

# Kansas City PM Characterization Study

## Final Report

### Appendix D

### Round 2 Recruitment

Assessment and Standards Division  
Office of Transportation and Air Quality  
U.S. Environmental Protection Agency

Sponsors:

National Renewable Energy Laboratory, U.S. Department of Energy  
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## Interviewer Training Guide

### EPA KANSAS CITY PROJECT:

Characterizing Exhaust Emissions from Light-Duty Gasoline Vehicles in the  
Kansas City Metropolitan Area  
Round 2

**Study Goal:** Recruit and test vehicles for particulate matter (PM) emissions so that emissions data are representative of a metropolitan area. Testing data will be used in revising a major Air Quality Model for PM. Under this study, we will recruit respondents to drive their vehicles to a study facility, where emissions testing will be conducted on their vehicles. The testing will be conducted on a dynamometer (a treadmill-like device for vehicles) and under cold-start conditions; therefore, these tests require the vehicles to be left at the facility over night. The respondents will need to drive their vehicle to the test site before 9am of the test day, and pick up their vehicle after 5pm the next day. Vehicles can be left a day early if they can not drop it off by 9am, but will have to be in at the site for longer than 1 day. A total of 255 separate vehicles will be tested.

**Study Background:** Mobile sources (cars, trucks) significantly contribute to ambient concentrations of air pollution (NOx, Ozone, Particulate Matter (PM)). Studies suggest that mobile sources can contribute to over half of the PM measured in urban areas. Recent and past emissions testing studies have tried to estimate the contribution of PM to air pollution, but these studies have obstacles such as recruitment of vehicles using non-random sampling techniques, high non-participation rates, and high costs associated with trying to entice persons to participate. Because of this, none of the studies conducted to date can be used to accurately represent the distribution of vehicle emissions in a large population.

**Vehicle Recruitment:** Along with the vehicle recruitment goals, there are 3 specific limitations surrounding the testing availability of vehicles.

- Vehicles must run on unleaded gas only (no hybrids or diesels)
- Vehicles can not be 4WD (four wheel drive) or AWD (all wheel drive), but are accepted if there is a switch to turn these features off
- Vehicles may only have one tailpipe.

**Recruitment Goals:** The goals for this survey are broken down between 2 dimensions. First, testing will be made on 33 vehicles that previously participated in this study last fall (Stype 3). All other participants have not participated in the study or received any forward information about the study. The second dimension is the vehicle class. Each recruited vehicle is places in a specific class based on its type of structure and year of production. Cars include, coupes, sedans, and wagons. Trucks include pickups, mini-vans, and sport utility vehicles. (Heavy duty trucks and motor cycles are not accepted).

Truck	Pre-1981	1	13	1	14
Truck	1981-1990	2	47	5	52
Truck	1991-1995	3	40	3	43
Truck	1996+	4	60	7	67
Car	Pre-1981	5	20	3	23
Car	1981-1990	6	47	5	52
Car	1991-1995	7	47	5	52
Car	1996+	8	33	4	37
			307	33	340

## FREQUENTLY ASKED QUESTIONS

### Selection

***Q: How are households selected?***

A: Since it is not cost effective to survey every single household within the Kansas City area, a representative sample is being taken that focuses on the geographic location, household size, and number of vehicles available to each household.

***Q: I just participated in a Travel Study; is this the same thing?***

A: This study is being conducted to confirm that the program developed to obtain accurate vehicle emissions will work and that we understand what is necessary to have the full participation of regional households. That study looked at travel behavior characteristics of regional households, which is a different topic.

***Q: How do you select which vehicle to use or which one I should bring in?***

A: Based on information gained from previous studies and available vehicle registration data, a vehicle listing of specific makes, models, and vehicle condition is used to determine which vehicles to test

### Testing

***Q: Who will conduct the emission test at Kansas City?***

A: BKI (Bevilacqua Knight, Inc) specializes in conducting vehicle emission testing for research studies.

***Q: What type of emissions data will be collected?***

A: Levels of pollutants coming from the vehicle.

***Q: Will I be able to view the videotape of my vehicle?***

A: The videotape will be used to document the vehicle's condition before and after testing. Viewing the videotape will only be necessary if upon return, the vehicles condition is in question.

***Q: Will I be liable for any fines or penalties if my vehicle fails emission quality test?***

A: No, this is a research study, independent of local or regional emissions registration and regulation.

***Q: Will I need to show proof of insurance?***

A: Proof of vehicle insurance will not have to be shown at the testing facility, but to use a rental insurance will be needed.

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***Q: How long will my vehicle be tested? (How many miles will be placed on my vehicle)***

A: They need emissions data for both after the vehicle has been running and after the vehicle has been resting for a while. They will be conducting short test through both periods.

### **Scheduling**

***Q: What are the hours I can drop off and pick up my vehicle?***

A: Vehicle drop off will need to be before 10:00 am on the drop off date and pick up will be available after 5:00 pm the following day. Besides the testing time, vehicle pick up and drop off is at the respondents' convenience.

***Q: Can my vehicle be picked up at home?***

A: Yes, we can arrange for your vehicle to be picked up and a rental vehicle left for use.

### **Demographic Specific**

***Q: Why do you need my household's income?***

A: Since each participating household represents a cross section of households in the study area, we need to make sure that we have the right mix of household income. Previous research has shown that both the mode of travel and vehicle condition vary greatly based on household income. To get an accurate selection of vehicles in the region, we must collect information from households at all income levels.

***Q: Why do you need other demographic data?***

A: Since each participating household represents a cross section of households in the study area, we need to make sure that we have the right mix of household demographics. To get an accurate selection of vehicles in the region, we must collect information from households of all demographics.

## Recruitment Questionnaire

### Kansas City Emissions Testing Program Round 2 Scheduling Questionnaire

Hi, my name is \_\_\_\_\_ and I'm calling on behalf of the U.S. Environmental Protection Agency and the Mid-America Regional Council. May I speak with [\*\*FNAME\*\* \*\*LNAME\*\*]? [If new person, reintroduce, if same person, continue]. The EPA and MARC have collaborated on a program to measure air pollution from cars and trucks in the Kansas City region. This breakthrough study is the first of its kind in the U.S., focusing on emissions from cars and trucks under real time driving conditions. It is very important because vehicle emissions include very small particles like what is found in smoke or soot. These particles can be inhaled, causing health problems like asthma and emphysema. So this study will help to measure those particles coming from vehicles in the Kansas City region.

For this study, vehicles will be tested for a 24 hour period at our testing facility in Wyandotte. Given your preference of drop off dates, we ask you to drop off your vehicle before 1 pm on one day, and pick it up after 5 pm the next day, but can work around your schedule. While the testing is being conducted a rental car and a token of appreciation will be given to you. The company performing the test is BKI, an industry leader in atmospheric, emission, and particle testing. They are licensed and insured, and accept full responsibility for the vehicle while in its care. Each vehicle is videotaped when it's dropped off, and again before it's picked up to verify its condition before and after the testing. The specific information about your vehicles admissions will be kept confidential.

1. If you are able to help us with this important study, you will be eligible for an incentive of \$75 for your time and participation. Are you interested in participating in this study?

If No – what if we offered you an incentive of \$100? What about \$125?

1=\$75 [Go to 2]

2=\$100 [Go to 2]

3=\$125 [Go to 2]

4=Need more information about the study first. [Go to 13]

NEED MORE INFO – go to mail-out section but disposition should be Advance mail out required.

9=RF – Thank you for your time.

To see if you qualify I would like to obtain some information about your vehicles.

2. I show that you live in \*\*COUNTY\*\* county. Is that correct? IF NOT, What county do you live in?

CASS COUNTY, MO 29037

CLAY COUNTY, MO 29047

JACKSON COUNTY, MO 29095

PLATTE COUNTY, MO 29165

JOHNSON COUNTY, KS 20091

LEAVENWORTH COUNTY, KS 20103

WYANDOTTE COUNTY, KS 20209

OTHER, SPECIFY COUNTY AND STATE 77777 INELIGIBLE-TERMINATE

DK/RF 99999 INELIGIBLE-TERMINATE

3. And is your home zip code \*\*ZIP\*\*? IF NOT, OBTAIN  
Our records indicate your household has \*\*HHVEH\*\* available for testing.

## Recruitment Questionnaire, Page 2

4. We are interested in testing the **\*\*YEAR\*\***, **\*\*MAKE\*\*** **\*\*MODEL\*\***, is this vehicle available for testing?
5. Does the vehicle run on another fuel besides unleaded gasoline? Yes – Vehicle DNQ (Does not qualify)
6. How many exhaust outlets (Tailpipes) does the vehicle have? – More than 1 - – Vehicle DNQ
7. Does the vehicle have 4WD or all wheel drive? If yes, is the 4WD or AWD option able to be turned off? If 4WD or AWD can not be turned off - – Vehicle DNQ  
If you are able to help us with this important study, we will provide you with a rental car and **\*\*INCENT\*\*** for your time.
8. We have an opening on **\*\*ASSN\*\***, would you be able to bring your vehicle in for testing on this day? If not, what day/ date would work best for you? [One drop down selection]  
If it is convenient, we ask that you drop off your vehicle before 9 am, so it will be ready for you to pick up the following day between 4 pm and 6 pm. Does this time frame work for you?
9. Does this time work for you? If not we can definitely work around your schedule, but it may require the testing facility to keep your vehicle an extra day.
10. What time do you think you can drop off your vehicle? (Based on time, change drop off date)
11. We are also interested in testing another Household vehicle, are you interested if offered an additional **\*\*INCENT\*\***. [Loop back using 2<sup>nd</sup> vehicle]
12. What name should we schedule your vehicles under? (FIRST AND LAST) [Confirm name if MARC sample]
13. So that I can send you a packet of information about the study, I need to confirm/obtain your home address.  
ADDRESS, CITY, STATE, ZIP  
  
IF THIS IS AN ADVANCE MAILOUT PACKET INT = ADM  
You should receive more information about the study in a few days, we will call you back at a later date, Thank you for your time.
14. Your telephone number is ###-###-####, in case there is a change in testing, or the testing facility has some information about vehicle testing, is there a better number where you can be reached at?  
[OBTAIN ALTERNATIVE PHONE NUMBER] This is a second phone number
15. Do you have an email address where I can send a reminder?

We will also plan to call you 2 days before your scheduled testing date to remind and confirm that you received your information packet. If you have any question please feel free to contact us at 1-877-221-7828. Thank you so much for your help and participation in this very important study!  
[Enter notes or any special scheduling comments if respondent is dropping off a day early]

## Vehicles Scheduled by date

Assignment	Test Date	Total
111	Tuesday, January 11, 2005	4
112	Wednesday, January 12, 2005	4
113	Thursday, January 13, 2005	5
114	Friday, January 14, 2005	6
115	Sunday, January 16, 2005	5
117	Monday, January 17, 2005	5
118	Tuesday, January 18, 2005	5
119	Wednesday, January 19, 2005	6
120	Thursday, January 20, 2005	5
121	Friday, January 21, 2005	6
122	Saturday, January 22, 2005	5
124	Monday, January 24, 2005	3
125	Tuesday, January 25, 2005	5
126	Wednesday, January 26, 2005	5
127	Thursday, January 27, 2005	6
128	Friday, January 28, 2005	6
129	Saturday, January 29, 2005	6
131	Monday, January 31, 2005	6
132	Tuesday, February 01, 2005	7
133	Wednesday, February 02, 2005	7
134	Thursday, February 03, 2005	7
135	Friday, February 04, 2005	4
136	Saturday, February 05, 2005	7
138	Monday, February 07, 2005	6
139	Tuesday, February 08, 2005	5
140	Wednesday, February 09, 2005	5
141	Thursday, February 10, 2005	6
142	Friday, February 11, 2005	6
143	Saturday, February 12, 2005	4
145	Monday, February 14, 2005	4
146	Tuesday, February 15, 2005	6
147	Wednesday, February 16, 2005	6
148	Thursday, February 17, 2005	6
149	Friday, February 18, 2005	4
150	Saturday, February 19, 2005	5
152	Monday, February 21, 2005	2
153	Tuesday, February 22, 2005	3
154	Wednesday, February 23, 2005	3
155	Thursday, February 24, 2005	3
156	Friday, February 25, 2005	6
157	Saturday, February 26, 2005	4
159	Monday, February 28, 2005	5
161	Tuesday, March 01, 2005	4
162	Wednesday, March 02, 2005	5
163	Thursday, March 03, 2005	5

Assignment	Test Date	Total
164	Friday, March 04, 2005	6
165	Saturday, March 05, 2005	7
167	Monday, March 07, 2005	8
168	Tuesday, March 08, 2005	3
169	Wednesday, March 09, 2005	6
170	Thursday, March 10, 2005	6
171	Friday, March 11, 2005	6
172	Saturday, March 12, 2005	6
174	Monday, March 14, 2005	9
175	Tuesday, March 15, 2005	7
176	Wednesday, March 16, 2005	9
177	Thursday, March 17, 2005	7
178	Friday, March 18, 2005	10
179	Saturday, March 19, 2005	10
181	Monday, March 21, 2005	7
182	Tuesday, March 22, 2005	7
183	Wednesday, March 23, 2005	6
184	Thursday, March 24, 2005	8
185	Friday, March 25, 2005	7
186	Saturday, March 26, 2005	7
188	Monday, March 28, 2005	6
189	Tuesday, March 29, 2005	5
190	Wednesday, March 30, 2005	2
191	Thursday, March 31, 2005	1
192	Friday, April 01, 2005	3
193	Saturday, April 02, 2005	7
195	Monday, April 04, 2005	8
196	Tuesday, April 05, 2005	5
197	Wednesday, April 06, 2005	9
198	Thursday, April 07, 2005	7
199	Friday, April 08, 2005	10
		433

## Study Brochure

### What's in it for me?

In addition to the free rental car, every study participant receives an appreciation gift as well as the knowledge that they contributed to a ground-breaking study in how vehicle emission levels are measured.

### What if I have questions?

If you have any questions or would like additional information, please contact:

Gene Tierney, EPA  
[Tierney.Gene@epa.gov](mailto:Tierney.Gene@epa.gov)


Todd Ashby, MARC  
[tashby@marc.org](mailto:tashby@marc.org)

OR


call the toll-free participant hotline:  
877-221-7828

visit the project website:  
[www2.ergweb.com/projects/KansasCity/](http://www2.ergweb.com/projects/KansasCity/)


# Kansas City Emissions Study




Project Leader:




In Association With:




Help us to  
better  
measure  
vehicle  
emission levels



Project Leader:



In Association With:





## What is the Kansas City Emissions Study?

This landmark study led by the Environmental Protection Agency (EPA) with support from the Mid-America Regional Council (MARC), will measure air pollution from cars and trucks in the Kansas City region. Vehicle emissions include tiny particles (like in smoke and soot) that, when inhaled, contribute to heart and respiratory disease. It's the first major study in the United States that will look at vehicle emissions under real world driving conditions. In addition, this effort will be a role model for other regions across the nation.

## Why should I participate?

Your involvement is so important because EPA will be able to measure emissions from many types of vehicles in a real-life setting. The results will provide the input needed to make air quality modeling more accurate and serve as a role model for other regions.

During this study, it's critical that we test emissions from all types of vehicles: new and old, compact and luxury, cars and SUVs, vehicles that smoke and those that don't. The test results are confidential and there are no consequences to any vehicle owner regardless of the emissions testing outcome.

## How does the testing work?

Participants bring their vehicles to a central facility and drop them off for testing. Owners may choose the most convenient drop-off and pick-up times, between the hours of 7am and 6pm, seven days a week. Most vehicles will be needed for 24 hours; in some cases, a little longer, depending on the scheduled drop-off time. Each participant is provided a free rental car for use while their vehicle is being tested. And everyone in the study receives an appreciation gift as a way of saying "thank you" for your time and cooperation.

Some vehicles may qualify for a second stage of testing that involves putting special emission detection equipment in your vehicle for 24-72 hours. If your auto is eligible for this stage, a technician at the testing facility will discuss it with you. Participants in this test will receive an additional appreciation gift.

### Why is my vehicle needed for 24 hours?

Unlike emissions testing during a car inspection, which only takes a few minutes, this study requires vehicles to go through a

cold-start test following 12 hours of sitting without being used.

### Where do I take my vehicle?

The test facility is located west of downtown Kansas City, in Wyandotte, with easy access from I-70, I-435, I-635, and I-35.



The standard check-in process includes videotaping each vehicle before and after the testing to verify it's condition. Eastern Research Group, the study lead, will take full responsibility for vehicles while under the care of the test facility. The facility itself is fully licensed and insured, and has been designed with the care and security of your vehicle in mind.

## Why are emissions a problem?

Personal automobiles are big polluters because of the sheer number of vehicles on our roads today. We may not realize it because we can't always see it, but driving a car pollutes our air. Besides particles, exhaust pollutants include hydrocarbons, nitrogen oxides (NOx), carbon monoxide (CO) and carbon dioxide (CO<sub>2</sub>). Hydrocarbons and NOx, when mixed in the presence of sunlight, form ground-level ozone, which irritates the eyes, damages the lungs, and aggravates respiratory problems. NOx also contributes to forming acid rain. Carbon monoxide reduces the flow of oxygen in the bloodstream - a risk for persons with heart disease. Fuel evaporation also contributes to hydrocarbon pollution, such as during refueling.

## Recruitment Letter

«FNAME» «LNAME»

«Address»

«City», «State» «Zip»

Dear «FNAME»,

You have been selected to participate in the **Kansas City Emissions Study**. The study is the first of its kind to be conducted in the US and will serve as a role model for other US cities to more accurately document the levels of vehicle emissions in other regions. The study is being conducted by a team of experts from Eastern Research Group (ERG), and sponsored by the Mid-America Regional Council (MARC) and the United States Environmental Protection Agency (EPA).

The **Kansas City Emissions Study** focuses on the emissions of specific vehicle years, makes, and models. For this study your vehicle will represent all similar makes and models from owners in the area. Your participation is very important so an accurate representation of the Kansas City Area can be made. As a token of appreciation all study participants will receive a monetary incentive.

A study representative will be calling you back in a few days to see if you are available to help us with this important study. Enclosed is a brochure that provides more info about the study. If you have any general questions concerning this study, please call 877-221-7827 or visit us online at [www2.ergweb.com/projects/kansascity](http://www2.ergweb.com/projects/kansascity).

We hope that you can help in this very important study.

Sincerely,



Dr. Charles A. Eddy  
*Chair of MARC's Board of Directors  
and Council member, Kansas City, Missouri*



Gene Tierney  
*Director Center for Air Quality  
and Modeling, U.S. EPA*

## Kansas City Emissions Study Participant Questionnaire

Thank you for participating in this vehicle emission study. Please take a few minutes to respond to the following questions. Your answers will help us correlate vehicle history to emission patterns.

Owner name: <first> <last>

Vehicle: <make>, <model>, <year>

Testing date: <Date>

1. Last brand of gasoline purchased was:

☐ a. Shell      ☐ d. BP      ☐ f. Other: \_\_\_\_\_  
☐ b. Exxon      ☐ e. Chevron  
☐ c. Texaco      ☐ g. Don't know

2. What grade of gasoline was this?

☐ a. Regular      ☐ b. Premium      ☐ c. Super

3. How long ago was the last oil change? \_\_\_\_\_

4. What brand of motor oil was used? \_\_\_\_\_

5. What was the oil viscosity? (example 10W30) \_\_\_\_\_

6. What oil additives are being used? \_\_\_\_\_

7. Within the last year, have major repairs been performed (this includes rebuilding or replacing the engine, transmission or catalyst)?

☐ a. Yes (briefly describe): \_\_\_\_\_ ☐ b. No      ☐ c. Don't know

8. Briefly describe any drivability or engine running problems. \_\_\_\_\_

**If you have any questions or if you need to change your testing appointment,  
please call 1-800-275-2209.**

*Please bring this form, your driver's license and your proof of insurance card  
with you to the testing facility.*

Office Use: Date Received: \_\_\_\_\_

Vehicle Make, model, yr. \_\_\_\_\_ License Tag # \_\_\_\_\_