Environmental Protection Agency
Fuel Economy Label

Final Report

PRR
VISION + VOICE

September 8, 2010

Topics

Background

The Environmental Protection Agency (EPA) and the National Highway Traffic Safety Administration (NHTSA) are conducting a joint process to redesign the fuel economy label that is posted on the window sticker of all new cars and light-duty trucks sold in the U.S. These changes are proposed to impact vehicles beginning with model year 2012. The redesigned label will provide information to help American consumers choose more efficient and environmentally friendly vehicles. The changes are needed to respond to the Energy Independence and Security Act (EISA) of 2007, introduction of advanced technology vehicles such as plug-in hybrid electric vehicles and electric vehicles, and changes in how vehicles are purchased by Americans.

A thoughtful and thorough process is underway to ensure the public is provided the best possible tool to help inform a decision that impacts their lives, their community and their environment. Both the research process and the design process are continuums involving many staff in multiple agencies and hundreds of research participants. Even though research participants were provided several options to review throughout this process, literally hundreds of options were created, modified, and discarded prior to ever reaching the research participants. Designs were influenced and directed by staff and managers from each agency involved in the review process, as well as dictated by statutory requirements.

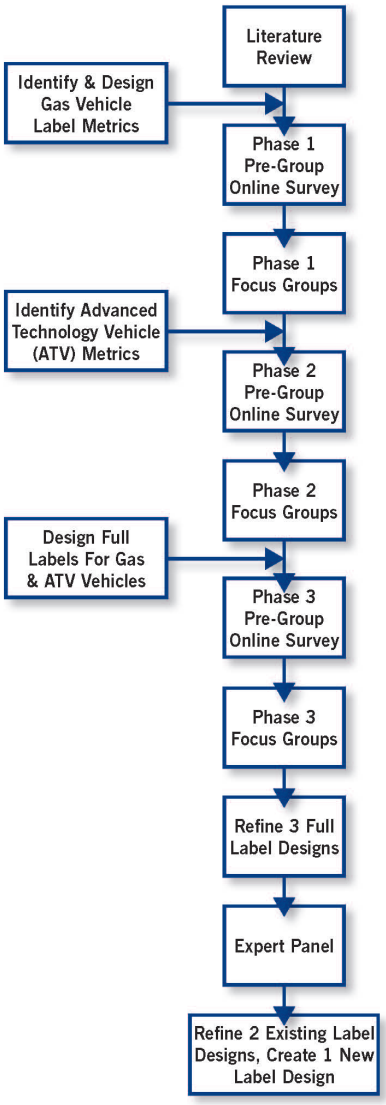
This report presents the key findings from the label redesign research process that informed the resulting label designs proposed for public comment. This report is intended to provide the reader with a top line summary of significant findings from the multifaceted information gathering process described in the next section. Detailed information is provided in the reports generated following each research phase.

Steps Involved

To help inform the redesign of the fuel economy label and increase the value of and preference for more fuel efficient vehicles, EPA engaged PRR Inc. to work with them in the development and implementation of several information gathering tasks. The following tasks were included and, as can be seen in Figure 1, each task informed the next task ultimately resulting in the redesigned labels.

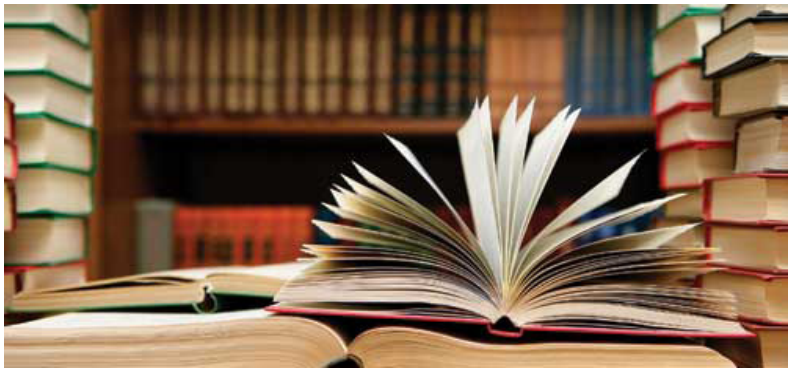
- Literature review
- Focus groups (including pre-focus group online surveys with participants)
- Expert panel
- Internet survey of new vehicle buyers and intenders

See Appendix A for a more detailed description of these research methodologies and their limitations.



Literature Review

PRR assembled and reviewed eighty articles. The primary focus of the review was to understand how consumers decide which vehicles to purchase and the factors that influence their decisions.



Focus Groups

Focus group participants completed an online survey before they took part in the discussions. The purpose of the pre-group online survey was to obtain information regarding their vehicle purchase process, the role of fuel economy in their purchase decision, how they used the current fuel economy label, and motivators and barriers to purchasing advanced technology vehicles. By gathering this information before the focus groups we were able to use the focus group time most efficiently.

Three phases of focus groups were conducted to acquire the desired information. The three phases and their in-depth discussions addressed the following issues:

- Phase I – Use of the current fuel economy label, as well as metrics and design of the label for conventional internal combustion engine vehicles.
- Phase II – Understandability of and preference for metrics on advanced technology vehicle labels.
- Phase III – Assessment of full label designs for conventional and advanced technology vehicles in regard to both content and look.

Expert Panel

A group of individuals with demonstrated experience in changing social norms was recruited to participate in a daylong consultation. Panel members came from a variety of fields in advertising, national educational campaigns and product introduction. Feedback received from this group was critical because of their unique history of creating dramatic shifts in social change and influencing product preference over short periods of time. In addition to providing feedback on prototype label designs as constructed following the three phases of focus groups, panelists were asked to provide guidance on increasing the value of and preference for more efficient vehicles. Counsel provided by the Expert Panel was significant and compelling because of the exceptional credentials of each panel member, the conviction of their recommendations and the strong consensus of the group. The very purpose of assembling this group was to receive comments and recommendations from an independent group of exceptional individuals and bring an outside perspective.

Internet Survey of New Vehicle Buyers and Intenders

While the focus groups and expert panel were used to develop new label designs, the internet survey will be used to examine how understandable the new label designs are, and whether the proposed new labels will improve consumers' knowledge about more efficient vehicles. The survey is scheduled to begin sometime in September 2010 and will ask these types of questions for both conventional and advanced technology vehicle labels.

29. Please rank order the top *five* things that would motivate you to seriously consider buying an advanced technology vehicle (such as an electric vehicle or a plug-in hybrid electric vehicle)? Do this by checking your #1 motivator in the #1 column, checking your #2 motivator in the #2 column, etc.

	#1 motivator	#2 motivator	#3 motivator	#4 motivator	#5 motivator
Lower fuel costs	○	○	○	○	○
Vehicle and parts are reliable	○	○	○	○	○
Good maintenance costs	○	○	○	○	○
Good vehicle range	○	○	○	○	○
Lower cost of vehicle	○	○	○	○	○
Better fuel efficiency	○	○	○	○	○
Reduce the number of trips to the gas station	○	○	○	○	○
Environmental benefits	○	○	○	○	○
Reduce our dependence on gasoline	○	○	○	○	○

Other things in your top five that would motivate you (please specify here)

Critical Themes

Developing an effective label – one that conveys the required and desired information to consumers so that they can understand and use it to make decisions – involves some inherent subjectivity. By this we mean that it involves the careful interpretation of the research results since some results are contradictory, as well as the fact that what is understandable and useful for one consumer may be confusing or unhelpful to another. Furthermore, research results must be assessed in regard to which results are more important than others relative to the ultimate goal of the label. Finally, the label metrics and designs are also 'negotiated' so as to meet the specific requirements of the various federal agencies involved.

In looking at all of the research results through the filters mentioned above we found that three key themes emerged which guided the label metrics used and the designs of the labels themselves. These three critical themes are:

1. **Keep it simple –** Without exception, consumers and experts stressed simplicity of content and design.

2. **Provide the ability to compare vehicles –** Consumers cast a wide net when selecting a vehicle and want the ability to easily compare the features and benefits of multiple vehicles.

3. **The role of the label in the purchase process has changed –** With the rise of internet and social media services, a significant and growing portion of the buying process is now happening before buyers even visit a lot.

Keep It Simple

Without exception, consumers and experts stressed extreme simplicity for both content and design.

Consumers currently receive an estimated 3,000 to 5,000 marketing messages each day. It has been said that "Data is like food. A good meal is served in reasonably-sized portions from several food groups. It leaves you satisfied but not stuffed. Likewise with information, we're best served when we can partake of reasonable, useful portions, exercising discretion in what data we digest and how often we seek it out." This is true in the vehicle purchasing process as well.

http://www.nytimes.com/2007/01/15/business/media/15everywhere.html

Many factors such as the aesthetics of the vehicle, reliability, safety, price, and fuel economy can influence a consumer decision. In addition, and addressed in greater detail later in this document, the buying process is an ever evolving continuum that includes consumer reliance on multiple sources to acquire information and make their purchasing decision. The fuel economy label is just one piece in this continuum and should be considered in that context.

Throughout each phase of the focus group process, and even more pronounced with the expert panel, was the cry for simplicity. When asked to select understandable designs participants described their selections as simple, straight forward, and concise. The least understandable designs were described as confusing, distracting, and complicated. In essence, participants preferred designs that they thought of as informative and that presented the information in a simple format.

"What you put on the sticker needs to be simple, basic, because it's going to scare a lot of people away from the car if there are too many figures."
– Chicago Male

"It took me some time to figure it out [3B]. If I have to take the time, I won't figure it out."
– Houston Female

The desire for simplicity became evident immediately, especially when focus group and expert panel participants were shown the existing Monroney label as a reminder of the space available for fuel economy information as well as the context in which this information is provided.

Phase 1 focus group participants were provided four approaches to represent individual metrics outside of the context of a full label. They were asked to indicate which approach was most understandable. Even in this sterile environment of looking at a single metric without other information competing for their attention, simplicity was the primary reason individuals gave for selecting their choice as most understandable. Statements used included:

- Easy. Nothing difficult to understand
- Could see it right away

Simplicity was again reinforced when participants were asked why they specifically rejected other options. Comments included statements such as:

- Cluttered and too busy
- Not reader friendly – there's too much stuff
- I get nervous when there's a lot of information
- This takes too much time and effort to figure it out

"Familiarity" was another significant theme that emerged related to simplicity. Throughout the research process participants raised the desirability and usefulness of having information provided in a "familiar" manner. The term "familiar" was used by participants when explaining their preferred choices across metrics for fuel economy, fuel consumption and environmental impacts.

When focus group participants were provided various metrics intended to help them compare one vehicle to another they again used the terms "simple" and "familiar" to describe why they selected a specific metric approach over the others. This was after viewing rating scales represented numerically, with stars and with leaves (in the case of environmental impacts), as well as slider scales similar to the bar that exists on the current fuel economy label.

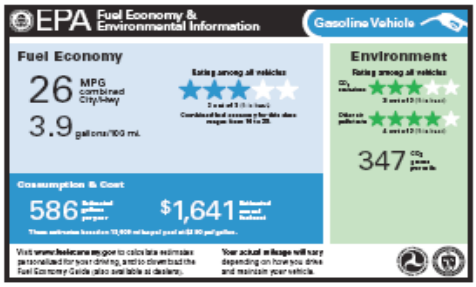
In Phase 2 focus groups (where they were presented with a variety of metrics that could potentially be included on labels for advanced technology vehicles) and Phase 3 focus groups (where they were presented with full labels), participants were overwhelmed with the amount of information and therefore favored designs that emphasized some values/metrics with larger font sizes and more prominence (so they knew what to look at and what to compare).

The two strongest recommendations provided by the Expert Panel echoed these comments as well—keep it simple and present it in a way that is familiar.

The Expert Panel was provided label designs for review that were the most current at the time. (See samples below). They understood that these designs reflected legal requirements, directives of staff from multiple agencies and feedback from focus group participants. Their initial response summarized the feelings of the group: "This label is the result of negotiation, not design."

Expert Panel members recognized that focus group participants had requested specific information and in some cases wanted it provided in great detail (such as wanting city and highway miles per gallon estimates for both electric and gas use on dual fuel vehicles). However, they rejected the need for this information to be provided in detail and in full on the label.

A



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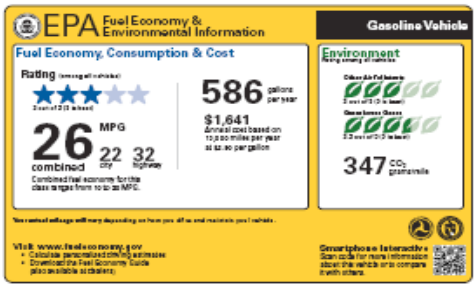

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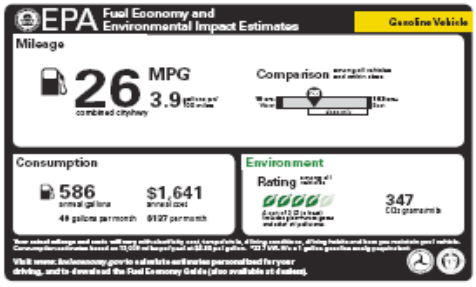

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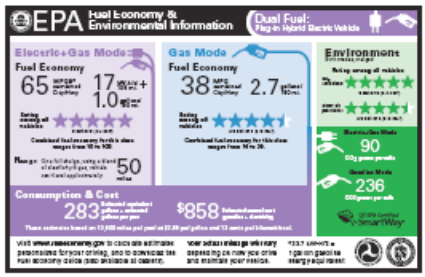

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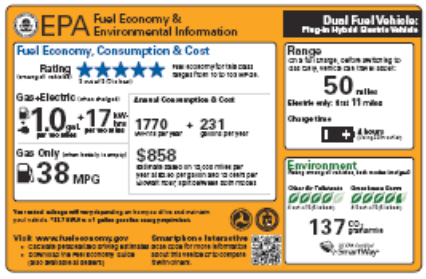

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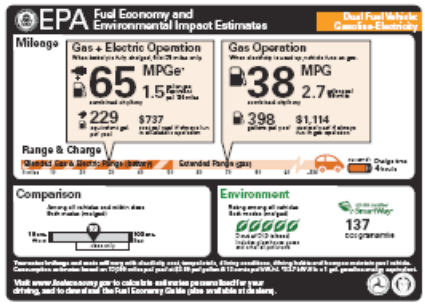


The guiding principles they used to support their recommendations were that consumers don't act on details, so information must be kept simple without the use of jargon, and that purchasing a car is an emotional decision so communications must appeal to emotions.

The Expert Panel then offered specific recommendations regarding design and content that, given their experience, would effectively engage the public. They referenced other successful labels when strongly recommending that the top portion, and the greatest amount of space on the label, contain only one element – a "grade." They suggested combining as many of the desired and required metrics as possible into a single grading scale (A, A-, B+, B, etc.). The rationale is that in a simple and familiar way, this design provides useful comparative information to the consumer who may only glance at it, while also providing the necessary details to those who want more in-depth information.

To help demonstrate the benefits of one vehicle over another they also suggested prominently displaying "savings" (over five years to express a larger and more realistic impact) rather than "cost." They went on to suggest that a website, similarly reflecting the desire for simplicity, could be created to provide additional detailed information for those who desired it. It was suggested that an easily remembered URL (such as "itsimple.com") be provided to help reinforce the educational messages and be easy to remember. Recognizing the current and quickly evolving level of information available using mobile devices such as Smart Phones, the Expert Panel echoed the recommendations of each focus group phase, to include a QR type scan code which would provide the consumer with multiple functions such as storing specific vehicle information, seeking additional information, and the ability to undertake side-by-side vehicle comparisons.

In the space under the grade they suggested placing the URL, which would inform the consumer that additional information was available and easily accessible while providing a natural design element. The remaining space below the grade and the URL could be used for any remaining information required by law.

For the Expert Panel it came down to these points:

- It is difficult for consumers to sway from routine
- It is critical to use only a few messages that are relevant and empower individuals to understand how their choices will make a difference
- Messages must address "What's in it for me?" and how making this decision will improve "my" life
- Keep it simple; we all yearn for simplicity
- Consumers don't act on details
- Remember the reality of very short label viewing time - roll ratings and metrics up into a single score
- Instead of focusing on costs, use savings information - a very strong consumer motivator
- Develop a website to be launched in conjunction with the new label

Expert Panel recommendations provided clarity and refinement, as well as specific tactical suggestions consistent with the findings of the literature review, pre-focus group online surveys, and focus groups. The implications of these recommendations for the label design are significant and might seem at first glance to contradict the focus group findings. However, there is consistency in striving to provide the ability to compare within and across vehicle technologies in a simple way.

Provide Ability to Compare Vehicles

Consumers cast a wide net when selecting a vehicle and want the ability to easily compare the features and benefits of multiple vehicles.

Consumers shop within and across vehicle classes

Consumers cast a fairly wide net when selecting a vehicle, possibly wider than they consciously realize and report. When asked in the focus groups and in the pre-group online surveys if they had a specific vehicle in mind when they started shopping, the vast majority said yes. However, more than three-fifths (63%) of respondents to the pre-group online survey reported that they seriously considered more than one vehicle class, with about a third of these considering both cars and trucks.[1] It is also important to note that participants thought of vehicle classes in fairly broad terms that are not necessarily parallel to those used by EPA. Class or type of vehicle is considered in terms such as SUVs, sedans, mini-vans, etc. This is probably why, when focus group participants were given the choice of having the comparison information on the label be displayed as 'within class', 'among all classes', or both, that most preferred both.

"There was a time when compact car meant something, but now there's sub-compact, mid-sized compact; everyone has different categories for the same thing. You're really talking about a small, mid-sized or luxury car." – Seattle Male

The fact that consumers shop across multiple vehicle classes throughout the buying process indicates that the label has the potential to influence consumers to choose vehicles that are more fuel efficient. As a trusted source of fuel economy information (according to 72% of pre-focus group online survey respondents), the EPA is in a strong position to use the redesigned fuel economy labels and its planned educational campaigns to aid consumers in selecting more fuel-efficient vehicles.

Consumers want the ability to easily compare across multiple vehicles

Based on the above, it is no surprise that throughout the focus groups, participants consistently and strongly indicated the need to be able to compare across vehicles. As reflected earlier in this document, they also demanded simplicity. But, what factors allow them to compare in the simplest way? The literature review made clear that the top four factors that buyers report as influencing their vehicle choice include reliability, safety, price, and fuel economy (in that order). In addition, one can't discount the importance of vehicle aesthetics. Put simply – the most reliable, safe, affordable, and fuel efficient vehicle will not be purchased if doesn't also, as one focus group participant said, "Speak to me!"

1 It should be noted that participants used the terms 'vehicle class' and 'vehicle type' interchangeably and how they grouped vehicles by type or class varied and did not necessarily match the distinct EPA vehicle classes.

It is worth restating that the buying process is a continuum that includes consumer reliance on multiple sources to acquire information and make their purchasing decision. The fuel economy label is just one piece in this continuum and should be considered in that context. To be effective it needs to provide relevant information, be understood in a very short amount of time, be compelling enough to generate the desired impact, and be presented in such a way that it draws the attention and interest of the buyer in the stressful, cluttered and confusing car lot environment.

Comparisons across vehicles can be made using a variety of metrics. The following three metrics were selected for further research exploration. Each is discussed in greater detail in this section:

- Fuel economy/fuel consumption
- Fuel costs
- Environmental impacts

"I wasn't sure about the information it's measuring, but the stars make sense." –Seattle Male

"I liked that it identified the worst case scenario, you know where the 347 falls in relation to the scale." – Houston Male

In Phases 1 and 3, focus group participants were shown rating scales including numerical, iconic (such as five star systems), and slider scales similar to the bar that exists on the current fuel economy label for within-class comparisons. Participants were split into two camps: those that preferred the analytic detail of the absolute slider scales, and those that prefer the simplicity of a star-type rating scale.

A major challenge to providing a useful comparison tool is the complexity of advanced technology vehicles. If consumers first encounter advanced technology vehicles on the dealer's lot, and are not predisposed to buy one, a label that effectively conveys the benefits of such vehicles would be helpful in informing consumers and could potentially influence them to purchase such vehicles.

Three advanced technologies were covered in the Phase 2 and Phase 3 pre-group online surveys, and were a particular focus of the Phase 2 focus groups. These advanced technology vehicles included:

- Electric Vehicles (EV)
- Extended Range Electric Vehicles (EREV)
- Plug-in Hybrid Electric Vehicles (PHEV)

When considering the implications of this research, it is important to remember that research participants had their first exposure to two of these technologies (EREV and PHEV) during the research process. In the 'real' shopping experience manufacturers, news organizations, websites, and a host of other resources will all be active in increasing awareness, understanding and preference for these emerging technologies.

The combination of confusion over new technology and a proclivity for people to want any information offered, makes it easy to understand why, even in spite of their call for 'simplicity' in label designs, Phase 2 focus group participants sought as much detailed information as possible.

As such, the overwhelmed participants indicated a thirst for more information. This however, did not mean that they would necessarily use all the information sought in comparing vehicles, but somehow having it provided them with a greater sense of control. Nonetheless, when asked what the two most important metrics were for comparison purposes they chose consumption and cost. This was further supported by the fact that 60% of pre-group online survey respondents rated fuel economy a '9' or above on a 10-point importance scale. On another survey question, 40% indicated that 'gas mileage/fuel economy' was the second most common factor they used to compare across the vehicles they were considering (second only to 'size/seating capacity/cargo capacity').

As important as fuel consumption and fuel costs are to consumers, their unfamiliarity and discomfort with advanced technology vehicles caused focus group participants to insist that labels for vehicles with electric power include both range (the distance a vehicle could travel on one charge) and charging time information. For that reason, even though we believe such information will be provided by other sources (such as manufacturers) or in other mediums (such as websites), both range and charge time appear on two of the three label designs for vehicles using electric power.

Currently consumers compare across vehicles using city and highway MPG figures. When participants were probed in the Phase 3 focus groups about why they liked certain label designs, the familiarity of city and highway values was often cited. The lack of this information was also cited for not liking those labels

"It's not really like any other car, its miles per charge, not MPG, it's a complete paradigm shift. This range is probably important, how far you go on a charge. There isn't room for error; it has to be awfully accurate." – Chicago Male

"What happens if I'm driving somewhere and I only have a limited time to recharge? How long will it take to recharge is important." – Chicago Male

"I usually look at city and highway, and then compare to other vehicles in class." – Seattle Female

that did not include it. This was further supported by results of the pre-group online surveys where 'highway MPG', 'city MPG' and 'combined fuel economy compared to other vehicles' were rated by survey respondents as the top three most helpful pieces of information on the current fuel economy label. Consequently, the redesigned labels include city and highway breakouts.

Finally, the Expert Panel (without knowledge that the agencies had already planned to introduce QR codes on the fuel economy label due in part to the enthusiasm for such an approach evidenced in the focus groups) recommended that the agencies include this technology and perhaps launch it by hosting a competition to create a Smart Phone application (App) that would directly provide users with additional vehicle information and expand consumers' ability to compare vehicles.

Fuel economy and fuel consumption

As discussed above, MPG information (in many cases to the exclusion of all other label information) is currently used for comparison purposes. Interestingly, participants admit that this might be because they have been trained to do so since they first started buying vehicles because it is by far the most prominent information displayed on the current label.

However, MPG is not linear and can therefore be misleading. When people compare vehicles with different MPG values they are apt to incorrectly estimate the fuel savings of one vehicle over another. For example, switching from a 15 MPG vehicle to a 20 MPG vehicle will save more fuel than switching from a 30 MPG vehicle to a 35 MPG vehicle (see MPG Illusion[2]). Consequently, we introduced the option to use 'gallons per 100 miles' in the Phase 1 focus groups as a more useful metric for fuel consumption.

"I'm used to MPG. Using gallons per 100 miles is like teaching us the metric system."
– Chicago Female

The reaction from focus group participants to 'gallons per 100 miles' was immediate, clear and intense – they did not understand it and they did not like it. However, once they understood the concept, many participants saw the value of the information, but still did not want to see it at the cost of losing the familiar MPG information. Consumers like and are attached to MPG. It became clear that if 'gallons per 100 miles' was to make it to the label, it would need to be through a slow transition process, occurring over time and in conjunction with retaining the MPG information in a more prominent position.

2 MPG Illusion http://www.efficient-mileage.com/mpg-illusion.html.

Advanced technology vehicles further complicate this issue with the need to express the consumption of electricity rather than gallons of any petroleum based fuel. In the Phase 2 focus groups, it became clear that participants did not understand the concept of a kilowatt hour as a measure of electric energy use in spite of the fact that they all receive monthly electric bills using this metric.

"I think by the time these cars get out we'll be more used to this, but this (kW-hr) doesn't mean anything to me right now. Keep it simple." – Charlotte Male

For electric-only vehicles, focus group participants favored an MPG equivalent, 'MPGe.' This was in spite of the fact that they did not understand, nor did they feel the need to understand how an MPGe metric was calculated. This again suggests that the desire for simplicity and familiarity outweighs the desire for accurate information.

"To me, this 2.9 miles per kW-hr, if I'm comparing it to a gasoline car, that doesn't help me, where as the 98 MPGe, my brain knows MPG." – Houston Female

As the complexity of the technology increased, so too did the complexity and number of metrics that consumers' desired. Given the options presented to them, focus group participants wanted an MPGe that combined the MPGe of electric operation and the MPG of gas operation in any vehicle that could operate in more than one mode of operation, such as an EREV or PHEV. In general, the more they were shown, the more they wanted. However, in order to stay true to consumers' greater desire for label simplicity, a decision was made to use the following fuel economy and fuel consumption metrics on the redesigned labels:

- MPG (city and highway, and combined)
- MPGe (city and highway, and combined)
- Gallons per 100 miles
- kW-hrs per 100 miles[3]

Fuel costs

Focus group participants reported (on the pre-group online survey, as well as in the group discussions) that after the use of city MPG and highway MPG, they turned to annual fuel costs when comparing vehicles. The use of annual fuel cost is not surprising given that cost is a major decision point for individuals and a metric (dollars) they easily understand. It should be noted that research took place during a period of record unemployment and immediately following one of the worst economic crises faced by this country.

3 It should be noted that the 'kW-hrs per 100 miles' metric was more confusing to focus group participants compared to a 'miles per kW-hr' metric since the former metric results in a lower number being better (that is, fewer kW-hrs is more efficient). This issue of 'the lower the number the better' is confusing because consumers think in terms of higher being better, as in MPG. The same can be said of 'gallons per 100 miles', but when kW-hrs are involved the issue becomes even more confusing. However, in order to have an electricity consumption measure that would be equivalent to 'gallons per 100 miles', it was decided to stick with 'kW-hrs per 100 miles'.

"The economy is important. If you looked at this two years ago, it would be a lot more accurate. But a year ago, gas was closer to $4. I thought this on the lot, at $2.80- a gallon, the information wasn't accurate." – Seattle Female

However, participants made it clear that annual fuel cost is a metric surrounded by skepticism because they question the assumptions upon which the cost figure is based. The current label clearly states that the cost figure assumes 15,000 annual miles at $2.80 a gallon. And yet, many focus group participants could not get beyond the fact that – "I don't drive 15,000 miles a year and gas costs a lot more than $2.80 where I live." In other words, participants really struggled with the idea that the annual cost figure needs to be based on some set of assumptions and that, regardless of which assumptions were chosen, it could still be used to compare one vehicle to another. Consequently, at least in regard to use of the current label, this skepticism drove consumers to rely even more on city and highway MPG.

The exact same skepticism was expressed for electricity costs, impacting metrics used for advanced technology vehicles – "Where I live electricity costs a lot more than 12 cents a kilowatt hour." The implication of this for the redesigned label is that consumers will continue to look for metrics with which they are familiar and which they trust, even if they do not understand the details.

"If you're doing your budget, you need to know how much more your electric bill is and how much less your gas bill is." – Charlotte Female

In spite of the skepticism, in the Phase 2 focus groups, where participants were asked to create labels from scratch, most groups placed a cost value on the label. When probed about expressions of a cost value, many participants expressed interest in cost per mile figures, monthly figures and annual cost figures. Monthly figures were appealing since that is how they are used to seeing electricity costs (on their monthly electricity bill) and it is also how they budget their money (i.e., monthly). However, in Phase 3, when presented with labels that displayed both a monthly cost and an annual cost, participants suggested that the monthly cost value could be dropped, since they could do the math (divide by 12).

Advanced technology vehicle labels are even more complex in that some run on both gasoline and electricity, or on a blend of both fuels. Most participants in the Phase 2 focus groups preferred to see costs separated by fuel type. However, when presented with full label designs during the Phase 3 focus groups, many saw the utility of a fuel cost figure that merged all fuels. Such a dollar figure could easily be compared across vehicles, across different vehicle technologies, and even to a PHEV (which runs at times on a blend of gasoline and electricity). As a result of the research, two of the designs presented here for public comment show fuel costs expressed in annual dollars with all fuels combined, while the third design presents separate costs by fuel type.

Understanding that cost is a significant influencer for vehicle purchasers and that demonstrating the benefits of more efficient vehicles is critical to the EPA, the Expert Panel suggested expressing financial information in terms of 'savings' and expressing it over a five year period in order to demonstrate a larger and more realistic impact. It was also thought that the introduction of the five year savings information would help consumers in overcoming the effects of the MPG Illusion. This use of a 'savings' metric made particular sense since focus group participants reported on the pre-group online surveys that the most compelling factor for purchasing fuel efficient vehicles was 'to save money.'

The second most compelling factor for purchasing a fuel efficient vehicle was because such vehicles are 'better for the environment,' which brings us to the third major metric category on the redesigned labels which can be used to compare vehicles: environmental impact.

Environmental impact

Most of the research included in the literature review and echoed in the focus groups indicated that consumers place much less importance on the environmental impact of vehicles, compared to other factors such as safety, price and fuel economy. Nonetheless, consumers are not opposed to, and some may welcome, an eco-label on their vehicle, although they say that it is unlikely to impact their purchase decision. Most focus group participants indicated that if such information was not on the label they were not likely to seek it out elsewhere. However, when presented with whole label designs in Phase 3 many participants indicated that the environmental metric should be on the label to accommodate those who were interested.

"I care about the environment, but when it comes to money, I have to put my pocket book first. The environment isn't going to pay my bills."
– Charlotte Female

Participants were shown multiple options for the presentation of environmental information; some separated CO_2 from other pollutants, while some combined all pollutants; some used relative rating scales, while others showed actual grams of CO_2. Rating scales examined included those based on relative values, such as a "5 leaf" rating system, as well as a linear scale that had the vehicle's absolute CO_2 value identified on a scale also showing the highest and lowest emitting vehicles available. As with all other information, the participants indicated that environmental information must be simple in order for consumers to pay any attention to it. An overall environmental rating was favorably received because as participants stated– "I don't need to know the science behind the rating," and "I trust the EPA to know how to come up with these ratings."

"I don't need to know the actual grams per mile, I just need to know how it compares with other cars [i.e. the 1-10 scale]."
– Houston Male

The Expert Panel suggested that environmental metrics be included as part of the overall rating or as a stand-alone rating in a less prominent position for those consumers interested in more detailed environmental information. Consequently, the label designs include CO_2 grams (separate from other pollutants), as well as absolute and relative scales of environmental impact.

Additionally, such a 'rating' could include the use of an environmental certification such as the SmartWay™ logo that appeared on label designs shown to focus groups. Although none of the participants recognized and knew what the SmartWay™ logo meant, they assumed that it was an EPA designation similar to the Energy Star™ rating found on electric appliances. However, while some participants indicated the logo may confer credibility to an environmentally friendly vehicle, it was obvious that for an environmental metric to have influence, it would either need to be incorporated into an overall rating system, or consumers would need to be educated as to why environmental ratings should be more important to them.

Role of the Label in the Purchase Process Has Changed

With the rise of internet and social media services, a significant and growing portion of the buying process is now happening before buyers even visit a lot.

The Vehicle Buying Cycle

The vehicle buying cycle is that period of time between consumers' first contemplation of purchasing a new vehicle and when they actually purchase the vehicle. The vehicle buying cycle is a seven step process: awareness, familiarity, opinion/imagery, consideration, one make/model intention, shopping, and purchase.

Unlike in the past, consumers increasingly seek out fuel economy information prior to, and beyond, simply viewing the fuel economy label on vehicles during dealership visits. They are taking advantage of the many opportunities available to become informed about the benefits they are seeking, which can include fuel economy and environmental impact. Two-thirds of the respondents to the pre-focus group online surveys reported they had researched fuel economy prior to buying their vehicle. Of these, about half (52%)

reported that they started researching vehicle information about one to three months prior to final purchase. Consequently, the length of the vehicle buying cycle is contracting as consumers obtain more information sooner.

The literature review, as well as the results of the pre-focus group online surveys, demonstrated a significant portion of the buying process takes place prior to consumers visiting a dealership. What this means for the fuel economy label is that through their own information gathering, many consumers now rely less on the fuel economy label as a source of initial fuel economy, fuel consumption, fuel cost, and environmental impact information. Rather, the label is more likely to be used to confirm what they have already learned. By the time the consumer enters the dealership to test drive a vehicle s/he is closer to a final purchasing decision than was true in the past. This might suggest that the label now has less influence over purchase decisions. However, if properly designed, the label has the potential to expand consumers' vehicle options in the direction of more fuel efficient vehicles. The label can do this by providing useful comparison metrics in a usable format.

Sources of Information

For many consumers, purchasing a big-ticket item like a vehicle happens only occasionally and tends to be related to other major changes in their lives. This increases the anxiety level of the consumer and increases the need for good information to drive the decision process.[4] Traditionally, information has come from vehicle manufacturers and dealers, word of mouth, personal experience, and family and friends, but much has changed with the advent of the Internet and the ability of consumers to search for information on specific types of vehicles and brands. Pre-focus group online survey respondents reported gathering fuel economy information from manufacturer websites, Consumer Reports, Edmunds, auto dealers, vehicle search websites, automobile magazines, others with similar vehicles, government websites, television advertisements, and the fuel economy label itself. However, for some buyers, viewing the label is simply too late in the purchase process to greatly influence their decision. Therefore, to be effective it becomes increasingly important for EPA to be where the consumer is, with the information they are seeking, delivered in a format that is relevant, and using the mediums they prefer throughout the buying cycle.

"I used the label more to confirm, I already had an idea when shopping for cars."
– Charlotte Female

"I already know this information before I go to the dealer."
– Seattle Female

The Internet has emerged as one of the most important sources of

4 Center for Advancing Health. (2009). Consumer Reports: Car Buying Guide. A Case Report for Getting Tools Used. Retrieved from http://www.cfah.org/activities/Getting_Tools_Used/consumer.pdf

"I would use the label to verify what I looked at online."
– Seattle Male

information for consumers interested in purchasing a vehicle. For example, traffic on the DOE and EPA website www.fueleconomy.gov increased from 400,000 user sessions in 1999 to more than 30 million in 2008.[5] Nearly half of consumers visit a vehicle manufacturer's website[6] in search of product and price information. Consequently, information on the redesigned fuel economy label that is intended to inform consumers about a vehicle's performance in regard to several metrics (such as fuel economy, consumption, cost, and environmental impact) should also be available online in the same format as it appears on the label so that consumers can easily recognize it and use it when they visit auto dealerships. The Internet also provides the opportunity for consumers to purchase vehicles online (annual growth rate of 14.6% in the United States over the past five years, although this still represents a small percentage of total car sales), which is very attractive to consumers who do not want to negotiate with vehicle dealerships.

Our research also validated the increasing importance third party reviews of vehicles and social networks play in informing the vehicle purchase process. The Expert Panel strongly recommended that outreach activities include crowdsourcing, the use of Smart Phone applications, creation of tools for car dealers, and collaboration with other organizations.

Consequently, influencing consumer purchase decisions increasingly needs to occur prior to consumers visiting dealer showrooms, and to highlight the value of educational tools beyond the label to provide consumers with information on a vehicle's fuel economy, fuel consumption, fuel costs, and environmental impact. EPA will need to be a content provider and use the fuel economy label, the web, emerging technologies such as QR codes and Smart Phones, and social networks – including third party trusted advocates – to get information out to the consumers.

5 Greene, D.L., Gibson, R., and Hopson, J., "Reducing Oil Use and CO2 Emissions by Informing Consumers' Fuel Economy Decisions: The Role for Clean Cities," prepared by Oak Ridge National Laboratory, Oak Ridge, TN, August 2009, p.1. Available at http://www1.eere.energy.gov/cleancities/pdfs/fuel_economy_strat_paper.pdf

6 Capgemini. (2009a). Cars Online 09/10: Understanding Consumer Buying Behavior in a Volatile Market. Retrieved from http://www.capgemini.com/services-and-solutions/by-industry/automotive/carsonline/

Label Designs for Public Comment

Label Version 1


EPA DOT
Fuel Economy and Environmental Comparison
C
Smartphone
The above grade reflects fuel economy and greenhouse gases. Grading system ranges from A+ to D.
website.here
Over five years, you will
spend $3,100
more in fuel costs compared to the average vehicle.
Gasoline Vehicle
Gallons/ 100 Miles
MPG City
MPG Highway
CO2 g/mile (tailpipe only)
Annual fuel cost
6.2
14
18
572
$2,625
Combined MPGe
CO2 g/mile
Other Air Pollutants
• Fuel economy for all SUVs ranges from 12 to 32 MPG.
• Annual fuel cost based on 15,000 miles per year at $2.80 per gallon.
Visit website.here to calculate estimates personalized for your driving, and to download the Fuel Economy Guide (also available at dealers).

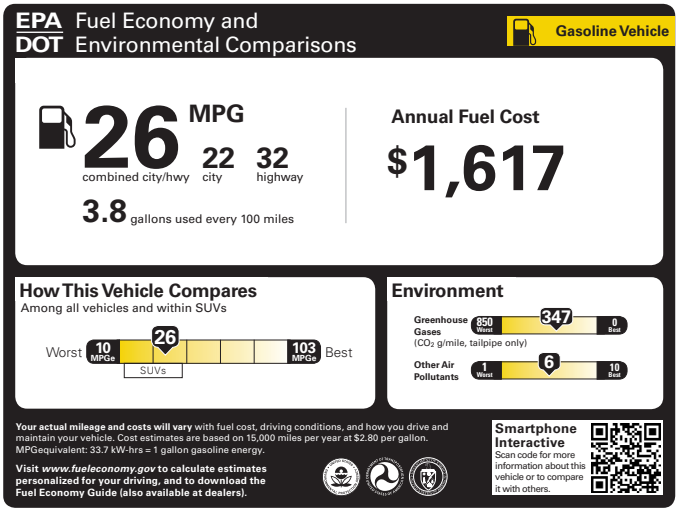

EPA DOT
Fuel Economy and Environmental Comparison
A
Smartphone
The above grade reflects fuel economy and greenhouse gases. Grading system ranges from A+ to D.
website.here
Over five years, this vehicle
saves $5,700
in fuel costs compared to the average vehicle.
Dual Fuel Vehicle: Plug-in Hybrid Electric
All-Electric Range
eGallons/ 100 Miles
MPGe City
MPGe Highway
CO2 g/mile (tailpipe only)
Annual fuel cost
Blended Electric+Gas (first 50 miles only)
11
1.5
66
64
90
$737
Gas Only
–
2.7
36
40
236
$1,105
Combined MPGe
CO2 g/mile
Other Air Pollutants
• Fuel economy for all midsize station wagons ranges from 18 to 75 MPGequivalent. MPGequivalent: 33.7 kW-hrs = 1 gallon gasoline energy.
• Annual fuel cost based on 15,000 miles per year at $2.80 per gallon and 12 cents per kW-hr.
Visit website.here to calculate estimates personalized for your driving, and to download the Fuel Economy Guide (also available at dealers).

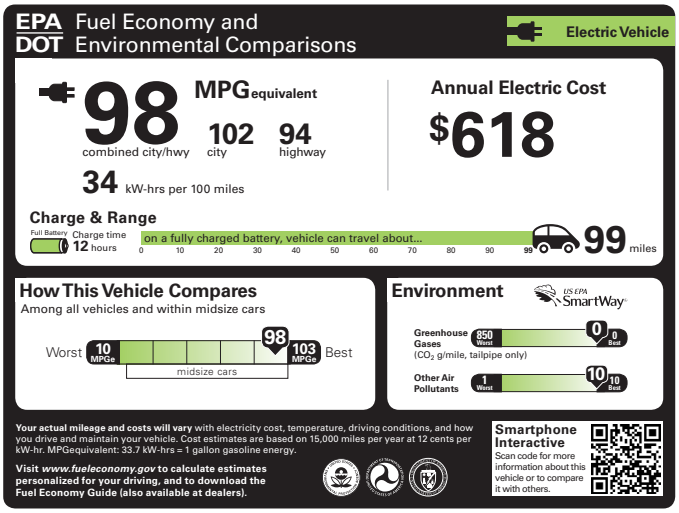

EPA DOT
Fuel Economy and Environmental Comparison
D
Smartphone
The above grade reflects fuel economy and greenhouse gases. Grading system ranges from A+ to D.
website.here
Over five years, you will
spend $9,100
more in fuel costs compared to the average vehicle.
Gasoline Vehicle
Gallons/ 100 Miles
MPG City
MPG Highway
CO2 g/mile (tailpipe only)
Annual fuel cost
9.1
10
13
797
$3,818
Combined MPGe
CO2 g/mile
Other Air Pollutants
• Fuel economy for all midsize cars ranges from 12 to 103 MPGequivalent.
• Annual fuel cost based on 15,000 miles per year at $2.80 per gallon.
Visit website.here to calculate estimates personalized for your driving, and to download the Fuel Economy Guide (also available at dealers).

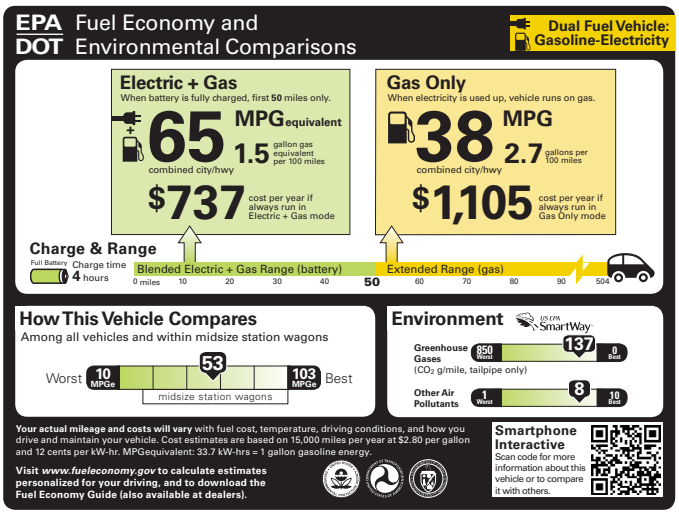

EPA DOT | Fuel Economy and Environmental Comparison
A-
Smartphone
The above grade reflects fuel economy and greenhouse gases. Grading system ranges from A+ to D.
website.here
Over five years, this vehicle
saves $6,100 in fuel costs compared to the average vehicle.
CNG Compressed Natural Gas Vehicle
Range (miles) | eGallons/ 100 Miles | MPGe City | MPGe Highway | CO2 g/mile (tailpipe only) | Annual fuel cost
170 | 3.6 | 24 | 36 | 220 | $777
10 Worst 28 103 Best
Combined MPGe
850 Worst 220 0 Best
CO2 g/mile
1 Worst 9 10 Best
Other Air Pollutants
• Fuel economy for all midsize cars ranges from 12 to 103 MPGequivalent. MPGequivalent: 121.5 cubic feet CNG = 1 gallon of gasoline energy.
• Annual fuel cost based on 15,000 miles per year at $1.45 per gasoline gallon equivalent .
Visit website.here to calculate estimates personalized for your driving, and to download the Fuel Economy Guide (also available at dealers).

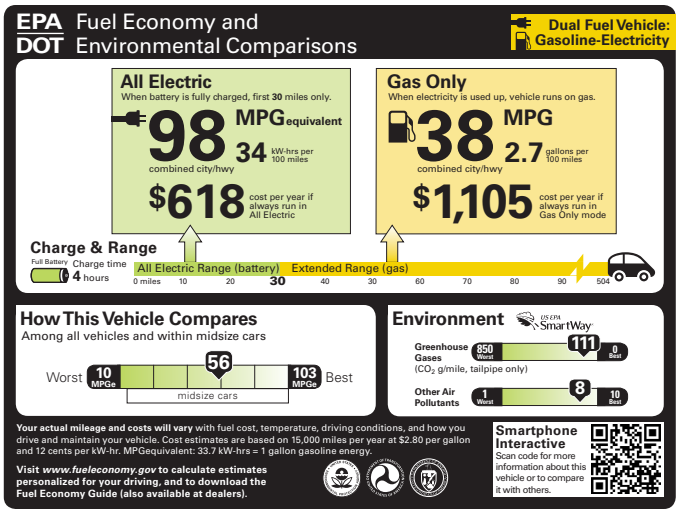

EPA DOT | Fuel Economy and Environmental Comparison
B
Smartphone
The above grade reflects fuel economy and greenhouse gases. Grading system ranges from A+ to D.
website.here
Over five years, this vehicle
saves $1,600 in fuel costs compared to the average vehicle.
Dual Fuel (Gas & E85) Vehicle
Gallons/ 100 Miles | Gasoline MPG City | Gasoline MPG Highway | CO2 g/mile (tailpipe only) | Annual fuel cost
4.0 | 22 | 30 | 355 | $1,680
10 Worst 25 103 Best
Combined MPGe
850 Worst 355 0 Best
CO2 g/mile
1 Worst 7 10 Best
Other Air Pollutants
• Fuel economy for all midsize cars ranges from 12 to 103 MPGequivalent.
• Ratings are based on gasoline and do not reflect performance and ratings using E-85.
• Annual fuel cost based on 15,000 miles per year at $2.80 per gallon.
• See the Fuel Economy Guide for more information.
Visit website.here to calculate estimates personalized for your driving, and to download the Fuel Economy Guide (also available at dealers).

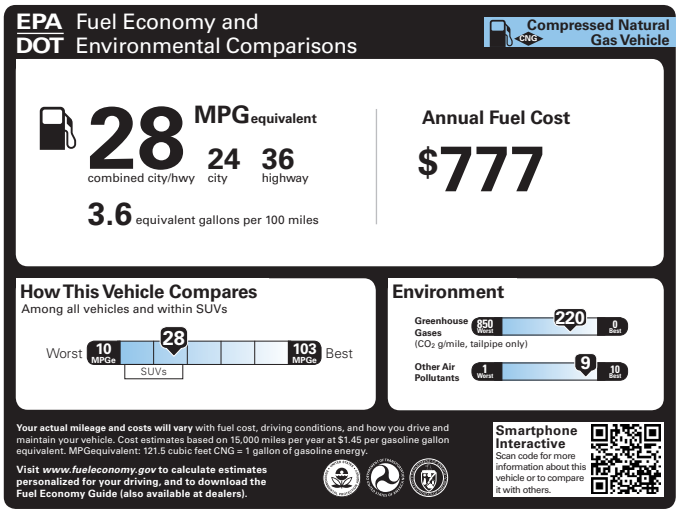
Label Version 2

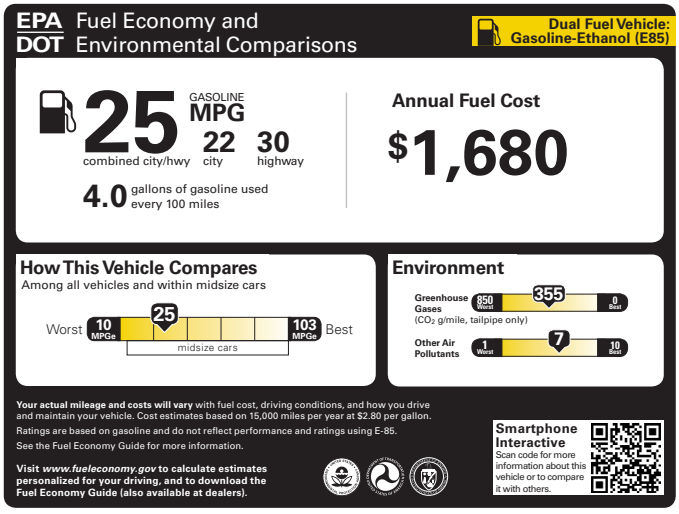




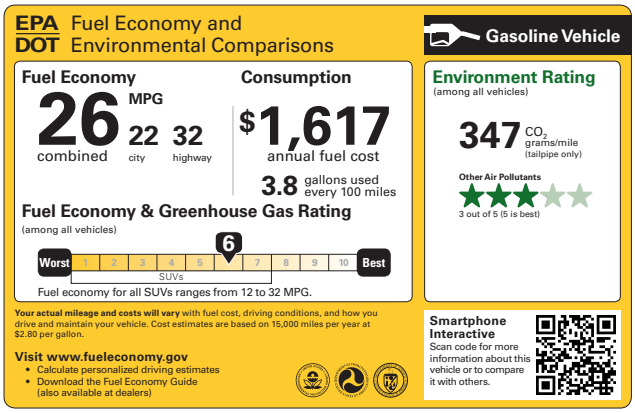


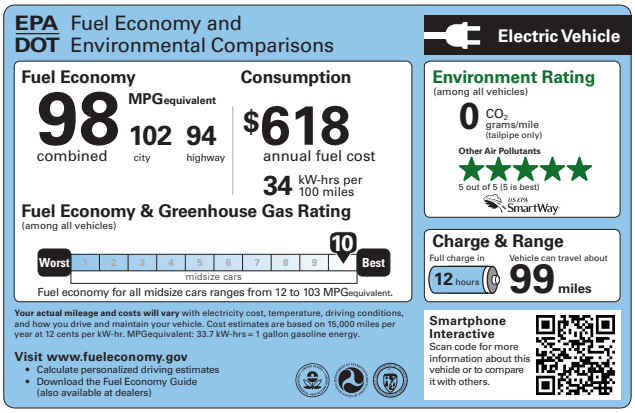

EPA DOT Fuel Economy and Environmental Comparisons
Dual Fuel Vehicle: Gasoline-Electricity
All Electric
When battery is fully charged, first 30 miles only.
98 MPGequivalent
34 kW-hrs per 100 miles
combined city/hwy
$618 cost per year if always run in All Electric
Gas Only
When electricity is used up, vehicle runs on gas.
38 MPG
2.7 gallons per 100 miles
combined city/hwy
$1,105 cost per year if always run in Gas Only mode
Charge & Range
Full Battery
Charge time 4 hours
All Electric Range (battery)
Extended Range (gas)
0 miles 10 20 30 40 30 60 70 80 90 504
How This Vehicle Compares
Among all vehicles and within midsize cars
Worst 10 MPGe 56 103 MPGe Best
midsize cars
Environment
US EPA SmartWay
Greenhouse Gases (CO2 g/mile, tailpipe only) 850 Worst 111 0 Best
Other Air Pollutants 1 Worst 8 10 Best
Your actual mileage and costs will vary with fuel cost, temperature, driving conditions, and how you drive and maintain your vehicle. Cost estimates are based on 15,000 miles per year at $2.80 per gallon and 12 cents per kW-hr. MPGequivalent: 33.7 kW-hrs = 1 gallon gasoline energy.
Visit www.fueleconomy.gov to calculate estimates personalized for your driving, and to download the Fuel Economy Guide (also available at dealers).
Smartphone Interactive
Scan code for more information about this vehicle or to compare it with others.

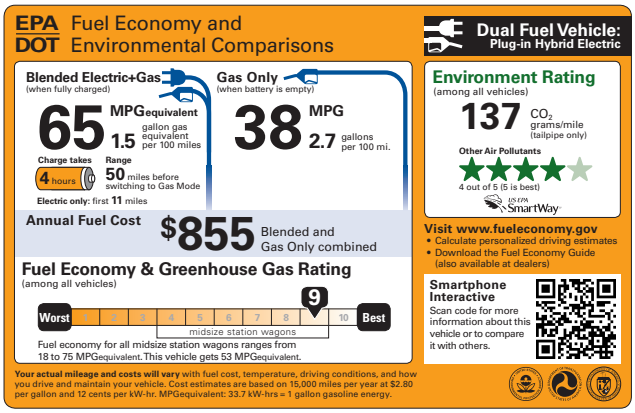

EPA DOT Fuel Economy and Environmental Comparisons
Compressed Natural Gas Vehicle
CNG
28 MPGequivalent
combined city/hwy
24 city
36 highway
3.6 equivalent gallons per 100 miles
Annual Fuel Cost
$777
How This Vehicle Compares
Among all vehicles and within SUVs
Worst 10 MPGe 28 103 MPGe Best
SUVs
Environment
Greenhouse Gases (CO2 g/mile, tailpipe only) 850 Worst 220 0 Best
Other Air Pollutants 1 Worst 9 10 Best
Your actual mileage and costs will vary with fuel cost, driving conditions, and how you drive and maintain your vehicle. Cost estimates based on 15,000 miles per year at $1.45 per gasoline gallon equivalent. MPGequivalent: 121.5 cubic feet CNG = 1 gallon of gasoline energy.
Visit www.fueleconomy.gov to calculate estimates personalized for your driving, and to download the Fuel Economy Guide (also available at dealers).
Smartphone Interactive
Scan code for more information about this vehicle or to compare it with others.

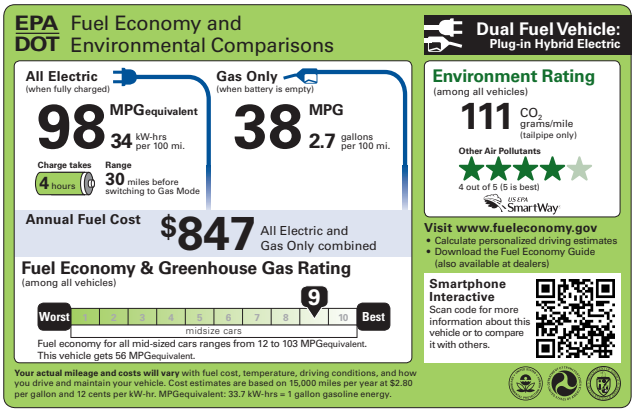

EPA DOT Fuel Economy and Environmental Comparisons
Dual Fuel Vehicle: Gasoline-Ethanol (E85)
25 GASOLINE MPG
combined city/hwy
22 city
30 highway
4.0 gallons of gasoline used every 100 miles
Annual Fuel Cost
$1,680
How This Vehicle Compares
Among all vehicles and within midsize cars
Worst 10 MPGe 25 103 MPGe Best
midsize cars
Environment
Greenhouse Gases (CO2 g/mile, tailpipe only) 850 Worst 355 0 Best
Other Air Pollutants 1 Worst 7 10 Best
Your actual mileage and costs will vary with fuel cost, driving conditions, and how you drive and maintain your vehicle. Cost estimates based on 15,000 miles per year at $2.80 per gallon.
Ratings are based on gasoline and do not reflect performance and ratings using E-85.
See the Fuel Economy Guide for more information.
Visit www.fueleconomy.gov to calculate estimates personalized for your driving, and to download the Fuel Economy Guide (also available at dealers).
Smartphone Interactive
Scan code for more information about this vehicle or to compare it with others.

Label Version 3









Appendix A – Detailed Research Methodology

The Environmental Protection Agency (EPA) and the National Highway Traffic Safety Administration (NHTSA) embarked on a comprehensive and innovative research program beginning in the fall of 2009. The research helped inform the development of the new labels being proposed and included a review of available literature, three phases of consumer focus groups (including pre-group online surveys), and a day-long consultation with an expert panel of individuals who have introduced new products or have spearheaded national educational campaigns. In addition, an online survey of vehicle buyers and intenders is planned to take place in September of 2010.

Such a multi-method approach has many benefits, perhaps the most important of which is that the limitations of one method can be potentially compensated for by the methodological strengths of another. For example, while focus groups are the preferred method to obtain in-depth reactions to potential label metrics and designs and to generate new ideas, they are not meant to be representative of new vehicle buyers nationwide in general. The focus groups for this research were held in four specific locations and the type of individuals who agree to participate in a focus group may be unique in some ways. In addition, group dynamics can influence the resulting discussion in ways that are not present during individual interviews.

Pre-group online surveys compensated for some of these limitations by gathering information from participants before they were influenced by the group discussion. Another technique we used during the groups themselves was to have participants record on paper their individual answers to discussion topics before opening the issue up to group discussion. Having conducted thirty-two focus groups, it was also beneficial to have another group, the Expert Panel, not involved with the project come in with a fresh set of eyes to provide another perspective.

To address the issue of the lack of representativeness of focus group participants, we plan to supplement the research process with a much broader sample of new vehicle buyers and prospective new vehicle buyers ("intenders") through a large sample online survey. This approach also has its limitations since such surveys do not allow for in-depth probing. Furthermore, the samples are self-selected to be contacted by email and there is no guarantee that those who choose to complete the survey are representative even of this self-selected group.

Literature Review

We began the research process with a review of existing literature on the vehicle buying process, information sources used by consumers as they shop for vehicles, the factors (such as price, fuel economy, and safety, as well as demographics and psychographics) that influence consumer vehicle purchasing decisions, and the impact of the increasing availability of "greener" vehicles. This allowed us to establish a foundation upon which subsequent research tasks were based and supplement (instead of repeat) existing research. A total of eighty studies/articles were reviewed and the sources spanned a broad range of books, articles, papers, and secondary research reports. Data presented were primarily taken from business, marketing, and academic journals and magazines; websites; newspapers; conference proceedings; and published government guidelines, standards, and documents. The literature review report provides a summary of the reviewed information.

Pre-Focus Group Online Surveys

The next research step involved gaining initial insights from individuals who would be participating in the focus groups. The online surveys had several objectives including validation of some key findings from the literature review (especially in regard to the vehicle purchase process and factors that influence the vehicle buying process). Using an online survey tool provided the opportunity to also acquire some information without the impact of peer influence in the focus groups. It also exposed participants to discussion topics raised later in the focus groups (such as the MPG Illusion and descriptions of advanced technology vehicles) to allow more time for discussion of priority topics when the focus groups met face-to-face.

A main purpose of the survey was to obtain additional information regarding participants' vehicle purchase process, the role of fuel economy in their purchase decision, how they used the current fuel economy label, and motivators and barriers to purchasing advanced technology vehicles. The survey questions were developed by PRR, with input from the EPA, NHTSA and OMB (Office of Management and Budget).

Those recruited were sent a link to the pre-group online survey approximately one week in advance of the scheduled focus groups. They were instructed to complete the online survey at least two days prior to their group. Follow-up reminder calls were made to those who had not completed the survey in the specified timeframe. A total of 404 of those recruited completed the online survey. It should be noted that the results of these surveys are not intended to be representative of any larger group of new vehicle buyers and reflect only the experience of the focus group participants themselves. Nonetheless, these results provided important insights when used in conjunction with the other research tasks connected with this overall project.

Focus Groups

When our research process was at the point of requiring in-depth consumer feedback on design possibilities the agencies determined that focus groups would be ideal to gather in-depth, qualitative feedback about fuel economy labeling, potential new label information, and ways of displaying the information. Focus groups are the optimum approach to use when the task calls for qualitative, in-depth insight into a consumer's understanding of fuel economy labels. Focus groups allowed us to probe around why some label designs were more understandable, how different label designs would be used in the vehicle purchase process, and which label metrics were most important to consumers. The focus group discussions also provided insights into how a label design may help consumers choose more fuel efficient vehicles. The focus groups were not intended to provide quantitative results, but were instead designed to help EPA and NHTSA discern the subtleties of consumer understanding and preference as it relates to the label and the best way to provide numerous and sometimes complicated pieces of information.

A total of thirty-two focus groups (256 participants) were conducted in three phases between February 25th and May 27th, 2010 in the cities of Seattle, Chicago, Houston and Charlotte. The three phases were designed to address the following issues:

- Phase I (8 focus groups) – Use of the current fuel economy label, as well as metrics and design of the label for conventional internal combustion engine vehicles.
- Phase II (8 focus groups) – Understandability of and preference for metrics for advanced technology vehicle labels.
- Phase III (16 focus groups) – Assessment of full label designs for conventional and advanced technology vehicles in regard to content and look.[7]

Thus, overall, focus groups were used to obtain a qualitative understanding of consumers' comprehension and reactions to fuel economy label information.

Participants were recruited from panels developed and maintained by the focus group facility used in each city. All the groups consisted of eight participants (with the exception of one group that had 7 participants, two that had 6 participants, and one that had 5 participants). Participants were screened for having purchased a new vehicle (not a used or pre-owned vehicle; not a motorcycle; and not a 'Cash for Clunkers' purchase) in the last 12 months and being the sole or primary decision maker with regard to this new vehicle purchase. To ensure a good cross-section of participants, each focus group included a mix of participants based on the following variables: type of new vehicle, price range of new vehicle, distance they typically travelled daily in this new vehicle, if they had seriously considered an advanced technology vehicle before purchasing their vehicle, and a variety of demographic variables. In each city, separate male and female groups were conducted in English and each group lasted two hours. A moderator guide was used to structure the focus group discussions.

7 There were as many as fifteen approaches presented to the agencies and they selected three to present to focus groups. Developing the labels was iterative and PRR strived to incorporate all statutory requirements, findings from Phase 1 and Phase 2 focus groups, and agency perspectives and overarching guidelines.

Expert Panel

Following the focus group research, we assembled an expert panel for a one day consultation and asked them to give us feedback on the draft label designs the focus groups had helped create and to assist us in identifying opportunities and strategies to increase consumer preference for energy efficient and environmentally friendly vehicles. The experts came from a variety of fields in advertising and product development and were chosen because they have led successful national efforts to introduce new products or had spearheaded national educational campaigns. Feedback received from this elite group was desirable because of their unique history and experience of creating dramatic social change and influencing product preference over short periods of time.

An initial list of products and social changes that met the criteria of being dramatic, impacting a significant percentage of the population, having demonstrated staying power and having happened quickly was generated and prioritized. Individuals who were in roles critical to the success of these efforts were then identified and invited to participate in the Expert Panel. The panel was limited to no more than 10 participants in order to ensure full participation.

Nine expert panelists eventually participated in the six hour discussion. The group was convened on Wednesday, June 9, 2010 at EPA headquarters located in Washington DC. In advance of the discussion, participants were provided a draft agenda, a brief overview of the project, and initial research and focus group findings. Panelists were asked to come prepared to discuss how they would recommend that the EPA increase the value of, and preference for more efficient vehicles, as well as identify opportunities to increase the priority of energy efficiency in the vehicle purchase process, and finally to provide feedback on fuel economy label design drafts.

Online Survey of New Vehicle Buyers and Intenders

The online survey of vehicle buyers and intenders is meant to examine how understandable the new label designs are, and whether the proposed new labels will improve consumers' knowledge about more efficient vehicles. This survey will use two samples: self-selected new vehicle purchasers, and people who expressed an intention to purchase a new vehicle by requesting a price quote from a dealer[8] within the past 12 months (excluding the 'Cash for Clunkers' 2009 period). Each sample will be divided into three separate groups and see surveys identical in every way except for the label design, each of the groups will see only one of the label designs.

The survey tests respondents' understanding of the labels by showing each respondent a series of label pairs. In each pair, all vehicle characteristics are held constant except the information on the vehicle label. For instance, the fuel economy of the vehicles may differ, or one may be for a conventional vehicle and one an electric vehicle. Respondents are then asked to identify which vehicle is better to use for trips of specified distances.[9] The key question is whether the different label designs produce statistically significant different results. If one label produces more correct responses than other labels, then it can be considered more understandable. If the labels do not produce statistically different results, then the labels can be considered equivalently understandable.

To test the potential influence of the labels on vehicle purchases, respondents will see pairs of labels for vehicles with all vehicle attributes constant except those varied on the label, such as the technologies of the vehicles, their efficiencies, and their energy costs. Instead of using the label to identify the better vehicle for a trip distance scenario, the respondents are asked which of these vehicles they would prefer to buy, based on their individual driving patterns. Because the survey asks respondents about their typical daily driving distances, it is possible to see whether respondents chose the vehicle better suited for their habits. The key variable is whether the responses differ for different label designs.

8 Sources of respondents were databases owned by Autobytel, http://www.autobytel.com (for those intending to buy new vehicles), and Focus USA (for those who purchased a vehicle in the last year), http://www.focus-usa-1.com.

9 Respondents are asked which was better, rather than which was more fuel-efficient or less costly, so as to leave the respondents with the choice of what information on the label to use for the comparison. A later question asks which information they used in their response. While this somewhat ambiguous approach may reduce the absolute number of correct answers to the questions, the goal is to test the relative effects of the labels, not the absolute effects.

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