

REQUEST FOR INFORMATION

Volkswagen Consent Decree Environmental Mitigation Trust

Submission Deadline: November 1, 2017



To

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From

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Background and General Information

Central Arkansas Water, (CAW) is a metropolitan public water system that serves a population of approximately 450,000. We have 137,000 residential, commercial, industrial and master-metered customers in Pulaski, Saline and Grant Counties.

Eligible Projects

Reference to: ***Appendix A Eligible Mitigation Projects and Administrative Expenditures and Definitions, 6. Class 4-7 Local Freight Trucks (Medium Trucks)***

CAW's fleet composition is 90% trucks ranging from small, light duty, to class 4-7 service and dump trucks. Of the class 4-7 trucks 18 of the 38 fall in the eligible category; CAW's eligible vehicles are listed in attachment C.

CAW has one CNG light duty truck in its fleet but due to the current infrastructure in place, CNG has not been an option the utility has pursue further. Conversion costs as well as current cost of diesel and gasoline has also influenced our decision as it relates to switching to this alternative fuel.

CAW is always looking for ways to improve the environment working toward carbon neutrality and the fact that CNG offers such a benefit is a plus. As manufacturers direct more of their research and development dollars to electric vehicles, especially the truck market, CAW hopes that this is another viable avenue for the utility in the future. With the unknown CNG infrastructure today, CAW would like to see a portion of the trust funds be designated to the following:

1. Up to 100% of the cost of a new diesel or Alternate Fueled (e.g. CNG, propane, electric, Hybrid) vehicle.
2. Up to 100% of the cost of a Repower with a new diesel or Alternate Fueled (e.g. CNG, propane, Hybrid) engine, including the cost of installation of such engine.

CAW staff analyzed replacement of eligible vehicles to support the utility's proposed option for funds distribution as a viable and beneficial choice. Replacing CAW's 18 eligible vehicles with current model diesel replacements represents approximately 90% reduction in emissions as well as a direct health benefit. This data was developed from the US EPA's *Diesel Emissions Quantifier* online tool and is summarized below:

Emission Results and Health Benefits for Project: VW Mitigation Calc

Emission Results

Here are the combined results for all groups and upgrades entered for your project.¹

Annual Results (short tons)²	NO_x	PM2.5	HC	CO	CO₂	Fuel³
Baseline for Upgraded Vehicles	2.975	0.117	0.257	0.871	296.3	26,334
Amount Reduced After Upgrades	2.636	0.112	0.234	0.774	28.9	2,570
Percent Reduced After Upgrades	88.6%	96.5%	91.1%	88.9%	9.8%	9.8%

Lifetime Results (short tons)²	NO_x	PM2.5	HC	CO	CO₂	Fuel³
Baseline for Upgraded Vehicles	6.259	0.214	0.498	1.747	839.4	74,613
Amount Reduced After Upgrades	5.233	0.202	0.431	1.464	74.7	6,640
Percent Reduced After Upgrades	83.6%	94.2%	86.7%	83.8%	8.9%	8.9%

Health Benefits Results

The table below shows the estimated PM2.5 reductions and health benefits by county and as a total for your project. Results are based on the inputs you have entered.

Annual Benefits represent the dollar value of health benefits resulting from reduced exposure to PM2.5. These benefits include the reduction of premature mortality, chronic bronchitis, asthma attacks, non-fatal heart attacks, and other health problems. The dollar values are based on studies used by EPA when estimating the health benefits of environmental rules.

Annualized Costs are based on the unit and labor costs you have entered. They have been annualized over the remaining life of the upgraded fleet.

Health Benefits Results

County and State	Annual Diesel PM2.5 Reduction (short tons)	Annual Benefits	Annualized Unit & Labor Costs
Pulaski, Arkansas	0.112	\$62,000	-
Total	0.113	\$62,000	\$810,000

* (Attachments A and B include calculations from the EPA's tool)

CAW appreciates the opportunity to submit our response and look forward to any upcoming correspondence regarding the State of Arkansas' VW Environmental Trust Beneficiary Mitigation Plan.

Regards,

Attachment A

Fleet Information

Vehicle Class Number	Model Year	Sector	Vehicle/Equipment Code	Technology	Number of Vehicles Retrofitted
1	2001	Short Haul - Single Unit	Class 6-7	Vehicle Replacement - Diesel	4
2	2000	Short Haul - Single Unit	Class 6-7	Vehicle Replacement - Diesel	1
3	2003	Short Haul - Single Unit	Class 6-7	Vehicle Replacement - Diesel	6
4	2007	Short Haul - Single Unit	Class 6-7	Vehicle Replacement - Diesel	5
5	1992	Short Haul - Single Unit	Class 6-7	Vehicle Replacement - Diesel	1
6	2012	Short Haul - Single Unit	Class 6-7	Vehicle Replacement - Diesel	1

Health Impacts Allocation

County and State	Percent Reduction
Pulaski, Arkansas	100%

Health Impacts Estimation Tool Results

County and State	Annual Diesel PM2.5 Reduction (short tons)	Annual Cost	Annual Benefits
Pulaski, Arkansas	0.1125	-	\$62,000
Total	0.1125	\$810,000	\$62,000

Attachment B

Blake Weindorf		10/30/2017	Detailed Report from the Diesel Emissions Quantifier			
Central Arkansas Water						
Blake		Weindorf				
blake.weindorf@carkw.com						
000-000-0000						
Type	Target Fleet	Class/Equipment	Number of Vehicles	Model Year	Retrofit Year	Technology Description
Onroad	Short Haul - Single Unit	Class 6-7	4	2001	2018	Vehicle Replacement - Diesel
Onroad	Short Haul - Single Unit	Class 6-7	1	2000	2020	Vehicle Replacement - Diesel
Onroad	Short Haul - Single Unit	Class 6-7	6	2002, 2003, & 2004	2021	Vehicle Replacement - Diesel
Onroad	Short Haul - Single Unit	Class 6-7	5	2006 & 2007	2022	Vehicle Replacement - Diesel
Onroad	Short Haul - Single Unit	Class 6-7	1	1992	2022	Vehicle Replacement - Diesel
Onroad	Short Haul - Single Unit	Class 6-7	1	2012	2022	Vehicle Replacement - Diesel

Fuel Type	Fuel Volume	Calculated Fuel Volume	Vehicle Miles Traveled/Year (VMT)	Idling Hours/Year	Horsepower	Usage Rate/Year	Number of Vehicles Retrofitted	New Model Year	Diesel Fuel Reduced (gallons)
ULSD	5852	5852	14962	30			4	2018	150
ULSD	1463	1463	14962	30			1	2018	80
ULSD	8778	8778	14962	30			6	2018	150
ULSD	7315	7315	14962	30			5	2018	150
ULSD	1463	1463	14962	30			1	2018	200
ULSD	1463	1463	14962	30			1	2018	40

Reduced Idling (hours)	Installation Cost	Unit Cost	Annual Baseline of Vehicles (NOx, short tons)	Lifetime Baseline of Vehicles (NOx, short tons)	Percent Reduced (NOx, %)	Baseline of Vehicles Retrofitted per year (NOx, short tons/year)	Amount Reduced per Year (NOx, short tons)
0	\$0	\$90,000	0.91427436	1.828548721	92.90%	0.9143	0.8494
0	\$0	\$100,000	0.228568616	0.228568616	92.90%	0.2286	0.2123
0	\$0	\$90,000	0.95372743	1.907454861	89.80%	0.9537	0.8564
0	\$0	\$90,000	0.396987923	1.587951692	71.20%	0.397	0.2827
0	\$0	\$100,000	0.452855687	0.452855687	95.00%	0.4529	0.4302
0	\$0	\$90,000	0.028190231	0.253712075	18.90%	0.0282	0.0053

Lifetime Baseline of Vehicles Retrofitted (NOx, short tons)	Lifetime Amount Reduced (NOx, short tons)	Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (NOx, short tons)	Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (NOx)	Annual Baseline of Vehicles (PM2.5, short tons)	Lifetime Baseline of Vehicles (PM2.5, short tons)	Percent Reduced (PM2.5, %)
1.8285	1.6987	0.1298	211,924.05	0.038051551	0.076103103	98.00%
0.2286	0.2123	0.0162	470,942.29	0.00951293	0.00951293	98.00%
1.9075	1.7129	0.1946	315,255.85	0.051461477	0.102922953	97.80%
1.588	1.1306	0.4573	398,011.15	0.001853885	0.00741554	23.00%
0.4529	0.4302	0.0226	232,443.05	0.015348472	0.015348472	98.10%
0.2537	0.048	0.2058	1,876,893.23	0.000350384	0.003153457	18.60%

Baseline of Vehicles Retrofitted per year (PM2.5, short tons/year)	Amount Reduced per Year (PM2.5, short tons)	Lifetime Baseline of Vehicles Retrofitted (PM2.5, short tons)	Lifetime Amount Reduced (PM2.5, short tons)	Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (PM2.5, short tons)
0.0381	0.0373	0.0761	0.0746	0.0015
0.0095	0.0093	0.0095	0.0093	0.0002
0.0515	0.0503	0.1029	0.1007	0.0023
0.0019	0.0004	0.0074	0.0017	0.0057
0.0153	0.0151	0.0153	0.0151	0.0003
0.0004	0.0001	0.0032	0.0006	0.0026

Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (PM2.5)	Annual Baseline of Vehicles (HC, short tons)	Lifetime Baseline of Vehicles (HC, short tons)	Percent Reduced (HC, %)	Baseline of Vehicles Retrofitted per year (HC, short tons/year)
4,826,964.04	0.106217079	0.212434158	95.50%	0.1062
10,726,539.04	0.026554386	0.026554386	95.50%	0.0266
5,364,665.73	0.082741705	0.165483409	91.40%	0.0827
263,840,761.21	0.013298187	0.05319275	48.10%	0.0133
6,641,494.91	0.02655428	0.02655428	94.80%	0.0266
153,441,457.18	0.00150728	0.013565523	8.40%	0.0015

Amount Reduced per Year(HC, short tons)	Lifetime Baseline of Vehicles Retrofitted (HC, short tons)	Lifetime Amount Reduced (HC, short tons)	Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (HC, short tons)	Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (HC)
0.1014	0.2124	0.2029	0.0096	1,774,495.00
0.0254	0.0266	0.0254	0.0012	3,943,304.89
0.0756	0.1655	0.1513	0.0142	3,570,204.59
0.0064	0.0532	0.0256	0.0276	17,587,940.90
0.0252	0.0266	0.0252	0.0014	3,972,438.05
0.0001	0.0136	0.0011	0.0124	78,981,738.40

Annual Baseline of Vehicles (CO, short tons)	Lifetime Baseline of Vehicles (CO, short tons)	Percent Reduced (CO, %)	Baseline of Vehicles Retrofitted per year (CO, short tons/year)	Amount Reduced per Year (CO, short tons)	Lifetime Baseline of Vehicles Retrofitted (CO, short tons)
0.307155542	0.614311084	93.40%	0.3072	0.2869	0.6143
0.076789271	0.076789271	93.40%	0.0768	0.0717	0.0768
0.346442635	0.692885269	91.20%	0.3464	0.316	0.6929
0.056999457	0.227997829	48.40%	0.057	0.0276	0.228
0.076789162	0.076789162	92.30%	0.0768	0.0709	0.0768
0.006460574	0.058145164	8.90%	0.0065	0.0006	0.0581

Lifetime Amount Reduced (CO, short tons)	Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (CO, short tons)	Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (CO)	Annual Baseline of Vehicles (CO ₂ , short tons)	Lifetime Baseline of Vehicles (CO ₂ , short tons)	Percent Reduced (CO ₂ , %)	Baseline of Vehicles Retrofitted per year (CO ₂ , short tons/year)	Amount Reduced per Year (CO ₂ , short tons)
0.5738	0.0405	627,432.88	65.835	131.67	10.30%	65.835	6.75
0.0717	0.0051	1,394,288.28	16.45875	16.45875	5.50%	16.4588	0.9
0.6319	0.061	854,550.23	98.7525	197.505	10.30%	98.7525	10.125
0.1104	0.1176	4,077,898.77	82.29375	329.175	10.30%	82.2938	8.4375
0.0709	0.0059	1,410,906.94	16.45875	16.45875	13.70%	16.4588	2.25
0.0052	0.053	17,391,574.45	16.45875	148.12875	2.70%	16.4588	0.45

Lifetime Baseline of Vehicles Retrofitted (CO2, short tons)	Lifetime Amount Reduced (CO2, short tons)	Lifetime Amount Emitted After Retrofit, Retrofitted Vehicles (CO2, short tons)	Capital Cost Effectiveness (\$/short ton), Retrofitted Vehicles (CO2)
131.67	13.5	118.17	26,666.67
16.4588	0.9	15.5587	111,111.11
197.505	20.25	177.255	26,666.67
329.175	33.75	295.425	13,333.33
16.4588	2.25	14.2087	44,444.44
148.1288	4.05	144.0787	22,222.22

Attachment C

Vehicle Number	License Number	VIN Number	Vehicle Description
202	X11390	3FDXF75B01MA64923	2001 FORD F-750 CHASSIS 2T CREW TRUCK
203	X11391	3FDXF75B21MA64924	2001 FORD F-750 CHASSIS 2T CREW TRUCK
204	X11389	3FDXF75B41MA64925	2001 FORD F-750 CHASSIS 2T CREW TRUCK
205	X11388	3FDXF75B61MA64926	2001 FORD F-750 CHASSIS 2T CREW TRUCK
210	X10011	1GBT7H4C9YJ510224	2000 CHEVROLET DUMP TRUCK
218	X11610	3FDXF75B22MA17913	2002 FORD F-750 CHASSIS 2T CREW TRUCK
231	X12336	3FDXF75B73MB06376	2003 FORD F750 PICKUP 2 T CREW TRUCK
232	X12338	3FDXF75B03MB06378	2003 FORD F750 PICKUP 2 T CREW TRUCK
233	X12337	3FDXF75B53MB07249	2003 FORD F750 PICKUP 2 T CREW TRUCK
234	X12339	3FDXF75B13MB07250	2003 FORD F750 PICKUP 2 T CREW TRUCK
255	X12618	3FRXF75S74V654199	2004 FORD F750 TRUCK 2 T CREW TRUCK
294	X 13999	3FRXF75GX6V298281	2006 FORD F750 CHASSIS DUMP TRUCK
295	X 14010	3FRXF75G16V298282	2006 FORD F750 CHASSIS DUMP TRUCK
412	X14625	1HTMPAFN27H508023	2007 INTERNATIONAL 4200 DUMP TRUCK
413	X14624	1HTMPAFN47H508024	2007 INTERNATIONAL 4200 DUMP TRUCK
415	X14851	1FVHCYDJC7D797344	2007 FREIGHTLINER DUMP TRUCK
468	X18632	3HAJTSKN8CL649032	2012 INTERNATIONAL CREW TRUCK
531	X22999	1FDYU90L5PVA04026	1992 FORD L9000 DUMP TRUCK