

**Appendix E:
Fuel Economy, GHG, Other Emissions, and Alternative Fuels Education Program
Draft Focus Group Discussion Guide**

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This discussion guide follows a funnel approach, beginning with a broad conversation about consumer understanding of fuel economy issues in order to start the conversation and begin the topic discussion, then narrowing to talk specifically about greenhouse gas and other emissions, alternative fuels and thermal-management technology. The initial exploration will include time for testing fuel economy-related content. The discussion will conclude with testing comprehension of potential consumer-facing messages and communication channels.

The content of this discussion guide is designed to meet two objectives:

- 1) Test consumer comprehension of existing fuel economy-related content. The line of questioning in sections B through E of this discussion guide satisfy this objective.
- 2) Test consumer-facing messages related to NHTSA's consumer education campaign. The line of questioning in sections F and G of this discussion guide satisfy this objective.

To achieve both research objectives within a two-hour focus group, we will not test all prepared pieces of fuel economy content or alternative fuel content with every group. Instead, we have developed a schedule that will allow us to test content and messages effectively within the time-constraints. This schedule appears on the [final pages](#) of this document.

The focus group will utilize both group discussions and group or individual activities to obtain the information necessary to inform the consumer education program. The information obtained in these groups builds upon the information collected by EPA, and focuses on consumer information rather than fuel economy label evaluations.

The content and messages we will be testing were developed through a messaging audit that NHTSA performed, which can be found as Appendix C of this ICR package. This audit comprises information

regarding fuel economy, alternative fuel, thermal management technologies and greenhouse gas and other emissions that is currently available through other sources. All content has either originated or been confirmed through various government sources.

The following discussion guide is prepared for Group 1 of the six groups we will be holding. For the other groups, the content tested and the order in which the content and messages are presented will be altered based on the [schedule](#). However, the flow of the discussion and the questioning will remain the same.

Discussion Guide for Group 1:

A. Introduction

- a. Welcome, group rules, privacy
- b. Group introductions
 - i. First name
 - ii. How often do you drive?
 - iii. What is your primary purpose for driving?

B. Fuel economy Content Evaluation

- a. When you think of fuel economy, what comes to mind?
- b. What about fuel efficiency? What does this mean to you? How, if at all, is it different from fuel economy?
- c. When looking for a new vehicle, how important would you say a vehicle’s fuel economy is to your purchase decision?
- d. At what point in your decision process, if at all, do you look at fuel economy?
 - i. What fuel economy information do you specifically look for?
- e. What are some of the benefits of owning a vehicle with better fuel economy?
 - i. Personal benefits vs. environmental benefits
- f. Thinking about the vehicle you currently have, what are some things that you do that can positively impact the fuel economy of your vehicle? [MODERATOR TO WRITE RESPONSES ON FLIP CHART]
 - i. [PROBE DRIVER BEHAVIORS/ACTIONS]
- g. I’m going to hand out some highlighters and a sheet of paper with a list of driving behaviors and maintenance tips. I’d like you to go through this list with your highlighters – please highlight those things on the list that you think can POSITIVELY impact your vehicle’s fuel economy in GREEN. Then, go back through the list and using your ORANGE highlighter, highlight the things on the list that can NEGATIVELY impact your vehicle’s fuel economy. If you think something may have no impact on a vehicle’s fuel economy, do not highlight it. After you complete the exercise, we’ll discuss the list as a group. [PRINT OUT AVAILABLE IN APPENDIX F]

Using the highlighters provided to you, please highlight in GREEN the things listed below that you can do to positively impact the fuel economy of your vehicle. Highlight in ORANGE the things listed below that would negatively impact your vehicle’s fuel economy. If you think it has no impact on your fuel economy, do not highlight it.

Avoiding sudden starts and stops	Driving with roof racks or rooftop carriers	Removing excess items from your trunk
Following your vehicle’s recommended maintenance schedule	Driving 70 MPH on the highway instead of the posted 65 MPH speed limit	
Using the A/C	Parking in a garage	Using overdrive
Idling while parked	Maintaining a constant speed	Replacing an air filter
Parking in the shade in the summertime	Purchasing lower rolling resistance tires	
Using your manufacturer’s recommended grade of motor oil	Regularly inflating your tires to the recommended tire pressure level	Keeping your windows open in the summertime when parked

- h. [WHEN GROUP IS FINISHED HIGHLIGHTING] Before we discuss, I'd like you to go back through the list one more time and circle the things that you, personally do. Remember, this exercise is anonymous
- i. Let's talk about a few of these in detail.
 - ii. [MODERATOR READ ALOUD] Avoiding sudden starts and stops
 1. By a show of hands, how many marked this with the green highlighter? Orange? How many did not highlight this?
 2. Those who highlighted it in green, why did you do so?
 3. Where did you hear about this activity's impact on fuel economy?
 4. Those who highlighted it in orange, why did you do so?
 5. Where did you hear about this activity's impact on fuel economy?
 6. Those who did not highlight this, why?
 7. I'd like to show you some more details about this [MODERATOR HAND OUT PAPER WITH "[AVOID SUDDEN STARTS AND STOPS.](#)" CONTENT].
 - a. How believable do you find this statement?
 - b. Written in this way, how easy is it to understand the impact this has on your vehicle's fuel economy?
 - i. [IF NOT EASY TO UNDERSTAND]: What would you suggest changing this in order to make it easier to understand?
 - ii. Is this information specific enough?
 - iii. After reading this statement, do you have any further questions about how you can use this tip to help improve your fuel economy?
 - iv. How if at all does this information change how you would highlight this activity?
 - iii. [MODERATOR READ ALOUD] Using the A/C
 1. By a show of hands, how many marked this with the green highlighter? Orange? How many did not highlight this?
 2. Those who highlighted it in green, why did you do so?
 3. Where did you hear about this activity's impact on fuel economy?
 4. Those who highlighted it in orange, why did you do so?
 5. Where did you hear about this activity's impact on fuel economy?
 6. Those who did not highlight this, why?
 7. I'd like to show you some more details about this [MODERATOR HAND OUT PAPER WITH "[OPEN THE WINDOWS AT SLOW SPEEDS AND TURN ON THE A/C AT HIGHER SPEEDS.](#)" CONTENT].
 - a. How believable do you find this statement?
 - b. Written in this way, how easy is it to understand the impact this has on your vehicle's fuel economy?
 - i. [IF NOT EASY TO UNDERSTAND]: What would you suggest changing this in order to make it easier to understand?
 - c. Is this information specific enough?
 - d. After reading this statement, do you have any further questions about how you can use this tip to help improve your fuel economy?
 - e. How if at all does this information change how you would highlight this activity?

- iv. [MODERATOR READ ALOUD] Using overdrive
 - 1. By a show of hands, how many marked this with the green highlighter? Orange? How many did not highlight this?
 - 2. Those who highlighted it in green, why did you do so?
 - 3. Where did you hear about this activity's impact on fuel economy?
 - 4. Those who highlighted it in orange, why did you do so?
 - 5. Where did you hear about this activity's impact on fuel economy?
 - 6. Those who did not highlight this, why?
 - 7. I'd like to show you some more details about this [MODERATOR HAND OUT PAPER WITH "[SHIFT INTO HIGH GEAR TO SAVE FUEL.](#)" CONTENT].
 - a. How believable do you find this statement?
 - b. Written in this way, how easy is it to understand the impact this has on your vehicle's fuel economy?
 - i. [IF NOT EASY TO UNDERSTAND]: What would you suggest changing this in order to make it easier to understand?
 - c. Is this information specific enough?
 - d. After reading this statement, do you have any further questions about how you can use this tip to help improve your fuel economy?
 - e. How if at all does this information change how you would highlight this activity?
- v. [MODERATOR READ ALOUD] Using your manufacturer's recommended grade of motor oil.
 - 1. By a show of hands, how many marked this with the green highlighter? Orange? How many did not highlight this?
 - 2. Those who highlighted it in green, why did you do so?
 - 3. Where did you hear about this activity's impact on fuel economy?
 - 4. Those who highlighted it in orange, why did you do so?
 - 5. Where did you hear about this activity's impact on fuel economy?
 - 6. Those who did not highlight this, why?
 - 7. I'd like to show you some more details about this [MODERATOR HAND OUT PAPER WITH "[USE THE RECOMMENDED MOTOR OIL.](#)" CONTENT].
 - a. How believable do you find this statement?
 - b. Written in this way, how easy is it to understand the impact this has on your vehicle's fuel economy?
 - i. [IF NOT EASY TO UNDERSTAND]: What would you suggest changing this in order to make it easier to understand?
 - c. Is this information specific enough?
 - d. After reading this statement, do you have any further questions about how you can use this tip to help improve your fuel economy?
 - e. How if at all does this information change how you would highlight this activity?
- vi. [MODERATOR READ ALOUD] Regularly inflating your tires to the recommended tire pressure level.
 - 1. By a show of hands, how many marked this with the green highlighter? Orange? How many did not highlight this?

2. Those who highlighted it in green, why did you do so?
3. Where did you hear about this activity's impact on fuel economy?
4. Those who highlighted it in orange, why did you do so?
5. Where did you hear about this activity's impact on fuel economy?
6. Those who did not highlight this, why?
7. I'd like to show you some more details about this [MODERATOR HAND OUT PAPER WITH "[CHECK YOUR TIRE PRESSURE MONTHLY.](#)" CONTENT].
 - a. How believable do you find this statement?
 - b. Written in this way, how easy is it to understand the impact this has on your vehicle's fuel economy?
 - i. [IF NOT EASY TO UNDERSTAND]: What would you suggest changing this in order to make it easier to understand?
 - c. Is this information specific enough?
 - d. After reading this statement, do you have any further questions about how you can use this tip to help improve your fuel economy?
 - e. How if at all does this information change how you would highlight this activity?
- vii. Thinking about all the information we just discussed regarding fuel economy and your driving behaviors and maintenance habits, would you, personally, take the time to seek out more tips like the ones we reviewed?
 1. [IF YES] Where would you look to find information on how your driving actions can affect the fuel economy of your vehicle?
 2. What sources would you trust most to provide you with information about your vehicle's fuel economy?

C. Alternative Fuels Content Evaluation

- a. What do you know about the use of alternative fuels in passenger vehicles?
 - i. In what ways are vehicles that run on alternative fuels different from those that run on gasoline?
 - ii. What are the benefits of these fuels? What are the drawbacks?
 1. [PROBE ENVIRONMENTAL, PERSONAL, POLITICAL] Which are more important you?
- b. By a show of hands, how many of you currently use alternative fuels in one or more of your vehicles?
 - i. Which fuels do you use? [MODERATOR TO WRITE ON FLIP CHART]
 - ii. What motivated you to use alternative fuels?
 - iii. For those of you with no experience with alternative fuels, what is keeping you from using them?
 1. Will you consider purchasing a vehicle that can run on alternative fuels? Why/Why not?
 2. What are some things you need to know about alternative fuels before considering purchasing a vehicle that runs on them?
 - a. Availability in your area?
 - b. Performance of your vehicle?
 - c. Environmental impacts?
 - d. Origin? (Domestic vs. Foreign)
- c. In addition to the fuels we've already listed, what are some other alternative fuels you have heard about? [MODERATOR TO WRITE ON FLIP CHART]

- i. Is there an alternative fuel that you think is better than other fuel options today?
 - ii. What is the difference between this and other alternative fuels?
 - d. Let's discuss a couple alternative fuels in detail:
 - i. [MODERATOR CIRCLE OR ADD TO LIST - ETHANOL, BIODIESEL]
 - 1. What is your opinion of using these fuels to power a vehicle?
 - a. Do either of these fuels stand out as better than the other fuels listed?
 - i. [IF YES] In what ways is this fuel better?
 - ii. In your opinion, how do these fuels compare to the others we listed?
 - 2. Do you know of any vehicles that currently can run on these fuels?
 - a. Ethanol?
 - b. Biodiesel?
 - 3. What are the benefits of Ethanol? Drawbacks?
 - ii. [MODERATOR HAND OUT [ETHANOL DESCRIPTION](#)]
 - iii. [READ ALOUD] Ethanol is domestically produced – which lowers our dependence on foreign oil – and has lower emissions of air pollutants and is more resistant to engine vibration when pressure is applied to the gas pedal. Additionally, the added vehicle cost is very small.
 - 1. How easy to understand is this information?
 - 2. Does it give you the information you need to change, reinforce or just form your opinion on this particular alternative fuel?
 - 3. What part of this information do you think is most important in encouraging Ethanol use?
 - 4. After reading this information, is your opinion of using Ethanol more positive or more negative?
 - 5. After reading this information, how likely are you to consider using Ethanol if your vehicle can run on it?
 - a. How likely are you to consider a vehicle that can run on Ethanol for your next car?
 - iv. [MODERATOR HAND OUT [BIODIESEL DESCRIPTION](#)]
 - v. [READ ALOUD] Biodiesel is domestically produced – which lowers our dependence on foreign oil – and has lower emissions of air pollutants, is biodegradable, non-toxic and safer to handle. Additionally, it can be used in most diesel engines when blended with regular diesel fuel.
 - 1. How easy to understand is this information?
 - 2. Does it give you the information you need to change, reinforce or just form your opinion on this particular alternative fuel?
 - 3. What part of this information do you think is most important in encouraging Biodiesel use?
 - 4. After reading this information, is your opinion of using Biodiesel more positive or more negative?
 - 5. After reading this information, how likely are you to consider using Biodiesel if your vehicle can run on it?
 - a. How likely are you to consider a vehicle that can run on Biodiesel for your next car?
 - e. Thinking about the alternative fuel information we just went through, how credible do you believe this information to be?
 - i. If this information came from a government agency, would that make the message more or less credible?

- f. How likely are you to look up more information about alternative fuels like the ones we discussed today?
 - i. Where would you look to find information about a vehicle's alternative fuel capabilities?
 - ii. What are some other sources that, in your opinion, absolutely must have this information? Where would this information be most helpful for you?
 - iii. [PROBE ONLINE, IN-STORE, PRINT MEDIA, PSA, ETC.]

D. Thermal Management Technologies Content Evaluation

- a. Have you heard of thermal management technologies?
 - i. [IF HEARD OF] What are thermal management technologies?
 - ii. [IF HEARD OF] Where did you hear about thermal management technologies?
 - iii. [IF HEARD OF] What are the benefits of having thermal management technologies in your vehicle?
 - 1. [PROBE PERSONAL BENEFITS VS. ENVIRONMENTAL BENEFITS]
- b. By a show of hands, how many of you currently own a vehicle equipped with thermal management technologies?
- c. I'd like to explore two types of thermal management technologies in detail.
 - i. Energy-efficient glass
 - 1. [MODERATOR HAND OUT PAPER WITH [ENERGY-EFFICIENT GLASS](#) STATEMENT]
 - 2. [READ ALOUD] Thermal-management technologies, such as energy-efficient glass, can reduce your vehicle heating and cooling needs. In the winter months, if you have energy-efficient glass in your vehicle, much of the warmth inside the vehicle is bounced back in. In the summer, the same thing happens but in reverse. With energy-efficient glass, much of the heat outside of your vehicle bounces off the glass and stays outside.
 - 3. How many have heard of this technology?
 - 4. After reading this information, what do you believe to be the benefits of this technology?
 - a. Does this give you all this information you need to change, reinforce or form an opinion on this technology?
 - ii. Energy-efficient air conditioning
 - 1. [MODERATOR HAND OUT PAPER WITH [ENERGY-EFFICIENT AIR CONDITIONING](#) STATEMENT]
 - 2. [READ ALOUD] Thermal-management technologies, such as energy-efficient air conditioning systems, can make your vehicle more efficient. According to the National Renewable Energy Laboratory, 7 billion gallons of gasoline – a volume representing nearly 5% of total fuel consumption in the United States – are used annually to run the air conditioners of passenger vehicles alone. By improving engine thermal efficiency and reducing overall energy use, vehicles will achieve better gas mileage and release fewer emissions.
 - 3. How many have heard of this technology?
 - 4. After reading this information, what do you believe to be the benefits of this technology?
 - a. Does this give you all this information you need to change, reinforce or form an opinion on this technology?
- d. After reading the information about both technologies, how likely are you to consider thermal management technologies when purchasing your next vehicle?

- i. How important is it for a car you are considering to be equipped with thermal management technologies?
 - ii. What other information would you need before deciding whether or not to include these technologies on your next vehicle?
 - e. Where would you look for information on thermal management technologies when you are considering a vehicle?

- E. Greenhouse gas and other pollutant emissions
 - a. Have you heard of greenhouse gas emissions?
 - i. [IF HEARD OF GHG] What are greenhouse gas emissions?
 - 1. What are the effects of greenhouse gas?
 - a. To you personally?
 - b. To the environment?
 - b. What other pollutant emissions have you heard of?
 - i. What are the effects of these emissions?
 - 1. To you personally?
 - 2. To the environment?
 - c. How, if at all, are vehicle emissions and fuel economy related?
 - d. [MODERATOR HAND OUT SHEET WITH [GHG](#) CONTENT]
 - e. [READ ALOUD] There is a direct relationship between the fuel economy of your vehicle and its greenhouse gas (GHG) emissions. Every gallon of fuel burned produces GHG. In fact, the EPA actually measures vehicle GHG output during testing and converts it to the Fuel Economy number you see on the label. Improving your driving behavior and vehicle operation will result in the reduction of GHG and saving fuel.
 - i. By a show of hands, how many have seen information about GHG and other emissions on a vehicle's label?
 - ii. After reading this, how likely are you to consider changing your driving behaviors in order to reduce the emissions from your vehicle?
 - 1. What motivates you more to change your behaviors – saving fuel or reducing your emissions?
 - iii. Does this give you all the information you need to understand GHG and other emissions and what you can do to reduce your emissions?
 - 1. What more do you need to know?

- F. Content Channels
 - a. We talked a little already about where you might seek out information on the topics we discussed today. Thinking about all the topics we talked about, where would you want this information to be available to you if you were interested in learning more about these topics? What sources would be most helpful to you?
 - i. [PROBE ONLINE, IN DEALERSHIPS, AT A GARAGE, ETC]
 - b. Who would you trust to be the source of this information? What organizations, if any, would you not trust to provide you with this information? PROBE:
 - i. Government sources: NHTSA vs. DOT vs. EPA vs. DOE
 - ii. Industry sources: Auto manufacturers, Fuel companies
 - iii. Third-party sources: Consumer Reports, Edmunds, KBB
 - c. How interested are you in searching for more information on these topics?
 - i. Are there still questions you have about this information?
 - ii. Which of these topics, do you personally care most about? (Fuel economy, emissions, alternative fuels, thermal-management technologies)
 - 1. Which topic do you feel you need to learn more about? Are there any topics that you believe you have more information than others?

G. Message Testing & Channels of Communication

- a. I'd like you to imagine that an organization wants to put information regarding the topics we've discussed today on a website so that consumers can learn more about fuel economy, alternative fuel, thermal management technologies and GHG and other emissions.
- b. I'm now going to hand out a small booklet. Each page in this booklet contains a message than an organization might use to encourage you to look up information on the topics we discussed today. As a group, let's go through each message – I'll read it aloud then we can discuss it together.
- c. [READ ALOUD] Is your windshield smart enough to keep warm air inside in the winter and prevent hot air from entering in the summer? It can be with energy efficient glass. Learn how your windshield can make your vehicle more fuel efficient at SaferCar.gov.
 - i. What do you like about this message?
 - ii. What don't you like about this message?
 - iii. Where can you picture seeing or hearing this message?
 - iv. Would you visit NHTSA.gov after reading or hearing this message?
 - v. Does your likelihood to visit NHTSA.gov change based on where the messages is:
 1. Would you click on this if it were an online banner ad?
 2. Visit after hearing this on a TV commercial?
 3. Visit after hearing this on the radio?
 4. Visit after reading this within a news article?
 - vi. Are you more or less interested in learning about thermal management technologies than you were before reading this message?
- d. [READ ALOUD] Sudden starts and stops waste fuel. Learn smart driving habits that can improve your vehicle's fuel economy by up to 33% at SaferCar.gov.
 - i. What do you like about this message?
 - ii. What don't you like about this message?
 - iii. Where can you picture seeing or hearing this message?
 - iv. Would you visit NHTSA.gov after reading or hearing this message?
 - v. Does your likelihood to visit NHTSA.gov change based on where the messages is:
 1. Would you click on this if it were an online banner ad?
 2. Visit after hearing this on a TV commercial?
 3. Visit after hearing this on the radio?
 4. Visit after reading this within a news article?
 - vi. Are you more or less interested in learning about driving behaviors that can improve your vehicle's fuel economy than you were before reading this message?
- e. [READ ALOUD] Alternative fuels burn cleaner and improve environmental sustainability. Learn more about the benefits of using alternative fuels at SaferCar.gov.
 - i. What do you like about this message?
 - ii. What don't you like about this message?
 - iii. Where can you picture seeing or hearing this message?
 - iv. Would you visit NHTSA.gov after reading or hearing this message?
 - v. Does your likelihood to visit NHTSA.gov change based on where the messages is:
 1. Would you click on this if it were an online banner ad?
 2. Visit after hearing this on a TV commercial?
 3. Visit after hearing this on the radio?
 4. Visit after reading this within a news article?

- vi. Are you more or less interested in learning about alternative fuels than you were before reading this message?
- f. [READ ALOUD] Regular vehicle maintenance can save you money and reduce CO₂ emissions. Learn vehicle maintenance tips that can improve your fuel economy at SaferCar.gov.
 - i. What do you like about this message?
 - ii. What don't you like about this message?
 - iii. Where can you picture seeing or hearing this message?
 - iv. Would you visit NHTSA.gov after reading or hearing this message?
 - v. Does your likelihood to visit NHTSA.gov change based on where the messages is:
 - 1. Would you click on this if it were an online banner ad?
 - 2. Visit after hearing this on a TV commercial?
 - 3. Visit after hearing this on the radio?
 - 4. Visit after reading this within a news article?
 - vi. Are you more or less interested in learning vehicle maintenance tips that improve fuel economy than you were before reading this message?
- g. [READ ALOUD] Every gallon of fuel burned produces greenhouse gas emissions. Learn about ways to reduce your emissions at SaferCar.gov.
 - i. What do you like about this message?
 - ii. What don't you like about this message?
 - iii. Where can you picture seeing or hearing this message?
 - iv. Would you visit NHTSA.gov after reading or hearing this message?
 - v. Does your likelihood to visit NHTSA.gov change based on where the messages is:
 - 1. Would you click on this if it were an online banner ad?
 - 2. Visit after hearing this on a TV commercial?
 - 3. Visit after hearing this on the radio?
 - 4. Visit after reading this within a news article?
 - vi. Are you more or less interested in learning vehicle maintenance tips that improve fuel economy than you were before reading this message?
- a. Some of these messages we went through talked about the benefits of these technologies or behavior changes in terms of cost savings, others about fuel savings, while others talked specifically about environmental issues. Which of these benefits do you find more compelling?
 - vii. Which message that we evaluated would most likely compel you to visit NHTSA.gov to learn more information?
- b. Do you have any other tips or suggestions to an organization looking to help educate consumers like you about these topics?
- c. Finally, by a show of hands how many would say they learned something new today about fuel economy, alternative fuels, thermal management technologies, or GHG and other emissions?
 - viii. What information about these topics did you learn today?
 - ix. What was the most interesting thing you learned?
- d. Thank and close group.

Fuel Economy Content Testing Schedule

Group	Content Test 1	Content Test 2	Content Test 3	Content Test 4	Content Test 5
1	<p>Avoid sudden starts and stops. Gentle acceleration and braking can save more than \$1 per gallon, according to the Environmental Protection Agency (EPA). A few seconds of high-powered driving can use as much gas as driving for several minutes at more measured speeds.</p>	<p>Open the windows at slow speeds and turn on the A/C at higher speeds. Air conditioning can reduce fuel mileage significantly – by as much as 20%. In fact, your air conditioner can consume up to one gallon of gas per tank to cool the vehicle. But driving with your windows open can produce aerodynamic drag, which reduces fuel economy. So, when driving at speeds of less than 40 mph, open your windows. At speeds over 40 mph, turn on the air conditioner instead.</p>	<p>Shift into high gear to save fuel. Vehicles are designed to start in the lowest gear possible, because that's where they have the most power; however, power means fuel consumption. By using overdrive gearing where possible, such as on the highway, your vehicle's engine speed goes down, saving fuel and engine wear while reducing CO2 emissions.</p>	<p>Use the recommended motor oil. According to the EPA, you can improve your fuel economy by 1-2% by using the manufacturer's recommended grade of motor oil. Additionally, motor oil that says "energy conserving" contains friction-reducing additives that can provide additional benefits.</p>	<p>Check your tire pressure monthly. Tire pressure increases when driving, so to get an accurate reading, check your pressure when you haven't driven for three or more hours. The Department of Energy estimates that 1.2 billion gallons of fuel were wasted in 2005 as a result of driving on underinflated tires. Even if your vehicle is equipped with an onboard Tire Pressure Monitoring System (TPMS), tires can still fall below their optimum pressure affecting fuel economy.</p>
2	<p>Maintain a constant speed. Maintaining a constant speed increases fuel economy, because it takes much more energy to move a stopped vehicle than to keep a vehicle moving. In fact, it can take 20% more fuel to accelerate from a full stop than from 5 mph. This can also make your commute smoother, since traffic lights are often synchronized so that a motorist driving at a specific speed will pass through a series of green lights without stopping.</p>	<p>Maintain an optimum highway speed. Highway driving that exceeds 60 mph uses more fuel. According to the EPA, every 5 miles over the 60 mph level is equivalent to paying 20 extra cents per gallon for gas. Observing the speed limit and not exceeding 60 mph (where legally allowed) can improve mileage by 7-23%. Using cruise control can also help maintain a steady speed.</p>	<p>Avoid idling and turn off the engine. An automobile may burn more than half a gallon of fuel for every hour spent idling. Make it a habit to turn your engine off when waiting at the curb – even if it's just for a short period.</p>	<p>Consider purchasing fuel-efficient tires. "Lower rolling resistance" tires can improve mileage. However, tire traction and handling characteristics should be priorities when considering these tires, so talk to your dealer or a tire expert, and consult your vehicle's owner guide to see if these tires make sense for you.</p>	<p>For modern cars, replacing an air filter will improve performance but not fuel economy. For modern computer-controlled, fuel-injected engines, changing a clogged air filter has no measurable effect on fuel economy but does affect ultimate performance. In a study conducted by the Department of Energy, average acceleration times for vehicles improved by 6-11% when running on a clean filter.</p>
3	<p>Drive your vehicle to warm it up. Even on the coldest morning, running your engine for 30 seconds is all today's vehicles need before they are ready to drive. Additionally, your vehicle will reach its optimum operating temperature much faster when you are driving, rather than idling.</p>	<p>Keep your vehicle cool on hot days. The inside of a vehicle heats up quickly in the summer sun, reaching 120 - 130 degrees Fahrenheit in just 10 minutes. That can mean more air conditioning use, which means more fuel use and CO2 emissions. Always roll down the windows when getting into a hot car to blow out the hot air, try to park in the shade and consider investing in a heat reflector or window shades to shield your vehicle's interior from the sun. Parking in your garage instead of outdoors can also help keep your vehicle cooler in the summer.</p>	<p>Maintain an optimum highway speed. Highway driving that exceeds 60 mph uses more fuel. According to the EPA, every 5 miles over the 60 mph level is equivalent to paying 20 extra cents per gallon for gas. Observing the speed limit and not exceeding 60 mph (where legally allowed) can improve mileage by 7-23%. Using cruise control can also help maintain a steady speed.</p>	<p>Follow the manufacturer recommended maintenance schedule. To keep your vehicle running at peak performance, visit your local dealership or auto shop on a regular basis. Manufacturers recommend different maintenance schedules based on how you drive and use your vehicle – make sure you follow the correct schedule based on your usage to prevent changing your oil too early and wasting good oil or potential damage from driving too far.</p>	<p>Reduce aerodynamic drag. Wind resistance can reduce mileage, so you can maximize your mileage by removing luggage racks, rooftop carriers and ski racks when they are not needed.</p>

Fuel Economy Content Testing Schedule (Cont.)

Group	Content Test 1	Content Test 2	Content Test 3	Content Test 4	Content Test 5
4	<p>Avoid idling and turn off the engine. An automobile may burn more than half a gallon of fuel for every hour spent idling. Make it a habit to turn your engine off when waiting at the curb – even if it’s just for a short period.</p>	<p>Maintain a constant speed. Maintaining a constant speed increases fuel economy, because it takes much more energy to move a stopped vehicle than to keep a vehicle moving. In fact, it can take 20% more fuel to accelerate from a full stop than from 5 mph. This can also make your commute smoother, since traffic lights are often synchronized so that a motorist driving at a specific speed will pass through a series of green lights without stopping.</p>	<p>Open the windows at slow speeds and turn on the A/C at higher speeds. Air conditioning can reduce fuel mileage significantly – by as much as 20%. In fact, your air conditioner can consume up to one gallon of gas per tank to cool the vehicle. But driving with your windows open can produce aerodynamic drag, which reduces fuel economy. So, when driving at speeds of less than 40 mph, open your windows. At speeds over 40 mph, turn on the air conditioner instead.</p>	<p>Remove excess weight from your vehicle. A vehicle’s weight affects fuel economy and CO2 emissions. An extra 100 pounds in the trunk typically reduces fuel mileage by about 2%.</p>	<p>Follow the manufacturer recommended maintenance schedule. To keep your vehicle running at peak performance, visit your local dealership or auto shop on a regular basis. Manufacturers recommend different maintenance schedules based on how you drive and use your vehicle – make sure you follow the correct schedule based on your usage to prevent changing your oil too early and wasting good oil or potential damage from driving too far.</p>
5	<p>Keep your vehicle cool on hot days. The inside of a vehicle heats up quickly in the summer sun, reaching 120 - 130 degrees Fahrenheit in just 10 minutes. That can mean more air conditioning use, which means more fuel use and CO2 emissions. Always roll down the windows when getting into a hot car to blow out the hot air, try to park in the shade and consider investing in a heat reflector or window shades to shield your vehicle’s interior from the sun. Parking in your garage instead of outdoors can also help keep your vehicle cooler in the summer.</p>	<p>Avoid sudden starts and stops. Gentle acceleration and braking can save more than \$1 per gallon, according to the Environmental Protection Agency (EPA). A few seconds of high-powered driving can use as much gas as driving for several minutes at more measured speeds.</p>	<p>For modern cars, replacing an air filter will improve performance but not fuel economy. For modern computer-controlled, fuel-injected engines, changing a clogged air filter has no measurable effect on fuel economy but does affect ultimate performance. In a study conducted by the Department of Energy, average acceleration times for vehicles improved by 6-11% when running on a clean filter.</p>	<p>Use the recommended motor oil. According to the EPA, you can improve your fuel economy by 1-2% by using the manufacturer’s recommended grade of motor oil. Additionally, motor oil that says “energy conserving” contains friction-reducing additives that can provide additional benefits.</p>	<p>Reduce aerodynamic drag. Wind resistance can reduce mileage, so you can maximize your mileage by removing luggage racks, roof-top carriers and ski racks when they are not needed.</p>
6	<p>Shift into high gear to save fuel. Vehicles are designed to start in the lowest gear possible, because that’s where they have the most power; however, power means fuel consumption. By using overdrive gearing where possible, such as on the highway, your vehicle’s engine speed goes down, saving fuel and engine wear while reducing CO2 emissions.</p>	<p>Drive your vehicle to warm it up. Even on the coldest morning, running your engine for 30 seconds is all today’s vehicles need before they are ready to drive. Additionally, your vehicle will reach its optimum operating temperature much faster when you are driving, rather than idling.</p>	<p>Check your tire pressure monthly. Tire pressure increases when driving, so to get an accurate reading, check your pressure when you haven’t driven for three or more hours. The Department of Energy estimates that 1.2 billion gallons of fuel were wasted in 2005 as a result of driving on underinflated tires. Even if your vehicle is equipped with an onboard Tire Pressure Monitoring System (TPMS), tires can still fall below their optimum pressure affecting fuel economy.</p>	<p>Consider purchasing fuel-efficient tires. “Lower rolling resistance” tires can improve mileage. However, tire traction and handling characteristics should be priorities when considering these tires, so talk to your dealer or a tire expert, and consult your vehicle’s owner guide to see if these tires make sense for you.</p>	<p>Remove excess weight from your vehicle. A vehicle’s weight affects fuel economy and CO2 emissions. An extra 100 pounds in the trunk typically reduces fuel mileage by about 2%.</p>

Alternative Fuel Content Testing Schedule

Group	Content Test 1	Content Test 2
1	Ethanol is domestically produced – which lowers our dependence on foreign oil – and has lower emissions of air pollutants and is more resistant to engine vibration when pressure is applied to the gas pedal. Additionally, the added vehicle cost is very small.	Biodiesel is domestically produced – which lowers our dependence on foreign oil – and has lower emissions of air pollutants, is biodegradable, non-toxic and safer to handle. Additionally, it can be used in most diesel engines when blended with regular diesel fuel.
2	Natural gas is domestically produced – which lowers our dependence on foreign oil – and produces 60-90% less smog-producing pollutants and 30-40% less greenhouse gas emissions. Additionally, it is less expensive than gasoline.	Hydrogen is domestically produced – which lowers our dependence on foreign oil – and produces no air pollutants or greenhouse gases when used in fuel cells.
3	Ethanol is domestically produced – which lowers our dependence on foreign oil – and has lower emissions of air pollutants and is more resistant to engine vibration when pressure is applied to the gas pedal. Additionally, the added vehicle cost is very small.	Natural gas is domestically produced – which lowers our dependence on foreign oil – and produces 60-90% less smog-producing pollutants and 30-40% less greenhouse gas emissions. Additionally, it is less expensive than gasoline.
4	Hydrogen is domestically produced – which lowers our dependence on foreign oil – and produces no air pollutants or greenhouse gases when used in fuel cells.	Ethanol is domestically produced – which lowers our dependence on foreign oil – and has lower emissions of air pollutants and is more resistant to engine vibration when pressure is applied to the gas pedal. Additionally, the added vehicle cost is very small.
5	Natural gas is domestically produced – which lowers our dependence on foreign oil – and produces 60-90% less smog-producing pollutants and 30-40% less greenhouse gas emissions. Additionally, it is less expensive than gasoline.	Biodiesel is domestically produced – which lowers our dependence on foreign oil – and has lower emissions of air pollutants, is biodegradable, non-toxic and safer to handle. Additionally, it can be used in most diesel engines when blended with regular diesel fuel.
6	Biodiesel is domestically produced – which lowers our dependence on foreign oil – and has lower emissions of air pollutants, is biodegradable, non-toxic and safer to handle. Additionally, it can be used in most diesel engines when blended with regular diesel fuel.	Hydrogen is domestically produced – which lowers our dependence on foreign oil – and produces no air pollutants or greenhouse gases when used in fuel cells.

Thermal Management Technologies Content Testing Schedule

Group	Content Test 1	Content Test 2
1	<p>Thermal-management technologies, such as energy-efficient glass, can reduce your vehicle heating and cooling needs. In the winter months, if you have energy-efficient glass in your vehicle, much of the warmth inside the vehicle is bounced back in. In the summer, the same thing happens but in reverse. With energy-efficient glass, much of the heat outside of your vehicle bounces off the glass and stays outside.</p>	<p>Thermal-management technologies, such as energy-efficient air conditioning systems, can make your vehicle more efficient. According to the National Renewable Energy Laboratory, 7 billion gallons of gasoline – a volume representing nearly 5% of total fuel consumption in the United States – are used annually to run the air conditioners of passenger vehicles alone. By improving engine thermal efficiency and reducing overall energy use, vehicles will achieve better gas mileage and release fewer emissions.</p>
2	<p>Thermal-management technologies, such as energy-efficient air conditioning systems, can make your vehicle more efficient. According to the National Renewable Energy Laboratory, 7 billion gallons of gasoline – a volume representing nearly 5% of total fuel consumption in the United States – are used annually to run the air conditioners of passenger vehicles alone. By improving engine thermal efficiency and reducing overall energy use, vehicles will achieve better gas mileage and release fewer emissions.</p>	<p>Thermal-management technologies, such as energy-efficient glass, can reduce your vehicle heating and cooling needs. In the winter months, if you have energy-efficient glass in your vehicle, much of the warmth inside the vehicle is bounced back in. In the summer, the same thing happens but in reverse. With energy-efficient glass, much of the heat outside of your vehicle bounces off the glass and stays outside.</p>
3	<p>Thermal-management technologies, such as energy-efficient air conditioning systems, can make your vehicle more efficient. According to the National Renewable Energy Laboratory, 7 billion gallons of gasoline – a volume representing nearly 5% of total fuel consumption in the United States – are used annually to run the air conditioners of passenger vehicles alone. By improving engine thermal efficiency and reducing overall energy use, vehicles will achieve better gas mileage and release fewer emissions.</p>	<p>Thermal-management technologies, such as energy-efficient glass, can reduce your vehicle heating and cooling needs. In the winter months, if you have energy-efficient glass in your vehicle, much of the warmth inside the vehicle is bounced back in. In the summer, the same thing happens but in reverse. With energy-efficient glass, much of the heat outside of your vehicle bounces off the glass and stays outside.</p>
4	<p>Thermal-management technologies, such as energy-efficient glass, can reduce your vehicle heating and cooling needs. In the winter months, if you have energy-efficient glass in your vehicle, much of the warmth inside the vehicle is bounced back in. In the summer, the same thing happens but in reverse. With energy-efficient glass, much of the heat outside of your vehicle bounces off the glass and stays outside.</p>	<p>Thermal-management technologies, such as energy-efficient air conditioning systems, can make your vehicle more efficient. According to the National Renewable Energy Laboratory, 7 billion gallons of gasoline – a volume representing nearly 5% of total fuel consumption in the United States – are used annually to run the air conditioners of passenger vehicles alone. By improving engine thermal efficiency and reducing overall energy use, vehicles will achieve better gas mileage and release fewer emissions.</p>
5	<p>Thermal-management technologies, such as energy-efficient glass, can reduce your vehicle heating and cooling needs. In the winter months, if you have energy-efficient glass in your vehicle, much of the warmth inside the vehicle is bounced back in. In the summer, the same thing happens but in reverse. With energy-efficient glass, much of the heat outside of your vehicle bounces off the glass and stays outside.</p>	<p>Thermal-management technologies, such as energy-efficient air conditioning systems, can make your vehicle more efficient. According to the National Renewable Energy Laboratory, 7 billion gallons of gasoline – a volume representing nearly 5% of total fuel consumption in the United States – are used annually to run the air conditioners of passenger vehicles alone. By improving engine thermal efficiency and reducing overall energy use, vehicles will achieve better gas mileage and release fewer emissions.</p>
6	<p>Thermal-management technologies, such as energy-efficient air conditioning systems, can make your vehicle more efficient. According to the National Renewable Energy Laboratory, 7 billion gallons of gasoline – a volume representing nearly 5% of total fuel consumption in the United States – are used annually to run the air conditioners of passenger vehicles alone. By improving engine thermal efficiency and reducing overall energy use, vehicles will achieve better gas mileage and release fewer emissions.</p>	<p>Thermal-management technologies, such as energy-efficient glass, can reduce your vehicle heating and cooling needs. In the winter months, if you have energy-efficient glass in your vehicle, much of the warmth inside the vehicle is bounced back in. In the summer, the same thing happens but in reverse. With energy-efficient glass, much of the heat outside of your vehicle bounces off the glass and stays outside.</p>

Group	GHG and Other Emissions Content Testing Schedule
1	<p>There is a direct relationship between the fuel economy of your vehicle and its greenhouse gas (GHG) emissions. Every gallon of fuel burned produces GHG. In fact, the EPA actually measures vehicle GHG output during testing and converts it to the Fuel Economy number you see on the label. Improving your driving behavior and vehicle operation will result in the reduction of GHG and saving fuel.</p>
2	<p>There is a direct relationship between the fuel economy of your vehicle and its greenhouse gas (GHG) emissions. Every gallon of fuel burned produces GHG. In fact, the EPA actually measures vehicle GHG output during testing and converts it to the Fuel Economy number you see on the label. Improving your driving behavior and vehicle operation will result in the reduction of GHG and saving fuel.</p>
3	<p>There is a direct relationship between the fuel economy of your vehicle and its greenhouse gas (GHG) emissions. Every gallon of fuel burned produces GHG. In fact, the EPA actually measures vehicle GHG output during testing and converts it to the Fuel Economy number you see on the label. Improving your driving behavior and vehicle operation will result in the reduction of GHG and saving fuel.</p>
4	<p>There is a direct relationship between the fuel economy of your vehicle and its greenhouse gas (GHG) emissions. Every gallon of fuel burned produces GHG. In fact, the EPA actually measures vehicle GHG output during testing and converts it to the Fuel Economy number you see on the label. Improving your driving behavior and vehicle operation will result in the reduction of GHG and saving fuel.</p>
5	<p>There is a direct relationship between the fuel economy of your vehicle and its greenhouse gas (GHG) emissions. Every gallon of fuel burned produces GHG. In fact, the EPA actually measures vehicle GHG output during testing and converts it to the Fuel Economy number you see on the label. Improving your driving behavior and vehicle operation will result in the reduction of GHG and saving fuel.</p>
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Message Testing Schedule

Group	Message Test 1	Message Test 2	Message Test 3	Message Test 4	Message Test 5
1	<p>Is your windshield smart enough to keep warm air inside in the winter and prevent hot air from entering in the summer? It can be with energy efficient glass.</p> <p>Learn how your windshield can make your vehicle more fuel efficient at SaferCar.gov.</p>	<p>Sudden starts and stops waste fuel.</p> <p>Learn smart driving habits that can improve your vehicle's fuel economy by up to 33% at SaferCar.gov.</p>	<p>Alternative fuels burn cleaner and improve environmental sustainability</p> <p>Learn more about the benefits of using alternative fuels at SaferCar.gov.</p>	<p>Regular vehicle maintenance can save you money and reduce CO₂ emissions.</p> <p>Learn vehicle maintenance tips that can improve your fuel economy at SaferCar.gov.</p>	<p>Every gallon of fuel burned produces greenhouse gas emissions.</p> <p>Learn about ways to reduce your emissions at SaferCar.gov.</p>
2	<p>Sudden starts and stops waste fuel.</p> <p>Learn smart driving habits that can improve your vehicle's fuel economy by up to 33% at SaferCar.gov.</p>	<p>Regular vehicle maintenance can save you money and reduce CO₂ emissions.</p> <p>Learn vehicle maintenance tips that can improve your fuel economy at SaferCar.gov.</p>	<p>Every gallon of fuel burned produces greenhouse gas emissions.</p> <p>Learn about ways to reduce your emissions at SaferCar.gov.</p>	<p>Alternative fuels burn cleaner and improve environmental sustainability</p> <p>Learn more about the benefits of using alternative fuels at SaferCar.gov.</p>	<p>Is your windshield smart enough to keep warm air inside in the winter and prevent hot air from entering in the summer? It can be with energy efficient glass.</p> <p>Learn how your windshield can make your vehicle more fuel efficient at SaferCar.gov.</p>
3	<p>Alternative fuels burn cleaner and improve environmental sustainability</p> <p>Learn more about the benefits of using alternative fuels at SaferCar.gov.</p>	<p>Is your windshield smart enough to keep warm air inside in the winter and prevent hot air from entering in the summer? It can be with energy efficient glass.</p> <p>Learn how your windshield can make your vehicle more fuel efficient at SaferCar.gov.</p>	<p>Sudden starts and stops waste fuel.</p> <p>Learn smart driving habits that can improve your vehicle's fuel economy by up to 33% at SaferCar.gov.</p>	<p>Every gallon of fuel burned produces greenhouse gas emissions.</p> <p>Learn about ways to reduce your emissions at SaferCar.gov.</p>	<p>Regular vehicle maintenance can save you money and reduce CO₂ emissions.</p> <p>Learn vehicle maintenance tips that can improve your fuel economy at SaferCar.gov.</p>
4	<p>Regular vehicle maintenance can save you money and reduce CO₂ emissions.</p> <p>Learn vehicle maintenance tips that can improve your fuel economy at SaferCar.gov.</p>	<p>Every gallon of fuel burned produces greenhouse gas emissions.</p> <p>Learn about ways to reduce your emissions at SaferCar.gov.</p>	<p>Sudden starts and stops waste fuel.</p> <p>Learn smart driving habits that can improve your vehicle's fuel economy by up to 33% at SaferCar.gov.</p>	<p>Alternative fuels burn cleaner and improve environmental sustainability</p> <p>Learn more about the benefits of using alternative fuels at SaferCar.gov.</p>	<p>Is your windshield smart enough to keep warm air inside in the winter and prevent hot air from entering in the summer? It can be with energy efficient glass.</p> <p>Learn how your windshield can make your vehicle more fuel efficient at SaferCar.gov.</p>

Message Testing Schedule (Cont.)

Group	Message Test 1	Message Test 2	Message Test 3	Message Test 4	Message Test 5
5	<p>Every gallon of fuel burned produces greenhouse gas emissions. Learn about ways to reduce your emissions at SaferCar.gov.</p>	<p>Regular vehicle maintenance can save you money and reduce CO₂ emissions. Learn vehicle maintenance tips that can improve your fuel economy at SaferCar.gov.</p>	<p>Is your windshield smart enough to keep warm air inside in the winter and prevent hot air from entering in the summer? It can be with energy efficient glass. Learn how your windshield can make your vehicle more fuel efficient at SaferCar.gov.</p>	<p>Sudden starts and stops waste fuel. Learn smart driving habits that can improve your vehicle's fuel economy by up to 33% at SaferCar.gov.</p>	<p>Alternative fuels burn cleaner and improve environmental sustainability Learn more about the benefits of using alternative fuels at SaferCar.gov.</p>
6	<p>Is your windshield smart enough to keep warm air inside in the winter and prevent hot air from entering in the summer? It can be with energy efficient glass. Learn how your windshield can make your vehicle more fuel efficient at SaferCar.gov.</p>	<p>Alternative fuels burn cleaner and improve environmental sustainability Learn more about the benefits of using alternative fuels at SaferCar.gov.</p>	<p>Every gallon of fuel burned produces greenhouse gas emissions. Learn about ways to reduce your emissions at SaferCar.gov.</p>	<p>Regular vehicle maintenance can save you money and reduce CO₂ emissions. Learn vehicle maintenance tips that can improve your fuel economy at SaferCar.gov.</p>	<p>Sudden starts and stops waste fuel. Learn smart driving habits that can improve your vehicle's fuel economy by up to 33% at SaferCar.gov.</p>