

Hot fuel for you, cold cash for oil companies

STANDARDS: By selling hot gasoline, oil companies make billions of extra dollars every year. And it's legal.

STEVE EVERLY, KANSAS CITY STAR

Lesley "Lucky" Duke's mood darkens with every drop of diesel that flows into his 2005 Freightliner big rig.

The 52-year-old independent trucker from Hertford, N.C., has just dropped off a load of potatoes and now is topping off his tank on a sweltering summer day.

He whips out a thermometer and takes the temperature of the \$2.80-per-gallon fuel gushing into his truck's tanks. The thermometer hits 80. Then 90. Finally, it stops at 93 degrees Fahrenheit.

"Hot" fuel is costing him the price of a good lunch today, Duke reckons, and as much as \$700 a year.

It gnaws at him. Duke is one of the few Americans who realize that fuel is often sold at temperatures much hotter than the government standard of 60 degrees. It's a standard agreed to nearly a century ago by the industry and regulators, but almost unknown to the average consumer.

But you should understand it, too -- because collectively it's costing us billions of dollars a year. An investigation by the Kansas City Star has found that at current prices, U.S. consumers are spending about \$2.3 billion more for gasoline and diesel this year than they otherwise would if fuel pumps were adjusted to account for expansion of hot fuel.

It works this way:

As a liquid, gasoline expands and contracts depending on temperature. At the 60-degree standard, the 231-cubic-inch American gallon puts out a certain amount of energy. But that same amount of gas expands to more than 235 cubic inches at 90 degrees, even though consumers still only get 231 cubic inches at the pump.

Put simply, every degree over the 60-degree standard diminishes the energy a 231-cubic-inch gallon delivers to the nation's fleet of cars, trucks, boats, buses and heavy equipment -- and forces drivers to consume more and pay more for fuel.

It is basic physics that, depending on the temperature, can amount to just a few cents per gallon. But it adds up to big money -- coming straight out of consumers' pockets and going right to the bottom line of major oil companies and other fuel retailers in the energy pipeline.

Moreover, it's perfectly legal, because even though your local filling station measures out your gas as if it were stored at 60 degrees, no law requires retailers to adjust the pump to reflect the expansion of hot fuel.

In other words, no law ensures you get what you pay for.

THE PROBLEM CAN BE FIXED

While the problem may be costly to consumers, the Star's examination reveals that it is eminently fixable. The technology exists to retrofit the nation's filling stations to adjust the amount of fuel pumped to reflect changes in fuel temperatures.

Even so, Big Oil has argued successfully for decades that it would cost too much to retrofit the nation's fuel pumps, particularly for independent retailers that now sell the majority of the nation's fuel. The industry also argues that consumers simply wouldn't understand fuel pumps that adjust for temperature change.

"The consumer doesn't necessarily want to be confused," said Prentiss Searles, a senior associate for marketing issues at the American Petroleum Institute, a Washington, D.C.-based group that represents the industry. "They're thinking, 'I just want a gallon.'" Most major oil companies either declined comment on the hot fuel issue in the United States, or referred inquiries to the API.

Anne Peebles, a spokeswoman for Shell Oil Co., said in a statement that the value of automatic temperature correction "may be limited.... Temperature correction is not something one company can do on its own, it would have to be (a) regulatory requirement that puts all facilities on the same page."

While the industry generally shies away from discussing the idea in this country, it has embraced temperature adjustment in Canada. The reason is simple. While hot fuel makes more money for the industry in the United States, cold fuel once cost the industry money in Canada. The industry put a stop to its Canadian cold-fuel problem beginning in 1990. That's when a Canadian law supported by oil companies and other gasoline marketers went into effect that permitted retailers to temperature-adjust on a voluntary basis. Supporters said the change, which meant Canadian consumers would stop catching a break on cold fuel, brought fairness to the marketplace.

Hans Kraus, who owned a company in Canada that supplied equipment to the petroleum industry, helped push the change. Kraus had produced a retrofit kit allowing temperature compensation at existing pumps, and he needed to market his gizmo. So he prepared a study showing that temperature compensation would make the industry money in Canada.

The industry bought his pitch and pushed for a change in Canadian law.

Today, sales material used by Kraus Global Products in Canada asserts that using fuel dispensers that don't adjust for temperature is an "inherently inaccurate" way to sell fuel. In one example, the sales material claims an Edmonton, Alberta, gas station could save \$23,000 for every \$1 million in fuel it sold.

'GREATEST RIP-OFF IN HISTORY'

Industry and government officials have known about the hot-fuel issue for decades. The 60-degree standard was set by mutual agreement of the oil industry and weights and measures regulators about a century ago. At the time, those involved reckoned that figure roughly matched the average air temperature in the United States.

While the industry changed and technology improved over time, the 60-degree standard remained, quietly protected by Big Oil. The issue simmered briefly in the 1970s, when fuel prices soared during two major oil crises. While drivers sat in long lines to pay high prices, a few government weights and measures officials pushed to adjust gas pumps for temperature variations.

Big Oil pushed back. The API dispatched Harold Harris, head of Exxon's office of engineering operations, to defend the status quo.

In 1974, Harris told a group of weights and measures officials meeting in Washington, D.C., that his study found that average fuel temperatures were below 60 degrees. His analysis claimed consumers were getting the energy equivalent of 242 million gallons of extra fuel a year that they weren't paying for.

Harris, retired and living in Houston, acknowledges now that the 1974 study was wrong. An API-financed study the next year tracked fuel temperatures at 56 stations across the country and found the average was about 61.5 degrees. Even so, the industry continued to argue that the financial benefits of adjusting for temperature were so small that it wasn't worth spending the money to solve the problem.

"It was better off to leave it alone," Harris said.

But times have changed -- for the worse for consumers.

First, the retail price of gasoline has more than tripled since the late 1990s, worsening the financial impact of fuel expansion. The average retail price of gas has surged in recent years from 90 cents to \$2.92 per gallon today, racing ahead of inflation.

The fuel being sold now also is hotter than in the past because of fundamental changes in how fuel is hauled, stored and sold. For instance, environmental regulations that require double-walled storage tanks to prevent leaks have effectively created a nation dotted with underground Thermoses -- keeping fuel hotter longer.

And much of the fuel-retailing industry has been consolidated from small corner stations into much larger outlets in recent years. At modern stations, which average eight hoses, fuel is sold in such massive daily volumes that the fuel in underground storage tanks turns over long before it has time to cool to ground temperature.

Finally, a population shift from cooler Rust Belt states to hotter Sun Belt states means that more people are buying hotter fuel than ever before.

A database of fuel temperatures at 1,000 retail stations compiled by the National Institute of Standards and Technology, obtained by the Star, reveals that fuel in this country is sold at nearly 65 degrees when averaged year-round and across the entire country.

When state-by-state temperature and consumption patterns are calculated, the Star estimates U.S. consumers now are being shorted the energy equivalent of roughly 760 million gallons a year of gas and diesel because of fuel expansion caused by heat -- fuel that's worth about \$2.3 billion at current prices.

"This is the greatest rip-off in history," said Jamie Court, president of the Foundation for Taxpayer and Consumer Rights in Santa Monica, Calif.

GOVERNMENT PROTECTS ITSELF

In a windowless ballroom at the Chicago Marriott Downtown, more than 100 business executives and government officials gathered in July to discuss the country's weights and measures regulations. The National Conference of Weights and Measures is charged with establishing model codes for states to follow in regulating all forms of commerce. Weights and measures professionals take pride in their work. Regulators say the integrity of daily commerce hinges on the basic trust that consumers know what they're buying. Consumers don't have to worry whether a gallon of milk is a pint short, or that a pound of hamburger weighs 15 ounces. Even so, the conference never has formally endorsed a national code for temperature compensation of fuel at the pump. But this year a report on temperature compensation was on the agenda. Michael Belue, a consultant for the API, argued that it would be too costly to adjust the nation's fuel pumps. "API recognizes the importance of temperature compensation at this conference," Belue said, adding that any policy to deal with fuel temperature should be strictly voluntary. The weights and measures conference took no action on the topic, deferring further action until next year at the earliest. Those in attendance spent more time debating the size of lettering on meat scales at deli counters -- and whether those scales should show "0" when empty -- than they did on whether to adjust pumps to account for billions of dollars in hot fuel. While fighting against temperature-adjusted gas for consumers, Big Oil long ago made certain that its crude-oil transactions prior to the refining process were made on a temperature-adjusted basis.

Temperature compensation also is a fixture in pipelines. The Explorer pipeline, which transports gasoline and diesel from the Gulf Coast to the Midwest, has a provision in its contract that requires fuel volumes to be adjusted for temperature. Wholesale fuel transaction measurements also are routinely adjusted for temperature. Even measurements of imported gasoline on tanker ships are adjusted for temperature. Indeed, temperature adjustment occurs at almost every step in the energy pipeline -- just not to retail consumers. Even the government protects itself. Some large-volume buyers of fuel are able to negotiate deals to buy fuel that is temperature-adjusted. One is the U.S. military, which has required temperature adjustment for decades. "It ensures we're getting the quantity of fuel we are purchasing," says Lindsey Hicks, chemist for the Defense Energy Support Center at Fort Belvoir, Va.