BEFORE THE
DOMESTIC POLICY SUBCOMMITTEE
OF THE
OVERSIGHT AND GOVERNMENT REFORM COMMITTEE
U. S. HOUSE OF REPRESENTATIVES
2154 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, D. C. 20515

PREPARED TESTIMONY OF:

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GRAIN VALLEY, MISSOURI

JUNE 8, 2007

The Owner-Operator Independent Drivers Association Foundation, Inc., is a wholly owned, not-for-profit subsidiary of the OOIDA. The foundation is a research, safety, and education organization dedicated to advancing the welfare of the nation's truck drivers, and owner-operators.

OOIDA is the preeminent trade association representing the interests of commercial truck drivers and the 350,000 owner-operators in the country. With an active membership of 153,000 plus, OOIDA is active in representing their interests at the national, state, local levels as well as in the courts of the land. The average OOIDA member owns 1.5 trucks and each truck averages 110,000 miles a year. These trucks average 6 miles to the gallon, so fuel is their highest operating expense and reaches $47,700, per truck per year when fuel is $2.65 a gallon. Because small business truckers make their living in a highly competitive environment, the successful ones examine their income and expenses down to a fraction of a cent per mile for every mile they travel.

The OOIDA board of directors is made up of 26 active owner-operators and during one of their 2002 meetings they asked the OOIDA Foundation to look into "diesel fuel quality", as they had noticed getting different mileage figures from different fill-ups. Subsequently, a fuel sample collection and testing program was set up and over the next six months and 32 samples were sent to a laboratory for analysis. The reports came back that all the samples qualified as, "normal #2 Diesel Fuel."

However, in reading the criterion for fuels to be labeled "#2 Diesel," I noticed that each fuel component had the caveat of, "at 60 degrees F." following its quantity figure. Reading further I found that petroleum products were highly reactive to temperature, expanding as temperatures rise, and contracting as temperatures lower. For this reason, I asked my sample collectors to also record the ambient atmospheric temperature, as well as the temperature of the fuel coming out of the truck stop tanks. From the subsequent 32 fill-ups, from across the country, not one truck stop had fuel at, or below, the reference temperature of 60 degrees Fahrenheit. The hottest fuel temperature recorded was 98 degrees F.

THE PROBLEM:

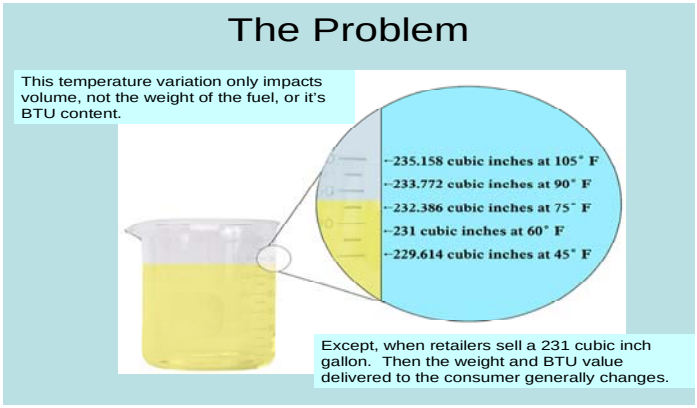
For more than 100 years, the petroleum industry has used a reference temperature of 60 degrees F. to measure flow rates and volumes of fuel. Fuel traded between producers is always temperature compensated to what that volume would be if the fuel were 60 degrees F. There are books with pages upon pages of tables which give the exact expansion and contraction factor for each fuel at every conceivable temperature. Today computer programs perform this task, but basically temperature compensation remains exactly the same. The unit of measure this system uses to measure fuel is called the "US Petroleum Gallon" which is defined as: "231 cubic inches, at 60 degrees F."

The US Petroleum Gallon is the only unit of measure used for sales between producers, and producers and wholesalers. It is also used between producers and large fuel retailers. But, it is not used between any US fuel retailers and fuel consumers, that I know of. The last time fuel is measured using the "US Petroleum Gallon" is when the producer or wholesaler fills the tank truck which will deliver the fuel to a retail filling station. At the retail filling station, consumer pumps deliver only a "US Gallon," which is 231 cubic inches of volume, regardless of the fuel's temperature.

The crux of the problem is retailers are buying fuel at the producer's/wholesaler's rack, and paying the fuel taxes, on a temperature compensated volume, the US Petroleum Gallon. However and they are selling to consumers, and recouping the already paid taxes, in a different measurement unit, the US Gallon.

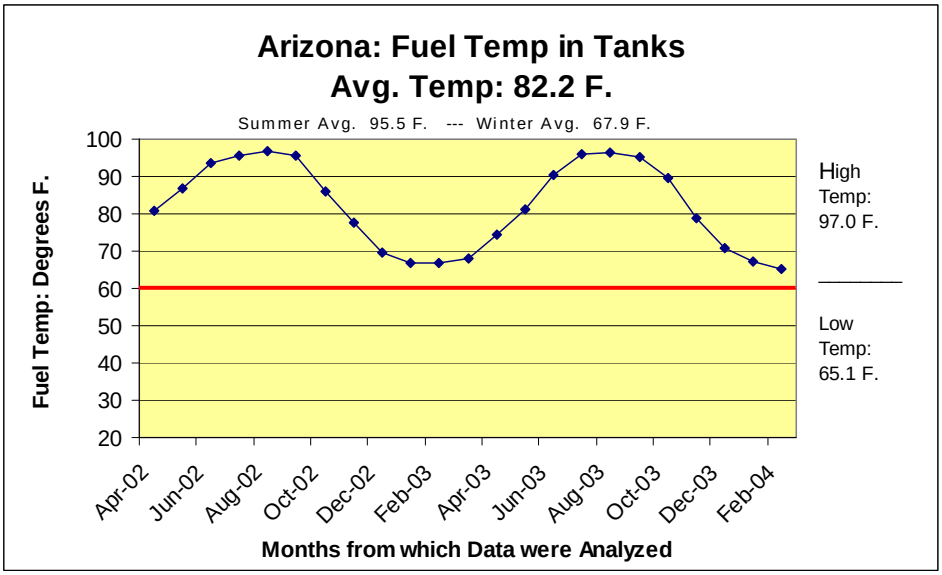
Fuel Expansion Factors:

Diesel fuel expands and contracts 1% for every 22 degrees F. of change. Gasoline is more reactive to temperature and will expand and contract 1% for every 15 degrees F. of change. Liquefied Petroleum Gas, or LPG, expands and contracts 1% for every 6 degrees F., and it is also universally measured, even when delivered to the customer's home via a small tank truck, in a temperature compensated gallon, as if it were 60 degrees F.



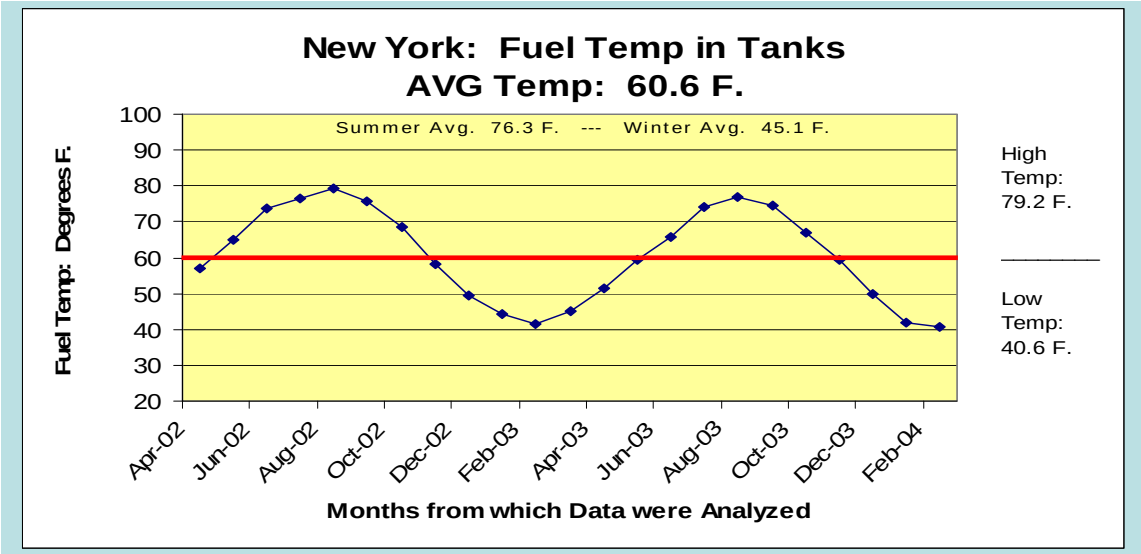
The above illustration depicts how a sample of gasoline would react to changes in its temperature. At 90 degrees F., the consumer is getting 2% less weight and BTU content than the retailer paid for when the gallon was temperature compensated to 60 degrees F. At 45 degrees F., the consumer is getting 1% more weight and BTU content than the retailer paid for at the rack.

How does this expansion and contraction play out in the retail arena? Below is a chart of the temperature of gasoline in filling station tanks in Arizona for a period of 23 months:



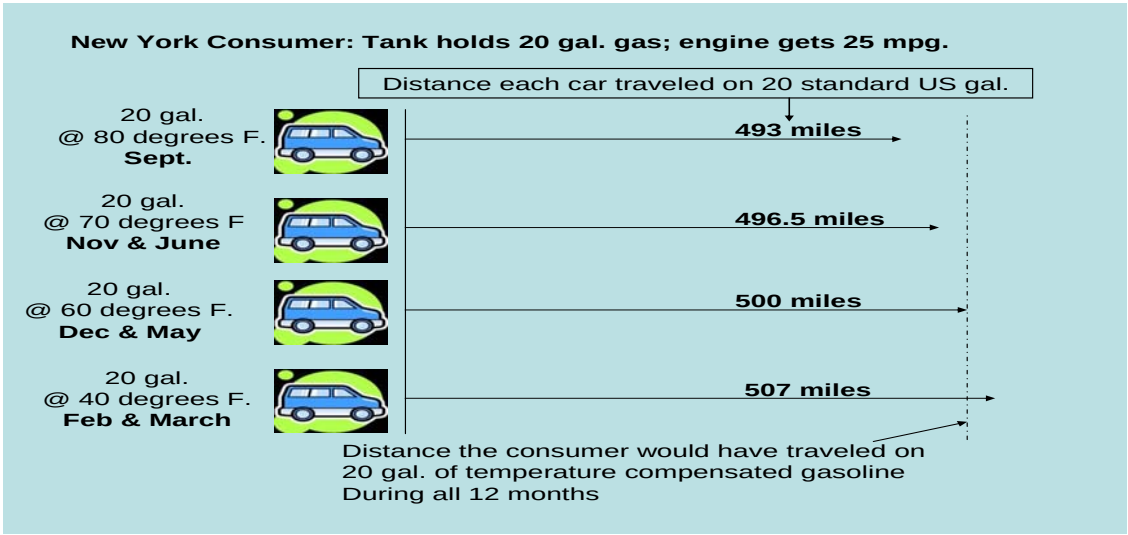
Obviously, retailers buying at Net 60 degrees at the rack have a lot of temperature-effect margin to work with at the retail pumps. And even though there is a seasonal spread of 30 degrees in summer and winter temperatures of the fuel, it never dips below 60 degrees in filling station's tanks.

Let's take a look at New York State, where fuel averages out to be very near the 60 degree reference temperature.

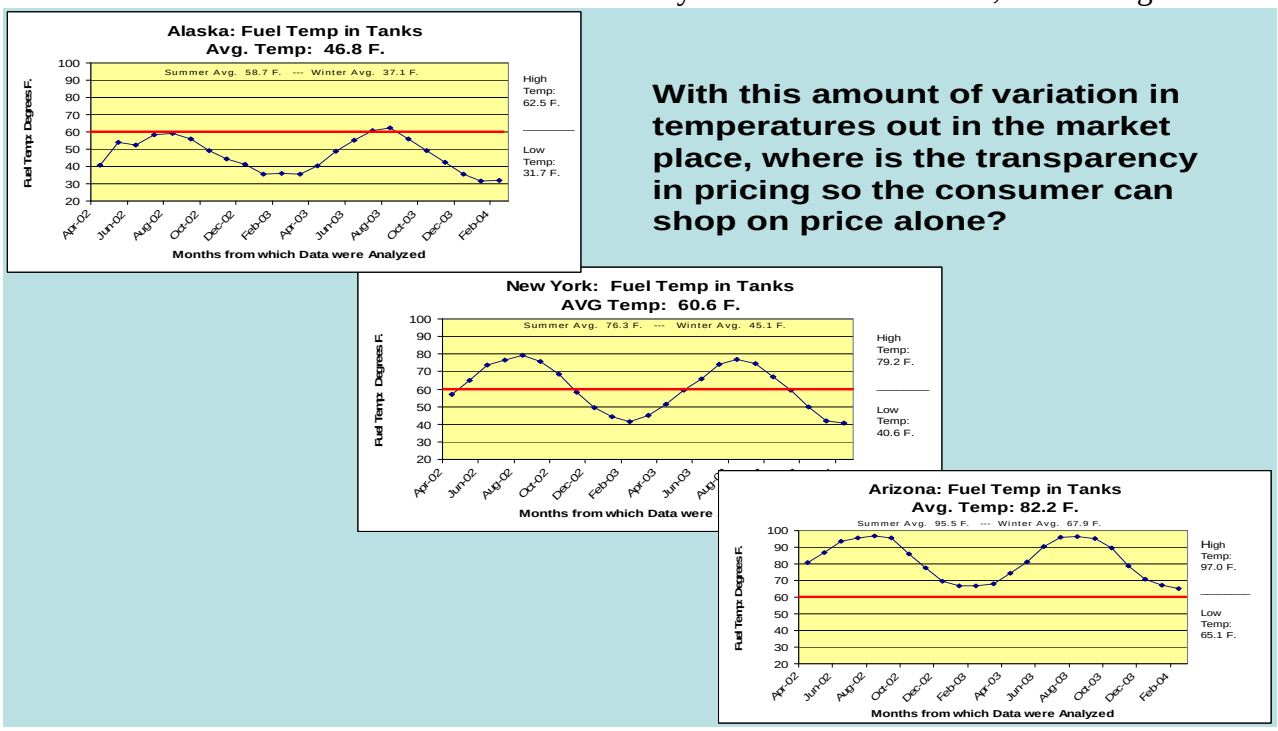


As you can see there is still nearly a 40 degree F. spread between the warmest and coolest temperatures of the gasoline, or a volume variance of 2.66%, which at $2.65 a gallon, is a temperature induced difference of $0.07 a gallon over the year.

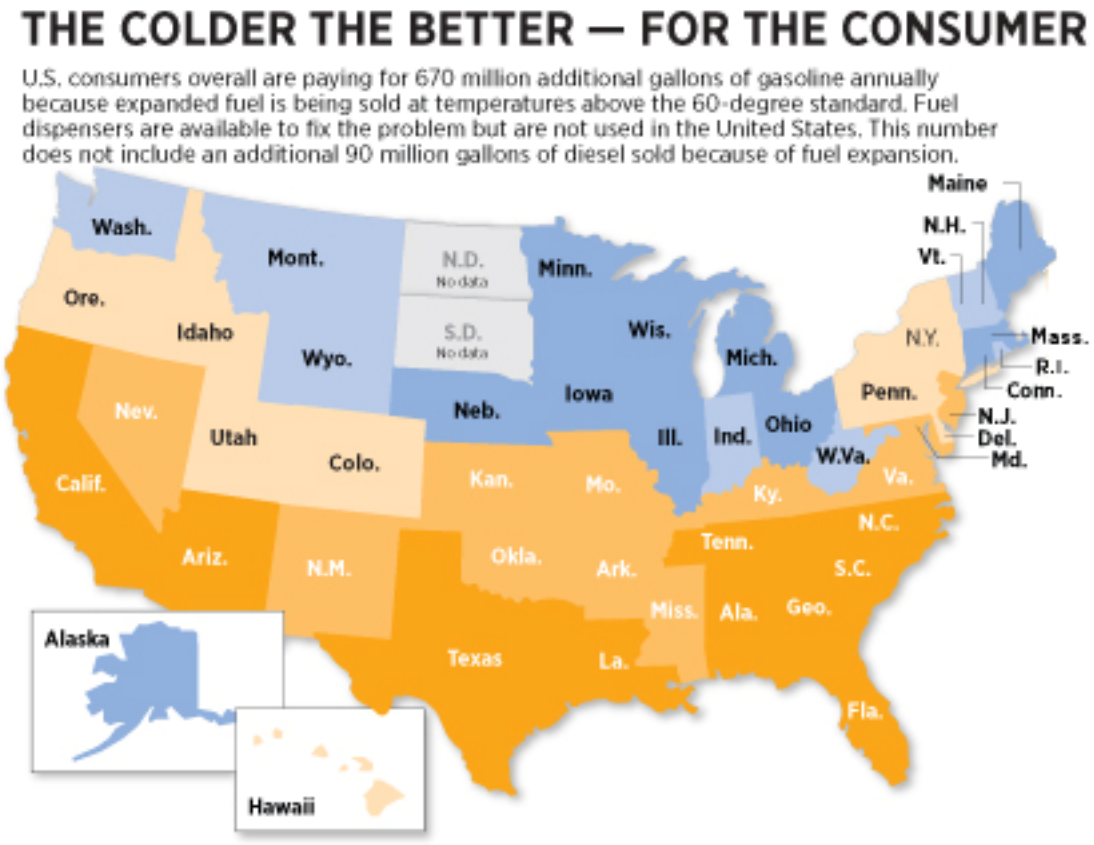
What does that mean to New York Consumers as they buy fuel during the year? The following chart shows the temperature expansion/contraction of fuel's impact on gas mileage:



The US consumer expects that every time they fill up they are getting equivalent amounts of energy that will take them the same distance, an expectation that is not true as long as retail fuel is measured only in US Standard Gallons. The following illustration shows this very well. Although New York State's fuel temperatures show a definite seasonal change that passes directly through the 60 degree F. reference temperature, fuel temperatures in other states can be in the extremes.



So, how does the entire nation fair in comparison to New York State? The map below shows the level of economic impact the temperature of gasoline has on consumers across the nation:



A graph that interprets the map above shows the scale and proportion of the problem that is borne by the highly populated states that are located in the southern half of the country. Subtracting the gains experienced in the cool states from the losses in the warm states still produces a net loss for the nation's consumers of $2.3 billion a year when prices are close to $3.25 a gallon for gasoline.

	STATE	AVERAGE FUEL TEMPERATURE	EFFECT ON RETAIL GAS CONSUMPTION IN MILLIONS OF GALLONS	CONSUMERS' GAIN OR LOSS IN MILLIONS OF DOLLARS
Paying an additional $50 million or more	California	75°	158	-$509
	Texas	78°	143	-$416
	Florida	82°	122	-$367
	Georgia	72°	41	-$123
	Arizona	82°	39	-$115
	Louisiana	77°	28	-$81
	North Carolina	69°	25	-$74
	Alabama	72°	22	-$63
	South Carolina	73°	22	-$61
	Tennessee	70°	21	-$60
Paying $10 million to $50 million more	Virginia	66°	16	-$46
	Mississippi	74°	16	-$46
	Arkansas	71°	11	-$32
	Nevada	75°	10	-$31
	Oklahoma	69°	11	-$31
	New Jersey	63°	8	-$22
	Maryland	64°	7	-$22
	New Mexico	69°	6	-$17
	Missouri	**62°**	**5**	**-$15**
	Kentucky	63°	5	-$14
	Kansas	**65°**	**4**	**-$12**
Paying $0 to $10 million more	Oregon	63°	3.5	-$10
	New York	61°	3	-$9
	Utah	63°	3	-$7
	Colorado	62°	2	-$7
Paying $0 to $10 million more	Hawaii*	86°	2	-$6
	Delaware	64°	1	-$3
	Pennsylvania	60.3°	1	-$3
	Washington, D.C.	66°	0.7	-$2
	Idaho	60.5°	0.2	-$0.6
Paying $0 to $5 million less	Rhode Island	59.8°	-0.05	$0.1
	West Virginia	59.6°	-0.2	$0.6
	Indiana	59.9°	-0.3	$0.9
	Wyoming	55°	-1	$3
	Washington	59.5°	-1	$3
	Montana	57°	-0.9	$3
	New Hampshire	58°	-1	$4
	Vermont	54°	-1.4	$4
Paying $5 million to $40 million less	Alaska	47°	-2	$7
	Massachusetts	59°	-2	$7
	Maine	55°	-2.5	$7
	Connecticut	59°	-3	$8
	Nebraska	54°	-3	$10
	Iowa	57°	-4	$11
	Ohio	59°	-4	$12
	Illinois	57°	-9	$29
	Wisconsin	55°	-9.3	$29
	Michigan	57°	-10	$29
	Minnesota	53°	-13	$37

* Hawaii sells a larger gallon based on the assumption of an 80 degree fuel temperature.

Sources: Tank temperatures from National Institute of Standards and Technology. The effect on retail gas consumption was calculated using information from National Institute of Standards and Technology and Energy Information Administration.
Cost in dollars calculated using AAA average cost of regular gas for each state on July 31, 2006.

THE KANSAS CITY STAR

Just a cursory glance at the Consumer Gain or Loss Columns reveals that consumer losses far out-weight the gain to consumers due to the temperature of the fuel just using the state's annual average fuel temperature. You can plainly see that consumer losses in warm states are 10 times the consumer gains in cool states. This map and chart also do not account for the 90,000,000 gallons of additional diesel fuel that are sold each year due to temperature expansion.

Annual consumer losses in warm states can approach $30 to $50 per car for gasoline alone. Trucker losses for those that drive primarily across the southern states can be as much as $400 to $700 for their diesel fuel, per truck, per year.

THE SOLUTION

The solution for this problem is to apply the same technology used throughout the petroleum production and distribution industry to the final fuel transaction, the retail sale. Automatic Temperature Compensation, (ATC) pumps are available for use throughout the world. American

pump manufacturers are making ATC pumps for the global-market, they just do not have a domestic market for them, yet. There are also companies who manufacture retro-fit kits that fit existing digital and mechanical pumps used in our domestic market, which will turn those pumps into ATC retail pumps. At a maximum of $2,000 to retrofit a digital pump, and $4,000 to retrofit the smaller number of existing mechanical pumps, it is estimated the total cost to retrofit the entire country is $2 billion. However, fuel retailers average buying new pump registers around every five years anyway, to add new features in their competition for customers. As banking technology advances existing pump credit card readers will become RFID receivers or Blue Tooth transponders requiring new registers to be put in place.

US petroleum producers, marketers, and retailers are universally against introducing temperature compensation into the US retail market. Their stated reasons are the additional cost and the pressure retrofitting would put on the small individual retailers. However, the reversing of a policy that has given them $2.3 Billion a year, and would continue to do so on into the future if not changed, seems a more reasonable explanation.

CANADA, HAWAII, AND PUERTO RICO

Canada has been putting in ATC equipped retail pumps since 1990 in a voluntary adoption program. Now 75% of the retail pumps, which sell 90% of the retail fuel in Canada are temperature compensated. In Canada, where the fuel averages being less than 60 degrees F. most of the year, it was the fuel retailers who were experiencing losses due to shrinking stocks. Fuel producers, distributors, and retailers joined wholeheartedly with the government to educate the Canadian consumers of the fairness of ATC for retail fuel sales.

In 1975, Hawaii adopted a standard gallon that reflected 80 degrees F. instead of 60 degrees F. for sales of gasoline in the state. Since the state has a relatively stable climate an easy fix for them was to roughly temperature compensate the fuel dispensers so they pumped out a larger sized gallon. This solved a 20 degree F. expansion of gasoline, but still misses equity in that market, since the fuel in Hawaiian filling station tanks averages 86 degrees F. annually.

Puerto Rico passed a law in 1995 that mandated ATC at the retail fuel pumps. Since no retail establishments had converted to ATC pumps by the year 2005, a class action suit was filed against the appropriate governmental agency which is responsible to oversee the transfer to ATC pumps. Arguments in the case went all the way to the Puerto Rico Supreme Court which found the plaintiffs had a right to litigate, and the suit continues to be adjudicated.

MYTHS ABOUT FUEL TEMPERATURE COMPENSATION

Myth: In-ground tanks keep fuel at 60 degrees F.
Fact: Double walled fiberglass tanks tend to keep fuel at the temperature it was delivered… for a long time. Also, large vendors turn over their fuel inventory very quickly, greatly reducing the fuel dwell time in their tanks.

Myth: The effects on fuel taxes and environmental issues present “fatal flaws” in temperature compensation.
Fact: Most states collect Federal Fuel Taxes at the rack on already temperature compensated gallons. ATC will balance the states fuel tax books, something they cannot do now.
The EPA already requires temperature compensation to be a part of the calculation for finding leaks in tanks holding over 10,000 gallons. ATC could only improve this data collection.

Myth: Temperature expansion/contraction only causes tablespoons of difference in the amount of fuel delivered.
Fact: A 25 gallon fill-up of 75 degree F. gasoline equated to a loss of nearly one quart. The same fill-up at 90 degrees equates to nearly a half gallon.

Myth: The cost to retro-fit retail pumps will far outweigh any consumer benefit.
Fact: The one-time cost to retro-fit retail pumps is very close to the extra amount consumers already pay annually for HOT Fuel.

Myth: If we study retail "Hot Spots," located close to refineries, we can find a solution.
Fact: Temperature compensation at the retail level is the only logical solution to "Hot Spots." We're dealing with retained process heat, in "Just-In-Time" manufactured fuels, not deliberate fuel heating by retailers.

CONCLUSION:

Retail fuel sales in the US leave consumers in the dark about the temperature of the fuel they are buying. Since fuel temperature is an important factor in how much energy is in a gallon, it is something that should be figured into the sale.

Computerized Automatic Temperature Compensation retail pumps sell US petroleum gallons so the consumer is getting consistent energy in each gallon he purchases, without regard to which station he buys it, or what the temperature of the fuel is in the filling station's tanks.

ATC pumps stand head and shoulders above what we have been using for the past hundred years. The technology is available and being used by other countries. It can be used in the US to make fuel purchases a fair deal for all involved. OOIDA certainly supports any move to make temperature compensation of retail fuels the law of the land.