Appendix F:
Fuel Economy Workbook
Handouts For Use During Focus Group Research

NHTSA Fuel Economy, GHG, Other Emissions
and Alternative Fuels Education Program ICR Package
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Fuel Economy Highlighting Exercise

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

Fuel Economy Content Print-Outs

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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%.

Alternative Fuels Content Print-Outs

Ethanol is most commonly produced domestically from corn. Pure ethanol has the potential to be renewable if production and distribution does not rely on any nonrenewable energy source or fossil fuel. Additionally, it provides economic development for most Mid-Western States in the US.

Biodiesel can be derived from recycled cooking oil or from natural oils in plants. It can be used in most diesel engines when blended with regular diesel fuel.

Natural gas is primarily sourced from fossil fuel reservoirs. It can also be derived from landfills, sewage treatment plants and animal waste. Additionally, natural gas vehicles have very thick and strong tanks.

Electricity can be generated from a wide range of sources including fossil fuels, nuclear power and renewable sources such as tidal, solar and wind power. Electricity is readily available. Additionally, most automobiles using electricity are very quiet.

Thermal Management Technologies Content Print-Outs

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.

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.

GHG & Other Emissions Content Print-Outs

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.

Message Testing Booklet

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.

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.

Alternative fuels burn cleaner and improve environmental sustainability

Learn more about the benefits of using alternative fuels at SaferCar.gov.

Regular vehicle maintenance can save you money and reduce CO_2 emissions.

Learn vehicle maintenance tips that can improve your fuel economy at SaferCar.gov.

Every gallon of fuel burned produces greenhouse gas emissions.

Learn about ways to reduce your emissions at SaferCar.gov.