

# Designing Effective Environmental Labels for Passenger Vehicle Sales in Maine: Results of Focus Group Research

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## EXECUTIVE SUMMARY

### Background

The environmental characteristics of products have become increasingly important to consumers. Firms have responded by placing information on products that highlight the product's environmental attributes and by introducing new, or redesigned, "green" products. Governments and non-governmental organizations have also responded by organizing, implementing, and verifying environmental labeling and marketing programs that cover thousands of products in more than 20 countries. From a policy perspective, one aim of eco-information programs is to educate consumers about the environmental impacts of product consumption, thereby leading to a change in purchasing behavior, and ultimately, to a reduction in negative environmental impacts.

In the US light-duty vehicle (cars, trucks, minivans, sport utility vehicles [SUVs]) market, traditional performance standards have been successful in achieving significant ongoing reductions in criteria pollutants emitted per mile, although some of these gains have been offset by an increase in the number of miles driven. By comparison, fuel efficiency standards have not led to ongoing reduction of fuel consumption. The fuel economy of new US light-duty vehicles has fallen significantly since its peak in 1989 following its rise pursuant to the corporate average fuel efficiency (CAFE) standards established by the US Energy Policy and Conservation Act of 1975 (PL94-163). CAFE regulations specify minimum fleet average standards for fuel efficiency that vehicle manufacturers must meet. The reasons commonly cited for this decline include a shift from cars toward trucks (which, for CAFE purposes includes vans, minivans, pickup trucks and sport-utility vehicles weighing less than 8,500 pounds or 3855 kg), the low price of gasoline, and the uneven management of the CAFE regulations themselves. Recently, the National Research Council (NRC) has come out with a comprehensive review of the effectiveness and impact of CAFE standards. The NRC concluded that the CAFE program has clearly increased fuel economy since its inception, although certain aspects of the CAFE program have not functioned as intended. These include indirect consumer and safety costs, a breakdown in the distinctions between foreign and domestic fleets, and between minivans, SUVs, and cars in the calculation of fuel economy standards, and the creation of fuel-economy credits for flexible-fuel vehicles. The NRC also concluded that technologies exist that, if

applied to light-duty vehicles, would significantly reduce fuel consumption within 15 years.

The availability of improved technologies for fuel economy alone is not sufficient to encourage their widespread adoption because market forces do not sufficiently value higher efficiency over the other amenities that improved technology can provide. The effective implementation of eco-information programs may allow customers to make choices that clearly reflect their preferences while simultaneously helping achieve policy objectives (e.g., reductions in fossil fuel use and air emissions). Although there have been numerous studies indicating a demand for "greener" vehicles, few of these vehicles have actually penetrated the market. This is of particular concern to policy makers because light-duty vehicles produce 57 percent of transportation carbon dioxide emissions (including international bunker fuels). Combustion of fossil fuels to power transportation was the single largest source of greenhouse-gas emissions in the U.S. economy in 1999. Light-duty vehicles are also responsible for 18 percent of nitrogen oxide, 45 percent of carbon monoxide, and 26 percent of volatile organic compounds.

### Objectives

The research is designed to provide policy makers and stakeholder groups some guidance in developing effective eco-information programs. There are two phases to this research. During the first phase, qualitative research (focus groups) is used

- 1) to identify the types of environmental information that consumers will find useful when purchasing a vehicle;
- 2) to understand how different modes of environmental disclosure affect consumers' choice of a vehicle with different environmental profiles;
- 3) to identify where consumers expect to obtain eco-information about vehicles (e.g., on the vehicle or somewhere off-product);
- 4) to identify the level of detail consumers expect/desire on a vehicle's eco-label;
- 5) to identify whom consumers view as the appropriate organization to monitor an eco-information program; and
- 6) to identify how the characteristics of the vehicle influences the desire or need for an eco-informational program;

The results of the first phase will be used to develop a survey instrument and an eco-marketing

campaign to be used in the second (quantitative) phase.

### Methods

The qualitative research involved six focus group sessions in Maine; two groups were held in Portland, two in Orono and two in Lewiston-Auburn. Participants were screened to ensure demographic diversity and to confirm that some proportion of the participants had purchased a passenger vehicle or truck within the last two years.

This research attempts to evaluate the communication messages that will be used as part of a marketing program for environmentally preferred vehicles. Props illustrating different information displays were used to stimulate discussion; these props varied across focus groups. Props could have consisted of potential vehicle *eco-seals* (simple logo-type graphics that would be placed on vehicles to denote that the car was environmentally better to drive), potential *taglines* (slogan-like text that could be used in conjunction with an eco-seal, or be used as part of a eco-marketing campaign), and/or potential environmental *labels* (graphic or tabular approaches that disclose more detailed or numeric information about how a vehicle ranks along several environmental attributes). We also used props of EPA's current website that is used to convey information about a vehicle's environmental rating. Discussion centered on whether any of the information was confusing or hard to understand, whether the information was important, and whether the display contained enough information.

### Results

#### What is important to participants?

The moderator asked participants what types of attributes they look for when buying a vehicle. Common responses centered on use- or lifestyle-characteristics of the vehicle. Given the potential for long, snow-filled winters and the outdoor lifestyle typical of many Maine residents, it was not surprising that driving and handling capabilities and safety were key attributes. Monetary considerations were also important. Several participants noted that "affordability" mattered. It was unclear whether participants who cared about affordability made a distinction between the purchase price of a vehicle and how much it cost to drive. When not prompted, auto emissions were only mentioned in one of the groups as being an important attribute. When provided a list of vehicle attributes, emissions were only mentioned in two of the groups.

In general, participants were split on the relative importance of fuel economy. Several participants indicated that fuel economy was very important while others indicated that, while it was important, its importance was secondary to other concerns (e.g., comfort). The importance of fuel economy seemed positively related to the amount of driving a participant did. Only three participants indicated that better fuel economy indicated the vehicle was "cleaner to drive" (provided fewer emissions); one of these participants specifically cited carbon dioxide (CO<sub>2</sub>) emissions as being related to fuel economy. When asked why fuel economy was important, most individuals mentioned that it made the vehicle less costly to drive.

#### How concerned are participants?

The moderator then asked participants whether they ever thought of environmental issues when shopping for a car or truck. Participants generally did not consider environmental impacts when shopping for a vehicle. When the moderator asked why they did not take these issues into consideration, many stated that they felt that air emissions were not a problem with vehicles; they said that vehicle emissions were already heavily regulated and that the regulations basically made all cars "pollute about the same."

The moderator then asked participants whether they thought Maine had an air pollution problem. Although several participants thought air pollution was not a big problem in Maine, most indicated it was a problem. However, when asked where the air pollution came from, almost everyone said that the problem was due to industrial pollution coming from out of state; many cited the Midwest or larger cities along the Eastern Seaboard as the source of the pollution. Most individuals said vehicle emissions were not a major contributor to air pollution in the state.

When participants were presented information about the percentage of air pollution caused by vehicles in Maine (about 50 percent), several of them were skeptical; they stated that Maine's inspection system was pretty strict and that few old cars would be on the road. Several questioned how the Maine Department of Environmental Protection (DEP) could come up with this result. One participant noted that no one in the group knew vehicle air emissions were so important, which pointed out a real need for education.

#### Information sources

To determine where individuals were getting their information about vehicles, the moderator

asked participants how they gathered information about vehicle attributes. The most common information sources cited were on-line sources, *Consumer Reports* and/or other vehicle-related publications (e.g., *Car and Driver*), and friends/relatives. Dealerships were often not visited until later in the car-buying process and were used only to gather monetary (price, financing, warranty, trade-in value) and “experiential” information (e.g., information obtained through visual inspections and test drives). Most participants narrowed their choice down to two or three vehicles before visiting a dealer.

### Experience and desires for vehicle eco-labeling

When asked if they were able to choose more environmentally friendly vehicles, most participants felt they did not have a choice because all passenger vehicles were regulated to be about the same in terms of emissions generation. The moderator then asked whether participants could tell which car or truck was more environmentally friendly to drive. Most felt there was no easy way to get this information at the dealership and that they would have to do their own research.

After being presented with the concept of an eco-labeling program for new vehicles sold in Maine, most participants were in favor of the concept although a few mentioned that their support for such a program would depend on who was in charge of administering it. Several participants cited their positive experience with using the efficiency ratings labels on electrical appliances and computers. Several individuals pointed out that this type of labeling might create an incentive for the car manufacturers and dealers to compete against each other to provide cleaner cars.

Although many of the participants liked the labeling idea, several questioned whether it would affect the prices of vehicles and whether the program would actually lead to changes in consumer behavior. Others felt that at a minimum a labeling program would help educate people and lead them to think more about the environmental ramifications of driving. A few participants thought that a labeling program was somewhat redundant since emissions were already regulated.

### Who should be in charge of the labeling program?

When asked who they thought should be in charge of the labeling program, no participant favored the auto industry as the sole administrator of the program. Some suggested a cooperative effort between industry and government, or a broader coalition of groups. One participant thought a non-

profit should be in charge although others questioned whether a non-profit would have the technical expertise and finances to run such a program.

When asked who they thought was most credible, most participants said the Maine DEP. The Maine Auto Dealers Association and the Natural Resources Council of Maine were both seen as biased and unaccountable to anyone; some thought these groups should be removed from the label. Others thought that as long as DEP was on the label that the others could remain on the label. Several participants stated the dealers should be involved in the labeling effort because the dealers and the salespeople would need to understand and to explain the label information.

### Reactions to logos

The moderator presented a set of logos and explained that these could be used as part of an eco-labeling program for passenger vehicles. Specifically, the moderator explained that these logos could be used on stickers placed on vehicles to denote that the vehicle was environmentally preferred. After letting the participants view the logos, the moderator then asked them to react to each of the logos.

In general, participants indicated that most of the logos did not convey any specific environmental message and they would need supporting text. Two logos were the top two choices of participants, the *Road to Tree* (Figure ES1) and the Maine Department of Environmental Protection’s *Original* (Figure ES2) logo because these two were seen as being the clearest at conveying the message.

*Road to tree*—Participants liked this graphic because it emphasized clear air, seemed to reflect an image of Maine, and was colorful.<sup>1</sup> However, others thought the scene was too generic, busy, or complicated; these individuals wanted a graphic that was more clearly associated with Maine (e.g., having the ocean in the background, or using a moose or blueberries) or would like to see the label in the shape of the state. However, others stated that having only nature referenced was unrealistic; they thought a vehicle should be in the graphic as well.

*Original*—Most participants liked this graphic; they liked that both a vehicle and a pine tree were included because it related to the overall idea of car emissions. A few mentioned that this graphic was their first choice. Others noted that this would be a good second choice because the sticker contained

<sup>1</sup>Colors for this graphic include orange sky and green hills with black tree and road.





Figure ES1. Road to Tree logo.

the right elements, but the label was too dull and not colorful enough.<sup>2</sup> Several thought the car was dull or ugly. Several individuals would have liked to see some reference to Maine either as a graphic or as the shape of the sticker.

#### Desire to keep the sticker on car

Several participants would be willing to keep the logo stickers on their vehicle because it would make a positive statement. Some went so far to indicate that the label has the potential to become a status symbol.

#### Reactions to taglines

The moderator presented participants with examples of taglines that could possibly be attached to the different logos and asked participants for their reactions. Because many of the logos were rejected as unsuitable, the groups only discussed taglines for those logos preferred by members of the focus group.

*Road to Tree*—“The Road to a Cleaner Maine” was the most popular tagline; participants stated that it went with the picture and referenced a vision of clean air. One participant liked the tagline because it focused on improving air quality for “our grandkids.” “Driving Maine’s Future,” “Drive Smart,



Figure ES2. Maine Department of Environmental Protection Original logo.

Breathe Easier,” and “A Clear Path for Maine” were liked by many participants. However, some thought the “Driving Maine’s Future” tagline did not convey an environmental message and that people would find it confusing. The “Drive Smart, Breathe Easier” line seemed to convey a clearer clean-air message related to driving.

Many participants liked statements related to Maine. They thought that since it would be a Maine program, it should reference the state name in the tagline. Another participant stated that Maine should be abbreviated as ME to make the connection that “I” will be cleaner.

*Original*—Most participants liked the words already on the label better than any of the alternatives presented. Although one individual stated the phrase “cleaner cars” was confusing and suggested that “lower emissions” was less confusing. Another was confused by what “health” referred to (health of people or the environment?).

#### Reactions to detailed environmental labels

The focus groups then viewed several different ways of presenting more detailed environmental information; These approaches can be summarized as *tabular* (Figure ES3), *relative scaling* (Figure ES4), and *horizontal arrows* (Figure ES5). In general, participants preferred graphical approaches to a table because the table format was harder to decipher and the graphical approaches made it easy to quickly check the vehicle. Some participants thought tabular information might be more appropriate on a website or in specific vehicle brochures rather than on the car itself. Many participants liked the relative scaling approach because it provided comparative information in a relatively simple manner and was similar to something they were

<sup>2</sup>Colors for this graphic include blue sky, green land, and a gray car. The tree and lettering are black.

**Vehicle Air Pollution Score:  
A Consumer's Right to Know**

	<u>This Vehicle</u>	<u>All Vehicles</u>
Sulfur Dioxides	69	76
Nitrogen Oxides	57	79
Carbon Monoxide	85	82
Hydrocarbons	82	87
Particulates	87	83
Carbon Dioxide	92	75

Environmental scoring system developed and administered by Maine's Department of Environmental Protection and the Maine Auto Dealers Association. For details of the rating system and other vehicle ratings: call 1-800-123-4567 or see WWW.DEP.GOV

Minimum Acceptable Score = 50  
Maximum Score Possible = 100

Figure ES3. Vehicle air pollution score information.

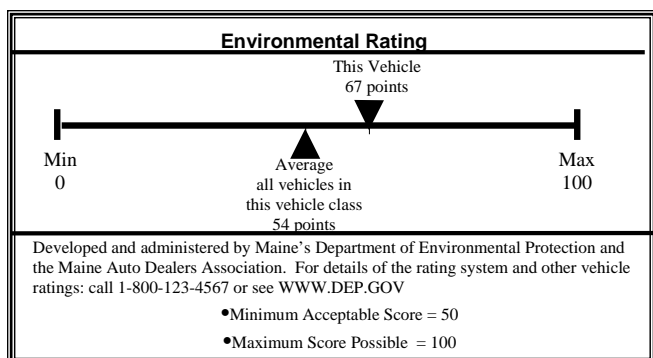


Figure ES4. Vehicle environmental rating information.

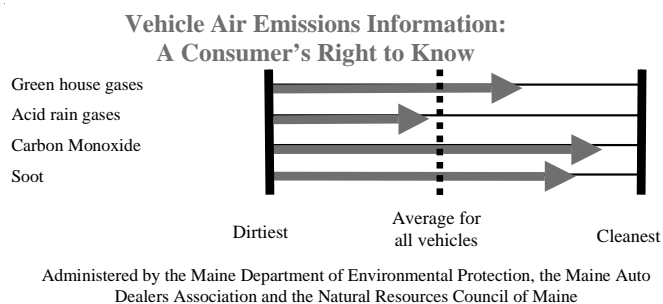


Figure ES5. Vehicle air emissions information.

already used to—the energy efficiency labels on appliances. However, other participants noted that arrows without numbers would make cross-vehicle comparisons difficult (e.g., when environmental attributes were somewhat similar).

**Level of detail**

In general participants liked simpler, smaller labels. Participants thought that labels with too much information appeared cluttered, would take too long to read, and would be ignored by vehicle shoppers. They indicated that when people shop for a vehicle they browse the lot—scanning the information on many vehicles—and they felt that most people would not want to spend too much time looking at this much information. They also thought simpler labels would be more eye-catching. Several stated the detailed information would not be important to them if a credible logo program was in place. Many felt more detailed information should be provided (off-label) to those individuals who wanted more information.

One participant stated that more detailed labels may be appropriate in a few years when people are more familiar with the issues and the program; another thought that this might be good information to provide on the website. Other participants, although they agreed that there was a lot of information on the label, liked the level of detail because they thought the more detailed labels would spark an interest in some people to learn more about these issues.

**Disclosure of pollutant information**

In general, participants disliked having information presented about specific pollutants. Most participants mentioned that it was difficult for them to understand how to react to the different pollutants because they felt that comparing these pollutants would be like comparing apples and oranges. Several participants noted that they would rather have one overall score, otherwise they would have to know more about the different pollutants and know how much weight to place on each one's importance. Others noted that they would rather have information about what the health effects of the pollutants were so they would know which of them to be more worried about. Further, some participants were unclear of how to evaluate the label because they were unclear whether the information denoted levels of pollution or magnitude of impacts. Some participants wondered which pollutant was more dangerous and whether the list was ordered in some way (e.g., is the pollutant listed at the top the one you

need to worry about). Some labels provided explanations of what the pollutants' impacts were. However, this definitional information was not seen as helpful and just increased the level of label clutter. In general, participants preferred less technical terms for the pollutants (e.g., soot vs particulates); however, some participants stated that both sets of words did not mean anything to them.

### **Certifier**

Participants liked the information about who was running the labeling program, which they felt enabled them to trust the label. One participant thought that it was too wordy; however, others pointed out that if the information was not there, that they would probably question the credibility of the information.

### **Contact information**

Participants generally liked the inclusion of the contact information (a phone number or website), stating it would allow interested consumers to find out more about the environmental information and the labeling program. One participant noted that interested consumers could compare cars at home on the web. Although most participants liked the inclusion of the contact information, most also felt any additional information available at a website should be available at the dealership, possibly in a pamphlet form. They felt that most people shopping for a vehicle would want the information immediately.

### **Endpoints**

Numerical endpoints were problematic, causing confusion in both the graphical and tabular label formats. Specifically, participants were unclear whether higher numbers were a good or bad thing; some participants associated lower scores with lower emissions while others had the reverse association. This confusion was evident even when there was supporting text explaining the direction of the effects. One reason is that some participants did not read, or were confused by, the explanation. Participants liked endpoints that were clearly labeled in terms of environmental quality (e.g., dirtiest/cleanest).

### **Reference value**

Most participants liked the idea of including a reference value in addition to the value presented for the specific vehicle. However, they preferred the reference to be based upon vehicles within the same class of vehicle rather than being based upon all vehicles. This was because participants felt that

most people shop for a type of vehicle and would like to know how the vehicle they are considering rated relative to other close substitutes. Participants continued to desire this method of referencing even when it was pointed out that this method might make some vehicles appear environmentally better when in fact they were environmentally worse compared to all other vehicles. Most participants felt that the scores should still be referenced to class of vehicle since that is what the person is looking for/needs; they felt it was more important to help people buy the "best of the worst" because it was unlikely that the environmental information would drive most people out of their chosen class of vehicle.

Some in the groups felt the vehicle-in-class reference could make some people complacent. One person presented a compromise position whereby two references are placed on the label: one for all vehicles and the other for vehicles within the same class. However, others felt that this might make the label too confusing or cluttered, especially if the three scores (the vehicle score, the all-vehicle score, and the all-vehicle-in-class scores) were relatively close together.

### **Potential for label to affect behavior**

The moderator asked participants if any of this information would affect their vehicle-purchase behavior. Many participants said it would not; they relied on the government to set standards to protect the environment and human health. Most mentioned it would be important, but the impact would be marginal compared to other considerations (e.g., functionally and comfort); in most cases it would not be a deciding factor on whether to buy the car or not.

A few participants noted that many of the manufacturers provided competing vehicles within a specific vehicle type that are similar in many of their characteristics. As a result, knowing the environmental information may push some people who are interested in a specific class of vehicles from choosing one brand over another. Another participant thought that most people in Maine did not realize how much vehicles contributed to air pollution problems in the state—the implication being that these individuals would not see emissions information as being very important in their vehicle purchasing decision.

When told that about 120 cars would meet Maine's standard to display a label, many participants thought this was interesting; they were under the impression only a few cars would meet the standard. In general participants saw this as positive news, that there would be a number of choices

available to consumers and that this would bode well for the success of the label.

Several participants stated since all this information was new the success of the program would be contingent on people being educated; a short-run suggestion included a “big media blitz” to highlight the program and a long-run suggestion included making this information part of the schools’ curriculum (maybe through driver’s education). Several participants suggested another method to increase success would be to provide a tax incentive program to encourage people to buy these cars.

### **Reactions to U.S. Environmental Protection Agency’s (EPA) Green Vehicle Guide website**

The moderator presented information from EPA’s *Green Vehicle Guide* website and asked participants if they ever had heard of this site; no one in the group had. Initial reaction to the website was that it had too much information and information that was confusing (e.g., the sales-area map, the phrase “global warming” in the fuel economy column). One participant would simplify the website (e.g., using two pull-down menus) so an individual could easily do side-by-side comparisons of the information (instead of scrolling around the site to find the information). Other suggested elimination of the ID number information and the sales-area information.

Participants were shown that some vehicles with better gas mileage had worse environmental scores; the moderator asked how this could be true. Most participants were stumped because the relationship seemed counterintuitive to them (most perceived that emissions were positively related to improvements in fuel economy). A few participants correctly mentioned that what came out of the tailpipe did not relate to gas mileage because they were two different technology bundles (e.g., catalytic converters). However, other participants provided alternative responses related to how the information was constructed (e.g., the numbers were based on fleet averages, came from different sources who used different scales). Participants felt the website needed to explain how gas mileage and emissions were determined and how they related to each other. When the moderator provided the correct explanation, most participants seemed comfortable with it.

When told the environmental scores excluded carbon dioxide emissions, a few participants wondered why; others responded that carbon dioxide was not necessarily bad. The moderator then explained that carbon dioxide is a global-warming gas

and is an emission that is linked to fuel economy. The moderator then asked if participants wanted to see the carbon dioxide information included in the environmental rating; most participants said that this was beyond them to determine, but several other participants thought it should be included.

The moderator then asked if participants would use this website to compare cars next time they go car shopping. Most indicated they probably would not use it. Reasons for not using it included that it was too difficult to use and that the information was only marginally important to their buying decision.

## I. INTRODUCTION

### Background

The environmental characteristics of products have become increasingly important to consumers (USEPA 1994). Firms have responded by placing information on products that highlight the product's environmental attributes and by introducing new, or redesigned, "green" products (USEPA 1991). Governments and non-governmental organizations have also responded by organizing, implementing, and verifying environmental labeling and marketing programs (hereafter, eco-information programs) that cover thousands of products in more than 20 countries (USEPA 1993). From a policy perspective, one aim of eco-information programs is to educate consumers about the environmental impacts of product consumption, thereby leading to a change in purchasing behavior, and ultimately, to a reduction in negative environmental impacts.

Eco-information approaches fall under the rubric of consumer information remedies (Moorman 2001). These remedies differ from traditional market restraint remedies in that the function of labeling and social marketing is to improve the flow of information to consumers (Mitra and Lynch 1995) who, in turn, alter their information search and or product purchase behaviors. These changes in consumer behaviors then may lead to changes in producer behaviors. For example, firms may develop new marketing strategies or target different consumers, develop new products, and alter the attributes of current products (see Moorman 2001 for a list of studies looking at firms' responses to changes in information policies). Importantly, not all consumers in a market need to be affected by the information program to alter markets; only a subset of consumers need to respond to the information to impact producer behaviors (Capon and Lutz 1983; Dunn and Ray 1980; Moorman 1998). In theory, firms that are better able to take advantage of the labeling and marketing programs will be rewarded with a comparative advantage (Mitnick 1980, 1981; Moorman and Slotegraaf 1999). However, only a few firms need to initially respond to these more progressive consumers, as many firms respond with imitation effects (Baum and Ingram 1998; Miner and Haunschild 1995).

Although eco-information programs are widespread and harbor significant market potential, empirical comparisons of the effectiveness of alter-

native eco-information programs are lacking (Teisl and Roe 2000).<sup>1</sup> Although there are several survey-based studies indicating that eco-information programs may alter consumers' perceptions of products and influence product choices, these results have been based solely on hypothetical or experimental scenarios (e.g., see Roe et al. 2001a, 2001b; Teisl et al. 2001). Other studies, which have looked at changes in actual behavior due to changes in eco-information programs, have indicated some success (Tools of Change 2002). However, each of the programs studied also includes other, non-informational factors. Specifically, these programs have used financial or regulatory incentives (i.e., subsidies, rebates, or lottery prizes for participation in the program) or disincentives (i.e., new fees or restrictions for not participating in the program). Thus, it is unclear whether the success of these programs was due to the informational component of the program. Currently, only one study has focused on determining the market effects of an eco-label (dolphin-safe labeling of canned tuna) and translating the market effects into consumer welfare changes (Teisl et al. 2002).

In the US light-duty vehicle (cars, trucks, minivans, sport utility vehicles [SUVs]) market, traditional performance standards have been successful in achieving significant ongoing reductions in criteria pollutants emitted per mile, although some of these gains have been offset by an increase in the number of miles driven. By comparison, fuel efficiency standards have not led to ongoing reduction of fuel consumption. The fuel economy of new US light-duty vehicles has fallen significantly since its peak in 1989 following its rise pursuant to the corporate average fuel efficiency (CAFE) standards established by the US Energy Policy and Conservation Act of 1975 (PL94-163). CAFE regulations specify minimum fleet average standards for fuel efficiency that vehicle manufacturers must meet. The reasons commonly cited for this decline include a shift from cars toward trucks (which, for CAFE purposes includes vans, minivans, pickup trucks and sport-utility vehicles weighing less than 8,500 pounds or 3855 kg), the low price of gasoline, and the uneven management of the CAFE regulations themselves.

The effectiveness of CAFE standards in raising the light-duty vehicle fleet's fuel efficiency, and other effects of CAFE regulations, have been dis-

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<sup>1</sup>Most research focusing on the effects of information programs have focused on changes in consumer awareness and understanding of health and nutrition information driven by changes in food labeling regulations (e.g., see Derby and Levy 2001; Levy and Derby 1996; Teisl et al. 1999). Other research has looked at how changes in these regulations have altered consumer and producer behaviors (see Ippolito and Mathios 1990, 1991; Teisl et al. 2001).

cussed in a large body of literature. It was debated whether the improvements in average fuel efficiency realized from 1978 (the first year that the CAFE standards went into effect) through 1987 were attained at a reasonable economic cost and whether the CAFE regulations induced undesirable changes in vehicles that could lower their safety (Crandall and Graham 1989; Greene 1990, 1998; Nivola and Crandall 1995,).

Thorpe (1997) found that the CAFE standards have led to a shift toward larger, more luxurious models in the imported Asian fleet and may have led to a decrease in the fleet's average fuel efficiency. In addition, the CAFE standards themselves, by being less restrictive for trucks than for cars, may have had the unintended effect of encouraging the shift in market share from cars to light-duty trucks. The light-duty truck share of new vehicle sales has grown from 9.8% in 1979 to 48.9% in 2002 (NHTSA 2003:16627).

Recently, the National Research Council (NRC) has come out with a comprehensive review of the effectiveness and impact of CAFE standards. The NRC concluded that the CAFE program has clearly increased fuel economy since its inception, although certain aspects of the CAFE program have not functioned as intended. These include indirect consumer and safety costs, a breakdown in the distinctions between foreign and domestic fleets, and between minivans, SUVs, and cars in the calculation of fuel economy standards, and the creation of fuel-economy credits for flexible-fuel vehicles. The NRC also concluded that technologies exist that, if applied to light-duty vehicles, would significantly reduce fuel consumption within 15 years.

The availability of improved technologies for fuel economy alone is not sufficient to encourage their widespread adoption because market forces do not sufficiently value higher efficiency over the other amenities that improved technology can provide. The effective implementation of eco-information programs may allow customers to make choices that clearly reflect their preferences while simultaneously helping achieve policy objectives (e.g., reductions in fossil fuel use and air emissions). Although there have been numerous studies (e.g., Brownstone et al. 1996a, 1996b; Bunch et al. 1996; Gould and Golob 1998) indicating a demand for "greener" vehicles, few of these vehicles have actually penetrated the market (Rubin and Leiby 2000). This is of particular concern to policy makers because light-duty vehicles produce 57 percent of transportation carbon dioxide (CO<sub>2</sub>) emissions (including international bunker fuels). Combustion of fossil fuels to power transportation was the single

largest source of greenhouse-gas emissions in the U.S. economy in 1999 (USEPA 2001a). Light-duty vehicles are also responsible for 18 percent of nitrogen oxide (NO<sub>x</sub>), 45 percent of carbon monoxide, and 26 percent of volatile organic compounds (USEPA 2001b).

### Objectives

The research is designed to provide policy makers and stakeholder groups some guidance in developing effective eco-information programs. There are two phases to this research. During the first phase, qualitative research (focus groups) is used

- 1) to identify the types of environmental information that consumers will find useful when purchasing a vehicle;
- 2) to understand how different modes of environmental disclosure affect consumers' choice of a vehicle with different environmental profiles;
- 3) to identify where consumers expect to obtain eco-information about vehicles (e.g., on the vehicle or somewhere off-product);
- 4) to identify the level of detail consumers expect/desire on a vehicle's eco-label;
- 5) to identify whom consumers view as the appropriate organization to monitor an eco-information program; and
- 6) to identify how the characteristics of the vehicle influences the desire or need for an eco-informational program;

The results of the first phase will be used to develop a survey instrument and an eco-marketing campaign to be used in the second (quantitative) phase.

## II. METHODS

The qualitative research involved six focus group sessions in Maine; two groups were held in Portland, two in Orono, and two in Lewiston-Auburn (Table 1). Participants were screened to ensure demographic diversity and to confirm that some proportion of the participants had purchased a passenger vehicle or truck within the last two years (screening is attached as Appendix A). Recruitment incentives were used. All groups were audio- and video-taped.

Qualitative research is critical to proper evaluation of the communication messages that will be used as part of the eco-labeling and marketing program. Props illustrating different information displays were used to stimulate discussion; these

Table 1. Demographic characteristics of focus group participants.

Characteristics	Portland		Orono		Lewiston-Auburn	
	Group I (n=11)	Group II (n=12)	Group I (n=9)	Group II (n=7)	Group I (n=10)	Group II (n=9)
Gender						
Male	5	6	3	2	2	7
Female	6	6	6	5	8	2
Purchased vehicle in last 5 years	7	9		5	9	5
Schooling						
High school/GED	4	5	1	0	5	4
Some/completed College	5	5	1	3	5	5
Post college	2	2	7	1	0	0
Income						
Less than \$20,000	0	0	1	2	1	0 <sup>a</sup>
\$20-40,000	3	2	4	2	2	2
\$40-60,000	3	3	1	2	3	3
\$60-80,000	3	2	3	1	3	3
\$80-120,000	2	3	0	0	1	0
More than \$120,000	0	2	0	0	0	0
Age						
18-34	1	2	2	4	2	4
35-49	3	4	5	2	4	2
50-64	4	4	2	1	1	3
65+	3	2	0	0	3	0

<sup>a</sup>One person refused to confirm income

props varied across focus groups.<sup>2</sup> Props consisted of potential vehicle eco-seals (simple logo-type graphics that would be placed on vehicles to denote the car was environmentally better to drive), potential taglines (slogan-like text that could be used in conjunction with an eco-seal, or be used as part of a eco-marketing campaign—see Appendix C), and/or potential environmental labels (graphic or tabular approaches that disclose more detailed or numeric information about how a vehicle ranks along several environmental attributes). We also used props of U.S. Environmental Protection Agency's (EPA) current website that is used to convey information about a vehicle's environmental rating (Appendix D).

Discussion centered on whether any of the information was confusing or hard to understand, whether the information was important and whether the display contains enough information (the complete moderator's guide is attached as Appendix B). Labels differed in terms of the methods of presenting the information (e.g., a table format versus a bar chart graphic).

### Limitations

In qualitative market research, the focus group approach seeks to develop insights and direction rather than to provide quantitatively precise or absolute measures. Because of the limited number of participants and the restrictions of recruiting, this research must be considered in a qualitative frame of reference without possibility of projections to real or potential customers in this product category.

## III. RESULTS

Because some of the discussion was consistent across focus groups the presentation of results will first focus on the consistent responses made by focus-group participants. When appropriate (e.g., when props differed across groups) additional responses will be presented by focus-group location.

### Car/Truck Purchasing

In all six focus groups, the moderator began by asking participants what types of attributes they

<sup>2</sup>Most logo props and taglines developed by BFT International<sup>(TM)</sup> of Portland, Maine.

looked for when buying a car or truck. Common responses centered on use- or lifestyle-characteristics of the vehicle. For example, size of the vehicle was a common response, and this response was often related to how the vehicle could handle passengers (e.g., children, dogs) or cargo. Given the potential for long, snow-filled winters and the outdoor lifestyle typical of many Maine residents, it is not surprising that driving and handling capabilities (e.g., presence of four-wheel drive, high ground clearance, and good traction in snow) and safety (e.g., crash test ratings) were key attributes. Monetary considerations (e.g., sales price, resale value, cost of ownership/driving, quality of warranty) were also important, cited in all of the focus groups.

Gas mileage was a commonly mentioned attribute; this attribute has several potential motivations: e.g., environmental (potential emissions reduction, lower recourse use), monetary (lower overall cost to drive) or “patriotic” (reduce imports of foreign oil). In general this attribute seemed primarily motivated by monetary concerns; environmental concerns seemed less important with patriotic concerns seemingly unimportant.

When not prompted, auto emissions were only mentioned in one of the groups as being an important attribute.

In four of the groups (both Portland and Orono groups) the moderator then handed out a list of vehicle attributes (Figure 1) and asked participants which of the attributes were most important to them. Most common responses focused on safety, price, performance-related features, and fuel economy; emissions were only mentioned in two of the groups.

### Information Sources

To determine where individuals were getting their information about vehicles, the moderator asked participants how they go about getting information about vehicles and their attributes. The most common information sources cited were online sources, *Consumer Reports* and/or other vehicle-related publications (e.g., *Car and Driver*), and friends/relatives. Dealerships were often not visited until later in the car-buying process and used only to gather monetary (price, financing, warranty, trade-in value) and “experiential” information (e.g., information obtained through visual inspections and test drives). Most participants narrowed their choice set down to two to three vehicles before visiting a dealer.

Figure 1. Vehicle attribute handout.

#### Interior Features

Air Conditioning  
Power/ Reclining Seats  
Power Windows, Mirrors, Locks  
Tinted Glass  
Dash Board Styling  
Tilt/Telescopic Steering Wheel  
Intermittent Wipers  
Rear Window Defroster  
Entertainment System  
Interior Style/Upholstery  
Remote Trunk Release  
Rear Defroster  
Console/Storage  
Interior Room  
Trunk Space

#### Exterior Features

Exterior Body Styling (e.g., Rear Spoiler, Premium Wheels)

#### Financial Features

Price  
Rebates and Incentives  
Financing Package

#### Safety Features

Antilock Brakes  
Traction Control System  
Fog Lights  
Child-Proof Locks  
Crash Test Ratings  
Alarm System

#### Performance Features

Front/Four Wheel Drive  
Cruise Control  
Power Steering  
Gas Mileage  
Environmental Emissions  
Engine size  
Type/Size of Transmission  
Turning Radius  
Braking Distance  
Handling around curves  
Riding Comfort  
Towing Package

#### Truck Specific

Step Bumper  
Running Boards  
Payload/Bed Length  
Cab Type (e.g., crew cab, extended cab)



### Importance of Gas Mileage

The moderator then asked participants to discuss how and why fuel economy is important. In general, participants were rather split on the relative importance of fuel economy. Several participants indicated that fuel economy was very important while others indicated that its importance was secondary to other concerns (e.g., comfort).

The importance of fuel economy seemed related to the amount and type of driving a participant did. Individuals who drove more said that fuel economy was very important. Others indicated fuel economy was important for the household's vehicle used primarily for commuting to work, but size, safety, comfort, and performance were more important for the vehicle primarily used to transport the family or used to access lifestyle choices (e.g., camping). Only three participants indicated that better fuel economy indicated the vehicle was "cleaner to drive" (provided fewer emissions); one of these participants specifically cited CO<sub>2</sub> emissions as being related to fuel economy.

When asked why fuel economy was important, most individuals mentioned it made the vehicle less costly to drive. A couple of individuals mentioned that better fuel economy was better for air emissions, and one individual mentioned it would help reduce foreign oil imports. Finally, one person equated better gas mileage with poorer engine performance and less engine durability because this participant perceived that gas mileage is correlated to size of engine. This person felt that smaller engines provided less acceleration and would "wear out" faster.

### Environmental Impact

The moderator then asked participants whether they ever thought of environmental issues or concerns when shopping for a car or truck. Participants generally did not consider environmental impacts when shopping for a vehicle. When the moderator probed why they did not take these issues into consideration, many stated they felt that air emissions were not a problem with driving vehicles; they noted that vehicle emissions are already heavily regulated. Others agreed, pointing out that there are a large number of emissions-control devices currently placed in vehicles. A few mentioned that big trucks and buses were the only vehicles that seemed to contribute significant air pollution. Several thought that all the regulations basically made all cars "pollute about the same."

The moderator then followed up, asking participants whether they thought Maine had an air-pollution problem. Although several participants

thought air pollution was not a big problem in Maine, most indicated that it was a problem. When asked where the air pollution comes from, however, almost everyone cited that the problem was due to industrial pollution coming from out of state; many cited the Midwest or larger cities along the Eastern Seaboard as the source of the pollution. Less common examples were wood stove emissions in the winter. Of those who thought there was no major air pollution problem, they indicated that air pollution seemed to be a temporary problem (e.g., seasonal or intermittent), otherwise the state was relatively clean. A few participants who had traveled or lived out of state indicated they had experience with cities having "bad" air pollution (e.g., Houston) and Maine did not "come close."

The moderator then asked participants if they thought vehicle emissions were a major contributor to air pollution in the state. Most individuals said vehicle emissions were not that important. The moderator then asked participants to estimate how much of the air pollution in the state was due to vehicles. Most indicated relatively small numbers (one to five percent) or used qualitative references like "miniscule." A few participants stated higher numbers (10 to 25 percent).

In both Orono and Lewiston-Auburn groups, the moderator then cited the Maine Department of Environmental Protection (DEP) statement that 50 to 60 percent of the air pollution in Maine is from vehicle emissions and asked for participants' reactions. In general everyone was "shocked" at the high number; others were skeptical about it. They wondered how Maine DEP figured this out. A few wondered about the geographic distribution of the air pollution; they indicated that maybe the high number is true in more urban areas of the state (e.g., Portland), but that this is not likely to be true "north of Augusta." Another countered that maybe the rural areas have a problem because of all the "old cars" being driven.

As the discussion unfolded, a few mentioned the idea that maybe Maine was developing a vehicle-based air pollution problem because everyone was driving more and more people have cars nowadays (e.g., "now all the high school kids have cars"). Others remarked that today's cars are a lot cleaner than they used to be.

### Experience and Desires for Vehicle Eco-labeling

In both of the Orono and Lewiston-Auburn groups, the moderator then asked participants if they were able to choose more environmentally friendly vehicles. Most felt they did not have a

choice; this reaction seemed driven by participants thinking that all passenger vehicles were regulated to be about the same in terms of emissions generation. A few mentioned that hybrid vehicles are an environmentally friendlier option, but others pointed out these types of cars were generally unavailable or they were unavailable in terms of the types of vehicles the participants needed/wanted.

The moderator then asked whether, when participants were shopping for car or truck, they could tell which car or truck was more environmentally friendly to drive. Most felt there was no easy way to get this information at the dealership and they would have to do their own research. One woman in the Lewiston-Auburn group stated she had seen a car with an emissions profile sticker; other participants in the group stated they would be skeptical of this information. An individual in the Portland group suggested vehicles could/should be labeled as environmentally friendly.

The moderator then read the following concept statement:

“There is a movement to have cars and trucks labeled in Maine so that you could determine which car or truck is environmentally better to drive. How this would work is that a list of environmental criteria would be constructed and all new cars sold in the state would be evaluated against these criteria. Cars and trucks that meet the standard could then display a label indicating that the car or truck is designated as environmentally better. This information could also be used in any product advertising.”

After reading the statement, the moderator asked for participants' reactions. Most participants were in favor of the concept although a few mentioned their support for such a program would be dependent upon who was in charge of administering it. Several participants cited their positive experience with using the efficiency ratings labels on electrical appliances. Others cited their positive view of EPA's Energy Star labeling on computers. Several individuals pointed out that this type of labeling might create an incentive for the car manufacturers and dealers to compete against each other to provide cleaner cars.

Although many of the participants liked the labeling idea several questioned whether it would affect the prices of vehicles and whether the program would actually lead to changes in consumer behavior. Others felt, at a minimum, a labeling

program would help educate people and lead them to think more about the environmental ramifications of driving. A few participants figured that since emissions are already regulated, a labeling program was redundant.

The moderator then asked participants who they thought should be in charge of the labeling program. No one favored the auto industry (either manufacturers or dealers) to be the sole administrator of the program. Some suggested a cooperative effort between industry and government, or a broader coalition of groups. Participants in both Orono groups liked the idea of this being a national rather than a state program. Although federal agencies seemed to be regarded with skepticism, several felt that EPA was a good federal choice

### Reactions to Logos

The moderator presented a set of logos and explained that these could be used as part of an eco-labeling program for passenger vehicles. Specifically, the moderator explained that these logos could be used on stickers placed on vehicles to denote the vehicle was environmentally preferred. After letting the participants view the logos, the moderator then asked participants to provide their reactions to each of the logos. Note that in three of the groups there was also some general discussion of the labeling program; their comments are listed at the end of this section

In general, participants indicated that most of the logos did not convey any specific environmental message and they would need supporting text.

### Road to Tree

Participants generally liked the “Road to Tree” graphic (Figure 2) because it emphasized clear air, seemed to reflect an image of Maine, and was colorful<sup>3</sup>. Many said they would keep something like this on their car. However, others thought the scene was too generic, busy, or complicated; these individuals wanted a graphic that was more clearly associated with Maine (e.g., having the ocean in the background, using a moose or blueberries) or would like to see the label in the shape of the state. However, others stated that having only nature referenced was unrealistic; they thought a vehicle should be in the graphic as well. A couple of participants would have preferred the sky be blue rather than a sunset—they thought a blue sky would better denote clean air. A few disliked that the road “ran into” the tree.

<sup>3</sup>Colors for this graphic include orange sky and green hills with black tree and road.



Figure 2. Road to Tree logo.

### Roadway

No participant liked the “Roadway” graphic (Figure 3); some disliked the coloring<sup>4</sup> and thought the text sounded like a political slogan. One participant noted the road surface denoted the opposite of an environmental message as it seemed to promote driving. Others said the graphic looked like a chalkboard or an ad for the turnpike.

### Steering Wheel

In general, no participant liked the “Steering Wheel” graphic and few were able to “see” the steering wheel shape (Figure 4); many thought the design mimicked other designs they have seen (e.g., a bio-hazard logo, a nuclear energy graphic, a peace sign, the former Maine Department of Agriculture logo, a hazardous-materials graphic, or the “Wheel of Fortune”). Several liked the colorful<sup>5</sup> nature of the graphic; others mentioned it was too busy or looked too stereotypical of the environmental movement (e.g., looks like a hippy peace sign; looks too “groovy” or too “granola”). Many participants liked the state of Maine shape in the center; some mentioned that the shape of the sticker should be the profile of the state.

### Original

Most participants liked the original logo (Figure 5); they liked that both a vehicle and a pine tree were included and that it related to the overall idea of car emissions. A few picked this logo as their first choice. Others noted this would be a good second choice because the sticker contained the right elements (tree, denoting nature and car, denoting



Figure 3. Roadway logo.

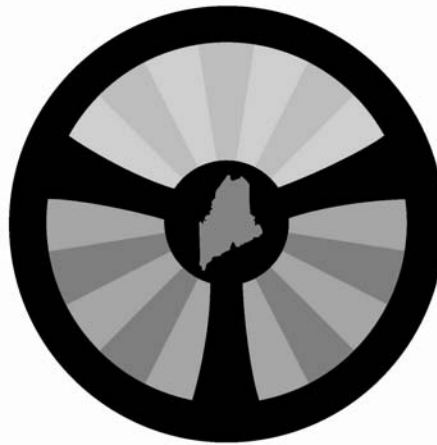


Figure 4. Steering Wheel logo.



Figure 5. Original logo.

<sup>4</sup>Colors for this graphic include blue lettering and red road lines.

<sup>5</sup>Colors for this graphic include orange-stripes for top portion of the wheel, with green-stripes for the bottom portion of the wheel. The state of Maine in the middle is gray.

driving); however, the label was too dull and not colorful enough.<sup>6</sup> Several thought the car was dull or ugly. Several would have liked to see some reference to Maine either as a graphic or as the shape of the sticker.

### Chasing arrows

Few participants liked the “Chasing Arrows” graphic (Figure 6). Participants noted the graphic was unclear about what it means and they disliked the color scheme.<sup>7</sup> A few participants liked the graphic because it reminded them of the recycling logo, which was a positive message; however, others thought this might be confusing.

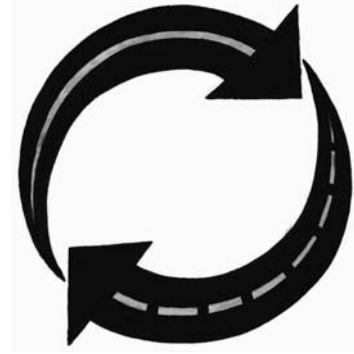


Figure 6. Chasing Arrows logo.

### Highway sign

Most participants rejected the “Highway Sign” graphic (Figure 7) because it was not clear what it was promoting (it was too confusing). One person liked this graphic because it denotes a choice; that there were two ways of going. Others thought the message was too divisive, that is, there are only two paths—a “right” way and a “wrong” way. Participants felt the message was too judgmental. One person mentioned that it looked too “official” and was not something they would keep on their car; others said that it looked like a sign to a city park or a dump sticker. Participants generally liked the green color.<sup>8</sup>

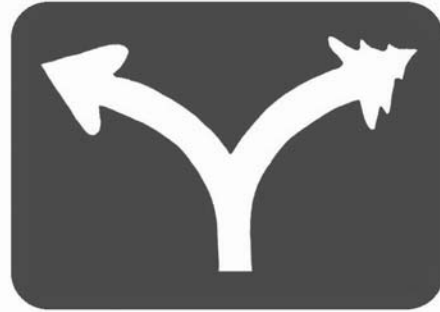


Figure 7. Highway Sign logo.

### How Low Can You Go?

Most participants did not like the text-only approach of the how low can you go logo because they wanted a distinctive logo that would be instantly recognizable (Figure 8). Some seemed to think the graphic was too busy.<sup>9</sup> Some liked the approach; they thought the slogan would be easy to remember. Others thought the text sounded too “slogany.” A few rejected this logo because the message may appear as a slam (i.e., “how low can you go” is seen as a negative message).



Figure 7. How Low Can You Go? logo.

## General Comments

### Portland Group II

While discussing the various logos one participant asks how big the sticker would be and where it would be on the car. The moderator showed them the actual size of the sticker. The participant said it would be too small to see while driving; another participant said that it would mainly be used to

<sup>6</sup>Colors for this graphic include blue sky, green land, and a gray car. The tree and lettering are black.

<sup>7</sup>Colors for this graphic include black arrows with orange/red road lines.

<sup>8</sup>Colors for this graphic include green background with white arrows.

<sup>9</sup>Colors for this graphic include green lettering for the top portion with orange road lines. The lower portion of text is black.

identify cars on the sales lot. Several people were concerned about the cost of the program and how it would be paid for (through taxes or through the price of the car). The moderator then asked if this information would be valuable to anyone. One participant said no since they are more interested in gas mileage; another said that most people would not care if the car is cleaner. Another participant thought it might make more people aware of the issue and that the sticker would be worth it.

#### **Lewiston-Auburn Group I**

After viewing all the logos there was some continuing discussion while the moderator handed out the sheets of paper listing the various taglines. One participant thought the logo should incorporate a figure of some children, along with a representation of Maine's nature (e.g., a moose) and a vehicle in the middle because this would be a clear message linking vehicle choice with human health and environmental considerations. Two other participants wanted a representation of the state to be included. They thought adding a state reference would link the logo directly to state-level emission standards. One participant thought the state silhouette would bring instant recognition, and would indirectly link to Maine's motto "the way life should be." One participant stated the logo by itself does not provide enough information, that people would want to know about specific emissions data. Another explained that the logo would provide some information since only cars that met the state's minimum standard would have the logo.

#### **Lewiston-Auburn Group II**

Before discussing each graphic individually there was discussion about the overall nature of the program. One participant questioned whether this was an official state of Maine program or something that an independent group would use to slap on cars. Most participants assumed that this was, and should be, an official program. The moderator asked the group who should be in charge of the program. Discussion mainly centered on whether it would be good to have the auto dealers monitor the program. One participant pointed out that there would need to be official oversight since there would be an incentive for some people to cheat. Another participant agreed with this statement, but thought the problem would be minor since dealers would have a lot at risk if they were caught. Several other participants agreed the state should have a role in monitoring and verifying the program even if the dealers were responsible for implementation.

There then was a concern over whether the price of the car would increase significantly. One participant would be against the program if the dealer had to pay a significant amount of money to obtain the sticker. Others also cited a cost concern.

One participant worried whether the sticker would be removeable; others assumed that the stickers would be removable. The moderator then explained that the sticker would be, in fact, removable, but could be left on if a buyer wanted to indicate to others they drove a "green" car. Most participants liked this approach.

One person pointed out that if the label were not attractive, people would not keep it on their car. Another participant thought that over time these labels might be viewed as a status symbol and people would want to leave the sticker on their car. Others agreed; they thought people would be proud of their car purchase.

#### **Reactions to Taglines**

In the Portland and Orono groups, and the first Lewiston-Auburn group, the moderator presented participants with examples of taglines that could be attached to the different logos and asked participants for their reactions. Because many of the logos were rejected as unsuitable, the moderator only asked for tagline discussions for those logos that were preferred by members of the group. Given that most participants preferred the road to tree and original logos, we are only able to make generalizations about participant reactions to taglines associated with these two logos. In the second Lewiston-Auburn focus group, to provide more time for the discussion of the website, the moderator skipped discussion of the taglines. However, she did pass out the tagline sheets and asked everyone to take a minute to look through the lines, to circle any line that they particularly liked, and to cross out any they strongly reject. Table 2 indicates the results.

#### **Road to tree**

"The Road to a Cleaner Maine" seemed to be the most popular tagline; participants stated it went with the picture and referenced a vision of clean air. One participant liked the tagline because it focused on improving air quality for "our grandkids."

"Driving Maine's Future," "Drive Smart, Breathe Easier" and "A clear path for Maine" were liked by many participants. However, some thought the "Driving Maine's Future" tagline did not convey an environmental message and that people would find it confusing. The "Drive Smart, Breathe Easier" line conveyed a clearer clean-air message related to driving.

Table 2. Written reactions to potential taglines made by participants at the Lewiston-Auburn II focus group, by logo type.

Tagline	Highway sign		Steering Wheel		Original		Road to Tree	
	prefer	reject	prefer	reject	prefer	reject	prefer	reject
The road to a cleaner Maine.	3	1	3	1	3	2	2	0
Driving Maine's future.	3	4	5	0			2	1
Driving toward a cleaner environment.	1	3						
Drive smart. Breathe easier.	4	3	1	1			1	1
Saving more than the environment.	3	2	2	1	1	3	0	1
Lower emissions make cents.	2	4	0	2	0	2	0	2
Driving America's future.	0	4	0	3			0	1
The road to a cleaner country.	2	2	1	1			1	0
The clear path for America.	1	3					0	1
America's future is clear.	0	3					0	1
The future is clear			0	1				
A driving force for the environment.			0	1	2	1		

Note: Taglines were not presented across all four logo types. Grayed spaces indicate logo/tagline combinations did not exist.

Many participants liked the statements that related to Maine. They thought that since it is a Maine program, it should reference the state name in the tagline. Another participant thought that Maine should be abbreviated to ME so it implied that "I" would be cleaner. Participants were split over the four non-Maine taglines ("Driving America's Future," "The Road to a Cleaner Country," "The Clear Path for America," and "America's Future Is Clear"); although some liked these when America was changed to Maine.

### Original

Most participants liked the words already on the label better than any of the alternatives presented. One individual stated the phrase "cleaner cars" was confusing, and suggested that lower emissions would be less confusing. Another was confused by what "health" referred to (health of people or the environment?). One person recommended abbreviating Maine as ME.

"A Driving Force for the Environment" and "The Road to a Cleaner Maine" were also preferred by many participants. Several participants disliked the "Lower Emissions Makes Cents" tagline.

Following the above discussion, there was no further clear discussion for the rest of the taglines. There was some discussion about what was missing in the taglines. One participant thought the most important item that was missing was a reference to

children. He thought a message relating the impacts of a clean environment to the health and well-being of people's children and grandchildren would be a powerful message. Two other participants agreed with this thought.

### Reactions to Detailed Labels

#### Portland Group I and II

In both groups the moderator provided a set of labels providing more detailed environmental information. Seven sheets of paper (one depicting each different label format) were placed on the table and participants were asked to look at and react to them.

Several participants liked the labels shown in Figures 9 and 10 due to the scaling and visual representation of relative "greenness," but cautioned the labels should be kept simple. They thought there were too many arrows to consider and too much information for most vehicle shoppers to digest. However they felt more detailed information should be provided (off-label) to those individuals who want more information. For one participant just knowing where the specific car falls relative to the average would be enough information.

In general, participants preferred the less technical terms used on the Figure 9 label (e.g., soot versus particulates) rather than the more technical words used in Figure 10. However, one participant

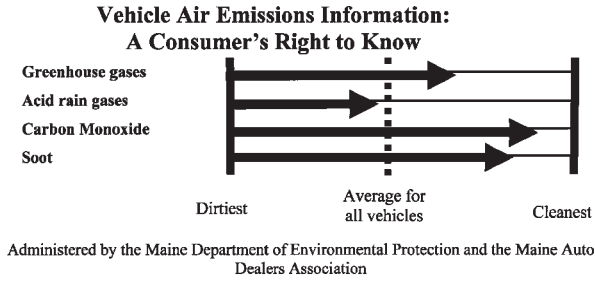


Figure 9.

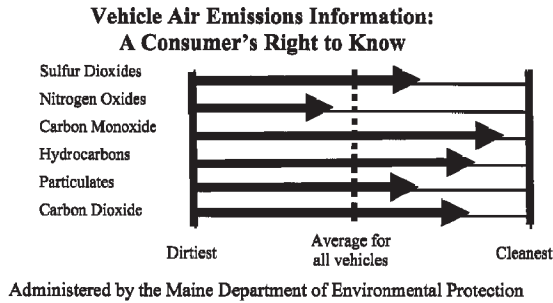
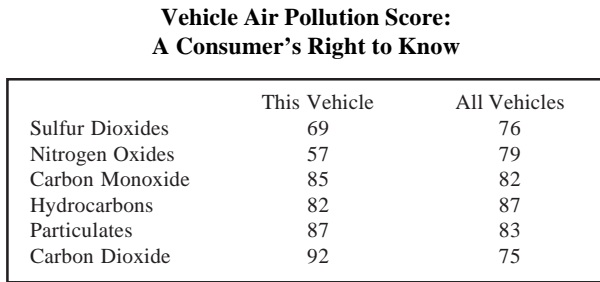


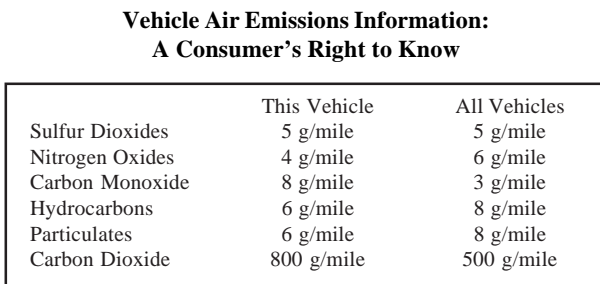
Figure 10.



Environmental scoring system developed and administered by Maine's Department of Environmental Protection and the Maine Auto Dealers Association. For details of the rating system and other vehicle ratings: call 1-800-123-4567 or see WWW.DEP.GOV

Minimum Acceptable Score = 50  
Maximum Score Possible = 100

Figure 11.



Administered by the U.S. Environmental Protection Agency



Figure 12.

felt both sets of words were meaningless. One participant thought there were too many words, which would make it confusing to the average person. One participant liked the inclusion of the contact information.

No one liked the table approach used on labels in Figures 11 and 12 because they had too much information and were confusing. One participant stated that this more detailed information should be placed in brochures about specific vehicles and not placed on the car itself. One participant did not like the technical terminology (not understanding what the terms meant). No one liked the metric approach (grams/per mile) used in Figure 12 because it did not mean anything to them.

Participants generally reacted negatively to the three labels shown in Figures 13, 14, and 15, saying they provided too much information and were confusing. One participant thought the labels were too confusing and therefore would ignore them. Another participant agreed, saying there was too much reading involved. One participant disagreed, saying these labels provided information about where the vehicle stood relative to other types of vehicles. Another participant liked the colorful nature of the labels in Figures 9 and 10 and felt that the other labels, although not confusing, were not as striking as those in Figures 9 and 10.

The moderator then asked whether this type of information would be useful. One participant said it would not be useful; another participant said it would be important because they currently do not know much about this issue. Another thought if a group set a standard and the awarding of a logo reflected the standard, then this additional information would not be useful. Other participants wanted things to be kept simple; one discussed the idea of a simple summary score. The moderator then asked what group of people would want the more detailed information; one participant stated "tree huggers." One participant said that they had been thinking of buying a hybrid (if they were bigger), and the label and logo information would be of some interest to them.

The moderator then asked participants if any of this information would affect their vehicle purchase behavior. One participant said not really because this participant relies on the government to set standards to protect the environment and human health. Most mentioned it would be important, but the impact would be marginal compared to other considerations; in most cases it would not be a deciding factor on whether to buy the car or not.

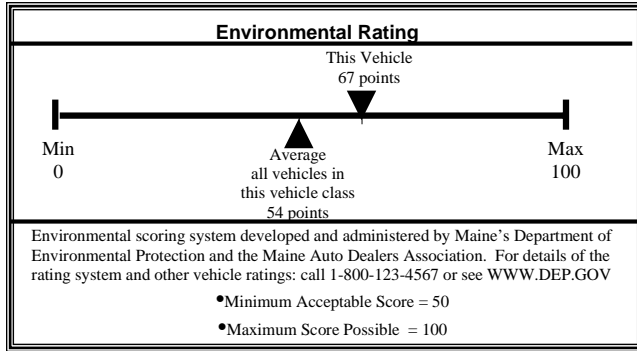


Figure 13.

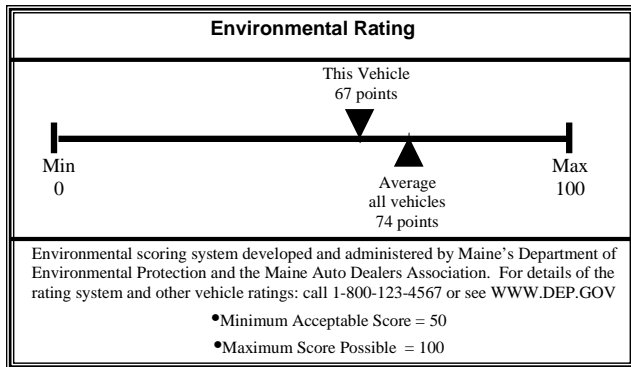


Figure 14.

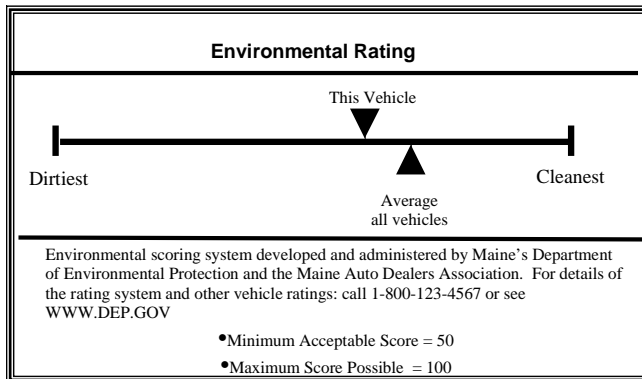


Figure 15.

**Vehicle Air Emissions Information:  
A Consumer's Right to Know**

	This Vehicle	All Vehicles
Sulfur Dioxides	5 g/mile	5 g/mile
Nitrogen Oxides	4 g/mile	6 g/mile
Carbon Monoxide	8 g/mile	3 g/mile
Hydrocarbons	6 g/mile	8 g/mile
Particulates	6 g/mile	8 g/mile
Carbon Dioxide	800 g/mile	500 g/mile



Figure 16.

One participant did not seem to understand the reason for these labels as they stated that emissions are related to fuel economy and since vehicles already post this information there was no need for more detailed emissions information. Two other participants stated that they would not necessarily think to link air emissions with fuel economy and that this information made it clearer; at a minimum it reminded them of the importance of air emissions.

The moderator then asked participants to assume that a summary rating system was used to rate vehicles on their emissions profile; she then asked which would be preferable, a numbering system (e.g., 84) or a letter grade (e.g., B). Participants were split; some thought a letter grade would be preferable while others thought a numbering system would be better.

One participant suggested that people who buy a low-emissions vehicle get a subsidy on their registration fee. Another participant wanted to know if these labels would rate all vehicles, or just a select group; if the latter were true, then this participant would not be interested in this information.

The moderator then asked if participants would be willing to keep the stickers on their vehicle; a few said yes. The moderator then asked why would they keep it on their vehicle. One participant responded that the sticker would make a statement. Another said the information would be seen as a positive when it was time to resell the car so there was an incentive not to remove it. Another participant stated they thought the sticker was a positive thing, but if the stickers were easily removable then the positive effect on resale would be negated since people could just peel a sticker from another vehicle.

At the end of the group the moderator presented information about the percentage of air pollution caused by vehicles in Maine (about 50 percent); she then asked whether this information made them rethink any of their responses. One participant was skeptical about this figure because Maine's fairly strict inspection system would keep most old cars off the road. One participant thought it was interesting that no one in the focus group knew that vehicle air emissions were so important and that this pointed out the need for education.

**Orono Group I**

No one particularly liked the label shown in Figure 16; most thought it had too much information and was confusing. Most participants did not



know what the pollutants were nor did they know what effects were associated with these pollutants. Another participant stated the information might spark an interest in some people to learn more about these issues. However, another countered that people were lazy and would just assume that lower numbers were better.

Many participants liked the format of the label shown in Figure 17, saying that it was similar to appliance labeling. Others noted the graphic would make it easy to make comparisons across vehicles. One noted that adding the source of the information enhanced the credibility of the label. The moderator then probed who they thought was most credible of the sources listed; most participants indicated that the Maine DEP was the most credible. They said the Maine Auto Dealers Association and the Natural Resources Council of Maine (NRCM) were biased and unaccountable to anyone; these individuals felt that these groups should be removed from the label. Others indicated that as long as DEP was on the label that it would be acceptable to have the other groups on it also. Another participant stated that the dealers should be involved in the labeling effort because the dealers and the salespeople would need to understand and to explain the label information.

One participant was confused about the endpoints of the scale, thinking it was unclear whether a higher number was a good or bad thing.

Most participants disliked the label in Figure 18; they thought that there was not enough information. Several participants were confused about the endpoints of the scale; they were unclear whether a higher number was a good or bad thing. Most thought the chart format was harder to decipher than the scale graphic.

Most participants seemed to like the label shown in Figure 19; however, others thought it had too much information. Several participants noted they would rather have one overall score, otherwise they would have to have more knowledge about the different pollutants and how much weight to place on each pollutant's importance. Most disliked the technical terms. One participant also noted that arrows without numbers would make cross-vehicle comparisons difficult; it would be difficult to compare vehicles that had arrows of similar lengths. Participants liked that the endpoints were now defined in terms of environmental quality (e.g., dirtiest/cleanest); however, one participant thought the scales should be reversed; i.e., that cleaner cars had a shorter arrow.

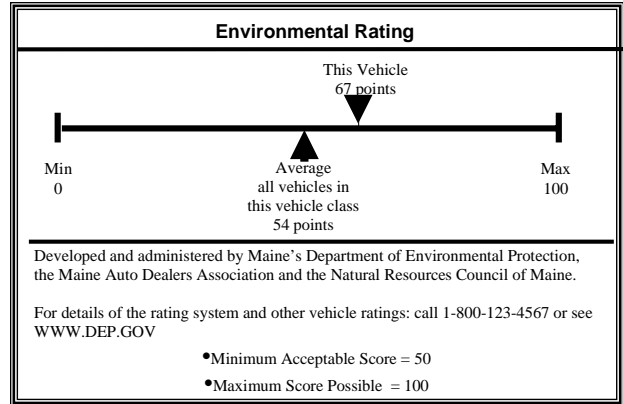


Figure 17.

**Vehicle Air Pollution Score:  
A Consumer's Right to Know**

	This Vehicle	All Vehicles
Air Pollution Score	9	7
Gas Mileage Score	8	6

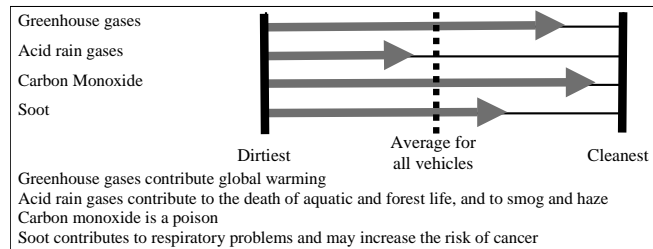
Administered by Maine's Department of Environmental Protection, the Maine Auto Dealers Association and the Natural Resources Council of Maine

For details of the rating system and other vehicle ratings: call 1-800-123-4567 or see WWW.DEP.GOV

Minimum Acceptable Score = 5  
Maximum Score Possible = 10

Figure 18.

**Vehicle Air Emissions Information**



Administered by the Maine's Department of Environmental Protection, the Maine Auto Dealers Association and the Natural Resources Council of Maine

Figure 19.



**Vehicle Air Pollution Score:  
A Consumer's Right to Know**

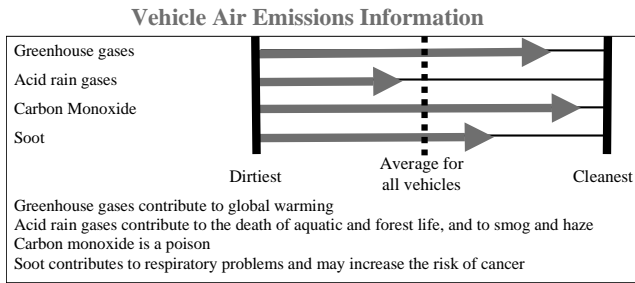
	This Vehicle	All Vehicles
Air Pollution Score	92	75
Gass Mileage Score	87	64

Administered by Maine's Department of Environmental Protection, the Maine Auto Dealers Association and the Natural Resources Council of Maine

For details of the rating system and other vehicle ratings: call 1-800-123-4567 or see WWW.DEP.GOV

Minimum Acceptable Score = 50  
Maximum Score Possible = 100

Figure 22.



Administered by the Maine's Department of Environmental Protection, the Maine Auto Dealers Association and the Natural Resources Council of Maine

Figure 23.

**Vehicle Air Pollution Score:**

For this vehicle	6
Average for all vehicles	9
Average for all vehicles in this class	4

Lower scores denote lower air emissions. Worst Score Possible = 10

For more details of the rating system and other vehicle ratings:  
call 1-800-123-4567 or see WWW.DEP.GOV

Administered by Maine's Department of Environmental Protection, the Maine Auto Dealers Association and the Natural Resources Council of Maine

Figure 24.

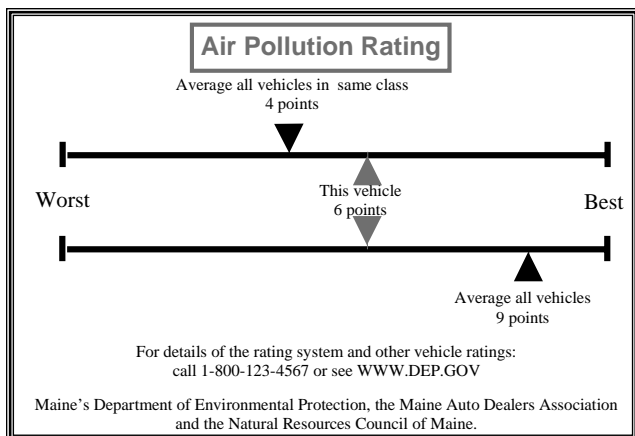


Figure 25

reaction was particularly emphasized with the emissions score: "Low emissions is good right?"

In general, participants disliked the label shown in Figure 23. Most participants thought there was too much detail with respect to the different pollutants. Others mentioned that it was difficult for them to understand how to react to the different pollutants because they felt comparing them would be like comparing apples and oranges. It appeared that participants were unclear of how to evaluate the label information because they were unclear whether the scaling information denoted levels of pollution or magnitude of impacts. Other participants, although they agreed that there was a lot of information on the label, liked the level of detail because they thought including this additional information might make some consumers more aware of the issues.

One participant disliked the title of the label because it was too cumbersome. Most participants liked the green color used in the label; there was an almost universal acknowledgement that green denoted an environmental message. A few participants stated they would like to see contact information; otherwise it made them more suspicious of the label.

**Lewiston-Auburn Group I**

**Reaction to detailed labels**

One participant stated the label shown in Figure 24 was too busy. This participant thought that when people shop for a vehicle they often browse the lot and scan the information on many vehicles. Thus, this label would take too much time to read. Another participant did not like that lower scores meant lower emissions and thought most people would assume lower scores were bad. One participant thought the scale should be more graphical, like a temperature gauge. Another participant agreed with this idea and proposed that the temperature gauge be incorporated into the logo. The example used was the original logo with a rainbow-like gauge flowing over the top of the logo. This participant argued that such an approach would be easy to understand and allow for a quick check on the environmental quality of the vehicle.

Participants generally liked the inclusion of the contact information, stating it would allow more interested consumers to find out more about the environmental information. Although participants generally liked having the agency information made clear, one person stated that it was too much to read; this participant just wanted the logos of the agencies presented.

Discussion of the label in Figure 25 was relatively short. One participant stated the label was still too busy and confusing and returned to the idea of a temperature gauge that is color coded to indicate whether something was environmentally better or worse (e.g., red denotes an environmentally bad vehicle). This participant thought the label was not self-explanatory. Another participant agreed that the label should be eye-catching, something simple that would stand out.

The label shown in Figure 26 also did not receive much discussion. At this point the three participants who favored a gauge continued to state that this label was too busy and not eye-catching enough; they want something simpler. Other participants then asked these three participants whether this was getting closer to what they wanted; their response was that it was getting closer but was not there yet.

The label in Figure 27 generated little discussion also, as it was seen as too complicated and cluttered. The moderator probed whether the definitional information about emissions was helpful; participants generally agreed that it was too much information.

The moderator finished this part of the discussion by asking participants if they equated high gas mileage with low emissions. One participant said that this was not necessarily true. The participants thought that emissions also depended on how one maintained the vehicle (e.g., maintenance of tire pressure, how they drive).

**Reaction to website information**

The moderator then presented information captured from EPA’s Green Vehicle Guide website (see Appendix D). She first asked participants if they had ever heard of this site; no one in the group had. She then asked if the presented information would be useful; one participant said the gas mileage information would be useful while two others liked the mileage and emissions information.

The moderator then asked participants to look at the SUV page and tell her which SUV on that page was most environmentally friendly. Several participants answered that the Nissan Pathfinder was the most environmentally friendly. The moderator then asked how they determined this; participants responded they used the air pollution bar graph information.

The moderator then asked individuals to look at the SUBCOMPACT sheet and tell her what they found. One participant indicated that all of the vehicles were not available in Maine. A few other participants indicated the Honda Insight was envi-

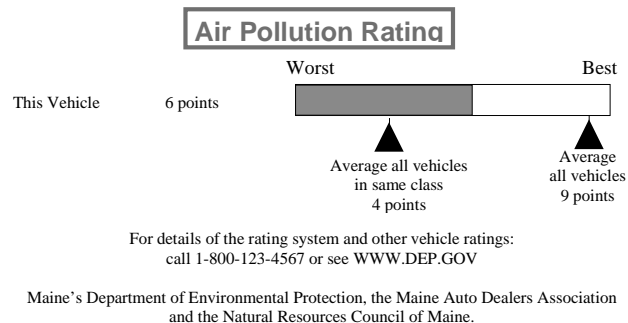


Figure 26.

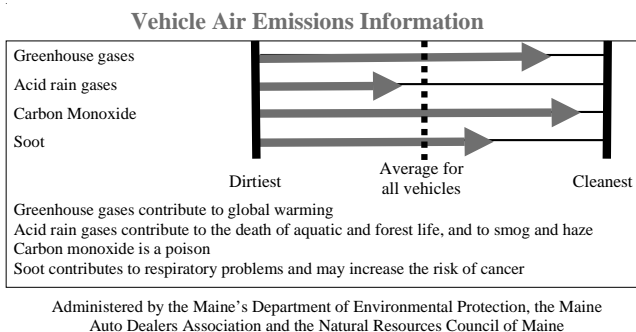


Figure 27.

ronmentally the best. One participant noted the Insight was a hybrid vehicle.

The moderator then asked participants to look at the information for the Honda Insight and the BMW 325ci and note they are both listed as having equal environmental ratings but have very different fuel economy scores. She then asked participants how this could be true. Most participants were stumped by the question; a few mentioned things related to differences in technologies (e.g., catalytic converters). The moderator then explained that gas mileage is due to one set of technologies while emissions control is a separate set of technologies. Most participants seemed comfortable with this explanation.

The moderator then asked if they would use this website to compare cars next time they go car shopping. One participant mentioned the average consumer probably does most of their information searching before they actually get to the dealership and thought it unlikely that people would visit a website after visiting the dealership.

The moderator then asked participants to assume that the labeling program was in effect; would

the information on the label affect which vehicle they would buy. One participant (who mentioned that he is handicapped) mentioned that functionality and comfort were more important than environmental information. Another participant mentioned that lifestyle was an important consideration in choosing a vehicle type. Another participant noted that many manufacturers provide competing vehicles within a specific vehicle type that are similar in many of their characteristics. As a result, knowing the environmental information might push some people interested in a specific class of vehicles to choose one brand over another. Another participant thought that most people in the state of Maine did not realize how much vehicles contributed to air pollution problems in the state, the implication being these individuals would not see emissions information as being important in their vehicle-purchasing decision.

At the end of the group one participant stated that this labeling program should not be run by any political organization; another mentioned that a non-profit should be in charge. One participant questioned whether a non-profit would have the technical expertise or finances to run such a program. One participant also mentioned these information programs could be improved if people were educated; they suggested that schools (maybe through driver's education) should incorporate this information.

## Lewiston-Auburn Group II

### Reactions to detailed labels

Most participants did not like the label shown in Figure 28. One participant thought the scale with higher scores denoting lower emissions was counterintuitive; several other participants agreed. One participant noted that the explanation was there so this was acceptable; others disagreed because they felt most people would not read the fine print and might interpret the scores the wrong way. Most everyone liked the contact information; one participant noted that if you were interested you could compare cars at home on the web. Most participants did not like the technical wording of the pollutants. They felt the information would be meaningless to most people and that they would ignore it. One participant would rather have had information about the health effects of these pollutants to know which of these pollutant to be more worried about.

The moderator asked participants whether they liked the certifier information. This opened up discussion about the roles of Maine's DEP and the auto dealers in the program. One person thought DEP

### Air Pollution Scores

	Pollution scores for this vehicle	Average pollution scores for all vehicles
Sulfur Dioxides	69	76
Nitrogen Oxides	57	79
Carbon Monoxide	85	82
Hydrocarbons	82	87
Particulates	87	83
Carbon Dioxide	92	75

Higher scores denote lower air emissions. Maximum Score Possible = 100

For more details of the rating system and other vehicle ratings:  
call 1-800-123-4567 or see WWW.EPA.GOV

Administered by Maine's Department of Environmental Protection, the Maine Auto Dealers Association and the Natural Resources Council of Maine

Figure 28.

would have to test all new cars and this would be a lot of work; others indicated the DEP would get the information from the manufacturer and DEP would set standards.

At this point someone asked if these labels would be placed on all vehicles or just the vehicles that passed. The moderator asked the participants their opinion, and they said this type of label should be placed on all vehicles, not just the "good" vehicles.

When asked, most individuals did not like that the air pollution scores were referenced to the average score of all vehicles; one participant would rather know how the vehicle stood relative to the same class of vehicles. Another participant thought vehicle scores should be referenced to the environmentally best vehicles. The moderator continued to probe this idea; she provided a scenario where she would be shopping for an SUV. If the environmental scores were referenced relative to all SUVs, then her SUV might look really good (but be relatively worse compared to all other vehicles). Given this, did people still want the environmental information referenced to SUVs? Most participants felt the scores should still be referenced to class of vehicle because that was what the person was looking for/needs. They felt that it was more important that people are helped to buy the "best of the worst" since it was unlikely the environmental information would drive most people out of their chosen class of vehicle. One participant stated the state should have a website that allows you to compare individual vehicles since many people made their choice of vehicle type before they stepped on a dealer's lot. One person stated that not every one has access to a computer.

One participant really liked the label in Figure 29 because it provided comparative information both within and without vehicle class. Another person liked the visual nature of the graphic and most participants agreed—they liked the simplic-

ity. One participant noted this was similar to the familiar energy efficiency scales on appliances. They also liked that the endpoints of the scale were defined clearly as worst to best.

Although participants also liked the label shown in Figure 30, most mentioned that they liked the previous label better. They thought the label in Figure 29 was simpler, presented the same information, and took up less space.

Participants generally did not like the label in Figure 31; they thought it was too cluttered and provided too much information. One participant stated that this level of detail may be appropriate in a few years when people would be more familiar with the issues and the program; another thought this might be good information to provide on the website. One participant also disliked that the label only provided reference information to the average of all vehicles. This participant wanted information about the class and other participants generally agreed.

One participant was confused thinking that the scores were the average for all vehicles and did not represent the score for a specific vehicle. This participant did not see that the length of the line segments and the numerical scores were for the specific vehicle and that the dotted line represented the average. Other participants did not have this confusion. One participant wondered which pollutant was more dangerous and whether the list was ordered in some way (e.g., is the pollutant listed at the top the one you need to worry about).

When asked, most participants stated they would expect to see this information on the side window, alongside the dealer sticker.

### Reaction to website information

Initial reaction was that the website provided too much information (Appendix D). Some people were confused about the sales area map. Two participants noticed and were confused that some SUVs with better gas mileage had lower environmental scores; this seemed counterintuitive to them. The moderator then asked everyone how this could be true. One participant mentioned that what came out of the tailpipe did not necessarily relate to gas mileage. Another thought that these numbers might be based upon fleet averages. Another thought that there must be differences in the way these two vehicles handled emissions. Another questioned whether the ratings came from different sources and whether they were using different scales, that is, this participant wondered whether the information provided

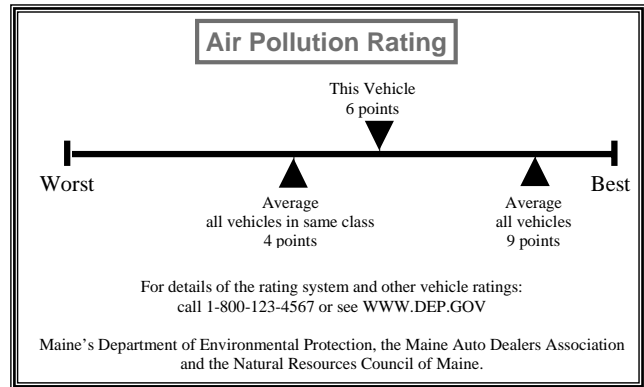


Figure 29.

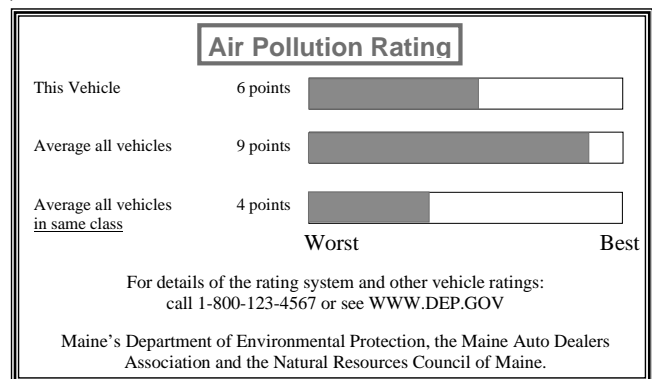


Figure 30.

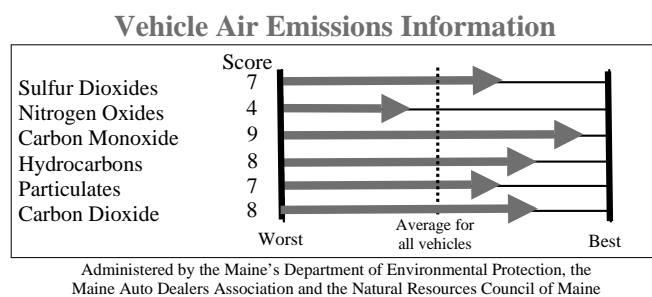


Figure 31.

by the different manufacturers could be different. One participant felt that the website needed to explain how gas mileage and emissions are determined and how they relate to each other. When the moderator probed further, one participant related the idea to difference in emissions technology, using the example of a catalytic converter, which may hurt fuel economy but reduce air emissions. Other participants also mentioned that gas mileage depended on how one drove.

The moderator also asked if the participants thought there was anything missing in the emissions information. One participant wondered if the scale was based on all cars or on only the class of cars. The moderator explained that the environmental score excluded carbon dioxide emissions. A few participants wondered why; others responded that carbon dioxide is not necessarily bad, but two other participants stated that carbon dioxide caused acid rain. The moderator then explained that carbon dioxide is a global warming gas and that carbon dioxide emissions are linked to fuel economy. The moderator then asked if participants wanted to see the carbon dioxide information included in the environmental rating. Most participants thought that this was beyond their expertise while one person thought it should be included; two other participants agreed.

When asked, one participant wanted to simplify this website by setting it up so that an individual could easily do side-by-side comparisons of the information (instead of scrolling around the site to find the information). This participant suggested two pull-down menus where you could type in, or select, the name of the vehicle for which you wanted information. To simplify the site, other participants suggested that the ID number information and the sales area information should be eliminated; most participants agreed that this information was not useful. One participant thought that the ID information might be useful if you were buying a used car and wanted to find it on the website.

One participant wondered about the phrase "global warming" in the fuel economy column. Another participant stated that EPA was equating fuel use with global warming; the person making the original comments said that he thought global warming was not true.

The moderator asked if participants liked that you could go to one website to get all this information. One participant would not use it; another thought it was a good idea, but wondered if using the website would be too difficult. Another person said she would buy a car she liked; the emissions information might make her feel guilty but not affect the decision. Almost all participants thought the gas mileage information was much more important to most people. One person then said that it was sad that most people were more concerned about saving money than the quality of the air we breathe. One person stated that it is human nature to not worry much about environmental quality until it is bad. Others noted that people have specific vehicle requirements that must be met before emissions information will come into play. One person illustrated the low priority that most people in the state

put on air quality by citing the public's negative reaction to the air emission testing that was implemented, and later dismantled, in the state.

At the end of the focus group the moderator told people that about 120 cars would meet Maine's standard to display a label. Participants thought this was interesting; they seemed to be under the impression that only a few cars would meet the standard. In general participants saw this as positive news, that there would be a number of choices available to consumers and that this would bode well for the success of the labeling program. One participant questioned if it would be better to place the labels on all the bad cars. Another thought there should be a poster in the dealership presenting the list of good cars sold. Another thought a tax incentive program would work to encourage people to buy these cars.

One participant stated that because all this information would be new that there would have to be a big media blitz to highlight the program; people would need to be educated.

#### IV. CONCLUSIONS AND RECOMMENDATIONS

Participants generally placed a low level of importance on auto emissions relative to other considerations when purchasing a vehicle, and there are several reasons that help explain this. First, many participants did not think air pollution was a big problem in Maine. Second, those who did see it as a problem did not view vehicle emissions as a major contributor because they thought vehicle emissions were already heavily regulated (i.e., only older cars are a pollution problem). Participants also felt most air pollution was due to industrial pollution coming from out of state. This popular belief was especially strong; when participants were presented information about the percentage of air pollution caused by vehicles in Maine, many were skeptical. Many participants also assumed that current environmental regulations made all cars "pollute about the same." As a result, few individuals would have the incentive to search out or to consider a vehicle's air emissions.

Given the success of an eco-labeling program is partially contingent upon consumers viewing the presented information as important, any proposed labeling program for vehicle will need to educate consumers about the magnitude of the air pollution problem, help them understand that air emissions can vary greatly across vehicles, and that even new cars can contribute a significant amount of air emissions.

Many participants stated that when they shop for a vehicle they get much of their information from on-line sources, vehicle-related publications, and friends/relatives. Dealerships were often not visited until late in the car-buying process and were used only to gather monetary and “experiential” information. Furthermore, many individuals had mostly made their vehicle decision before they would be exposed to the eco-labeling program.

*Given that a limitation of a smaller eco-marketing effort is that traditional information channels (e.g., nationally distributed vehicle publications) are largely unavailable, a rather concerted and sizeable marketing effort will be needed. Multiple off-dealership channels (e.g., local radio, print, television) will be needed. In addition, on-dealership channels may be particularly important; the marketing effort will benefit from the active involvement of dealers and sales personnel.*

On the plus side, many participants were in favor of an eco-labeling program for new vehicles sold in Maine, particularly if it were administered by a cooperative effort between industry, government, and other groups.

*The eco-marketing and labeling effort needs to highlight that it is supported by a broad coalition of groups.*

Participant’s negative reaction to the potential success of the labeling effort seemed contingent on their assumption that relatively few vehicles would obtain a logo (environmentally friendly rating). When told that many vehicles across a variety of vehicle classes would meet Maine’s standard to display a label, many participants saw this as positive news; there would be a number of choices available to consumers and this would bode well for the success of the label.

*The eco-marketing effort needs to highlight that many eco-preferred vehicles and vehicle classes are available to consumers.*

The logos generally preferred by participants were seen as being the clearest at conveying the message, emphasizing both nature and vehicles/driving. Preferred elements included graphics clearly associated with Maine and color. Several individuals thought the sticker needed to be bigger and to “stand out more,” and several indicated the graphic should include some reference to children. Many participants indicated they would be inclined to keep the stickers on their vehicle because the logo

would make a positive statement. Some indicated the label has the potential to become a status symbol. Logos alone were seen as inadequate; supporting text was needed. With respect to taglines, most participants liked statements related to Maine; they thought that since it is a Maine program it should reference the state name in the tagline.

*The current logo proposed by DEP seems adequate; however, it may be beneficial for DEP to redesign the current logo to incorporate more color and graphical elements specific to Maine and to increase the size of the sticker.*

*Environmental logos should not be used alone; at a minimum supporting text is needed (e.g., certifier information and taglines). Taglines should relate to Maine.*

With respect to more detailed environmental labels, most participants preferred simple graphical approaches so that it would be easy to do a quick vehicle check on the dealer’s lot. Participants thought that labels with too much information would be ignored by vehicle shoppers. In addition, several participants stated that a credible logo program would negate the need for more detailed information. However, many felt more detailed information should only be provided off-label (on a website or in brochures available at the dealership).

*Detailed labels are not likely to be helpful if placed on vehicles, but the information should be available at the dealership. The more detailed information should achieve a balance between simplicity and detail.*

Most participants liked the idea of including a reference value in addition to the value presented for the specific vehicle. However, they preferred the reference to be based upon vehicles within the same class of vehicle rather than being based upon all vehicles. This was because participants felt that most people shop for a type of vehicle and would like to know how the vehicle they are considering to buy rates relative to other close substitutes.

*Detailed labels should provide a reference value based upon vehicles within the same class.*

Participants generally liked the inclusion of the contact information (a phone number or website), stating it would allow more interested consumers to find out more about the environmental information and the labeling program.



*The eco-marketing program should include contact information (e.g., telephone number or website address) to increase credibility. This information may also need to be provided on the logos, detailed labels, and elsewhere at the dealership (e.g., signage).*

Numerical endpoints caused confusion in both the graphical and tabular label formats. Participants generally liked endpoints that were clearly labeled in terms of environmental quality (e.g., dirtiest/cleanest).

*Detailed labels should use endpoints that are clearly labeled in terms of environmental quality.*

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## APPENDIX A—SCREENER INFORMATION

**VEHICLE LABELING STUDY  
FOCUS GROUP SCREENER**

Hello, My name is \_\_\_\_\_ and I'm a graduate student at the University of Maine and would like to ask you a few questions about your car and truck shopping. This should only take less than 3 minutes. I'M NOT TRYING TO SELL YOU ANYTHING.

Because we must interview an equal number of adult males and females, may I please speak with a (male/female) 18 years or older?

## 1. (RECORD SEX OF RESPONDENT) CHECK QUOTAS

- 1 Male
- 2 Female
- R Refused (THANK AND TERMINATE)

## 2. Have you purchased a new passenger vehicle, such as a car, pick-up truck, van or SUV in the last five years? (not just used vehicles or leased vehicles) CHECK QUOTAS

- 1 YES
- 2 NO
- R Refused (THANK AND TERMINATE)

## 3. How old are you? CHECK QUOTAS

- 1 18-34
- 2 35-49
- 3 50-64
- 4 65+
- R Refused (THANK AND TERMINATE)

## 3. What is the highest level of education you have completed? CHECK QUOTAS

- 1. LESS THAN HIGH SCHOOL GRADUATE
- 2. HIGH SCHOOL GRADUATE OR GED
- 3. SOME COLLEGE or COLLEGE GRADUATE
- 4. POSTGRADUATE, DOCTORATE, LAW DEGREE, OTHER PROFESSIONAL
- R Refused (THANK AND TERMINATE)

## 4. What was your total household income before taxes for last year? Was it..... CHECK QUOTAS

- 1. LESS THAN \$20,000
- 2. \$20,000 - \$40,000
- 3. \$40,000 - \$60,000
- 4. \$60,000 - \$80,000
- 5. MORE THAN \$80,000

R Refused

(THANK AND TERMINATE)

We're asking some area residents to participate in a discussion group to talk about what they think about when they buy a new car or truck.

The discussion will be held at: \_\_\_\_\_

The discussion group will consist of about 10 people and will last about two hours. Each participant will be paid \$40. We will also be serving refreshments during the meeting.

Are you interested in being part of the group?			
1 Yes	2 No	8 Don't know	9 Refused
<b>CONTINUE</b>	<b>THANK AND TERMINATE</b>	<b>THANK AND TERMINATE</b>	<b>THANK AND TERMINATE</b>

That's Great!

We will be sending you a letter confirming when and where the discussion group will be held. May I have your name and address, please?

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Phone # : \_\_\_\_\_

Thank you. We look forward to seeing you on (REPEAT DATE AND TIME) at

**VEHICLE LABELING STUDY FOCUS GROUP  
 SCREENER QUOTA TALLY SHEETS  
 FOR SUPERVISOR USE ONLY**

**(Recruit 14 people with the following profile:**

**GENDER (Mix of male/female)**

<b>Women (5-9):</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	
<b>Men (5-9):</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>

**PURCHASED CAR**

<b>YES (7-9)</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>
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**DISTRIBUTION OF AGES**

<b>18 to 34 (3-4)</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>35 to 49 (3-4)</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>50 to 64 (3-4)</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>65+ (3-4)</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>

**EDUCATION**

<b>LESS THAN HS (1-2)</b>	<b>1</b>	<b>2</b>				
<b>HIGH SCHOOL GRADUATE (3-5)</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>SOME COLLEGE to COLLEGE GRADUATE (3-5)</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	
<b>POSTGRADUATE (1-2)</b>	<b>1</b>	<b>2</b>				

**INCOME**

<b>LESS THAN \$20,000 (1-2)</b>	<b>1</b>	<b>2</b>		
<b>\$20,000 - \$40,000 (2-4)</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>\$40,000 - \$60,000 (2-4)</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>\$60,000 - \$80,000 (2-4)</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>MORE THAN \$80,000 (1-2)</b>	<b>1</b>	<b>2</b>		

## APPENDIX B—MODERATOR'S GUIDE

### **Moderator's Guide—Vehicle Labeling Study**

#### **Introduction and Group Orientation (5 minutes)**

Thank you for participating in this focus group today. I'll be leading you in a discussion about how you shop for a passenger vehicle (cars, vans, light-duty trucks and SUVs). I want you to know that there are no right or wrong answers. We expect to receive a wide range of opinions and are eager to hear everyone's ideas and thoughts.

Tonight we are interested in your vehicle shopping experiences, the different concerns you may have while you shop for a car or truck and the types of information you might find useful when shopping for a car or truck.

#### **Car/Truck Purchasing (15 minutes)**

I want you to tell me what characteristics do you look for when buying a car or truck?

When you've narrowed down your choice to 2-3 vehicles, what attributes of the car/truck are most important in making your final decision?

[Hand out attribute list]

Of the attributes on this list which are the most important to you?

How do you go about getting information about these car/truck attributes? Where do you go for information? (e.g., Car magazines, Consumer Reports, Websites, Newspapers)

At what stage of the car buying process do you go and visit a dealership? That is, do you go after you've already narrowed down your decision to a couple of vehicles?

What information are you looking for at the dealership? What information at the dealership would sway your decision toward/away from a particular car?

How important is the gas mileage of the vehicle?

Why is it important? [lower cost to drive?, reduces oil imports, lower CO2 emissions?]

#### **Environmental Impact (10 minutes)**

Do you ever think of the environmental issues or concerns when you are shopping for a car or truck? What types of problems?

Do you think that Maine has an air pollution problem?

What is causing air pollution in the state? [What are the most important sources of air pollution in the state?]

How important are car and truck emissions in the overall pollution problem in the state?

[For the rest of this discussion we'll define the environmental characteristics as being lower air emissions (less pollution) and greater fuel economy (better gas mileage)]

How concerned are you about these problems?

Does your concern for the environmental impacts of driving a car or truck depend on what the vehicle is primarily used for?

What can you as a consumer do to choose more environmentally friendly cars or truck?

When shopping for car or truck can you tell which car or truck is more environmentally friendly to drive? How?

Have you seen any cars or trucks advertised or labeled as environmentally friendly?

*What did you think of these claims?*

### **Certification Concept Statement (10 minutes)**

I would like to read to you a concept statement about the possibility of labeling cars and trucks to indicate they are environmentally better to drive. After I read the statement, I want you to tell me your reaction.

*There is a movement to have cars and trucks labeled so that you could determine which car or truck is environmentally better to drive. How this would work is that a list of environmental criteria would be constructed and all new cars sold in the state would be evaluated against these criteria. Cars and trucks that meet the standard could then display a label indicating that the car or truck is designated as environmentally better. This information could also be used in any product advertising.*

What is your reaction to this statement?

Who should be in charge of this labeling effort? [Federal EPA, State DEP, Auto Dealers]

### **Reaction to Predetermined Logos and text (40 minutes)**

[Show set of logo designs - no additional text]

A logo is being developed to identify cars and trucks as being environmentally better. The logo could be used like the recycling logo [show example of recycling logo] is used to identify products made from recycled materials.

What does each of these logos say to you?

Which of these logos do you prefer? Why?

Do you find any of these confusing?

Would a statement or some words be helpful?

Which of these stickers would you be most likely to keep on your car or truck after buying it?

[Show sets of potential text for labels]

Does this text help clarify the logo idea?

Do you find any of the text confusing?

Can you think of any way to make the text better?

Would you like more detail on these labels?

Should any of the information be explained better?  
What other information would you like to see on a label?  
What would impact whether you believe these labels?  
Who should be in charge of the labeling program?

## APPENDIX C—TAGLINES

### *“Steering wheel” taglines options*

The future is clear.  
The road to a cleaner Maine.  
Driving Maine’s future.  
Drive smart. Breathe easier.  
A driving force for the environment.  
Saving more than the environment.  
Lower emissions make cents.  
Driving America’s future.  
The road to a cleaner country.

### *“Road to tree” taglines options*

The road to a cleaner Maine.  
Driving Maine’s future.  
Drive smart. Breathe easier.  
Saving more than the environment.  
Lower emissions make cents.  
Driving America’s future.  
The road to a cleaner country.  
The clear path for America.  
America’s future is clear.

### *“Circular arrows” taglines options*

The road to a cleaner Maine.  
Driving Maine’s future.  
A driving force for the environment.  
The future is clear.  
Saving more than the environment.  
Lower emissions make cents.  
Driving America’s future.  
America’s future is clear.

### *“Highway sign” taglines options*

The road to a cleaner Maine.  
Driving Maine’s future.  
Driving toward a cleaner environment.  
Drive smart. Breathe easier.



Saving more than the environment.

Lower emissions make cents.

Driving America's future.

The road to a cleaner country.

The clear path for America.

America's future is clear.

*"Roadway" tagline options*

The future is clear.

The road to a cleaner Maine.

Driving Maine's future.

Driving toward a cleaner environment.

Drive smart. Breathe easier.

Saving more than the environment.

Lower emissions make cents.

Driving America's future.

The road to a cleaner country.

*"Original symbol" tagline options*

The road to a cleaner Maine.

A driving force for the environment.

Saving more than the environment.

Lower emissions make cents.

APPENDIX D SCREEN CAPTURES OF U.S. ENVIRONMENTAL PROTECTION AGENCY'S GREEN VEHICLE GUIDE WEBSITE

Green Vehicle Guide - Listed by Rating Within Class - Netscape

http://www.epa.gov/greenvehicles/smcar-04.htm

Model	Engine Specs.	Area	Use of 48,000 L/g Jet ID Number	Air Pollution	Global Warming
<b>Subcompact</b>					
<a href="#">HONDA Insight</a>	1L (3 cyl) Auto-AV 2WD Gasoline		4HNXV01.0NCE		City 57 mpg Hwy 56 mpg
<a href="#">BMW 325ci</a>	2.5L (6 cyl) Auto-S5 2WD Gasoline		4BMXV02.5M56		City 19 mpg Hwy 27 mpg
<a href="#">VOLKSWAGEN New Beetle Convertible</a>	2L (4 cyl) Auto-S6 2WD Gasoline		4VWXV02.0224		City 21 mpg Hwy 31 mpg
<a href="#">BMW 325ci</a>	2.5L (6 cyl) Man-5 2WD Gasoline		4BMXX03.0UL2		City 20 mpg Hwy 29 mpg
<a href="#">TOYOTA Solara Convertible</a>	3.3L (6 cyl) Auto-S5 2WD Gasoline		4TYXV03.3PEA		City 20 mpg Hwy 29 mpg

Green Vehicle Guide - Listed by Rating Within Class - Netscape

http://www.epa.gov/greenvehicles/suv-04.htm

<a href="#">NISSAN Pathfinder Armada</a>	5.6L (8 cyl) Auto-L5 2WD Gasoline		4NSXT05.6P9B		City 13 mpg Hwy 19 mpg
<a href="#">NISSAN Pathfinder Armada</a>	5.6L (8 cyl) Auto-L5 4WD Gasoline		4NSXT05.6P9B		City 13 mpg Hwy 18 mpg
<a href="#">CHEVROLET Tahoe 1500</a>	4.8L (8 cyl) Auto-L4 2WD Gasoline		4GMXT05.3174		City 16 mpg Hwy 19 mpg
<a href="#">GMC Yukon 1500</a>	4.8L (8 cyl) Auto-L4 2WD Gasoline		4GMXT05.3174		City 16 mpg Hwy 19 mpg
<a href="#">FORD Expedition</a>	4.6L (8 cyl) Auto-L4 2WD Gasoline		4FMXT05.4RFC		City 15 mpg Hwy 19 mpg
<a href="#">CHEVROLET Tahoe 1500</a>	4.8L (8 cyl) Auto-L4 4WD Gasoline		4GMXT05.3174		City 15 mpg Hwy 19 mpg
<a href="#">GMC Yukon 1500</a>	4.8L (8 cyl) Auto-L4 4WD		4GMXT05.3174		City 15 mpg Hwy 19 mpg



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