The Fuels Institute’s Annual Meeting in San Francisco in late April attracted 100 industry professionals from oil, biofuels and automobile companies, research labs and government agencies, and advocate organizations from a variety of perspectives. The disparate but cohesive group came together for two and a half days to attend field trips, discuss the future of fuels and listen to finalists from the annual University Case Competition.

Presentations focused on the future of fuel retailing and the market for liquid fuels, experience with historic fuel transitions, environmental objectives for the transportation sector, and the future of powertrains and technology, including autonomous vehicles.

The Landscape
Building on the previous day (in which attendees visited a local c-store and one under construction), Dae Kim, NACS vice president of research, kicked off the formal conference by diving into the state of the convenience and fuel retailing industry. Sharing key industry metrics from NACS, he noted that “70% of what we sell is fuel, but from a profitability perspective, it’s the opposite.” He pointed out that the industry has essentially recovered from the recession and that lower fuel prices have helped spur gasoline consumption, setting the industry up for a potential record setting year in 2016. Lower fuel prices have also given consumers additional buying power, and with the majority of consumers electing to spend the money they save at the pump, convenience store industry transactions were higher in 2015 than in 2014.
Liquid Fuels
In a session on the future of liquid fuels, panelist Steve Przesmitski, global team leader with Aramco R&D, noted that demand is increasing in developing countries and that oil is being refined faster than it's being used. “There’s no magic bullet when it comes to alternative vehicles—they all have limitations,” he said. And while fuel market changes can be very difficult, everyone thinks it’s a simple process for everyone else, Przesmitski added. Regulations are now taking longer to address issues that arise, and since the conditions of every fuel transition are different, the necessary solutions differ as well. When vehicle changes require a new fuel, a full market transition may take 10 or more years.

But the fuel industry shouldn’t overlook the distribution system and retail infrastructure implications either. If incentives are there for all market segments, the market can act quickly. “If fuel prices go up by more than 2% and are not transparent to the consumer, be prepared for some consumer backlash,” Przesmitski stated.

“We’re going to continue to get more efficient,” said panelist Horace Hobbs, chief economist for P66. With gas demand falling over time, VMT growth should become more moderate. As a result, Corporate Average Fuel Economy (CAFE) standards should catch up to the industry within the next five years, so “we’ll start to see the stair step down,” he said.

And as far as oil availability, Hobbs added that we know where the oil is, and we know we can get it relatively cheaply, but regardless, we may not need to drill for it. “It’s a market scarcity, not an oil scarcity issue,” he said.

While gasoline demand in the United States will fall according to EIA predictions, in the rest of the world it’s increasing, said Eric Bowen of the Renewable Energy Group. In tandem with that, he said, everyone is working hard to increase the renewable component. “The more efficient biodiesel plants can still be competitive. [At] $50 to $60 for crude, they can be profitable,” Bowen said, adding that feedstock is still viable but running soybean won’t work.

Panelist Jeremy Bezdek with Flint Hills Resources noted that his company has chosen to invest in biofuels production facilities because they see long-term viability in that sector, independent of government programs. His company currently operates seven biofuels facilities and considers market demand sustainable in the years to come.

John Melo, CEO of Amyris, Inc., a biotechnology company, and former head of BP’s North American fuels operations, spoke to the international conditions affecting the liquid fuels market. He noted that global geopolitics, such as the economic realities of lower oil prices on Russia’s economy, could eventually play a significant role in determining the market conditions for transportation energy. And everyone agreed that higher oil prices improved the potential for alternative energy to gain market share. Melo’s company continues to work on the development of advanced biofuels and he noted that the fundamental issue is producing a product at a sufficient scale at the right price.

Environmental Concerns
Because a primary focus of regulators and policymakers is to promote environmental protection, the Fuels Institute incorporated a portion of the meeting to discuss the intersection of environmental policy and fuels and vehicles production. A field trip included a visit to the Joint BioEnergy Institute as well as the Advanced Biofuels and Bioproducts Process Demonstration Unit at the Lawrence Berkeley National Lab (ABPDU), which are working on advanced biofuels production to help reduce the carbon footprint of liquid fuels. And several speakers focused on the role of the environment in market development.

During presentations, Paul Machiele, Fuel Programs Center director for the EPA, reiterated how difficult fuel market changes can be. Analyzing historic fuel transitions, he noted that conditions and solutions both vary, and when vehicle changes require a new fuel, it can become a significant
In 1973, the government removed lead from gasoline with a three-page rule; in 2014, the latest sulfur regulations spanned 472 pages in the Federal Register.

challenge. Considering all “phase-ins, phase-downs, step-downs and delays, the ability to produce the fuel isn’t always the biggest challenge,” he said. Over time, regulations have made such any transitions complex—in 1973, the government removed lead from gasoline with a three-page rule; in 2014, the latest sulfur regulations spanned 472 pages in the Federal Register.

Simon Mui, a scientist from the Natural Resources Defense Council (NRDC), began his presentation with a quote from World Bank President Jim Yong Kim: “If we don’t address climate change, there will be no hope of ending poverty or boasting shared prosperity.” Near-zero and zero emissions mobility are among the goals of the NRDC, he said, including clean and efficient, more affordable and safer methods, pointing to the sustainable community strategy currently in effect in California. “When you reduce VMT (vehicle miles traveled), there’s a tipping point where the roads get much less congested. What if you could reduce certain congestion thanks to some of these policies?” he asked.

The Autonomous Road

Visions of the future always seem to include self-driving vehicles. “Autonomous driving is about improving safety, but people I talk to seem to be more interested in saving time,” said Coleman Jones, biofuel manager at GM, during his talk on the future of powertrains and technology. He referenced the Rand Corporation, which is working on autonomous vehicles specifically for the blind, disabled and those too young to drive. He noted that cars could provide a range of autonomous features, from the driver being in control to the car being in control. Roger Melen, a senior advisor at Toyota Infotechnology Center, added that test cars are able to drive a large number of miles without issues, making them ideal for improving safety on the roads.

And although the Fuels Institute is dedicated to evaluating the market issues related to consumer

AND THE WINNER IS...

A full day of presentations and learning at the Fuel Institute’s Annual Meeting concluded with presentations from the three University Case Competition finalists: Duke University, Morgan State University and the University of California at Berkeley. Each school spent 30 minutes presenting and fielding questions from attendees about their vision of an ideal future transportation sector, including both mass transit and consumer vehicles. UC Berkeley’s proposed natural gas and electricity model took home the top prize this year in the competition, which is sponsored by Gilbarco Veeder Root North America.

“Our vision is motivated by long-term social and economic goals, especially the mitigation of climate change,” the UC Berkeley students noted in their proposal. “Although the most severe consequences of America’s energy issues will occur outside the 30-year time frame of this challenge, adverse climate-driven impacts are already being felt in the U.S. and elsewhere.”

The three finalists were chosen from 20 teams of three or more students from 11 schools that registered for the competition. Check out the full proposals from all of the entrants online at fuelsinstitute.org/research.
vehicles and the fuels that power them, Jones was able to bring the conversation back to the c-store. If people who can’t typically drive are the ideal market for autonomous vehicles, then, he wondered: “Does the service attendant return? How does this affect the convenience store?”

**Consumer-Driven Future**

Ellen Peters, psychology professor and director of the Decision Sciences Collaborative, presented the closing keynote session of the conference, “Consumer Decision Making Processes.” While not an expert in the fuels business, Peters brought to attendees a fresh perspective on what drives consumers to choose what they do, noting that instinct sometimes overpowers analytical thought. Peters noted that consumer risk perceptions are derived in two ways—through both analysis and feelings. But thinking harder and feeling more can sometimes hurt decisions, she said. “In the real world, risks and benefits tend to be positively correlated. In people’s minds though, risks and benefits tend to be negatively correlated,” Peters said.

What makes sense sometimes comes in conflict with what we want to do, she said, referencing an experiment that involved participants having to remember a long number and unexpectedly wait before they could then choose a healthy option or chocolate cake as a reward for repeating the number. “When little brain power was available, subjects were much more likely to make a decision of the heart,” she said, noting that most participants chose the chocolate cake even though they wanted to choose the healthy option. “Feelings matter more when you can’t think hard,” she said.

Peters’ take on consumer decisions can appropriately be tied to the choices people make when buying cars, added John Eichberger, executive director of the Fuels Institute. The types of cars people buy certainly matters, but what does it mean for fuel sales?

Eichberger closed out the conference noting that although we’ve experienced a couple years of record fuel margins, long-term projections still point to declining consumption. CAFE standards are staying where they are, and 10 years from now vehicles will use 55% less energy, according to EIA projections. So while a fuel demand reduction will be likely, Eichberger said, liquid fuels still have an important place at the table.