up-to-date on vehicle replacement and other fleets to improve services to government departments and the general public. However, fleet operators should take time to plan vehicle replacement schedules, as well as for the fueling, maintenance and service support necessary to optimize use of the vehicle. Planning ensures a better, more lasting impact. Compared to quick, one-off purchases that are forced in some funding opportunities, the duration of the Trust program allows the state to step back and plan accelerated vehicle replacement schedules for state and local government fleets.

Even given a planning period, most fleets will be ready to replace or upgrade some diesel vehicles almost immediately. A recent survey of a small sample[8] of school bus fleets across the U.S. showed that in fleets ranging from 30 to 400 buses, 90% are ready to start purchasing within 1 year.



Notes: Fuel volumes are measured in gasoline-gallon equivalents (GGEs).
*Electric prices are reduced by a factor of 3.4 because electric motors are 3.4 times more efficient than internal combustion engines.

Figure 1: Average retail fuel prices in the U.S. Does not include pricing for public agency or private companies using a fuel contract. Clean Cities Alternative Fuel Price Reports (http://www.afdc.energy.gov/fuels/prices.html). Data from September 2016

Include Private Fleet Operators

Given Kansas' emphasis on bringing new business to the state, it is clear that private businesses are an important priority. We recommend allocating a percentage of Trust funds to private fleet operators and using strategic considerations and requirements to ensure the best outcomes. For instance, consider location relative to population centers and volume of fuel used by its diesel equipment, and require that the vehicles operate within Kansas for a minimum of five years and be fueled by American alternative fuels.

Leverage Planned State and Local Investments

In addition to consideration of the economic factors discussed above, we recommend leveraging the following program investments:

[8] At the National Association of Pupil Transportation conference, November 7, 2016, about 30 districts attended a session on alternative fuels; 8 responded to the survey. It is not scientific but representative. None of the respondents are Kansas districts.

Kansas Clean Diesel Program

Utilizing national Diesel Emission Reduction Act (DERA) grants, the Kansas Department of Health and Environment has run several successful school bus retrofit or replacement programs. These programs target emission reductions in a manner that has direct and measurable impacts on the exposure of children and families to diesel emissions. We recognize the successes of these programs and encourage the State to build on them. The scale and duration of the Trust funding allow an expansion of these programs to reduce diesel emissions from school buses in a more comprehensive manner across the State.

However, simply expanding the DERA program in the state may impose some limits that may not contribute to the best possible outcomes. For instance, EPA's rules require a one to one replacement, where the replacement vehicle is the same or less horsepower as the original and does the same or similar job. If the Mitigation Trust funds were used only with that approach, an agency might not pursue vehicle replacement strategies that right-size the fleet, such as replacing two or more smaller vehicles with one larger vehicle to do the job of both other vehicles.

In addition, we suggest that the State balance short-term results with longer term investment in our transportation future. Diesel engine idle reduction technologies allow for a quick impact on diesel emissions and spread funding impact more broadly, but focusing on this strategy does little to address aging fleets, fuel diversity or the introduction of new transportation systems, all of which can more greatly reduce emissions for the long-term. Funding decisions should balance short and long-term goals, and the Kansas Clean Diesel Program should be leveraged where it best fits such a strategic approach.

Public Transit

The KC Area Transportation Authority, Wichita Transit and other public transit agencies in the State are working to upgrade their bus fleets, diversify their use of fuels and enhance ridership. Reducing diesel emissions from public transit has direct implications for public health, particularly in urban neighborhoods with the most concentrated diesel emissions. Additionally, enhancing ridership of public transit takes private vehicles off the road, reducing diesel and gasoline emissions particularly in urban communities. Investment in upgrades to public transit buses and vans would be well placed.

Program Management

Local planning and local match

While government vehicles may be replaced or repowered with Trust funds at 100% of cost, we encourage the State of Kansas to establish some level of local match to receive funds for projects under its program plan. Requiring local matching funds not only stretches the funds and increases the impact on emissions, but also ensures local buy-in, which is very important. Our experience is that if people—even our local government agencies—receive something for free it is valued less. If local funding is involved in the purchase or retrofit of vehicles, the funds provided through the Trust are more likely to be used optimally. As a consequence, gains made through the investment are more likely to be sustained over the longer term.

Similarly, we encourage the State to require that entities receiving funds should present planning documents (such as fleet studies and replacement schedules, capital improvement

plans, urban or regional planning documents) to demonstrate that the funds can be used as part of a larger improvement strategy.

The above-mentioned school district survey also indicated that 75% of respondents will need only partial funding, while fewer than 25% will need full or nearly full funding support. In addition, 75% would like to have alternative fuel fleet planning assistance.

Set Limits

Maximum numbers of vehicle replacements should be set for both public and private entities. This ensures that many different entities can benefit from the funds, and also mitigates any supply chain issues that could otherwise delay purchases and deployment. Our experience with a major alternative fuel project funded by the Recovery Act taught us that it takes time for the supply chain to catch up with demand, when demand suddenly skyrockets. Plan for raising the limits in case funds are not expended as quickly as anticipated, or as orders are fulfilled in a timely fashion.

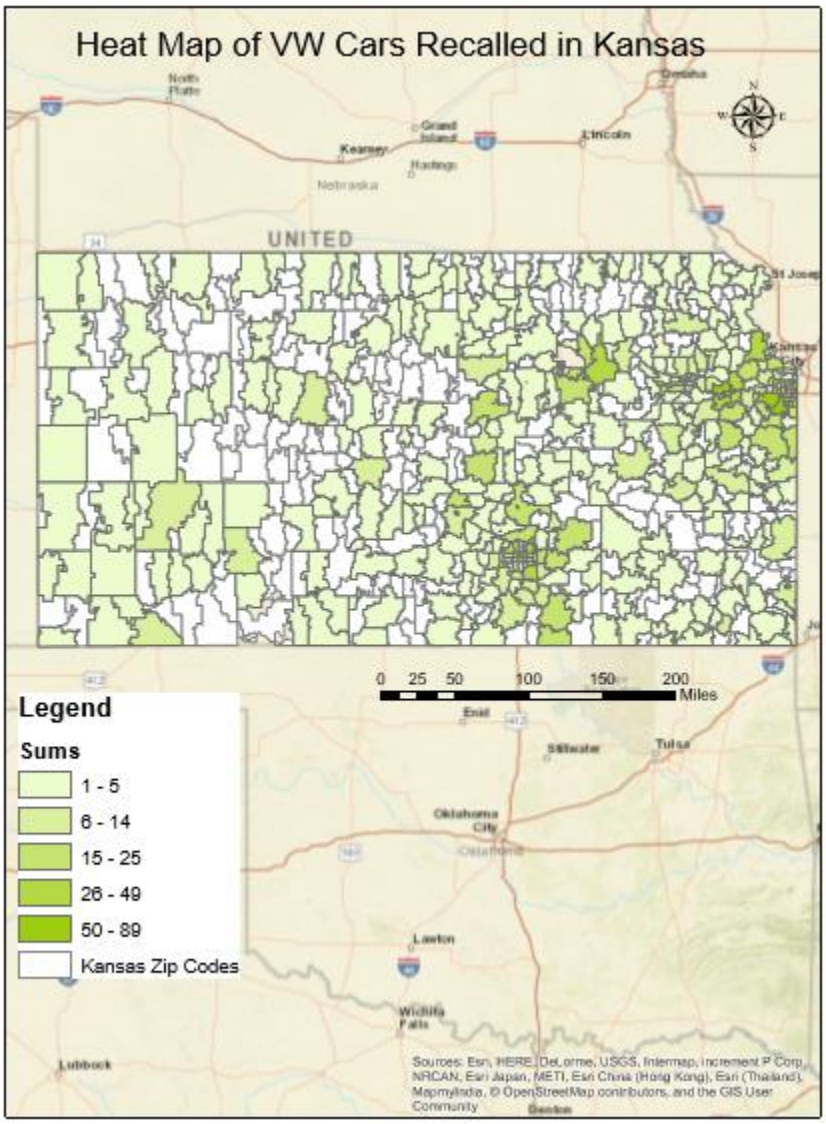


Figure 2: Shows the relative concentration of affected diesel-powered 2.0 liter VW cars in Kansas, based on IHS Polk data.

Set minimum monthly mileage (or operating hours) for vehicles to be replaced, based on averages for each duty cycle. It would not be beneficial, for instance, to replace a vehicle that is near the end of its useful life and is not in regular service; nor one that is operated only for special purposes and doesn't use much fuel in a year.

Set a minimum number of years (we like 5) for the new vehicle to operate in Kansas.

Distribution of Funds

Kansas City Regional and Central Kansas Clean Cities have the latest list of the affected VW vehicles by zip code and county, totaling nearly 3000 vehicles affected. Funds could be distributed equitably across the state based on the location of affected diesels. Figure 2 (previous page) shows the relative concentration by zip code in Kansas, with IHS Polk data.

See also the map in Figure 3, which shows locations of public-access EV, CNG and propane stations, where Trust funds could be allocated for alternative fuel vehicle deployments.

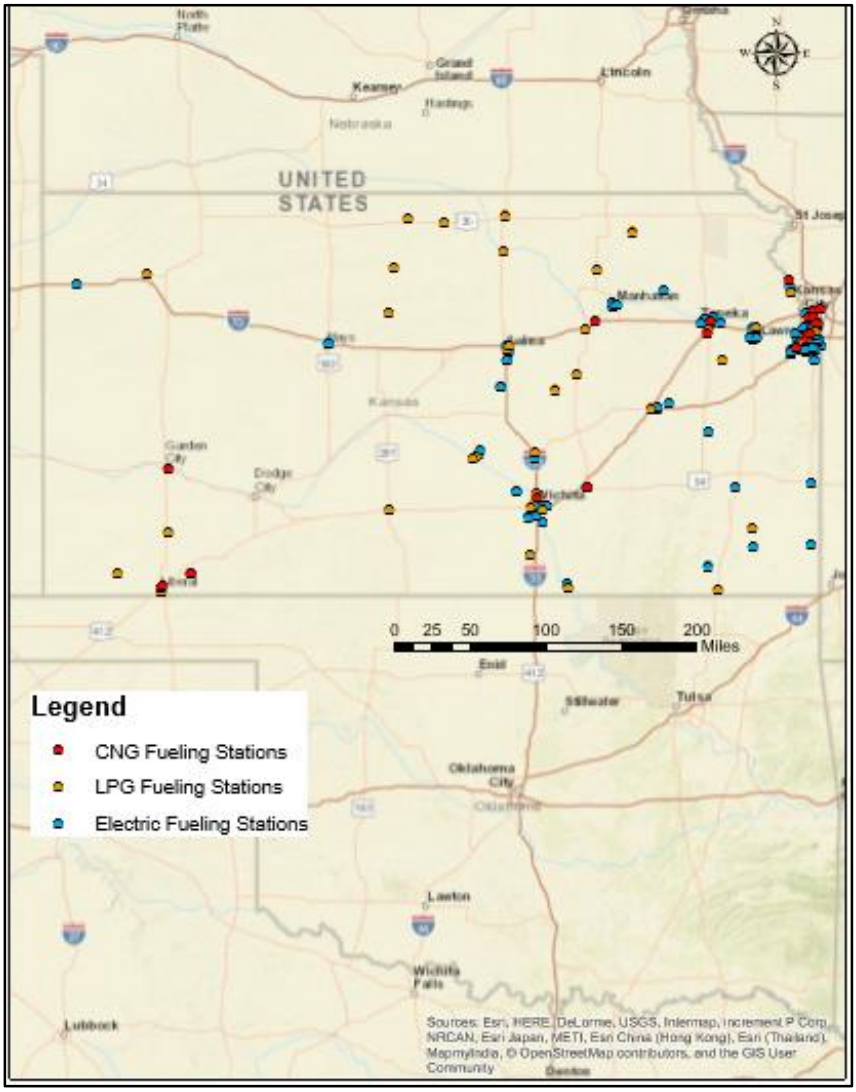


Figure 3: Shows locations of public-access EV, CNG and propane stations, using data from the Alternative Fueling Station Locator. AFDC.energy.gov.

Vehicle Purchasing Considerations

Emphasize the purchase of American fuels

Prioritize CNG (compressed natural gas), propane, hydrogen, electricity and biofuels. By prioritizing American fuels, the program will create energy security; boost economics by creating jobs; and assist in meeting air quality standards across the State by reducing particulate matter, greenhouse gas emissions, and NOx.

Replacing diesel for diesel does nothing to reduce our dependence on foreign oil. In instances of diesel for diesel replacement, mandate

- biodiesel usage or a local match higher than if purchasing an American-fueled replacement;
- certified idle reduction technology.

Use a rating system

Funding requests should be evaluated using a rating system which, similar to the EPA diesel quantifier, awards points to vehicles based upon their efficiency and level of emissions, but also awards points for American fuels. The Alternative Fuels Data Center[9] offers multiple tools that meet that criterion.

Require EPA and/or CARB emissions certification.

Ensure that all alternative fuel technology purchased meets emission standards by requiring agencies/companies to turn in certificates from either EPA or CARB (California Air Resources Board).

"Buy Kansas"

Give priority to the purchase of vehicles or fuel conversions from qualified Kansas-owned businesses.

The Scrap Steel Market and Unintended Consequences

Due to a flood of steel imports and slowing economies in much of the developing world, scrap steel is currently at extremely low prices. The DERA program requires the scrapping of existing diesel vehicles as a way of ensuring that emissions are reduced, not increased, by the program. To the extent that the Trust requires scrapping of existing diesel vehicles around the country, the Trust will add to the glut of scrap steel in the U.S., resulting in a large number of vehicles sitting in scrap yards for an extended period of time—an unintended consequence with other environmental implications. We encourage the State to address this unintended consequence by:

- looking at a broader array of strategies for diesel emissions reduction, such as those described above that do not rely solely upon the DERA formula and framework; and/or
- developing plans for donating or discounting the scrap steel generated by this program to manufacturers of environmentally constructive products: racking for solar arrays, public transit kiosks and benches, alternative fuel signage for highways.

[9] Alternative Fuels Data Center: http://www.afdc.energy.gov/tools.

Contract for Program Administration

We strongly encourage the State of Kansas to work with existing organizations with expertise and relationships that can be put to use in implementing the Trust in Kansas, as opposed to adding state personnel to oversee the program. Contracted program administration avoids an unsustainable expansion of state payroll, taps into existing expertise and networks, and ensures the sustainability of programs by creating a mix of local government and nonprofit dollars from the start. In that regard, we urge you to consider working with the Kansas City Regional and Central Kansas Clean Cities Coalitions. These Coalitions have a wide array of industry stakeholders, and staff have administered U.S. Department of Energy Recovery Act funds and EPA DERA grants, have worked with public and private fleets to introduce alternative fuel vehicle technologies, and have provided outreach and education on a variety of transportation-related issues.

Summary of Recommendations

Vehicle Replacement

Encourage replacement of diesel vehicles with vehicles fueled by American fuels, i.e. electric, propane, natural gas or biodiesel.

Judiciously distribute vehicle replacement funds in communities with established AFV stations.

Replace vehicles in urban neighborhoods, where frequent and prolonged presence in communities can result in more concentrated exposures to diesel emissions over time, including transit operators.

Fairly distribute vehicle replacement funds throughout the state based on where the violating vehicles were/are registered, and not just concentrated in urban areas.

In freight-handling districts, electrify yard trucks (i.e. yard hostlers, terminal trucks, etc).

Upgrade government fleets

- require a local match to maximize impact of funds
- strategically in areas of greater financial need

Require fleet operators to engage in, or provide documentation of, reasonable fleet planning activities

Set limits on the number of vehicles any fleet or fleet unit can replace in a calendar year.

Strategically allocate a percentage of Trust funds to private fleet operators for replacement with AFVs.

Require replaced vehicles to remain in service in Kansas for a minimum of five years.

Station Investment

Indirect / leveraged

With deliberate planning involving station installers and fleet operators

- leverage the Trust to encourage third-party investment in new CNG and propane stations in freight handling districts, and
- use FHWA-designated AFV Corridors as a guide along heavily traveled corridors.

Reduce overall emissions from new and older diesels along major highway corridors by increasing the use of biodiesel at diesel retail locations through incentives or mandates requiring higher biodiesel blends.

Direct

In freight handling districts, invest in systemic upgrades to electrify freight handling equipment.

Maximize investment (15% of Trust) in a state-wide network of electric charging stations

- DC Fast Chargers (DCFC) along key routes such as I-70, I-44 and I-49
- Level 2 charging stations in communities and at destination locations, as well as support at DCFC locations
- Leverage VW's ZEV Investment to the maximum extent before expending funds from the Trust.
- Encourage leveraged investment in Level 1 charging stations at workplaces

Program Management

Ensure maximum impact of funds by creating an evaluation system that rates applicants based on the above recommendations in addition to

- Monthly mileage (or operating hours) for vehicles to be replaced
- Buy Kansas
- EPA and/or CARB Certification

Strategically leverage the Kansas Clean Diesel Program. To the extent the Trust supplements the Kansas Clean Diesel Program

- increase long-term solutions, such as vehicle replacement
- judiciously use short term solutions, such as engine retrofits

Where diesel for diesel replacements or upfits are allowed

- mandate a local match higher than if purchasing an American-fueled replacement; and
- require a certified idle reduction technology.

Mitigate the impact on the scrap steel market by planning investments over at least 5 years.

Minimize impact on state government staffing by contracting for program administration.

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This report is the effort of Clean Cities coalitions managed by staff at Metropolitan Energy Center, a nonprofit corporation, with input from valued stakeholders. Please visit our web site at www.metroenergy.org to learn more.