So much attention is paid to alternative fuels and vehicles, including by us at the Fuels Institute, but the relationship between traditional fuels and the opportunity for alternatives to gain market share is one that has been demonstrated time and time again. In mid-January, the U.S. Energy Information Administration (EIA) released its Annual Energy Outlook 2020 (www.eia.gov/outlooks/aeo) presenting their projections for the energy sector through 2050. I look forward to this report every year—it is big and complex, but when using the interactive table viewer, I am able to narrow my focus on those elements that will have the most relevance to the transportation energy market.

And as much as I enjoy AEO2020 and all other forecasts I come across, they are not certainties and they are often maligned by those who question the methodology, the assumptions, and the outcomes. I think these attacks are a waste of time, but I also caution against assuming any projections are locked-in realities—we should use the data as a point from which to have further discussions about what might transpire and what factors might wield influence in the future.

Fuel Efficiency Improvements

When I speak with fuel marketers and producers, they often ask what is going to happen with overall demand of the most common transportation energy products in the market—gasoline and diesel fuel. I typically start out by explaining that fuel efficiency programs and improved vehicle technologies have had and will continue to have a major influence on the amount of energy needed to travel a certain distance and that understanding how these relate is critical. And I stress that there are a lot more factors affecting fuel demand and technologies improving efficiency than the overwhelmingly big story of the day, electrification.

First of all, between 2000 and 2017 passenger cars improved their efficiency by 38% and light trucks by 34% without much help from electrons. And much of this improvement was achieved prior to the current era Corporate Average Fuel Economy (CAFE) standards, although clearly the current policy resulted in accelerated improvements in the second half of this time frame.

![Average Fuel Efficiency of New Vehicles](image)
GIVE YOUR STATION NEW ENERGY.

Pushing the boundaries of possibility is an expectation we gladly exceed. Because when we do, our partners reap the rewards. You get a reliable product supply that provides TOP TIER™-certified quality fuel. You get attentive customer support, which has reached a level of excellence unmatched by anyone in industry. You get our modern Vanguard station design. You get the confidence in knowing you’re partnered with an energy company built on strong finances — and an even stronger commitment to your success.
As we look forward to better understand what efficiency will do in the coming decades, EIA is constrained to evaluate market evolution based upon current regulations. (At the time, the SAFE Vehicles Rule had not been finalized and the Obama-era CAFE program remained in place.) However, because that program does not stipulate efficiency targets beyond 2025, EIA’s model holds regulatory requirements at that 2025 level going forward. Their forecast is for the fleet to become 47% more efficient by 2040—meaning a vehicle will be able to travel the same distance on about half the fuel required today.

Increasing Miles Traveled
What impact will these improvements have on fuel demand? Leveraging efficiency data alone is insufficient to make that projection—we must also consider anticipated miles traveled. In this respect, EIA anticipates miles driven to increase between 7% and 20% by 2040, depending on the assumptions used. (I present in the slides below the EIA reference case projections as a solid line and the range of potential outcomes associated with EIA’s low oil price and high oil price scenarios in the shaded areas.) Contributing to the increase in miles traveled is an increase of 12% in the number of licensed drivers. This increase in miles traveled offsets to a degree improved vehicle efficiency, at least in terms of the impact on total fuel consumed.

(Published in January, it is clear that EIA’s forecasts were made prior to the COVID-19 pandemic, which has led to dramatic reductions in travel behavior. What will happen with travel once the pandemic is over remains to be seen and, perhaps, the EIA forecasts will return to reflect normal anticipated driver behavior.)
Gasoline and Diesel Demand Destruction

In balancing efficiency improvements with miles traveled, EIA is able to forecast that gasoline consumption could drop between 13% and 26% by 2040 in the two oil price scenarios. Meanwhile, diesel fuel could yield 3% to 15% volume under the similar conditions. This destruction in demand is a direct result of efficiency improvements delivering greater benefits to consumers. For fuel retailers, this could be a very challenging development, but it does not tell the whole story. More importantly will be what happens with the number of visits consumers need to refuel their vehicles.

Many auto engineers tell me that, in order to support efficiency gains, the size of a vehicle’s fuel tank will shrink in order to save weight. If this is the case, to what extent will a vehicle’s range improve along with its overall fuel efficiency? I suspect that the tank will not shrink at a ratio that will prevent improved range per full tank, but the impact of retail fueling trips is unlikely to be proportional to the reduction in gallons consumed. In other words, consumers are likely to buy fewer gallons per visit than they do today, but still travel further on the gallons they do buy. This will reduce refueling trips, but not as significantly as it will reduce gallons consumed.

Forecasting Fuel Prices

The alternative scenarios on which I focused relied upon EIA’s projections for the price of oil. EIA generated forecasts for a low price and high price scenario. The variability in these forecasts is significant – ranging from a potential low of $41 to a high of $171 in 2040. The reference case puts oil in 2040 at a level almost equivalent to today’s prices adjusted for anticipated inflation of about 2%-3%. The result would be $86 for West Texas Intermediate and $90 for Brent. (Again, these forecasts were published prior to the pandemic and oil price war between Saudi Arabia and Russia.)
Why is the price of oil so important? Well, oil prices influence prices at the pump. According to EIA’s monthly report of the retail price of gasoline, crude oil routinely represents about two-thirds of the retail price of gasoline and has at times exceeded 80% of the posted retail price. So, if the high oil price scenario were to materialize, prices at the pump would be expected to increase. In fact, EIA’s forecast for retail gasoline prices is presented below – the range is significant from a potential low of $2.20 to a high of $5.00. This has implications for the ability of alternatives (absent government incentives or requirements) to gain market share.

**Impact of Fuel Prices**

We know and have demonstrated that a consumer’s decision to purchase any vehicle is complex and involves a significant array of factors. However, in our 2018 report, “Driving Vehicle Sales,” (www.fuelsinstitute.org/research) we concluded that the primary factors are need (What kind of vehicle do I need for my daily activities?), affordability (Can I afford to buy the vehicle I am considering?), and efficiency (How much will it cost me to fuel this vehicle compared to other options?). Again, there are many other factors, but these are significant considerations.

We also know from past experience that the price at the pump influences how consumers weigh these issues. In consumer surveys and examinations of raw data, it is clear that consumers are much more willing to consider purchasing an alternative vehicle (such as a hybrid electric vehicle) when pump prices are high than when they are low. For example, in 2014 when retail gasoline prices were around $3.50 per gallon, 84% of consumers said they would consider a hybrid for their next vehicle and 3.2% of consumers actually purchased such vehicles. Fast forward to 2016 when retail gasoline prices dropped to less than $2.00 per gallon, those willing to consider a hybrid dropped to 44% and those who actually purchased one dropped to 1.9%. Consequently, what happens to prices at the pump (all things being equal) will have an impact on consumer adoption of alternative transportation technologies.
As founders of National Egg Roll Day, our goal is to help your customers bring the party home. Give your shoppers a reason to celebrate this summer with Van’s Kitchen egg rolls. Made with whole ingredients, premium proteins, and love in every bite, Van’s Kitchen egg rolls are the fun flavor adventure your customers are looking for.

Van’s Kitchen 4-Pack of Egg Rolls with Sauce are a touch-free, prepared meal solution that your customers can heat and enjoy at home.

- Includes Sweet & Sour Sauce Packet
- Packaged in Microwavable Tray
- 21-Day Refrigerated Shelf Life
- Fully Prepared and Ready to Cook
Avoid Dismissing or Adopting Forecasts

EIA’s AEO2020 is a fascinating report that provides some insight into how the market might evolve — but it is not a prescription. Models and forecasts are only as good as the assumptions and inputs they leverage. Technological advances, manufacturing breakthroughs, policy adjustments, geopolitical risk, and global economic health will all affect the trajectory of this market and they are impossible to accurately model. Consequently, it is relatively easy to poke holes into forecasts like AEO2020, but that misses the point.

We are at a stage of market development and transition that is a moving target and it is impossible to get our arms around every moving facet that will influence the eventual outcome. Resources like AEO2020 give us a reference against which to evaluate what is happening, a starting point for discussion and debate, and a way to begin introducing alternative scenarios that could play out. I applaud the team at EIA for their diligence in delivering their forecasts for us to consume, ponder, tear apart, and build upon. But just as it is a waste of time to nitpick, it would also be a mistake to take such forecasts as guarantees or to assume one forecast is 100% accurate — none are, but they give us ammunition to continue exploring the market and try to make some sense of what is often a chaotic situation. ★

John Eichberger is Executive Director of The Fuels Institute, a non-profit, independent think tank founded and managed by NACS, the association for convenience and fuel retailing. Drawing diverse stakeholders from the vehicle and fuels industries, the Institute encourages multi-industry collaboration and produces credible, independent analytical reports to better inform business leaders and policymakers about opportunities and challenges in the vehicles and fuels markets.