



**Fuels Institute**

# **Consumers and Alternative Fuels 2017**

Economics remain top of mind

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## Summary

Consumers remain interested in the economic features of their vehicle purchases, although the intensity has waned somewhat in the shadow of sustained low fuel prices. When considering a new vehicle purchase, overall interest in alternative fuels is down in 2017 compared to the past year in almost every category, which is likely reflective of a transportation market that has been powered by lower cost energy resources.

The lower pump prices have reduced the incentive to shop for alternative powertrains, for all except the younger generation. There seems to be a generational gap in levels of interest between younger drivers and those with more experience behind the wheel. Despite the decline in their interest in alternative fuels, the significant portion (*up to 48%*) of consumers claim to still be interested in a non-gasoline powered vehicle. The raw data of vehicle sales, however, demonstrates a very different interest level when consumers actually spend money to purchase a vehicle. The relationship between what consumers say they might do and what they actually do is critical to understand when reviewing survey data. Consumers desire to be viewed in a certain way and aspire to be behave similarly, but reality does not always reflect this self-image. It is always important to understand what consumers think and desire compared with what they actually do.

This white paper looks directly at what consumers have said they would do and what would be important to them when purchasing a new vehicle, and shows data relative to actual purchases made in 2016. The survey data is a strong indication of where consumer behavior may trend in the future, despite the actual recorded behavior at dealership sales lots.

## Methodology

Every year, the Fuels Institute teams with NACS to commission a survey of consumers to determine their potential for buying a vehicle in the near term and to evaluate the attributes that are most important to these consumers

Further, the survey seeks to better understand how consumers feel about various powertrains that might be available. The online survey of *1,100* American adults is conducted by Penn Schoen Berland and has a margin of error of *+/- 2.95%* at the *95%* confidence level. This most recent survey was conducted February 7-10, 2017. Actual light duty vehicles sales for 2016 was obtained from WardsAuto.

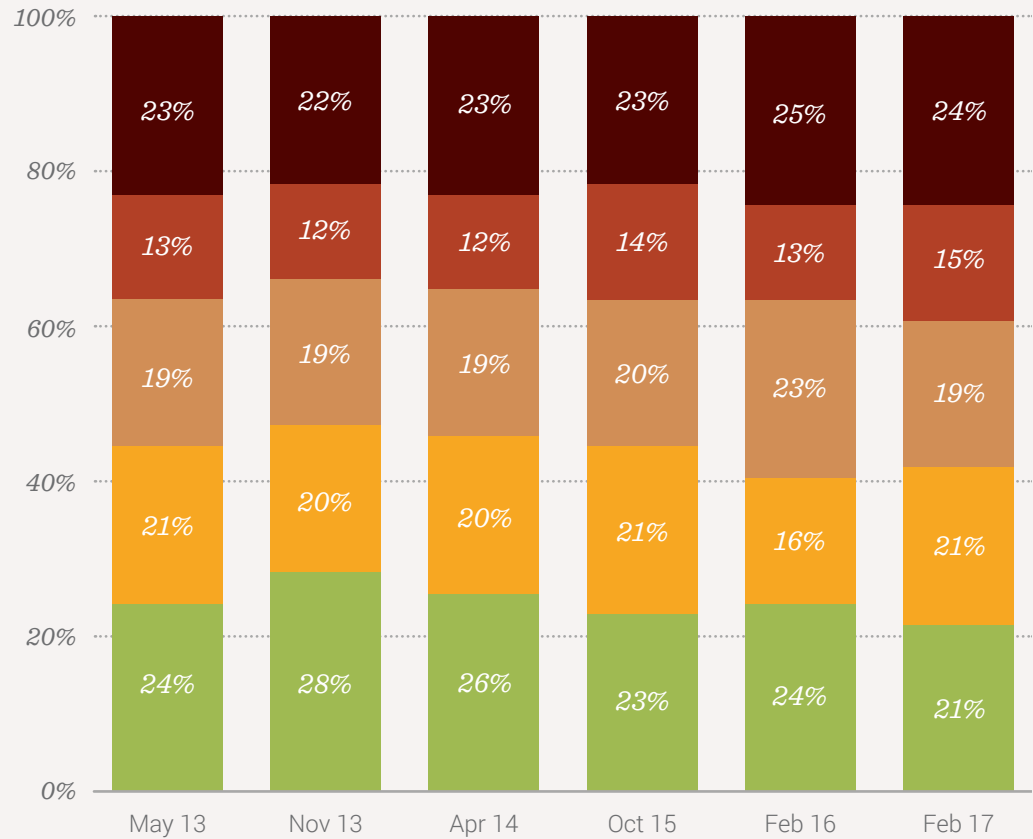
# Potential car buying market

The United States set a record of light duty vehicle sales in 2015 and again in 2016, so it is not surprising that in 2017 fewer consumers than ever before told the Fuels Institute they might be in the market to purchase a vehicle within the next two years. Even so, the number of potential customers remains significant at **61%**.

Of those who are “Very Likely,” “Somewhat likely” or “Might/Might Not” purchase a vehicle in the next two years, the majority claim to be interested in acquiring a new vehicle. Since last year, there has been an increase in potential interest in the used vehicle market, but new units continue to interest more than **50%** of potential buyers.

## How likely are you to purchase a vehicle in the next 2 years?

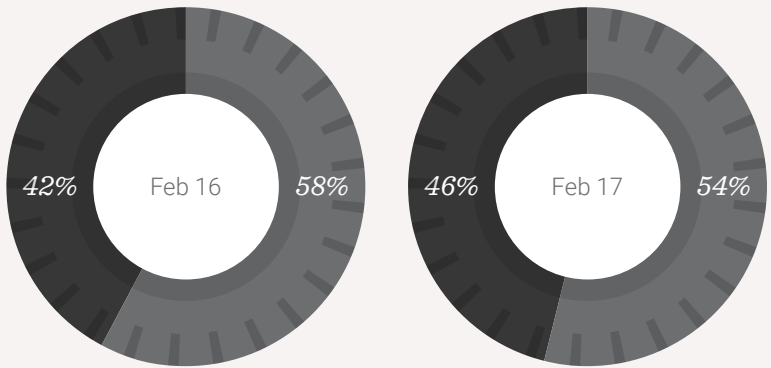
Very likely      Somewhat likely      Might/Might Not  
Somewhat unlikely      Very unlikely



Source: Penn Schoen Berland, Fuels Institute, NACS

## Breakdown of purchase intent

New vehicle      Used vehicle



“  
The United States  
set a record of light  
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in 2016.”



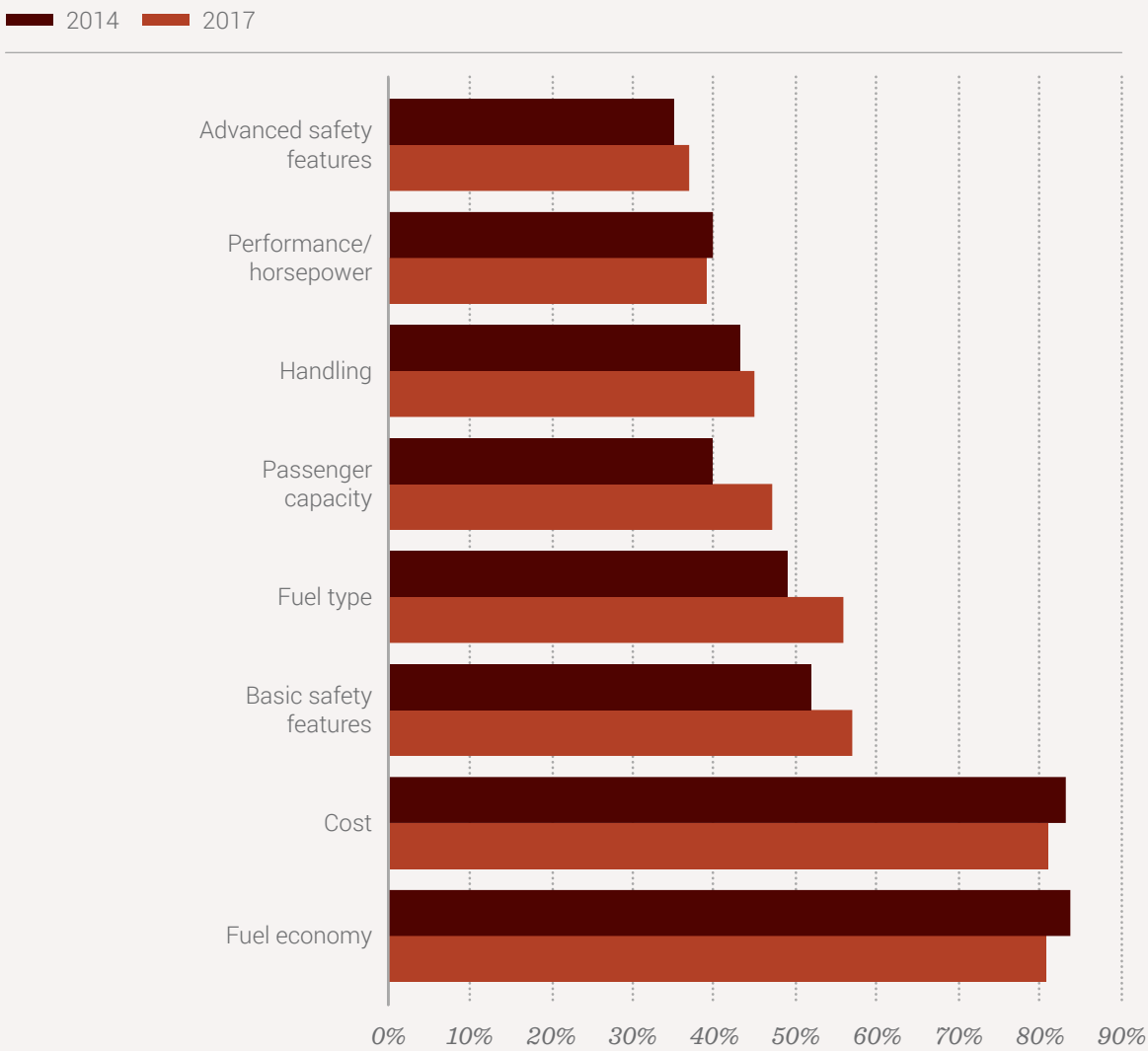
Source: Penn Schoen Berland, Fuels Institute, NACS

Financial attributes continue to dominate

Of those consumers who might make a vehicle purchase within two years, the vehicle attributes that matter most to them continue to be financial – cost of vehicle (81%) and fuel economy (81%). The continued focus on fuel economy is interesting, considering consumers have experienced a prolonged period of

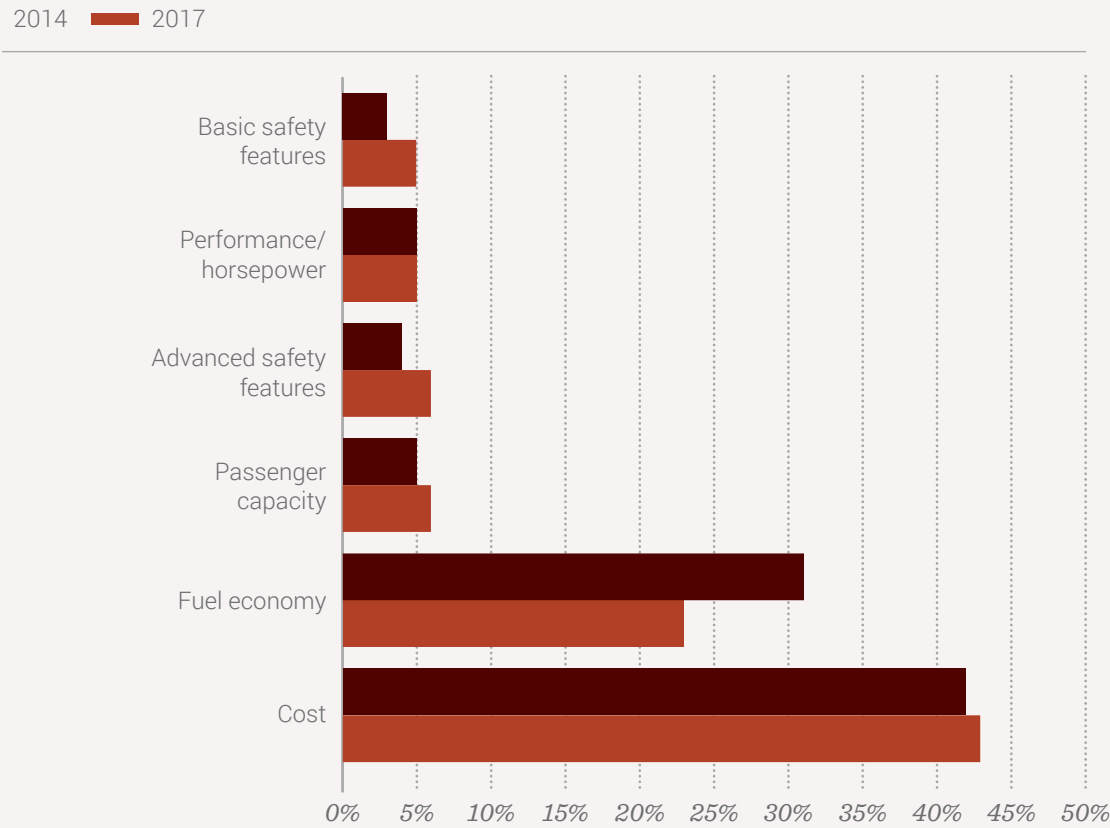
relatively low fuel prices the last few years. When asked to isolate which attribute is most important to them, however, it is clear that fuel economy has declined over the past three years (from 31% to 23%), while the cost of the vehicle remains the top priority.

Which vehicle attributes are most influential?



Source: Penn Schoen Berland, Fuels Institute, NACS

What single attribute is most influential?



“Interest in fuel economy has declined over the past three years (from 31% to 23%), while the cost of the vehicle remains the top priority.”



Source: Penn Schoen Berland, Fuels Institute, NACS



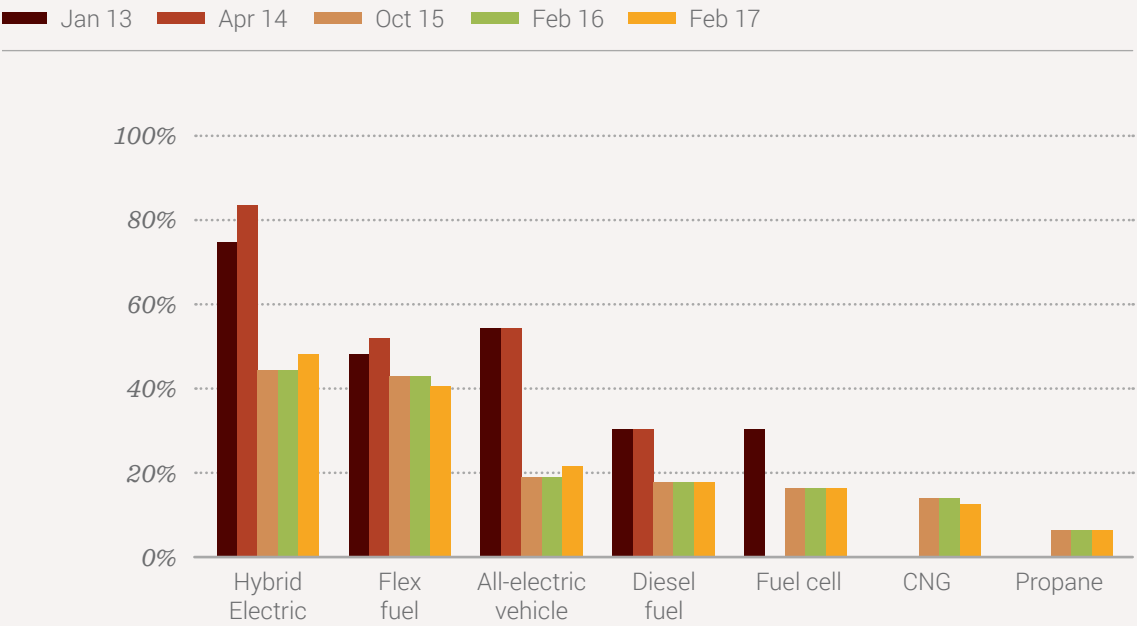
Reduced interest in alternative vehicles

This reduced interest in fuel economy has complicated the efforts of the automobile industry to sell more efficient vehicles and to comply with federal regulations. Along with the change in priorities has come a change in interest for alternative fuel vehicles.

When asked if they would consider alternatives to gasoline internal combustion engine-equipped vehicles, consumers indicate a significant reduction in their interest in alternatives. Most apparent is the drop in interest in hybrids and all-electric vehicles since 2013 and 2014. Willingness to consider a hybrid vehicle has dropped from a high of 84% in 2014 to 48% this year, while interest in all-electric vehicles has dropped from 55% in 2014 to 22% this year.

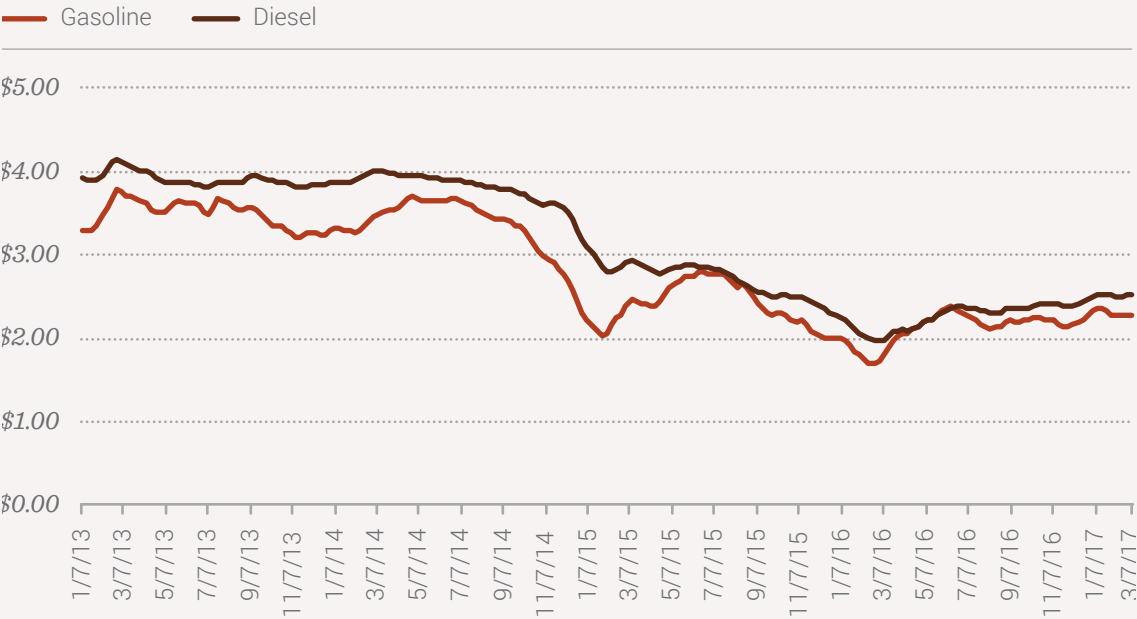
When considering the change in fuel prices, this is not entirely surprising. National retail fuel prices when the 2013 and 2014 surveys were conducted averaged \$3.31 and \$3.64 per gallon. Since then, the surveys conducted in 2015, 2016 and 2017 coincided with retail gasoline prices of \$2.27, \$1.74 and \$2.28, respectively. The effect has been consumers who are not as focused on fuel prices and fuel economy, thereby lowering their incentive to shop for new technologies to reduce fuel expenses, as evidenced in the recent trend of hybrid vehicle sales. .

Would you consider the following types of vehicles?

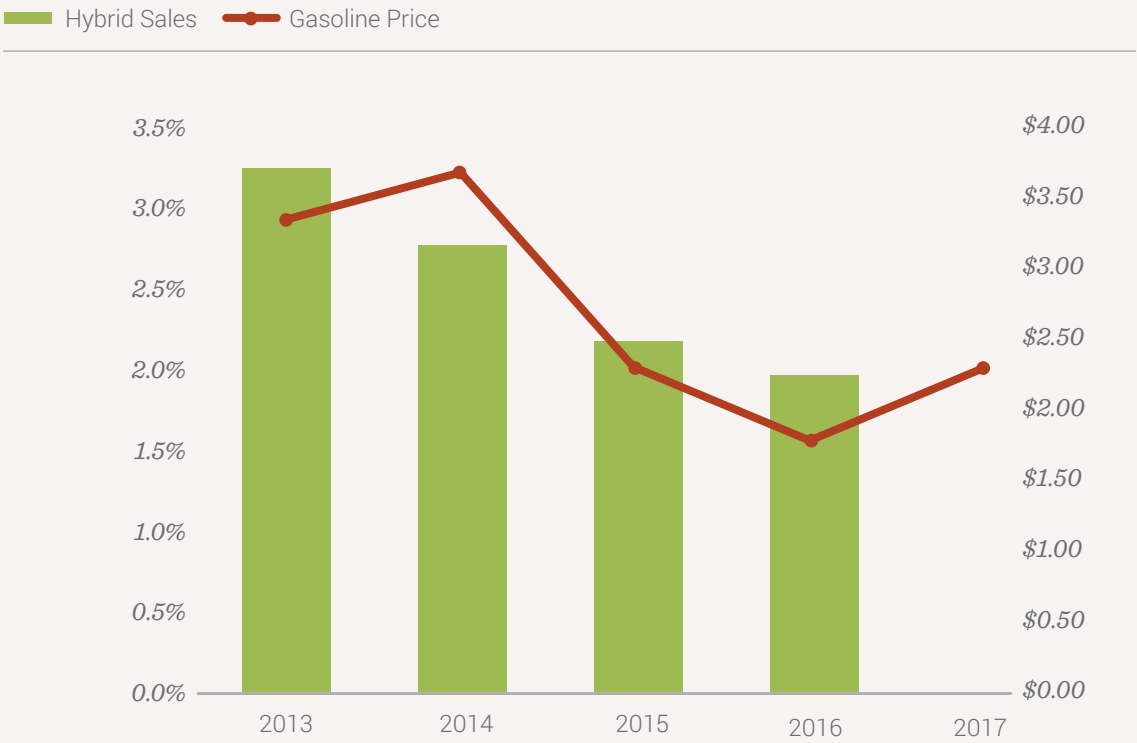


Source: Penn Schoen Berland, Fuels Institute, NACS

Retail fuel prices (Jan 2013 – Feb 2017)



Gas prices and hybrid sales



Sources: Oil Price Information Service (OPIS); WardsAuto, OPIS

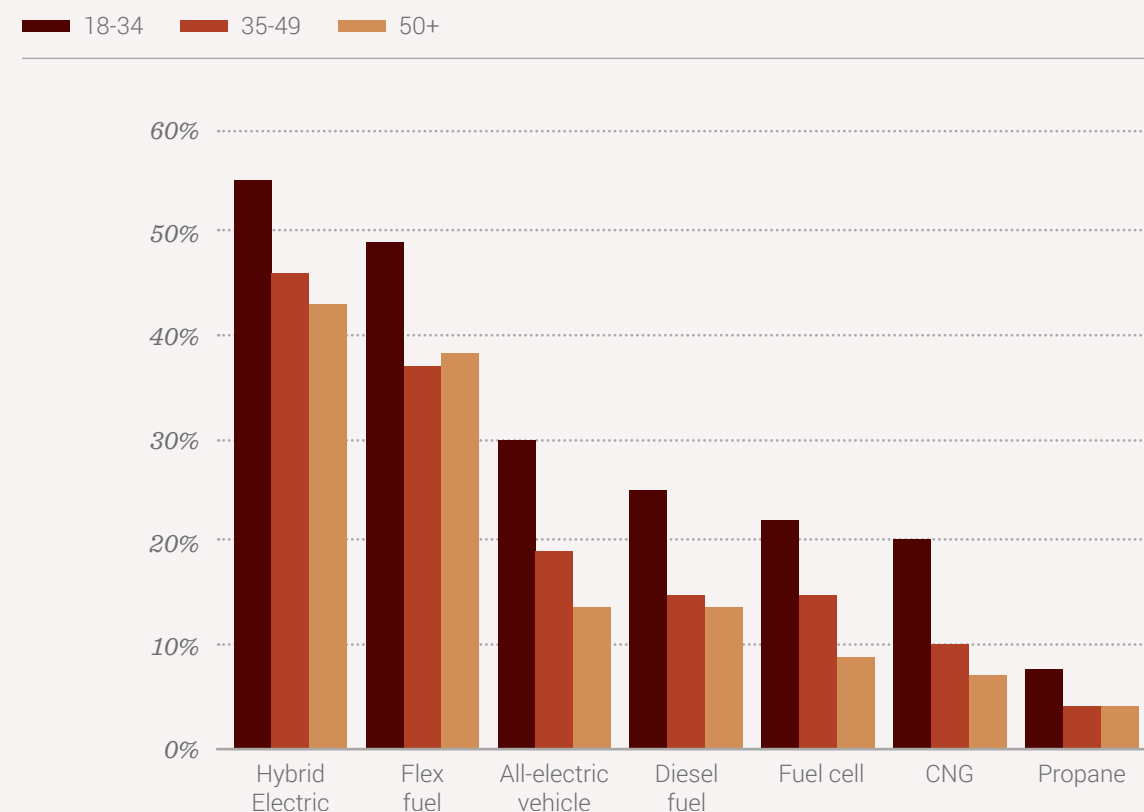
The level of interest in these alternatives to gasoline does not fall equally across demographics. For example, those aged 18-34 are significantly more interested in both hybrid electric and all-electric vehicles than are older drivers. The younger group of consumers responding to the survey seem to be more open to every alternative option than their older contemporaries.

Yet the cause for this distinction in interest is not readily explained when considering which vehicle attributes are most important to them. Those 18-34 actually said that fuel economy and cost were less important to them than these attributes were to older demographics.

In fact, the only attributes that the younger group claimed were more important than the older groups were Bluetooth/USB connectivity, GPS navigation and high quality sound system – attributes not unique to alternative fuel vehicles.

**“Those aged 18-34 are significantly more interested in both hybrid electric and all-electric vehicles than are older drivers.”**

### Vehicle interests by age

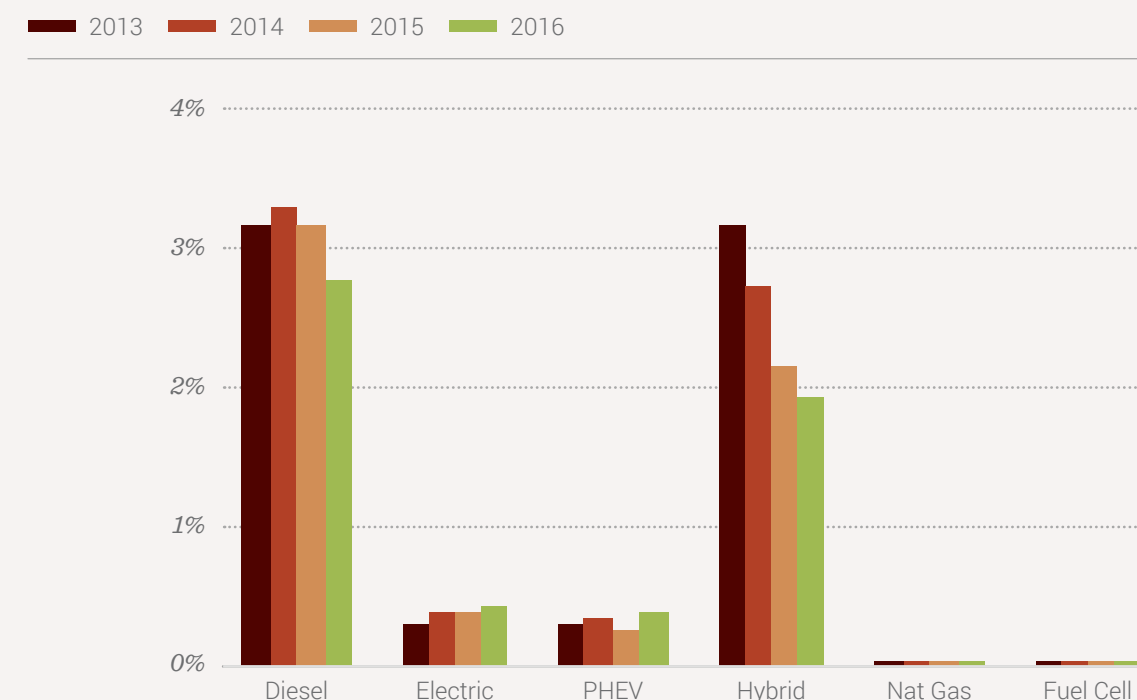


Source: Penn Schoen Berland, Fuels Institute, NACS

### Interests do not always reflect in reality

While having some insight regarding the level of expressed interest of potential consumers is extremely enlightening, it is critical to compare what they say they will do with what they actually do. In this respect, there is a strong disconnect between stated interest and purchases made.

### Market share of LDV sales (2013–2016)



In 2016, United States consumers purchased **17.6 million** new vehicles, breaking the record set just the prior year. The sales break down by powertrain does not reflect the level of interest expressed by consumers. In fact, it demonstrates a significant lack of progress in terms of increasing the diversity of the powertrains driving on American roads. For example, while **48%** of consumers currently claim they would consider purchasing a hybrid

vehicle, sales of hybrids in the U.S. since 2013 have never even reached **3.5%** of total light duty vehicles sold, according to WardsAuto. The decline in survey interest in hybrids parallels sales trends. Since 2014, when **84%** of consumers told the Fuels Institute they would consider a hybrid vehicle, sales have dropped **25%** and in 2016 represented only **1.9%** of total light duty vehicles sold.

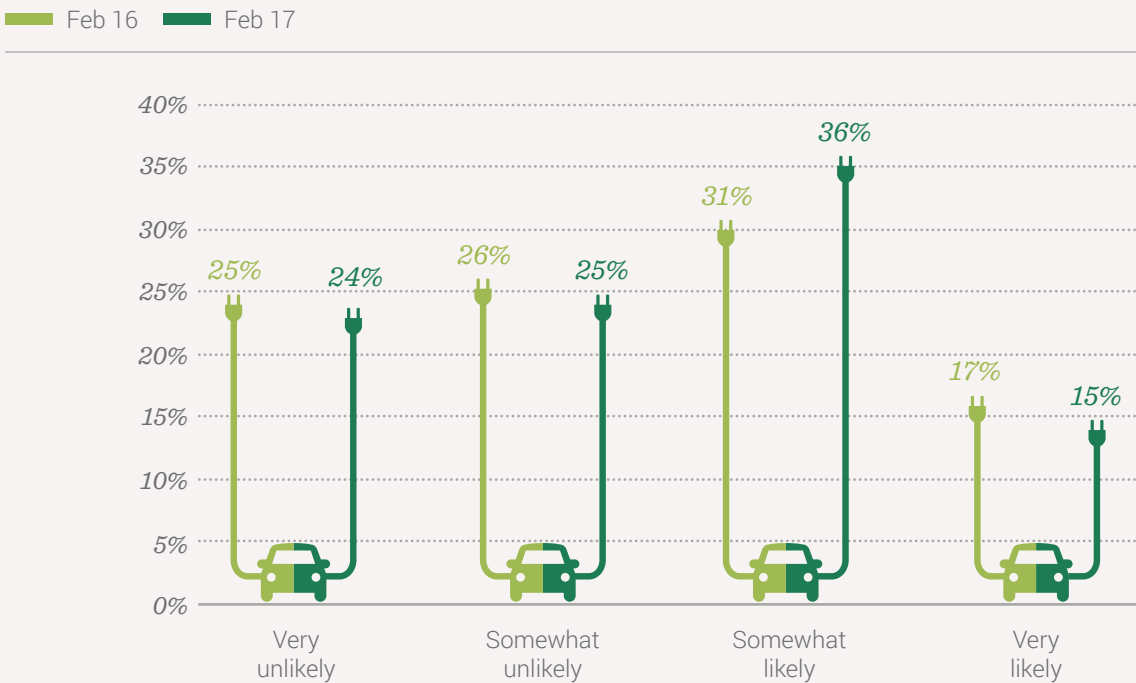
Source: WardsAuto

# Perceptions relative to electric and diesel-powered vehicles

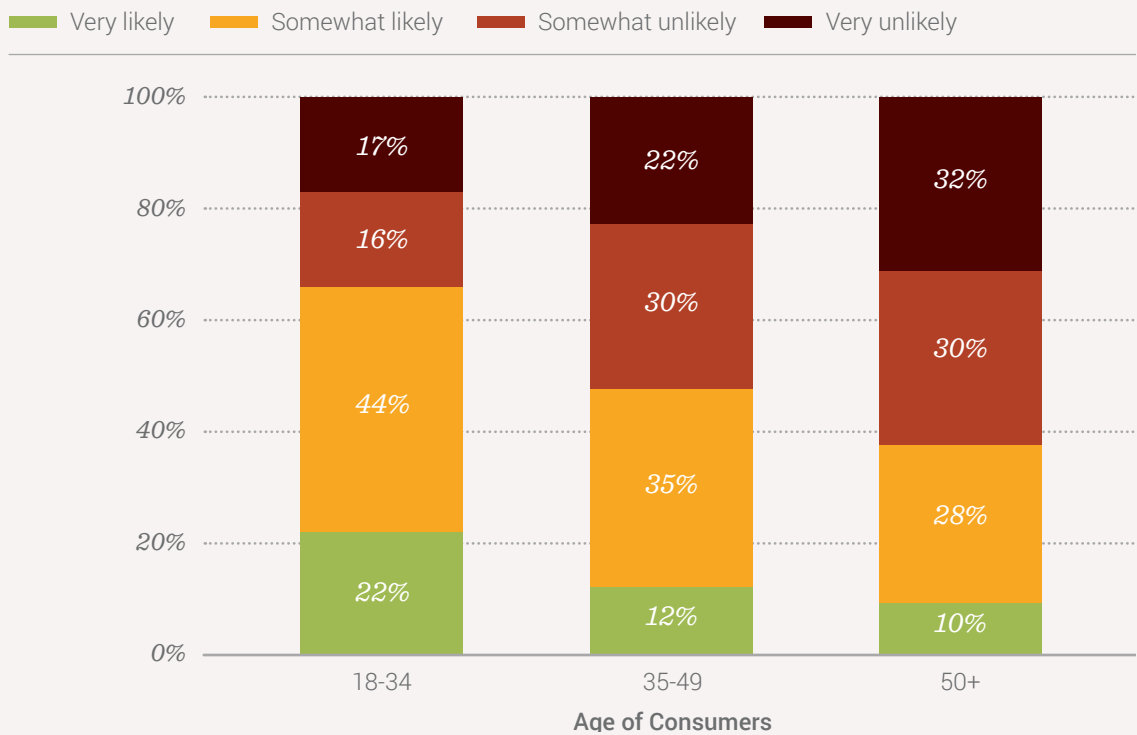
After asking general questions to ascertain consumer perceptions relative to the light duty vehicle market, the Fuels Institute asked the same consumers specific questions relative to electric and diesel-powered vehicles. It is interesting to observe the variation in consumer responses. When asked to reflect their interest from a series of alternative vehicles, the reported interest in electric

and diesel vehicles was relatively low (22% and 18%, respectively). But when asked if they would specifically consider an electric or diesel vehicle, the responses were much more positive towards the powertrains (51% and 45%, respectively). The following sections dive more deeply into the responses relative to these two vehicle types.

## How likely would you be to consider an electric vehicle?



## How likely would you be to consider an electric vehicle (by age)?



## Hurdles remain for consumers to embrace electric vehicles

For those potentially in the market for a vehicle within the next two years, when asked specifically if they would consider an all-electric vehicle for their next purchase, 51% said they were very or somewhat likely to do so. This is up from the 48% who claimed in February 2016 that they might consider an electric vehicle. Those aged 18-34 were much more likely to consider electric vehicles while those over 50 seem to remain skeptical about the technology. For the majority of consumers who would consider an electric vehicle, the

“Those aged 18-34 were much more likely to consider electric vehicles while those over 50 seem to remain skeptical about the technology.”

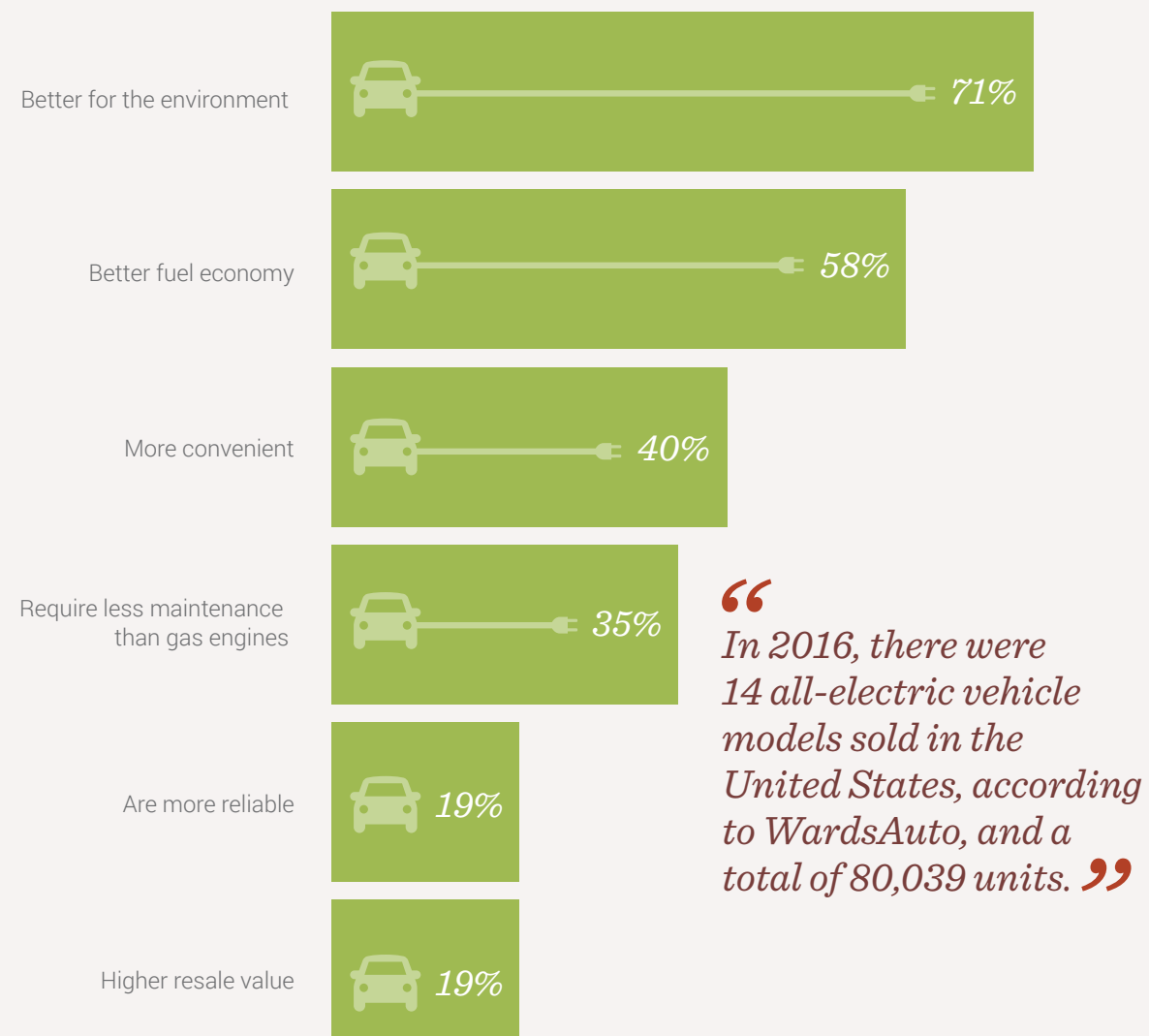
predominant reasons for their interest were environmental and economic. However, for those not as inclined to opt for an electric vehicle, the reasons were much more pragmatic, including lack of recharging infrastructure, range anxiety and battery replacement costs.



The market for electric vehicles is evolving and many of these concerns are being addressed through advancements in technology. In 2016, there were *14 all-electric* vehicle models sold in the United States, according to WardsAuto, and a total of *80,039* units. This reflects a market expansion of *10.6%* over the *72,374* units sold in 2015. However, electric vehicles

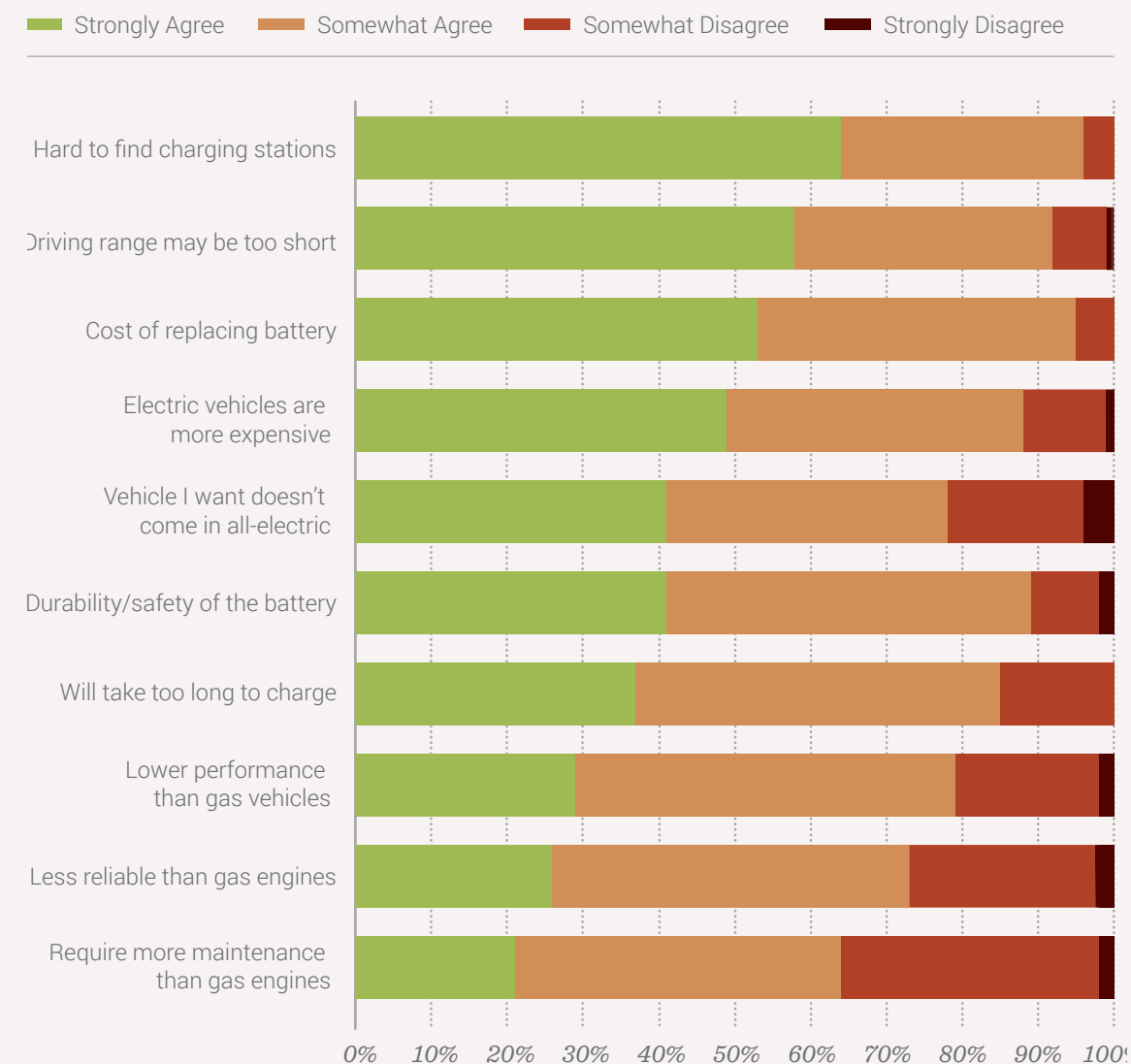
represented only *0.45%* of all light duty vehicles sold in 2016, indicating the industry has a long way to go before this technology begins to capture significant market share. Proactively addressing and communicating solutions to the consumer concerns stated in the chart opposite, could assist market development efforts.

### Why would you *consider* an electric vehicle?



Source: Penn Schoen Berland, Fuels Institute, NACS

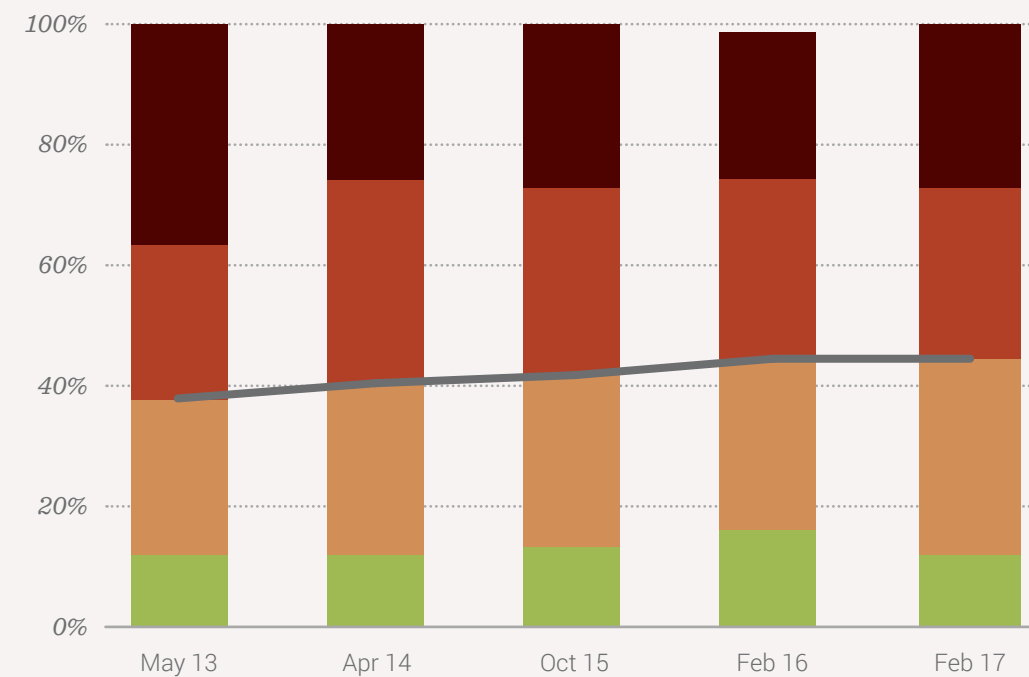
### Why would you *not consider* an electric vehicle?



Source: Penn Schoen Berland, Fuels Institute, NACS

## How *likely* are you to consider a diesel vehicle?

Very likely    Somewhat likely    Combined Likely  
Somewhat unlikely    Very unlikely



## Interest in diesel remains limited, but not because of emissions scandals

Nearly half (**45%**) of potential car buyers said they were very or somewhat likely to consider buying a vehicle equipped with a diesel engine. This matches the number of consumers so inclined in 2016 and is higher than any time over the prior three years.

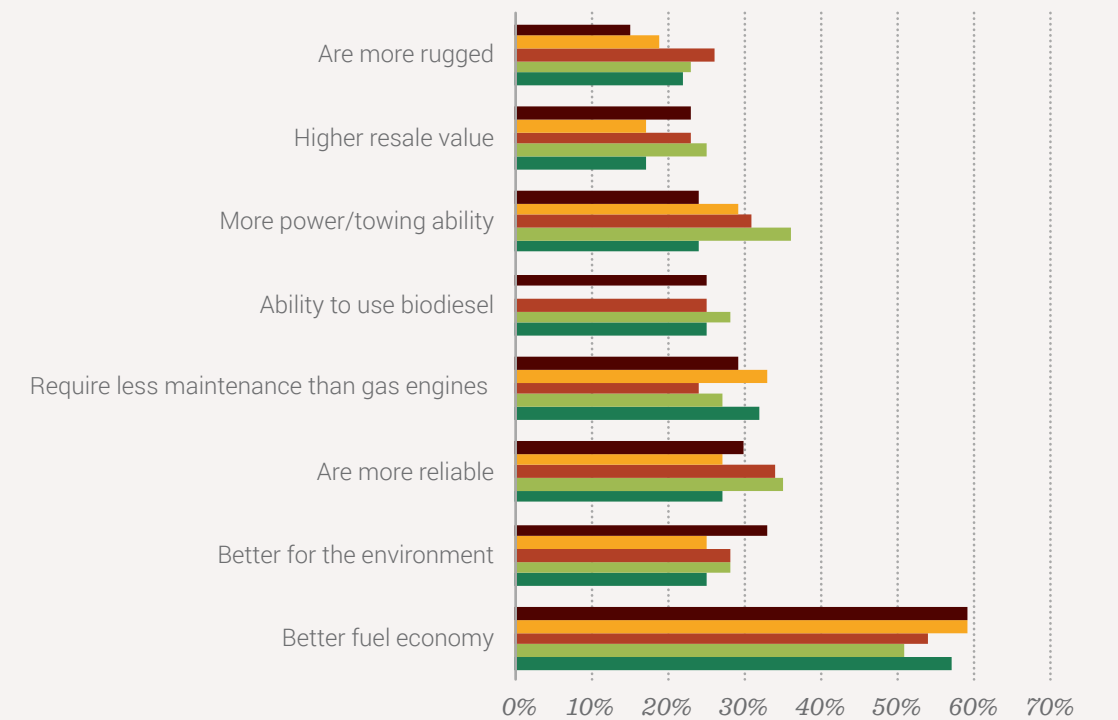
For those interested in diesel-equipped vehicles, the dominant reasons were economic with better fuel economy far outpacing any other positively identified

attribute. And this has been consistent since the Fuels Institute began asking the question. Possibly reflecting the fact that the current light duty market for vehicles equipped with diesel engines is dominated by pick-up trucks, men were much more inclined to consider a diesel-powered vehicle than were women.

Source: Penn Schoen Berland, Fuels Institute, NACS

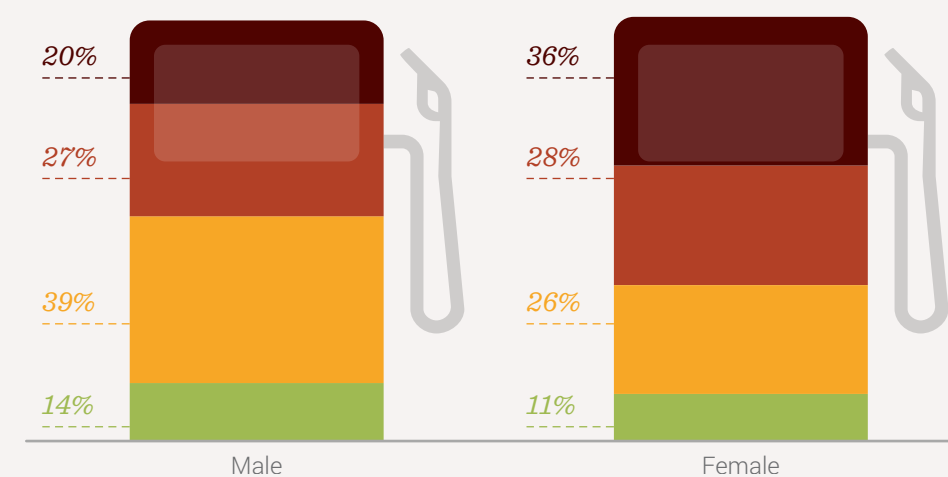
## Why are you *likely* to consider a diesel vehicle?

May 13    Apr 14    Oct 15    Feb 16    Feb 17



## Men are more *likely* to consider a diesel vehicle than women

Very likely    Somewhat likely    Somewhat unlikely    Very unlikely



Source: Penn Schoen Berland, Fuels Institute, NACS

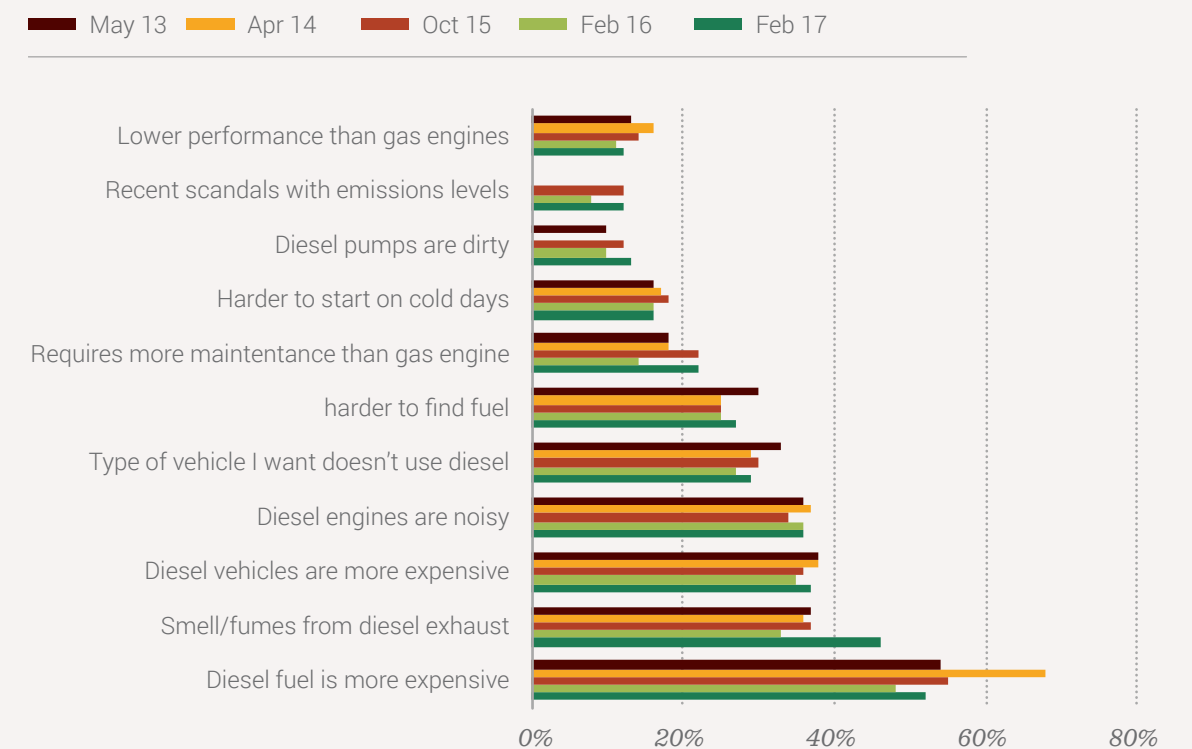


According to WardsAuto, *less than 1%* of diesel vehicles sold in 2016 were classified as “cars;” the rest were light or medium duty trucks. This reality is reflective of the departure from the market of diesel vehicles manufactured by Volkswagen Auto Group following their emissions scandal. (In 2015, VW Auto Group commanded *85%* of the market for diesel-engine equipped “cars.”) Yet, news of this situation and other similar investigations did not dissuade consumers from their interests in diesel technology. In fact, of those who said they were unlikely to consider a diesel vehicle, only *12%* cited recent emissions scandals. The primary concern was the price of diesel fuel relative to gasoline and this has been consistent throughout the years, although it has dissipated modestly as the gap between diesel fuel and gasoline prices has narrowed. (*See page 11*)

Other key issues of concern are somewhat rooted in issues that have been addressed by the manufacturing industry but not yet entrenched in consumer’s perception of diesel engines. Modern engines are no longer smelly, dirty or excessively noisy. These are perceptions that can be overcome with additional education and experience, provided diesel-equipped vehicles increase their share of the light duty vehicle market. In 2016, they represented only *2.8%* of annual light duty sales and a similar share of registered vehicles. This limits the exposure of consumers to new diesel technology and impedes the recognition of improved performance of the technology.



### Why are you *unlikely to consider* a diesel vehicle?





## In Conclusion

Consumers seem to remain theoretically interested in alternative fuel vehicles, including electric and diesel vehicles.

However, this interest has not reflected in actual sales.

Despite this lack of movement at the dealer lots, the sustained interest in alternative fuels, especially among the younger generation of drivers, is indicative of a growing trend that could mature and demonstrate itself in vehicle sales in the coming years.



## About the Fuels Institute

The Fuels Institute, founded by NACS in 2013, is a 501(c) (4) non-profit research-oriented social welfare organization dedicated to evaluating the market issues related to vehicles and the fuels that power them. By bringing together diverse stakeholders of the transportation and fuels markets, the Institute helps to identify opportunities and challenges associated with new technologies and to facilitate industry coordination to help ensure that consumers derive the greatest benefit.

The Fuels Institute commissions and publishes comprehensive, fact-based research projects that address the interests of the affected stakeholders.

Such publications will help to inform both business owners considering long-term investment decisions and policymakers considering legislation and regulations affecting the market. Our research is independent and unbiased, designed to answer questions, not advocate a specific outcome.

Participants in the Fuels Institute are dedicated to promoting facts and providing decision makers with the most credible information possible, so that the market can deliver the best in vehicle and fueling options to the consumer.

**[www.fuelsinstitute.org](http://www.fuelsinstitute.org)**



The Fuels Institute was founded in 2013 by NACS, the international association that advances convenience and fuel retailing. Through recurring financial contributions and daily operational support, NACS helps the Fuels Institute to invest in and carry out its work to foster collaboration among the various stakeholders with interests in the transportation energy market and to promote a comprehensive and objective evaluation of issues affecting that market and its customers both today and in the future. NACS was founded August 14, 1961, as the National Association of Convenience Stores, and represents more than 2,100 retail and 1,600 supplier company members.

**[www.convenience.org](http://www.convenience.org)**

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## Fuels Institute Staff

**John Eichberger**  
*Executive Director*  
jeichberger@fuelsinstitute.org

**Amanda Appelbaum**  
*Director, Research*  
aappelbaum@fuelsinstitute.org

**Donovan Woods**  
*Director, Operations*  
dwoods@fuelsinstitute.org



1600 Duke Street  
Suite 700  
Alexandria, VA 22314

[fuelsinstitute.org](http://fuelsinstitute.org)

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