Appendix C
Method of Sale Regulation:
Automatic Temperature Compensation – Letters
(Items 232-1 and 232-2)

Table of Content

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Overview of Alaska's Permissive ATC State

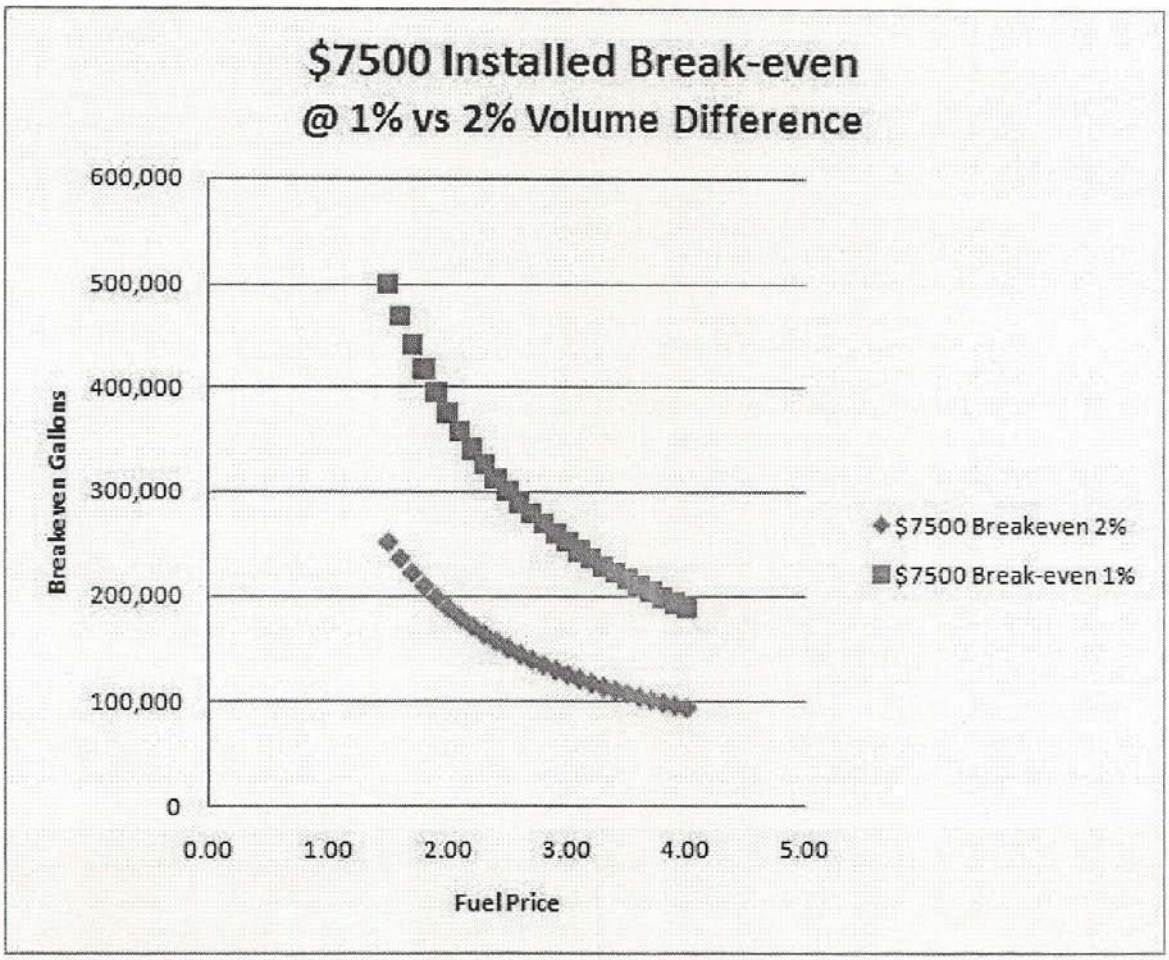
For vehicle tank meters, Automatic Temperature Compensation (ATC) is permissive in Alaska. This is not so for devices dispensing motor fuels, as there remains no national approval. Alaska, like many states, adopts the National Institute of Standards and Technology (NIST) Handbook 44 as law unless contrary regulations are established. There are no contrary regulations in Alaska on ATC so Handbook 44 is state law with respect to ATC. In 2008 regulation that effectively eliminated ATC at retail was proposed and led to this independent study.

The debate over ATC at retail has largely been about which standard should prevail based on equity and transparency. The National Conference on Weights and Measures (NCWM) has not taken a position "pro" or "con" except to say that if ATC is adopted it should be mandatory and with a reasonable transition period. Alaska's concern is that it has, and remains in a continuous state of permissive status in the vehicle tank meter market.

ATC Devices are Economic in Alaska

The economics of ATC devices in Alaska are compelling and are the greatest incentive to use them. Alaska is an extreme cold state. As a practical matter, net gallons are smaller than gross gallons, as will be demonstrated.

In high-volume, high priced markets one "can't afford not to" install ATC technology, as it has been aptly put by industry representatives. In figure 39 of page 92 the report uses an example of a $7500 installation on a fuel truck with retail fuel prices ranging from $1.50 per gallon to $4.00 per gallon. The break-even quantity of fuel (necessary to have the ATC device to pay for itself) is shown for a 1% vs. 2% volume difference net vs. gross.



At $4.00 a gallon a brand new temperature compensating vehicle tank meter of 1.5 inches, 60 gpm, will pay for itself at 100,000 gallons when the volume difference is 2%. But at $1.50 fuel and 1% volume difference, it would take 500,000 gallons to pay for itself.

Figure 39 – Breakeven for ATC Devices

$4.00 fuel and 2% volumetric difference, ATC pays for itself in 100,000 gallons. One
s to pose an extreme situation – such as $1.50 fuel and 1% volumetric difference to
ıke ATC start to look less attractive. If we double installation costs in consideration of
emote application of new equipment then reasonable price and volume scenarios
tainly still justify the expense.

Consumer Ignorance

The study conducted two small surveys that were conclusive in addition to a number of revealing interviews in the course of the study. In one small survey of 20 random home heating oil customers, not one in that twenty was familiar with net gallons. There is no point in a larger survey with a response this overwhelming. Consumers are ignorant and there is no question about that. The survey was conducted after media coverage of the study.

The second survey was earlier, prior to any media coverage. Home heating oil retailers were surveyed in exactly this manner: Firms were called to establish the price per gallon for deliveries on that day. After the price quote was given the respondent was asked which gallon was being delivered – gross vs. net – and none knew the answer save one. In that case the call was to a cell phone operated by the owner/driver dispensing the fuel. The most common response by the position assigned to quote prices was that they had never heard the question before.

In interviews with numerous people who "ought to know" – an owner of a regional airline, the chief of flight operations for another, purchasing agents for school districts, etc. – they had either gone years before discovering the difference despite seeing delivery tickets or invoices - or still did not know the difference.

So there is a lack of transparency in pricing that gives the competitive advantage to the net gallon because it is smaller. It has been suggested that it is inflammatory to use the term "smaller", but that is exactly why the ATC math "works" as illustrated in figure 39.

There are no intentions of suggesting impropriety or nefarious motives on the part of those who have a rightful property interest in the ATC devices purchased. They have also offered other reasons they have an incentive to invest in them: greater accuracy in tracking inventory for example.

But in the long run just as with Canada the advantage to ATC will prevail and the industry will adopt it universally wherever it pays for itself. Product labeling thus far has failed to convey to consumers what net gallons are because the concept itself is far too complex to convey in a label. "Volume corrected to 15^{0}C" appears on Canadian motor fuel dispensers. But explaining what that means requires a baffling discussion of fuel-expansion physics.

Net vs. Gross Volumes in Alaska

In the analysis of temperature data collected by the study it is clear how quickly fuel adjusts to ambient air temperatures. We reproduce figure 10 from page 21 of the temperature study appendix first to show how closely fuel temperatures follow ambient once distant from the refinery. The data is from the Anchorage truck rack for the Flint Hills refinery. The truck rack is located several hundred miles by rail from the North Pole refining facility. All retail fuel in the major population center of Alaska must be transported from refineries distant from Anchorage by barge, railroad, truck, or pipeline.

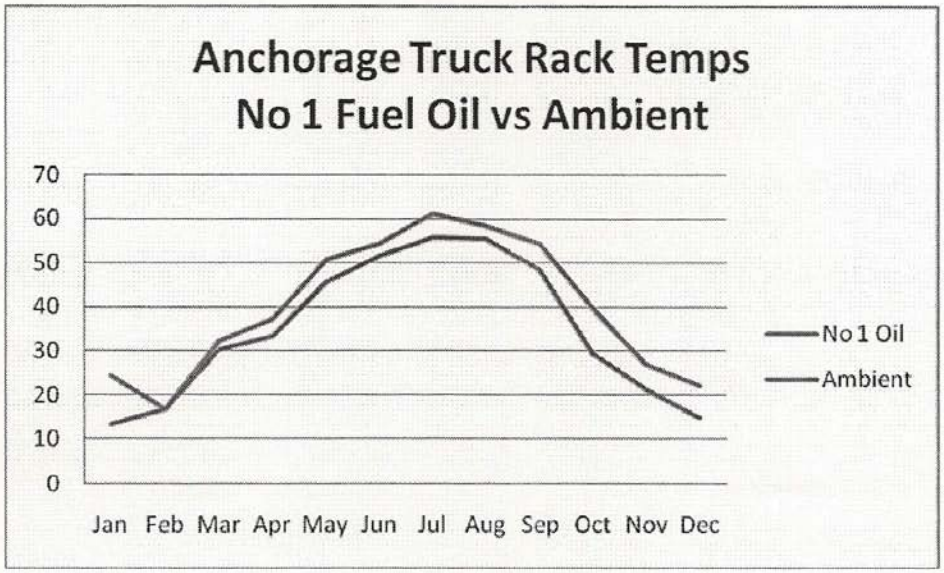


Figure 10: Anchorage Truck Rack Temperatures - No 1 vs. Ambient

It is quite clear from this diagram that in such a circumstance the difference in volumes of delivered fuels for retailers under either a mandatory gross or net standard will be far less than the variation between retailers under a permissive standard with some delivering gross and some delivering net.

Delivering ATC fuel is equivalent to delivering gross gallons at 60 degrees. So if one puts it in these terms it is equivalent to one retailer delivering fuel thirty or forty degrees warmer than another for about half the year at this location.

Stored fuel will not match ambient on a real-time basis. The speed of adjustment depends on a lot of factors. But generally speaking a below-ground tank is following a monthly average cycle and above-ground a weekly average cycle. Below ground tank cycles are more moderated compared with above-ground.

Under a gross gallon standard the largest potential differences between retail suppl distant from refineries in Alaska would depend on the method of storage – above vs below ground. But retailers generally store their fuel in the same way. One can propose a maximum difference between two fuel oil retailers based on one having left overnight in a delivery truck parked outside vs. one parked inside. But the great bulk of deliveries are occurring the same way between retailers similarly situated.

Fuel temperatures at the refinery tell a similar but more complicated story. We reproduce minimum, maximum, and average ambient vs. fuel temperatures below the Flint Hills refinery North Pole truck rack facility.

One can see fuel temperatures at the rack in the -20 F to – 30 F ranges, as with the lowest ambient temperatures. But the maximum truck rack temperatures are much greater than maximum ambient in the deepest winter months. So clearly, recent refinery runs placed into storage are much warmer than ambient in those months.

This is at least one step removed from retail. If you ask what is the maximum potentia difference between one retailer and another on any given day in the vehicle tank meter market, it will be in the coldest months. When one retailer is taking delivery of warm refinery run and another is closer to ambient. But whatever that difference is, much less than the difference between a net gallon and gross gallon retailer can be the same winter day.

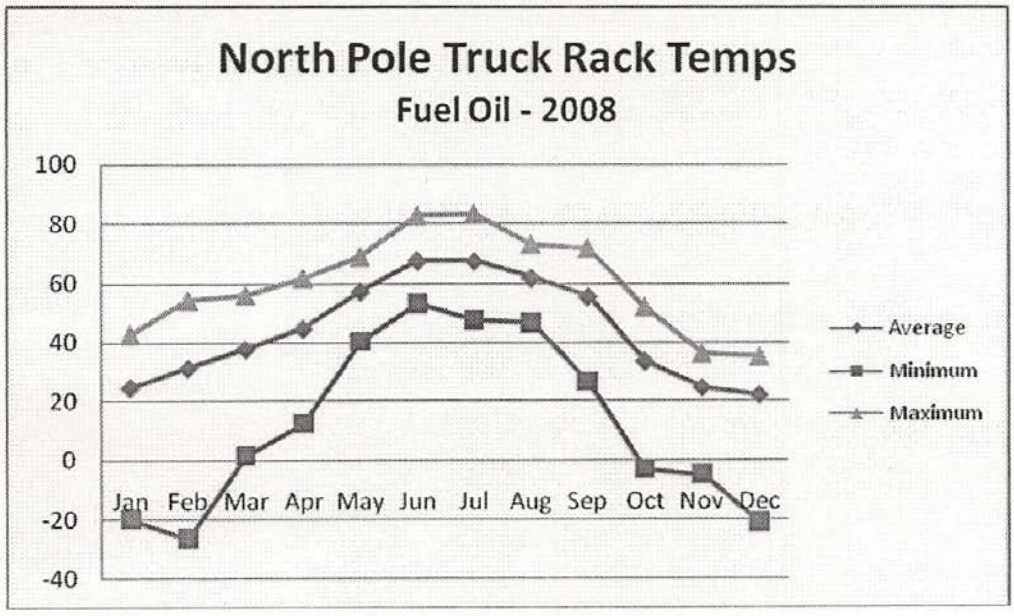


Figure 2: North Pole Truck Rack Temperatures - No. 1 Fuel Oil

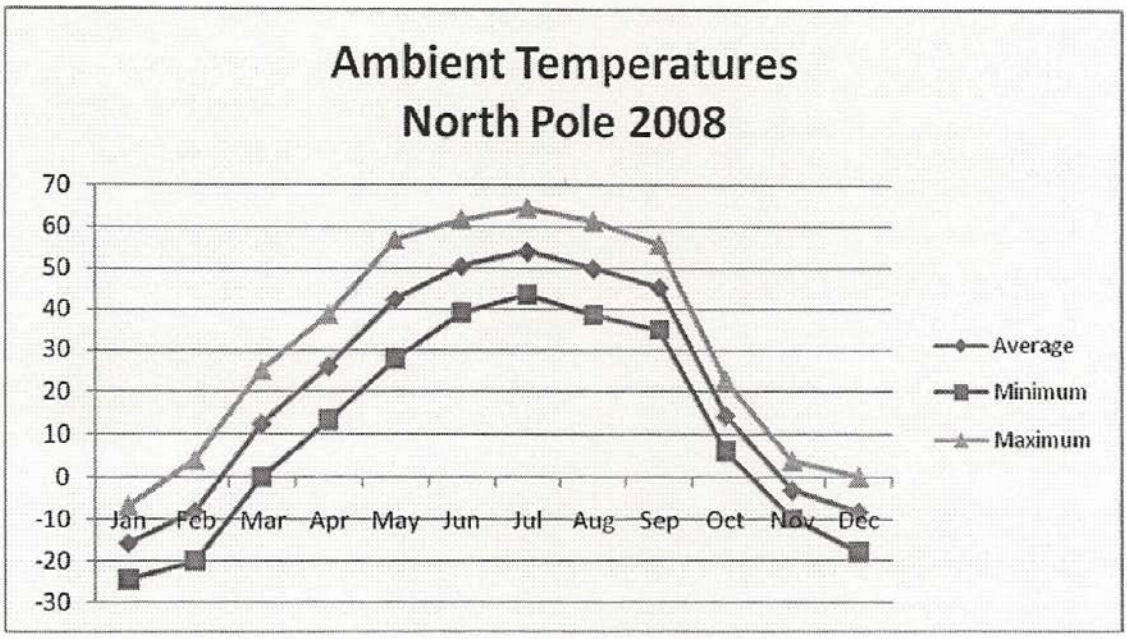


Figure 3: Ambient Air Temperatures: North Pole

temperature extremes in Alaska make for considerable difference between net vs. ss gallon volumes. Figures 24 and 25 from pages 71 and 72 of the report are shown e. Differences of around 5% or 6% are possible for the case of fuel oil vs. gasoline. charts have "price differential" on the vertical axis. That is, two suppliers quoting same "price per gallon" are actually 5%-6% different on an equivalent basis if one is oting net and the other is quoting gross. That is a reasonable worst case scenario

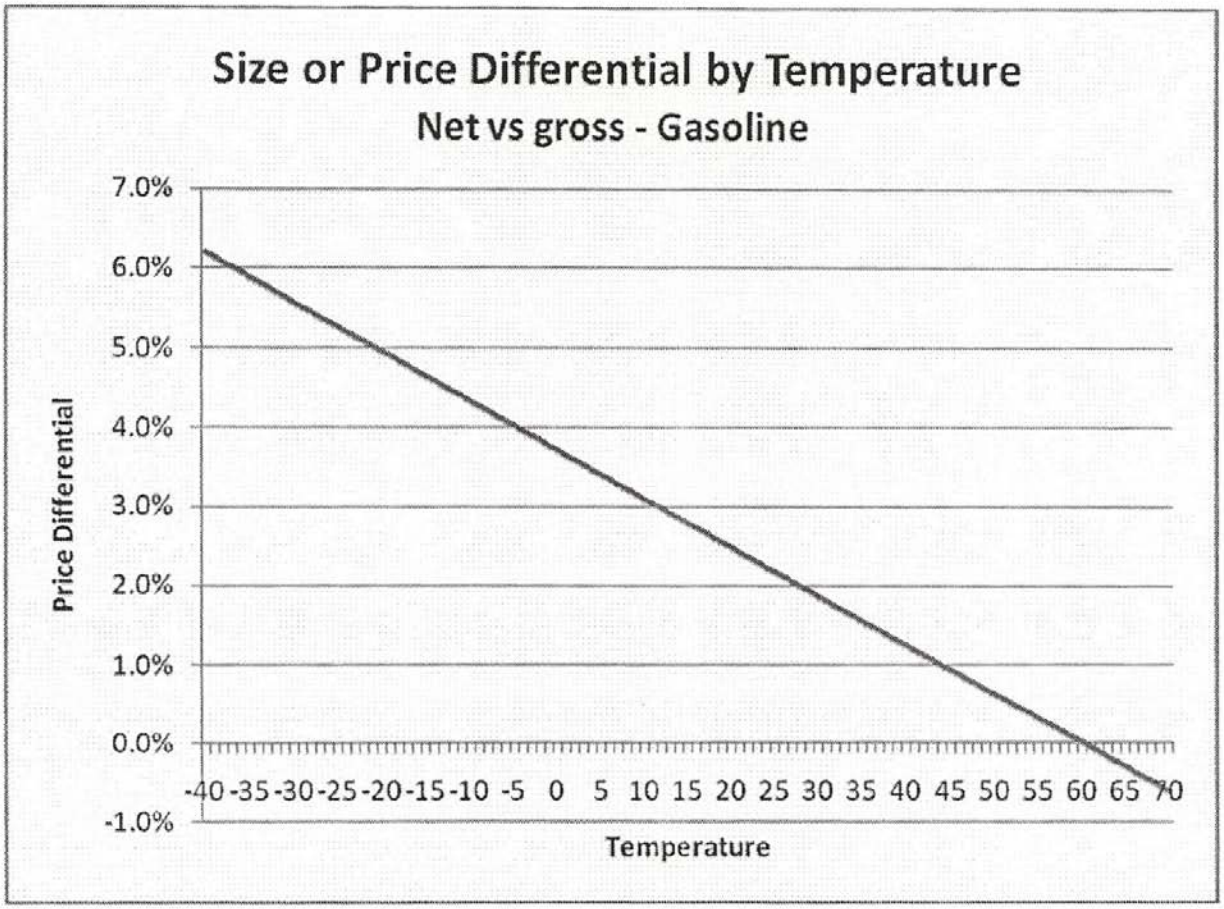

Size or Price Differential by Temperature
Net vs gross - Gasoline
Price Differential
7.0%
6.0%
5.0%
4.0%
3.0%
2.0%
1.0%
0.0%
-1.0%
-40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70
Temperature

Figure 4

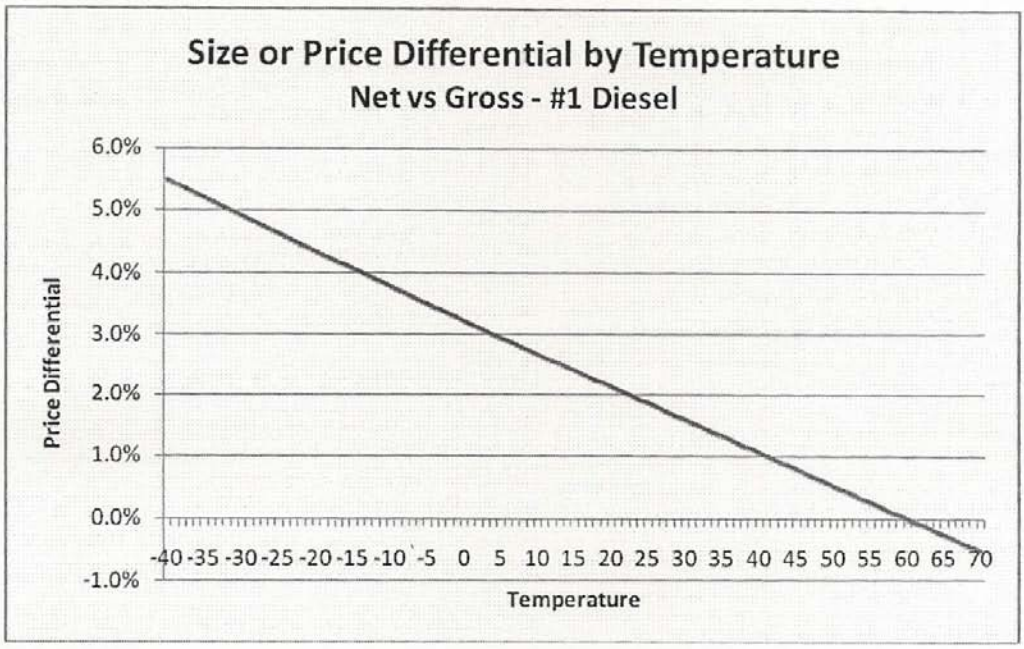


Figure 5

Comparing Net Gallon vs. Gross Gallon Standards

The greatest disparity between retailer volumes occurs under the permissive standard. Eliminating one or the other establishes a more level retail playing field. Deciding between the two requires evaluating the comparative benefits and the costs. In Alaska, converting to mandatory ATC would require conversion costs where ATC is not being practiced.

Benefits of a net gallon standard vs. gross gallon standard were estimated using the method applied in the recent California Report on ATC. Chicago economists Murphy and Topel provided the estimated benefits in that report termed "vanishingly small" in comparison to the costs. It should come as no surprise that the results are similar for Alaska.

These kinds of analytical computations are not perfect, and it is orders of magnitude that matter in this case. For California the costs were on the order of "hundred million" vs. benefits on the order of "hundred thousand". Alaska is a far smaller fuel market but with similar proportion in cost/benefit. Costs of fully converting to ATC are in the millions whereas the benefits are in the thousands.

It was pointed out in testimony during the study that if minimizing consumer cost were the objective, then ATC will lose by construction. (Because it costs more than

dispensing by gross gallons). But the issue is not whether ATC costs more. It is whether those costs produce benefits that exceed them.

ATC's economics in the diagram above are not based on the consumer placing a higher value on net gallons vs. gross gallon. It is based upon an ignorance between the two. Generally when a product has higher value to the consumer, firms market the product based on that higher value. We do not see that in Alaska markets where net gallons are sold.

A Note on Inventory Accounting

Generally the issue of ATC at retail has been brought to any kind of public attention by those alleging a nefarious "hot fuel" inventory accounting switch perpetrated by fuel retailers in warm fuel states. Net gallons have greater volume than gross gallons in warm fuel states. So the allegation is that the retailers are buying larger gallons, and selling smaller gallons thereby profiting from the difference.

This is sort of an "inventory fraud" myth where consumers are "shorted" product relative to what the firm buys. The study is the first time, as far as we know, that inventory and financial accounting has been used to clarify the ATC debate. In this case, it is shown that the allegation is a mythical view of how inventory accounting is actually performed, as well as the financial accounting of profits and losses.

The Hot Fuel Inventory Fraud Myth		
Initial Inventory	0	
Receipts	10,000	gallons (net)
Disbursement	10,200	gallons (gross)
Ending Inventory	-200	

Figure 6

Figure 27 of Page 82 in the report shows that if firms actually did "net in gross out" inventory in warm states then they would be reporting ever larger and absurdly negative inventories to state and federal agencies. If one starts with no inventory and buys 10,000 net gallons, but sells 10,200 gross gallons, then the firm has an ending inventory of -200 gallons.

Alaska is a cold state, setting consumers and retailers in the opposite direction vis-à-vis a warm fuel state. It is tempting to make the argument as a retailer that if fuel is

purchased on a net gallon basis but sold on a gross gallon basis that there is an inventory loss. But it is not true, and for the same reasons.

News from NATSO

FOR IMMEDIATE RELEASE
May 1, 2009
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"Hot Fuel" Settlement Leaves Consumers Out in the Cold, says NATSO

Agreement Likely to Achieve Little More Than Pay Day for Trial Lawyers

ALEXANDRIA, VA. – A proposed settlement agreement with Costco over "hot fuel" is the latest attempt by trial lawyers to mislead the public, according to Lisa Mullings, CEO of NATSO, a national association representing travel plazas and truckstops.

Despite claims that the warehouse club will "fix hot fuel," the only likely results from the 19-page settlement agreement are a payout for plaintiffs' lawyers and an end to the litigation for defendant Costco.

The proposed class action lawsuit claims that when consumers buy gasoline in warm-weather states, they get less than they pay for because warmer fuel expands. According to comments made by trial lawyers and lawyer-funded groups such as Consumer Watchdog, Costco has agreed to "fix hot fuel" in at least 14 states within five years. By that time, they insist, devices installed on Costco fuel pumps will dispense more or less gasoline depending on the temperature.

Mullings says news of the settlement came as a surprise because a California government body, the California Energy Commission, concluded just weeks ago that automatic fuel temperature compensation devices would actually *increase* the retail cost of gas and diesel.

In 2007, California's legislature directed the CEC to study the effects of mandating automatic fuel temperature compensation, or ATC. The report, released in March, concluded that "under all the options examined," ATC presented a "net cost to society."

In fact, transcripts reveal that one commissioner remarked during the release of the study that "hot fuel" was "a lot of hot air and big dollars."

Yet another commissioner remarked, "I say this as a public interest lawyer. [R]econsider what are the most important public interests here. Rome is burning, the Titanic is sinking...this just does not seem like the highest and best use of the state of California…"

Mullings said, "The trial lawyers can continue their charade, but the cat's out of the bag on ATC—it would cost consumers more."

She continued, "Despite all the hype, the mere existence of this agreement does not require Costco to install these devices. We believe this is simply a ploy by trial attorneys to induce other defendants into settling frivolous litigation." She noted:

- Automatic temperature compensation is not permitted by law. The settlement agreement puts the burden of obtaining legal approval for ATC squarely on the plaintiff's lawyers, not on Costco.

- The agreement states that as long as Costco believes that the devices cannot be installed under any state's law, they do not have to install them in that state.

- If the settlement agreement directly or indirectly results in higher fuel costs for Costco in any state ("determined *solely* in the good faith *subjective judgment* of *Costco*" in provision 4.8) (emphasis added), Costco is able to unilaterally rescind or cancel the agreement for that state.

- If any other defendant secures "a more favorable settlement," Costco ("in its sole discretion") can modify its agreement to take advantage of the more favorable terms, according to provision 4.7.

"The fact that these trial attorneys are willing to enter into this agreement tells me that they are desperate to secure a financial windfall while they still can. It is unconscionable that they will go this far to score a big settlement award," said Mullings. "Costco will not pay one penny in damages to the proposed class of consumers. On the other hand, the agreement clearly requires Costco to pay the plaintiffs' lawyer fees awarded by the court."

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NATSO is the trade association of America's travel plaza and truckstop industry. Founded in 1960, NATSO represents the industry on legislative and regulatory matters; serves as the official source of information on the diverse travel plaza and truckstop industry; provides education to its members; conducts an annual convention and trade show; and supports efforts to generally improve the business climate in which its members operate.

APMA **Arizona Petroleum Marketers Association**

April 29, 2009

Mr. Steve Gill
Chair
Central Weights and Measures Association
24th Annual Conference
RE: Automatic Temperature Correction

Dear Mr. Gill & CWMA Attendees:

On behalf of the Arizona Petroleum Marketers Association, I would like to thank you and your colleagues in the Central Weights and Measures Association (CWMA) for your time and efforts in addressing the issue of automatic temperature correction (ATC) and whether the equipment should be recommended or required for use in the retail marketplace. While it may seem strange to be receiving comments from petroleum marketers in Arizona, the actions and recommendations that CWMA can make prior to the annual NCWM conference in July could significantly impact petroleum marketers in Arizona.

Given the latest development of a large big-box retailer, Costco, agreeing to install ATC equipment where it is not prohibited in southern states as part of a legal settlement, retailers across the country are justly concerned. The potential implementation of ATC devices at retail should not be adopted hastily. It is imperative that all of the potential costs, ultimately borne by consumers, be accounted for and carefully weighed against any perceived social benefit in the accuracy of measurement delivered with ATC devices at retail.

Having attended the NCWM's annual meetings since June 2007, I would like to offer the following observations for your consideration before this again becomes a voting issue at the annual NCWM meeting in 2009.

ATC Benefits

In determining retail consumer benefits from ATC, many have argued using the following formula: (fuel volume) x (retail fuel price) x (volume correction factor). APMA is concerned that basing the formula for consumer benefits using current retail fuel prices ignores the fact that fuel pricing will likely change with ATC installation and that fuel pricing is a fluid process.

Common sense dictates that if retailers selling in warmer climates are required to sell an additional amount of fuel with ATC equipment, that the retailer will adjust fuel pricing to take into consideration that he is now selling "larger" gallons to consumers.

Some proponents of ATC have assumed retail prices will remain the same with ATC versus without ATC. However, by making this assumption, it is easy to end up with an inflated retail consumer benefit number.

The reality is that it is unclear if consumers will perceive ATC to be a benefit if they know that while they may get a larger gallon from an ATC dispenser they are also likely to pay more for that larger gallon.

ATC Costs

The special committee on ATC within NCWM attempted to gather data on the business costs associated with the installation of ATC at retail back in 2007. These would include the costs of equipment, either new dispensers with ATC capability or retrofit kits for existing dispensers, and the cost of labor associated with installation. Additional costs to consider for retailers would be the maintenance and inspection of the ATC dispensers. The installation of ATC in states would also likely lead to new costs for Weights & Measures Departments to acquire the proper testing equipment and train their staff for inspecting ATC in the field. With current state budget deficits in Arizona, this would be particularly problematic.

Much of the estimates for ATC costs to date have come from manufacturers selling the equipment in Canada. On behalf of my membership I have repeatedly attempted to get pricing data from Gilbarco since they have equipment which was type-approved by the California Division of Measurement Standards. However, I am repeatedly told that the equipment is not available for sale in the US and therefore there is no pricing available.

Forced to use the Canadian numbers by default to calculate the estimated cost of the ATC equipment alone without calculating in the installation fees in Arizona, APMA has found the following: with over 2,000 retail outlets in Arizona, APMA estimates the cost just to purchase the ATC equipment to be at least $30 million. These costs do not include the hidden costs of installation/labor, breaking concrete and additional costs related to new federal standards which will only add to the retailer's financial burden to install ATC. With over 40% of Arizona's retail outlets in rural areas, many gasoline retailers will be forced to purchase completely new dispensers at an enormous expense. It is important to note that the majority of motor fuel retail outlets are now independently owned---meaning they are not owned by major oil companies, so the costs associated with installing ATC will not be paid by big oil but rather by small businesses. In Arizona, over 90% of all retail is independently owned—not owned by a major oil refining company. This shift in retail ownership has occurred nationally as well.

Given the federal Energy Act of 2005, when retailers break concrete on the dispenser pad in Arizona, they will also be required to install double-wall piping and double-wall tanks which will add to the overall costs of implementing ATC for some retailers. For rural retailers this burden may not make sense financially for them to remain in business.

Cost Benefit Analysis

When discussing the cost benefit methodology used by the California Energy Commission, APMA is concerned that the comparison of retail station costs to consumer benefits just does not provide the full picture since the formula again assumes the same retail prices in a post-ATC installation scenario as in a pre-ATC marketplace.

It seems much more likely that fuel pricing already does in fact take into consideration temperature. It's also important to note that Arizona ranked last in retail margins in 2007 according to OPIS bringing in a measly 3.8 cents per gallon when compared to the national average of 14.2 cents per gallon. In 2008, while margins improved slightly, Arizona still ranked lower at 10.1 cents per gallon versus 18.1 cents per gallon nationally. With these retail margins being lower than other "cooler" parts of the country, many of the consumer driven arguments for ATC at retail don't seem to hold-up. If the consumer does not benefit from the installation of ATC, then whom does?

Permissive versus Mandatory ATC

NCWM in the past asked industry to weigh in on the various scenarios in which retail ATC would be implemented and whether there should be a permissive phase and/or ultimately a mandatory phase. This is also how the vote at the annual meeting in July is set-up. While it is true that industry would prefer that the status quo remain in place and that retail ATC not be pursued for reasons outlined above, W&M officials need to recognize that a permissive retail ATC scenario will likely create major problems in the petroleum retailing market.

By allowing the installation of ATC to be permissive, NCWM would be essentially allowing large well-financed retailers to use the ATC regulation as a potential way to gain an unfair market advantage over smaller retailers. When coupled with the recent additional tank requirements under the federal Energy Act of 2005, many small retailers may decide that they can't afford to make these costly changes to their operation and close shop. Ultimately, this harms the consumer by decreasing their fueling options.

Permissive ATC also creates major confusion for the consumer because they can no longer compare station's pricing based on the same gallon being sold station to station. While the temperature in Arizona may very well be over the 60 degree standard---the temperature is constant corner to corner—consumers can easily compare price per gallon from the street—even if it is a gallon at 80 degrees. However, under a permissive retail ATC scenario, a consumer will be hard-pressed to compare stations selling ATC fuel v. retail sites selling traditional gallons. If some states decide not to implement retail ATC while other states do implement it---interstate commerce and taxes could be significantly impacted as well.

APMA truly appreciates the opportunity to share our concerns with CWMA officials. We intend to remain active and engaged on the issue of retail ATC and hope that the ultimate decision reached by any state legislature or regulatory agency will be one which balances science and the best interest of the consumer.

Sincerely,

Andrea M.G. Martincic
Executive Director

APMA * P.O. Box 93426* Phoenix AZ 85070* (480) 460-1561 * FAX: (480) 460-9016

American Trucking Associations
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Driving Trucking's Success

Richard Moskowitz
Vice President and Regulatory Affairs Counsel

May 4, 2009

Jack Kane, Chairman
National Conference on Weights and Measures
1135 M Street, Suite 110
Lincoln, NE 68508

Via e-mail: jkane@mt.gov

Re: Automatic Temperature Compensation Devices for Fuel Dispensers

Dear Chairman Kane:

The American Trucking Associations, Inc.[1] (ATA) is writing to provide comments on the issue of automatic temperature compensation (ATC) and its potential impact upon consumers of diesel fuel. As the national representative of the trucking industry, ATA is interested in the matters affecting the purchase and sale of diesel fuel, including the manner in which diesel is dispensed at retail fueling stations. Diesel fuel is the lifeblood of the trucking industry. Last year, the trucking industry consumed 39 billion gallons of diesel. For most carriers, fuel is the second largest expense after labor. As the largest diesel fuel consumer group, ATA members are keenly interested in any initiative that could impact diesel prices.

The trucking industry is the backbone of this nation's economy, accounting for more than 80% of the nation's freight bill and employing nearly 9 million Americans. The trucking industry delivers virtually all of the consumer goods in the United States, and over 80 percent of all communities in the United States receive their freight exclusively from trucks.

ATA has closely followed the debate over ATC and has previously provided comments to the National Conference on Weights and Measures (NCWM), opposing both permissive and mandatory ATC.[2] With the recent findings of the California Energy Commission (CEC) that implementation of ATC will result in additional costs for

[1] ATA is a united federation of motor carriers, state trucking associations, and national trucking conferences created to promote and protect the interests of the trucking industry. Directly and through its affiliated organizations, ATA encompasses over 37,000 companies and every type and class of motor carrier operation.

[2] *See* Letter from Richard Moskowitz, ATA to Judi Cardin, NCWM (January 14, 2008).

retailers and consumers with virtually no quantifiable benefit, we wish to again express our opposition to implementation of ATC at the retail level.

As we expressed to NCWM in our letter of January 14, 2008, ATA opposes a permissive standard for ATC. Permissive temperature compensation leaves the decision regarding whether to install temperature compensation equipment to the fuel retailer's discretion. A permissive temperature compensation regulatory environment could allow retailers to manipulate the system by installing the equipment where the average temperature of the fuel dispensed is below 60 degrees, and refrain from such installation where the average temperature of the fuel dispensed is above 60 degrees.

Permissive temperature compensation also could undermine fair trade and transparency in the retail marketplace. Many trucking companies rely upon daily price surveys to determine where and how much fuel to purchase at given points along a truck route. Other trucking companies rely on advertised prices to determine where to refuel. The use of ATC equipment by an unknown portion of fuel retailers will greatly complicate our members' ability to determine the most economic place to refuel. Retailers, whether located across the street from one another or across a state border, would no longer be selling comparable volumes of fuel, making it exceedingly difficult to make an educated purchasing decision.

ATA recognizes that the retail motor fuels industry is highly competitive with gas stations and truck stops competing fiercely to attract additional business on the basis of a penny per gallon. Fuel retailers price their fuel to cover the cost of the bulk fuel they purchase and include a reasonable return on their investment. In pricing diesel fuel, the retailer also must consider the prices that competing stations are charging, since a difference of as little as one penny per gallon could result in a substantial gain or loss of business. In this highly competitive environment, inventory expansion and shrinkage are accounted for in the retail price of diesel fuel, and any perceived advantage from temperature variation is eliminated through competitive pricing.

ATA does not believe that ATC technology will ensure that every gallon yields the same energy content. There are far more variables affecting the energy content of fuel other than temperature. BTU reductions from various renewable blends (e.g. ethanol and biodiesel) may have a greater impact upon energy content than temperature.

As we have commented previously, we are concerned that the trucking industry will bear the cost of installing ATC devices on fuel dispensers. The CEC's cost benefit analysis confirmed this. Therefore, we stand by our previous statement that the installation of ATC devices is a solution that is more expensive than the problem it is trying to address.

In a single day, a truck driver may travel through several states. We believe it would be detrimental to our industry if various states each adopt their own systems for

measuring motor fuel. Therefore, we again recommend that the NCWM consider new language that prohibits states from adopting ATC at the retail level.

* * * * *

If you have any questions concerning the issues raised in this letter, please contac the undersigned at (703) 838-1910.

Respectfully submitted,

Richard Moskowitz
Vice President & Regulatory Affairs Counsel

cc: States Weights and Measures Officials

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June 14, 2009

ATC as a Better, More Comprehensive Form of Measurement
By Henry Oppermann
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I. Overview

Over the past 5 years, much valuable information has been collected and diverse views presented as the issue of temperature compensation has been addressed by the NCWM. Several reports and the temperature data collected by state weights and measures programs are referenced in this document. They are:

1. Fuel Delivery Temperature Study, California Energy Commission, Transportation Committee, January 2009, Report No. CEC-600-2009-002-CTF
2. An Economic Analysis of the California Energy Commission Staff's Fuel Delivery Temperature Study and the "Hot Fuel" Allegations, by Michael A. Flynn, distributed at the NCWM Interim Meeting, January 2009. Several claims in Mr. Flynn's report are challenged in this paper.
3. Temperature Compensation of Liquid Fuels, A Study for National Weights and Measures Laboratory, Stanton Avenue, Teddington, Middlesex, Project No: NWM006, Report No: 184/99, Date: 21 July 1999
4. Temperature data collected by weights and measures programs.

The report by the staff of the California Energy Commission provides the best economic analysis that has been done on the subject. However, the economic analysis is not the only issue that should be considered. One issue has not yet been adequately addressed, namely, **does the benefit of more comprehensive measurement that results from temperature compensation justify the cost?** The answer to this question does not come from an economic analysis of these issues, but is a judgment of the value of better measurement. Weights and measures officials will have to make this judgment when they vote on the temperature compensation issue again. The benefit referenced should be considered in terms of:

- Equity in individual transactions;
- Transparency for consumers and in competition among companies in that unit prices are based on the same temperature;
- Better service station management of fuel inventories; and
- More accurate field tests performed by service companies and weights and measures officials.

To highlight these aspects of the debate, this paper looks at several issues that are relevant to making a decision on the value of automatic temperature compensation for retail motor fuel dispensers.

1. Are weights and measures officials interested in accurate measurement only on the basis of an annual average or are they interested in the accuracy of individual transactions? Product temperature data collected by weights and measures programs are presented to illustrate the significance of this issue. (See sections III and IV, in particular.)

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2. Several claims and conclusions contained in the report by Mr. Michael A. Flynn are challenged to address issues that are incorrect or not adequately substantiated.
3. Does selling gasoline on the basis of average temperatures and not addressing product temperature in individual transactions a good business practice or good for consumers?
4. Will service station owners achieve better inventory control by using temperature compensated dispensers? Most people recognize that inventory control will be improved by the use of temperature compensation.

II. Oil Industry Justification for ATC at Wholesale

The oil industry has justified the use and need for ATC at wholesale, because the shipment and delivery of fuel products occur at different times and locations in the country. In his testimony before the Subcommittee On Domestic Policy Of The Committee On Oversight And Government Reform Of The United States House Of Representatives on July 25, 2007, Mr. Hugh Cooley, Vice President and General Manager, National Wholesale and Joint Ventures, *Shell Oil Company,* stated the following.

> "Furthermore, the reasons that temperature adjustment makes sense for intercompany exchange transactions do not apply to retail sales: distance, time, quantity, and temperature. Gasoline marketers like Shell exchange large volumes of gasoline between terminals that are very far apart, often in markedly different climates, and at varying times of the year, all of which requires accounting for the impact of temperature variations. For example, Shell might deliver a specific number of gallons of gasoline to another company in Texas (where we have a refinery) in exchange for that company's near simultaneous delivery of gasoline in northern Minnesota (where we do not have a refinery). Similarly, in some instances a company may receive product in one season and repay the gallons at a later date when the weather is cooler or warmer. In contrast, retail gasoline sales occur at far smaller quantities under highly competitive conditions in a specific place, at a specific time, under specific conditions, which include the ambient temperature and large signs visible from the street posting prices. Unlike the exchange context, consumers do not buy and sell gasoline over a huge geographic distance and climate difference - in fact, they cannot do so. Likewise, consumers do not receive product in one season and repay it in another — nor is that possible."

In reality, the only justification for the use of temperature compensation at wholesale is to address temperature changes in the product. The locations and times of delivery are not important, except for the fact that the temperature of the product is different based upon location or the time of the transaction. The oil industry makes temperature corrections to the volumes, because the temperature of the petroleum products usually varies from the source to the destination of delivery. Temperature differences are large for consumers as well, so the same considerations apply at retail as they do at wholesale. Why is temperature compensation justified because millions of gallons of fuel are bought and sold between two

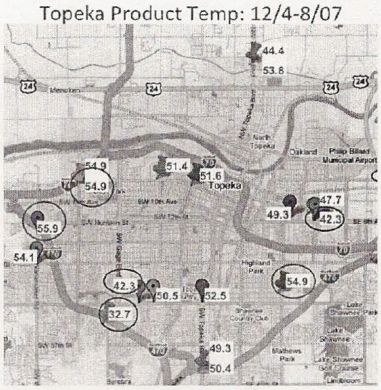
large companies, but temperature compensation is not justified for millions of gallons of fuel sold to consumers?

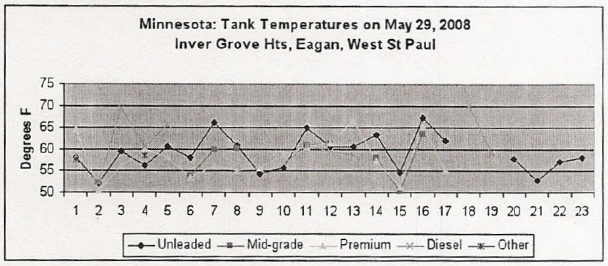
The fact is that the temperatures of retail gasoline and diesel fuel vary from station to station, from dispenser to dispenser within the same station, and may vary from transaction to transaction for the same dispenser. If the rationale of the oil industry to justify ATC at the wholesale level is essentially due to the fact that the product temperature changes, then the rationale and justification for the use of A TC applies equally well to retail deliveries of gasoline and diesel fuel at service stations.

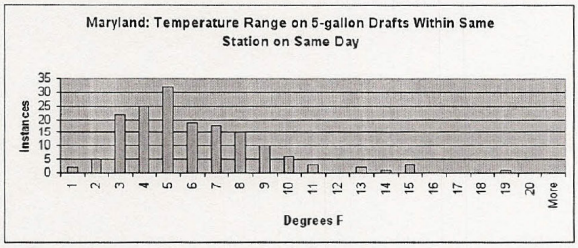
III. Variations in Product Temperature at Retail

Product temperatures can vary greatly at retail. Consequently, temperature differences are significant at retail. Data presented to the NCWM for product temperatures in Topeka, KS, (below left) and for underground tank temperatures in Minnesota (below right) show that the temperatures of gasoline and diesel fuel vary from station to station.

Topeka Product Temp: 12/4-8/07

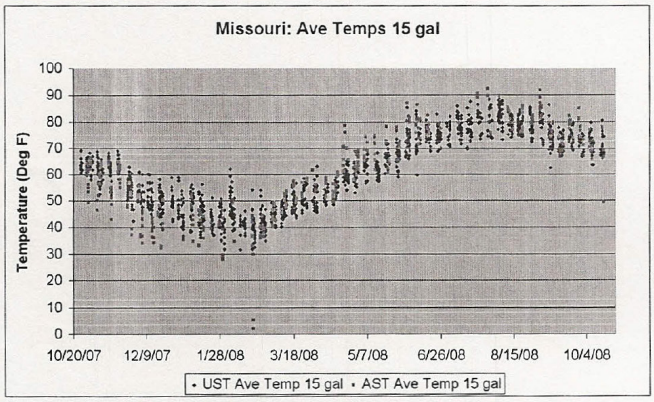






Temperature data collected by Maryland demonstrate the extent to which product temperatures can vary on the same day within the same station.

Temperature data collected by Missouri show how product temperatures can vary across the state throughout the year. The temperatures are the average temperatures of three consecutive 5-gallon test drafts, which is equivalent to 15-gallon deliveries.



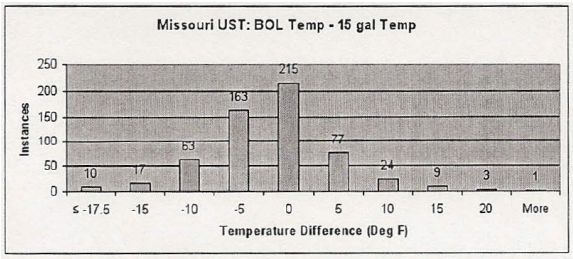
Since temperature has such a large effect on the volume of gasoline, why shouldn't the effect of temperature be

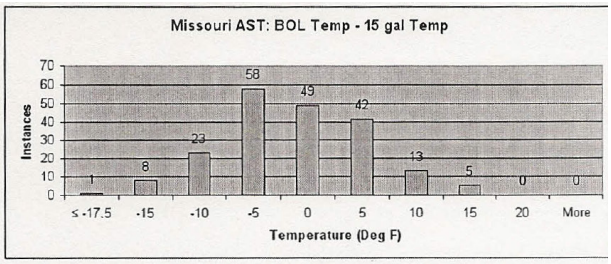
corrected at retail? The technology exists and is in widespread use in Canada. The California study showed that the cost of ATC equipment per gallon of fuel dispensed is relatively small. There is no technical obstacle to performing temperature compensation at retail.

IV. Accuracy on the Average or Accuracy on Each Transaction

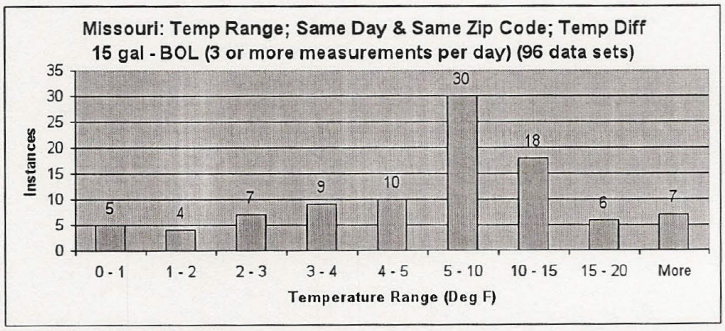
Mr. Michael Flynn explained in his report how service station owners establish the unit price for gasoline and diesel fuel based upon the number of gross gallons received at the temperature of the product as stated on the bill of lading. It is important to assess whether or not the stations actually sell the products at the temperatures for which the station owners compute the unit prices. Should product temperature variations be addressed in individual transactions or is the average of product temperatures over a year sufficient?

Several weights and measures programs collected significant amounts of temperature data that allow the comparison of the temperature on the bill of lading (BOL) for deliveries to the temperatures of the products actually delivered from the retail fuel dispensers. If one looks only at the average difference between the BOL temperatures and the temperatures of the product delivered over a period of a year, the average differences are relatively small, often less than 1.5 F. However, the temperature differences for individual transactions can cover the range from zero to over 20 °F. Below are histograms for the State of Missouri that show the variations in the product temperatures from the BOL for 15-gallon deliveries. The graph at the left is for deliveries from underground storage tanks and the graph to the right is from above ground storage tanks. Each value on the horizontal axis represents temperature differences that are ±2.5 °F from the value on each axis (e.g., the column marked "5" is for temperatures from 2.5 to 7.5 °F.





The Missouri data were evaluated to see how much the delivery temperature varied from the temperature reported on the most recent BOL for the stations. The range of the temperature deviations of the delivery temperatures on each day was calculated when three or more "deliveries" (three consecutive 5-gallon test drafts) were run by Missouri inspectors. The distribution of the deviations is shown on the graph to the right. Sixty-one out of 96 tests (63.5%) had temperature deviations of 5 °F or more, which represents a

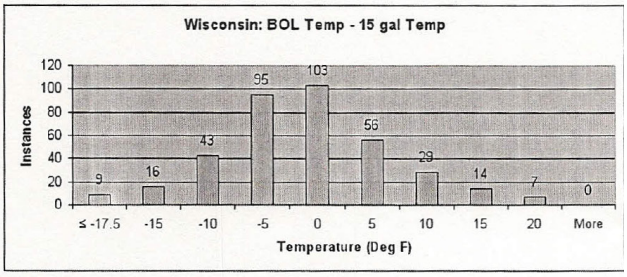


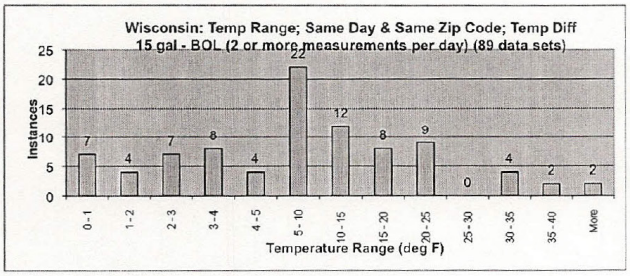
change in volume of gasoline of about 0.33%.

The "peak" of the distribution (30 instances or 31 %) is centered at 5 to 10°F, which includes all values from 7.5 OF ± 2.5 °F and represents a temperature effect of 0.5% on the volume of gasoline. Approximately, 14% (13 of 96) had a temperature effect greater than 15 °F, which is more than 1% of the volume of gasoline.

Based on the information Mr. Flynn provided on how gas stations set the unit prices based on the gross gallons delivered to the station, that means the temperature effect on the unit price for gasoline causes the unit price to be in "error" by at least 0.5% from the target price in 63.5% of the transactions. Therefore, at a unit price of $2.00 per gallon, this means that the variation in product temperature within the same zip code area amounts to at least 15 to over 30 cents on a 15-gallon delivery of $30. Thirteen of those 96 "deliveries" (13.5%) have temperature deviations of 15 or more degrees, which represents a temperature effect of 1 % of the volume (and the unit price) of 30 cents or more on a 15-gallon or $30 delivery. At $4 per gallon, the money values in all of the examples double.

To show that the product temperature variations in Missouri are not unusual, to the right is a histogram of temperature variations for a 15-gallon "delivery" from data collected by the State of Wisconsin for three consecutive 5-gallon test drafts. The temperature range on the same day for the same zip code is even greater in Wisconsin than in Missouri. The maximum temperature range in Missouri was about 26 °F, but for Wisconsin, the maximum range was almost 46°F. For Wisconsin, 66% of the tests had temperature deviations of greater than 5 °F; 28% had temperature deviations greater than 15 °F (or 1% of volume); and 9% had temperature deviations greater than 30 °F (or 2% of volume). Based on how Mr. Flynn reported that service stations take temperature into consideration when setting unit prices, these deviations represent over 1% and 2% "errors" in the unit prices.





ATC would virtually eliminate the varying effect of temperature on individual deliveries. Why shouldn't the effect of temperature be addressed?

The net weight criteria in Handbook 133 for the accuracy of the net contents of prepackaged goods requires that packaged products comply with two requirements, namely, (1) the average net weight for the inspection lot and (2) the maximum allowable variation limit for individual packages. The temperature effect on the volume of gasoline combined with the temperature variations from station to station and transaction to transaction are analogous to the variations in

the net contents of packages. Again, why shouldn't the effect of temperature on the delivery of gasoline and fuel oil be addressed through ATC?

V. The Average Approach to Temperature Variations

Mr. Michael Flynn explained that the average of random purchases of gasoline and diesel fuel made throughout the year at different service stations (which also applies to random purchases throughout the year at the same service station) will result in the average temperature of purchases to be very close to the average temperatures for the stations. Is this good enough? Does this reflect good business practices?

To illustrate this point, we can apply the random sampling concept to the purchase of hamburger from different supermarkets using an extreme example. Suppose that there are five supermarkets in an area and a consumer, using a random sampling plan, is going to pay for 1 lb of hamburger during each visit to these five supermarkets throughout the year. Suppose at Supermarket #1, the consumer pays for a package labeled as I lb of hamburger, but the consumer actually receives 2 lb of hamburger. Suppose that at Supermarket #2, the consumer pays for l lb of hamburger, but receives 1.5 lb of hamburger. Continuing this example, at Supermarket #3, the consumer pays for l lb of hamburger and receives l lb of hamburger. At Supermarket #4, the consumer pays for 1 lb of hamburger, but receives 0.5 lb of hamburger. At Supermarket #5, the consumer pays for l lb of hamburger, but receives an empty package (0 lb) of hamburger. If the consumer makes 10,000 purchases of hamburger (and all of the packages are labeled with l Ib) at these supermarkets during the year using a random sampling plan, then the average net weight of the consumer's annual purchases will be l Ib. Are all of these transactions equitable? Are all five supermarkets following good business practices? The net content of packaged goods is based on both the average requirement and accuracy limits (maximum allowable variations) on individual packages.

The temperature of the gasoline and diesel fuel at the gas pump cannot be controlled, but the effect of temperature on the volume of gasoline is often greater than the tolerance applied to retail fuel dispensers. Does the consumer deserve more comprehensive (temperature corrected) measurement in individual purchases of gasoline? This brings us back to the question, “Should the product temperature be addressed for purchases of gasoline and diesel fuel for individual transactions or only to the annual average?”

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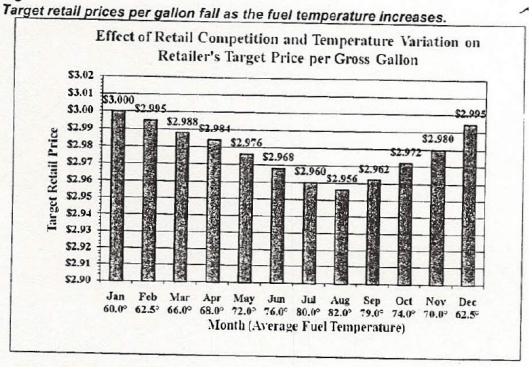
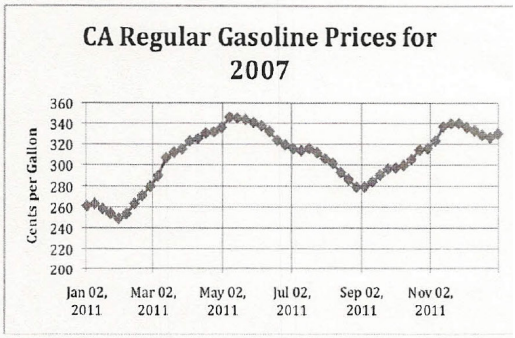
VI. Does Competition Automatically Correct for Product Temperature?

Mr. Flynn states, "Competition in retail fuel markets already adjusts pump prices to compensate for the seasonal effect of temperature on the volume of gasoline and diesel fuel."[1] Mr. Flynn explains in great detail how service station dealers can use the monthly product temperature to set the target price of the retail product. However, on page 50 of his report, Mr. Flynn states that "…dealers themselves do not consciously and explicitly change their pump prices to achieve this result…" and "…anyone looking for the specific notes and calculations by which individual retailers determined the appropriate changes in their pump prices will do so in vain." Furthermore, the method to calculate the target price of service stations carefully explained in his report and illustrated in the graph at the right (taken from page 57 of his report) are not reflected in the actual retail prices for California. Consequently, Mr. Flynn cannot substantiate his claim with the actual gasoline prices in California (graph at the right) over the time period covered by his report[2]. Mr. Flynn admits in his statement during the December 9, 2008, meeting of the California Energy Commission, "Now, this is not to suggest that these are what wind up as the street prices, because there's lots of other factors that go into the determination of the competitive retail price."[3] Mr. Flynn is correct on this point, because the actual retail prices in California do not follow the target retail prices that he has computed. One can reasonably question if the temperature of the product has any effect on how the prices of gasoline at service stations are established.

Target retail prices per gallon fall as the fuel temperature increases.





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[1] An Economic Analysis of the California Energy Commission Staff's Fuel Delivery Temperature Study and the "Hot Fuel" Allegations, by Michael A. Flynn, page 4.

[2] Department of Energy, Energy Information Administration web site, http://www.eia.doe.gov/oil_gas/petroleum/data_publications/wrgp/mogas_history.html

[3] Transcript of the December 9, 2008, , Committee Workshop Before The California Energy Resources Conservation And Development Commission, page 155, web sites http://www.energy.ca.gov/transportation/fuel_delivery_temperature_study/documents/2008-12-09_workshop/2008-12-09_TRANSCRIPT.PDF and http://www.energy.ca.gov/transportation/fuel_delivery_temperature_study/documents/index.html.

In short, Mr. Flynn says that market competition automatically corrects for all factors that affect the price of gasoline and diesel fuel. Therefore, Mr. Flynn claims that whatever factors affect the fuel products that service stations sell, even the effect of temperature, have already been factored into the unit prices that stations have set in the past by virtue of the fact that the unit price is based upon the gross volume of fuel delivered to the station. However, the temperatures of the majority of fuel sold through the fuel dispensers are different from the temperature on which the station owner has set the price for selling the fuel. Some could argue that the multitude of pricing errors that occur, average out over the course of a year, so the cost of using ATC equipment is not justified. However, selling gasoline on a temperature compensated basis would provide a uniform and definite basis for service stations on which to set the unit price of gasoline and allow consumers to make better price comparisons, since temperature is no longer an unknown variable in the transaction.

Regarding Mr. Flynn's approach that competition addresses all market factors that affect the price of gasoline at retail, another analogy can be provided from the net weight of packaged goods. If competition is the "cure all," then when the concept of competition is applied to the net weight of packaged commodities, then packagers could be allowed to sell packaged goods on the basis of gross weight, because competition would drive the unit prices down to the level where the tare weight is automatically considered in the (gross) weight and item price. Is this what weights and measures officials are willing to accept?

VII. Inventory Control

The variation in product inventory for service stations is affected to a significant extent by temperature changes in the gasoline and diesel fuel sold. The shrink of gasoline inventory is a problem that is pervasive in the industry. The study done for the for National Weights and Measures Laboratory (NWML) in the United Kingdom documented the extent of shrink and gain in inventory at service stations in their country. The amount of shrink varied depending upon the source of supply of the product. The report (which should not be interpreted as the position of the NWML) recommended that ATC at retail be allowed to improve inventory control.

VIII. Net Versus Gross Volume Delivery Systems

Mr. Flynn illustrates four relationships for how the price of fuel is expressed at retail and how the quantity of fuel is measured at retail (pages 9-14 of his report). Mr. Flynn states that Scenarios II and III are problematic, because the systems for pricing and measurement are different. Mr. Flynn states, “In particular, the total dollar cost to a motorist for a given quantum of fuel would be identical under either *Scenario lor Scenario IV.”*[4] Scenarios I and IV have the pricing and measurement methods based on gross-to-gross gallons and net-to-net gallons, respectively. Mr. Flynn continues, “It is the core assumption of this paper that no dispute or problem arises as long

[4] An Economic Analysis of the California Energy Commission Staff's Fuel Delivery Temperature Study and the "Hot Fuel" Allegations, by Michael A. Flynn, page 10.

as retail fuel sales are conducted according to *either Scenario I or Scenario IV."*[5] However, Scenario I is valid only if the service stations are selling the products at the same temperatures at which they price the product. We know from the data collected by weights and measures programs that this is not the case, so the legitimacy of Scenario I is lost. Consequently, the only remaining and reliable approach to pricing and selling fuel at retail is Scenario IV, which is pricing and measuring retail fuel on the basis of net (temperature compensated) gallons.

IX. More Accurate Field Tests of Dispensers

When testing retail fuel dispensers without temperature compensation capability (gross volume), weights and measures officials and service company representatives do not correct for (1) the change in volume of the fuel due to any change in temperature of the product from the meter to the prover or (2) the capacity of the volume standard for the difference of the temperature of the standard at the time of test from its 60 OF reference temperature. It isn't possible to correct for a change in temperature from the meter to the standard when testing a temperature uncompensated dispenser, because there isn't a thermometer well adjacent to the meter to get the temperature of the product at the meter. The change in capacity of the volume standard is very much smaller than the temperature effect on the gasoline or diesel fuel during a test.

If the proposed changes to Handbook 44 for temperature compensated fuel dispensers are adopted, then temperature compensated dispensers would indicate the temperature of the product passing through the meter during the tests of the meters, there would be a thermometer well at the meter and temperature corrections could be made to any temperature change from the meter to the standard and to the capacity of the standard. If these corrections would be made during a field test, then the accuracy of the field test would be increased.

X. Conclusions

Automatic temperature compensation provides a more comprehensive measurement at retail and therefore a more accurate and equitable measurement. Changes in the temperature of gasoline and diesel fuel have a greater impact on the volume of the fuel than does the Handbook 44 tolerance allowed for retail fuel dispensers. Automatic temperature compensation would provide greater equity in retail fuel measurement. Hence, automatic temperature compensation should be used at the service station level for the retail sales of gasoline and diesel fuel.

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[5] An Economic Analysis of the California Energy Commission Staffs Fuel Delivery Temperature Study and the "Hot Fuel" Allegations, by Michael A. Flynn, page 10.

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July 1, 2009

National Conference of Weights & Measures
Laws & Regulations Committee
1135 M Street, Suite 110
Lincoln, NE 68508

Subject: California Independent Oil Marketers Comments: Automatic Fuel Temperature Compensation Items Under Consideration; Recommendation to Prohibit

NCWM Laws & Regulation Committee Members:

The California Independent Oil Marketers Association (CIOMA) wishes to provide the following comments on the items to be considered regarding development of requirements for the use or mandate of automatic temperature compensation (ATC) technology at retail fuel outlets. ***We recommend that automatic fuel temperature compensation at retail outlets be prohibited.***

CIOMA sponsored the California legislation (AB 868 [Davis, 2007]) which required the California Energy Commission to prepare the first comprehensive cost-benefit analysis ever performed on retail ATC deployment in the United States. We sponsored this legislation as we were continually fighting exaggerated and unfounded claims on how ATC might affect the consuming public. We now have a completed study that provides an independent review and analysis of issues, costs and benefits surrounding deployment of ATC-equipped (or adjusted) fuel pumps. The conclusions of the report provide a solid and irrefutable basis for the prohibition of ATC at retail. It is important to note that the report conclusions were derived in a "warm" state where the average fuel temperature is over 70 degrees (F) – 10+ degrees warmer than the standard 60 degrees (F) reference measuring point.

Our initial assumptions regarding ATC have been ratified by the independent conclusions in the report:

- ATC is expensive to install and maintain;
- consumers will see no benefit and only costs from its installation; and,
- consumers will merely wind up paying *more* for the same units of purchase.

Some of the important conclusions made in the report include:

Cost to Society

- "…it is unlikely that there are any plausible circumstances whereby some consumers could realize a small net benefit of ATC at retail in California."[1]
- "Net costs to society amount to approximately $245 million…"[2]

[1] CEC Final Fuel Delivery Temperature Study, pg. 107, Findings section
[2] CEC Final Fuel Delivery Temperature Study, pg. 73 ATC Retail Cost-Benefit Analysis section

Retrofit Costs

- "Statewide costs for ATC retrofit kits are estimated by staff to amount to approximately $85 million or $8,763 per retail station."[3]
- "Energy Commission staff estimated that the time required to inspect and certify retail fuel dispensers will increase between 10 and 20 percent if ATC is mandated for use at retail stations in California."[4]
- Total statewide costs for the new equipment (specialized thermometers) they will need to verify the accuracy of ATC dispensers is estimated to range between $77,000 and $140,000.[5]

Adjusting fuel price to meet new distribution requirement

- "The conclusion, therefore, is that retail station owners will in fact raise their fuel prices to compensate for selling fewer units, all other things being equal."[6]
- "...the retail station owners are expected to adjust the price of the new units to a slightly higher level to try and maintain similar levels of profitability in a post ATC scenario."[7]

Statewide/regional reference temperature change

- "Based on the report analysis, the Committee concludes that establishing a new statewide reference temperature, or different regional reference temperatures for the state, would not successfully address temperature compensation at the retail level and therefore does not recommend this approach."[8]

Small services stations and fuel supply

- "If ATC was to be mandated at retail stations in California, it is possible that the expense to comply with the regulation could be onerous for some station owners. Some of these station owners may be unable to obtain adequate financing and could possibly close their business."[9]
- "The closure of a retail station that was either the sole or one of only two sources of retail fuel for a community could create a local fuel supply availability problem.[10]

In a nutshell, here is why we believe ATC at retail is inappropriate:

- ATC will cost consumers. The report concludes costs are greater than benefits. The report states that retailers will merely adjust their sales price to compensate for changes made to dispensed volume – there will be no "free fuel" dispensed. The report states that the costs of installing and maintaining the equipment will be passed on to consumers. *"It is unlikely that there any plausible circumstances..."* where consumers will benefit from ATC.
- ATC changes the method of dispensing along the distribution chain. It is important to understand that there is consistency in fuel distribution from the rack to the customer at the current time. Gross gallons are distributed at the rack, gross gallons are distributed though the wholesale chain, and gross gallons are distributed at retail. What is changed (only at the rack) is the *price*. Deployment of ATC at retail will change dispensing from

[3] CEC Final Fuel Delivery Temperature Study, pg. 104, Findings section
[4] Ibid
[5] CEC Final Fuel Delivery Temperature Study, pg. 104, Findings section
[6] CEC Final Fuel Delivery Temperature Study, pg. 70, Quantification of Potential Consumer Benefits section
[7] CEC Final Fuel Delivery Temperature Study, pg. 71, Quantification of Potential Consumer Benefits section
[8] CEC Final Fuel Delivery Temperature Study, pg. 3, Executive Summary section
[9] CEC Final Fuel Delivery Temperature Study, pg. 105, Findings section
[10] Ibid

gross gallons to net physical gallons at the pump. This brings *inconsistency* into the distribution chain, *not* greater consistency.

- ATC creates greater consumer mystery – At the time the customer receives their final receipt they have no idea how much more, or less, fuel they have received. They merely get a receipt stamped with "Temperature Corrected Gallon". We believe that if Canadian customers truly understood they were receiving less than a full gallon on a consistent basis, the issue of temperature compensation would become more hotly argued in that nation.
- No free fuel – There has been an underlying, incorrect assumption that the fuel customer will receive, in warm states, more cubic inches of fuel for the same price as they are currently paying. The CEC report concludes that retail prices will be adjusted to compensate for changes in dispensed volume created by the ATC equipment. The analogy is like switching from gallons to liters. The same type of adjustment will be used to adjust price for ATC-dispensed fuel. Since fuel is purchased in gross gallons (regardless of how it is priced), the retailer must sale-price product in gross gallons to achieve a like-quantified return on investment. Retailers are *not* going to give away fuel.
- ATC does not give customers an accurate energy-density-adjusted gallon. ATC only corrects for one variable in the energy density of fuel at the retail nozzle – temperature. The CEC report notes that other factors such as refinery fuel composition, regulatory seasonal fuel blend adjustments, and inclusion of biofuels can have much more dramatic impact on fuel energy density than temperature. ATC falsely leads customers to believe they are getting an energy-adjusted gallon. They are not.

For all of these reasons we believe the argument and controversy over automatic fuel temperature compensation needs to be put to bed. ATC needs to be prohibited and the Conference needs to take an affirmative stand that it is not an appropriate sales technology at the retail level. ***We ask you to take this action.***

CIOMA represents independent marketers who purchase gasoline and other petroleum products from refiners and sell the products to independent gasoline retailers, businesses, and government agencies, as well as representing branded "jobbers" who supply branded retail outlets, especially in rural areas. Our members are primarily small, family owned businesses who encounter unique difficulties in meeting California's complex and increasingly expensive environmental requirements. We represent approximately 400 members, about half of whom are actively engaged in the marketing and distribution of petroleum products and fuels.

If you need additional information or insight into our conclusions please do not hesitate to contact me at your earliest convenience.

CIOMA Letter to NCWM: Prohibit ATC
July 1, 1009

Sincerely,

Jay McKeeman, Vice President, Government Relations & Communications

cc: PUMP Coalition members
CIOMA Board of Directors

Commonwealth of Massachusetts
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UNDERSECRETARY OF CONSUMER AFFAIRS AND BUSINESS REGULATION

CHARLES H. CARROLL
DEPUTY DIRECTOR

July 6, 2009

Joe Gomez, Chairman
NCWM Laws and Regulation Committee
New Mexico Department of Agriculture
MSC 3170, P. O. Box 30005
Las Cruces, NM 88003-8005

Dear Chairman Gomez:

The ATC issue is not a new issue to NCWM it has been around a long time. When last visited by the conference it was rejected as there was no compelling argument or consensus to adopt ATC as a required method of sale at the retail level at that time.

The current discussions and multiple hearings held on the issue raised more questions than answers. In addition, those most affected by the proposal if adopted are opposed to it and consumer groups are also against it by more than a two to one margin.

The statement in the L & R Committee report that the NCWM was now in a position to make an informed decision on this issue couldn't be more further from the facts. The facts are two regional associations representing half the country are opposed to adopting ATC as a method of sale. This fact does not spell out consensus it spells out dissention. Before we move this issue forward we must have a very definitive consensus to adopt. In reality the arguments presented thus far have not convinced me that the current method of sale is inequitable to either the buyer or seller.

In any geographic locale the temperature variations are very small from one retail location to another within that location. Competition for market shares is based on pricing rather than a large or small gallon. Consumers purchase motor fuel in most cases based on price. The competition for these consumers is fierce and pricing is the major tool used to attract customers. If retailers all sell the same gallon then we have a level playing field which is the bottom line in enforcing weights and measures laws. ATC if mandated will do nothing but increase costs for businesses and consumers. NEWMA has discussed this issue in depth and we took a stand not to support adoption of this requirement. Remember, retail motor fuel individual sale volumes are small thus any variation due to temperature is also small.

We in the Northeast feel that the current system of measurement is accurate and equitable and urge your committee to withdraw the two proposals currently in your committee.

Respectfully,

Charles H. Carroll
Deputy Director, Commonwealth of MA

APMA **Arizona Petroleum Marketers Association**

July 6, 2009

Mr. Joe Gomez
Chairman
Laws & Regulation Committee
NCWM 2009 Annual Meeting
RE: Automatic Temperature Correction Voting Items

Dear Mr. Gomez and L&R Attendees:

On behalf of the Arizona Petroleum Marketers Association, I would like to thank you and your colleagues for your time and efforts in addressing the issue of automatic temperature correction (ATC) and whether the equipment should be permitted or mandated for use in the retail marketplace.

Given the current economic climate, retailers across the country are justly concerned. The potential implementation of ATC devices at retail should not be adopted hastily. To date, it has not been clear at NCWM meetings or at regional W&M meetings how the petroleum marketing landscape will be improved for consumers with the adoption of ATC, nor has it been vetted out among NCWM officials exactly how an ATC marketplace would provide consumers with greater clarity regarding the energy content of their fuel purchase. Various gasoline formulas have varying BTU's and ATC devices do not balance out the BTU difference for consumers.

Having attended the NCWM's annual meetings since June 2007, APMA urges NCWM officials to vote NO on L&R voting items 232-1 or 232-2 for the following reasons:

232-1 ATC Method of Sale Proposal Developed by the NCWM ATCSC

This first voting item on ATC is a multi-prong proposal which would permit ATC for both wholesale and retail devices as of January 1, 2010 and then mandate ATC for both wholesale and retail devices as of January 1, 2020. The permissive and mandatory provisions have a caveat so that they are not effective where they conflict with other statutes or regulations.

NCWM in the past asked industry to weigh in on the various scenarios in which retail ATC would be implemented and whether there should be a permissive phase and/or ultimately a mandatory phase. NCWM officials need to recognize that a permissive retail ATC scenario will create an unlevel playing field in the petroleum marketplace. In fact the ATC Special Committee actually recommended that any permissive stage be as short as possible.

By allowing the installation of ATC to be permissive, NCWM is essentially allowing large well-financed retailers to use the ATC regulation as a potential way to gain an unfair market advantage over smaller retailers. When coupled with the recent additional tank requirements under the federal Energy Act of 2005, many small retailers may decide that they can't afford to make these costly changes to their operation and close shop. Ultimately, this harms the consumer by decreasing competition in the

Permissive ATC also creates major confusion for the consumer because they can no longer compare station's pricing based on the same gallon being sold station to station. While the temperature in Arizona may very well be over the 60 degree standard---the temperature is constant corner to corner—consumers can easily compare price per gallon from the street—even if it is a gallon at 80 degrees. However, under a permissive retail ATC scenario, a consumer will be hard-pressed to compare stations selling ATC fuel versus retail sites selling traditional gallons.

Additionally, if some states decide not to implement retail ATC while other states do implement it---interstate commerce and taxes could be significantly impacted as well.

Overall, voting item 232-1 would not result in a better petroleum marketplace for consumers but instead will result in almost ten years of uncertainty and confusion for consumers regarding the legal method of sale for petroleum products.

Another concern with voting item 232-1 is section 2.32.2.2 (c) 3, which states that "If a fuel is sold temperature corrected from a measuring device at a business or fleet location, all sales of the same fuel from that business or fleet location shall be sold temperature corrected over at least a consecutive 12-month period." Because NCWM changed its definitions for wholesale and retail devices in 2004, many transactions which industry would consider wholesale are considered transactions with retail devices and would now fall under this provision.

So, it is possible for a petroleum jobber who delivers to agricultural customers and/or business fleets to be in a situation where one customer may request their deliveries to be ATC and another customer does not want ATC. This jobber would no longer be able to deliver fuel to both customers under the proposed provision because the tanker to deliver that fuel would have to have a vehicle tank meter with ATC and be dedicated to delivering ATC gallons only for twelve months to accommodate the customer requesting ATC, thereby no longer able to deliver non-ATC fuel to his other customer.

Voting item 232-1 does not contain any flexibility in it to address the hardship or difficulty in implementing the new method of sale for specific customers. While APMA recognizes that the purpose of section 2.32.2.2 (c) 3 is to prevent a "traditional" retailer from selling through the compensated or uncompensated dispenser only when it benefits the seller, the language in the proposal snags what would be considered wholesale transactions by industry due to the definition of retail devices.

232-2 Original Recommendation for a Method of Sale Proposal for ATC Developed by the 2007 Committee

The second ATC voting item in L&R allows for the use of ATC where it is not in conflict with other statutes or regulations. It essentially codifies permissive ATC for states wanting to implement ATC and for those 18 states which automatically adopt the regulation by reference or citation.

Voting item 232-2 also contains section 2.32.4.2 under Other Provisions which states "At a business location which offers products for sale on the basis of a temperature compensated volume, all measuring devices shall dispense on the basis of temperature-compensated volume…"
APMA would urge voting members of the NCWM to reject voting item 232-2 for the same reasons that 232-1 should equally be rejected.

Creating the infrastructure to allow for two legal methods of sale for petroleum products sanctions a confusing and chaotic marketplace for consumers where they can no longer compare prices between competing stations at an intersection. NCWM would essentially be injecting inconsistency into the market.

Voting item 232-2 will also inadvertently harm those engaged in the wholesale jobber business and force them to make a decision to serve only customers wanting ATC or those not wanting ATC products. This voting provision essentially requires them to have all of their vehicle tank meters to dispense ATC if they choose to serve a customer who wants product delivered ATC.

POTENTIAL FUTURE SOLUTIONS

In the interest of cooperation and better understanding on ATC issues at retail; APMA would like to see NCWM prohibit the use of ATC for retail devices. There still does not appear to be consensus that ATC benefits consumers or creates a better marketplace for consumers. If NCWM is not of a consensus to mandate a new legal method of sale for petroleum products it does not seem just that NCWM would allow for multiple methods of sale to exist for a product. Prohibiting ATC at retail, even if it is for a finite time, would allow for a much more meaningful and merit driven debate on whether ATC should become the new legal method of sale for petroleum products.

At the same time, it would be beneficial to have L&R take a closer look at the definitions of retail and wholesale devices and also consider whether it might make sense to develop definitions for actual transactions—wholesale versus retail to account for various end user tanks. It also seems appropriate for L&R and/or the regional W&M associations to consider language which would provide jobbers with some flexibility recognizing the diversity of customers served.

APMA truly appreciates the opportunity to share our concerns with NCWM officials. We intend to remain active and engaged on the issue of ATC for retail devices and hope that the ultimate decision reached by any state legislature or regulatory agency will be one which balances science and the best interest of the consumer.

State of New York
Department of Agriculture and Markets
10B Airline Drive
Albany, New York 12235

Bureau of Weights and Measures
518-457-3146
FAX: 518-457-5693

July 6, 2009

Joe Gomez, Chairman
NCWM Laws and Regulations Committee
New Mexico Department of Agriculture
MSC 3170, PO Box 30005
Las Cruces NM 88003-8005

Dear Chairman Gomez,

I have been a student of the ATC issue for many years. My connection to the issue began with my first trip to an NCWM meeting in Portland, Oregon in 1979. The ATC issue was already an old issue at that time. I have also conducted my own research and reviewed multiple papers on the subject, both pro and con. I served on the NCWM ATC Steering Committee and I was contributor to the California Energy Commission study. Based on long and careful study of the issue, I must urge you to withdraw your proposals that either permit or mandate the use of ATC at retail. In addition I urge you to consider offering instead a proposal that recognizes the current method of sale on the gross basis but puts it formally in regulation with a ban on artificial heating.

I am also submitting a paper that exposes the weaknesses in the arguments for increased fairness with ATC. For many years we have heard claims of great economic losses and of unfair competition. I believe my presentation and written materials combined with works of many other more worthy experts has dispelled every one of those claims. The paper attached tries to show that the fairness claims are presently unfounded since even the supporters of the argument must admit that there is no empirical data to show that variations between stations are significant. In addition, there is no cost based analysis of any kind that shows ATC pays. Thus your two proposals are promoting a solution where there is no problem to solve.

Weights and Measures professionals have always recognized that allowing reasonable variation is necessary to keep costs of measurement low. In my paper I reference both Handbook 44 and 133 and show that they both limit variation to prevent serious harm to either buyer or seller. We have no evidence to support any claim that the variations in the present system are unreasonable or cause any serious harm. The recent draft report from the Alaska Fuel Metering Project calls this a lottery that participants (both buyers and sellers) have a 50% chance of winning with jackpots measured in pennies. Thus I have always been confused by the eagerness of this Committee to move ATC forward without valid supporting facts.

Two years ago at the Annual Meeting in Park City New York abstained from voting on the ATC proposal. I told the Committee in open hearings that we did not have sufficient information to make a valid decision on public policy at that time. I urged the Committee to craft its report in the form of a Regulatory Impact Statement (RIS) exactly to show that we did not have that information. Now we are again faced with voting items that the Committee hasn't justified.

The CEC report left us with a powerful visual image for California of an equal arm scale loaded on the cost side with $210 to $410 million and loaded on the benefits side with a meager $3.8 million. What were the critical issues and indicators that convinced the Committee that fairness issues would trip that balance to the other side? They are not in your report. Instead we are directed to view the reports of past years and they too lack any conclusive justification for either of the proposals now up for vote. If you had the justification, I would have expected to see at least a comprehensive summary of what tripped the scales for you in the text of this year's report. Those needed to be very powerful arguments because of the overwhelming imbalance. I and about 30 other state directors need that summary to help us craft the RIS text for our states.

I am very concerned about the lack of consensus and what appears to be a lack of interest in consensus by the Committee. I quote from page L&R -5 of your report:

> *This item has been on the agenda for several years and deserves reconsideration by the full membership of the NCWM. The Committee members reviewed available information and testimony and decided that the NCWM was now in a position to make an informed decision on this issue. This is also a decision on which the entire membership must have an opportunity to vote.*

The consensus building process that is the hallmark of the NCWM is not visible in this paragraph. Instead I see a straw poll decision making process. Let's float a few ideas and see if anyone takes a fancy to one of them? Perhaps that meaning is not what you intended to say, but it most definitely leaps off the page when you read it. We should not be voting to see if we have a consensus, we should vote only when we are confident we have actually reached that consensus!

Does this Committee somehow claim to have a consensus when the four regional associations are split two for and two against ATC, the regulated industry is 100% opposed to ATC, and even consumer interest groups are running 70/30 against ATC? By the basic rules of engagement, the supporters of ATC have to make a case that change is cost beneficial. I submit they have failed to make that case and this has been exposed by the works of the economics experts. The arguments for fairness are equally as hollow as the hot fuel rip-off arguments and as I have shown they only make sense when you constrain retailers to make business decisions that don't make sense.

If you are using straw polls to create NCWM standards, why only offer us net gallon options? I am confused as to why a gross gallon proposal that adopts the status quo with a ban on artificial heating has never appeared in your previous reports. The ban on artificial heating could eliminate the only real problem ever identified in our discussions, namely a few above ground storage tanks that were painted black. Why is it that we could not even discuss a gross gallon proposal? Why is the method of sale we are using today, and have used for 80 years, not worth codifying in regulation to eliminate confusion?

I have served on the L&R Committee and I know that the issues are not easy to resolve. Gaining consensus on controversial issues takes hard work on everyone's part. I urge the Committee not to make rash decisions without a consensus and continue to work toward that consensus. Please do not force a vote on the two proposals in your report. Unlike two years ago, today we have the information necessary to vote intelligently against any proposal that either permits or mandates ATC at retail. I would much rather vote for something that really represents a consensus.

Respectfully submitted,

Ross Andersen, Director, New York State
Michael Sikula, Assistant Director

Is the ATC "Fairness" argument just as hollow as the hot fuel allegations?
Ross Andersen, New York State
July 6, 2009

There are numerous claims that temperature compensated measurements are more comprehensive and thus more fair than the present gross gallon measurements for fuel transactions. These claims are not new and can be traced to debates at the NCWM from the early 1970's. Henry Oppermann's latest paper on the subject [1] is essentially a restatement of those assertions with the addition of some new analysis of temperature data gathered over the last few years. He strains to force the data to fit his arguments by pushing the wrong point of view, i.e. a focus on individual transactions rather than on reasonable averaging. In the process he attempts to invalidate long standing principles in Weights and Measures that have always permitted reasonable variation within a framework of tolerance.

Mr. Oppermann is correct to use NIST Handbook 133 [2] as a good focal point. That standard recognizes that variations within reasonable limits are acceptable and it further recognizes that averaging is an acceptable business practice for the packer to make business decisions. Mr. Oppermann is essentially arguing that the Handbook 133 approach is wrong, i.e. that the retailer should be using technology to ensure each package contains the exact net weight regardless of cost, and that averaging variations is not a solid business practice for either the buyer or seller.

In Section III of his paper Mr. Oppermann states, "Product temperatures can vary greatly at retail. Consequently, temperature differences are significant at retail." We are expected to take that statement at face value and without question. Taking the view of an impartial arbitrator in this case, I am required to question it and I believe the burden of proof lies with those who would seek change. We have heard the claim that temperatures vary greatly many times over the year, but never have we heard what objective standard is being used to judge whether that assessment is correct. Is the variation excessive or is it actually within reasonable limits, i.e. within tolerance? Nor have we seen any explanation of how the significance of the impact of the variation on retail trade practices was assessed.

I will try to show that those advocating for ATC have essentially failed to see the forest for the trees. They zoom in, but you can't assess the viability of the forest from that point of view. This is critical since ATC advocates have never made a positive connection between fuel temperature variation and profit or loss for either buyer or seller. While many have made claims of that connection, I do not believe that anyone has yet convincingly made arguments to support it. Specifically, they cannot project that any change at the individual transaction level with ATC will impact the pricing practices of the seller or the purchasing practices of the buyer. If this connection cannot be made convincingly, then any cost to upgrade will accrue to the buyer but not result in delivery of any additional fuel or increase in value to the transaction.

To continue the HB133 analogy, compare transactions involving other commodities. A one pound package of hot dogs or chicken can vary in value (net weight) up to 6.25%. For other non-meat products the permitted variation is 4.4%. Energy content of conventional gasoline without ethanol can easily vary 5% due to fuel composition. With added ethanol the variation is even larger. In the case of a retail fuel sale the variation due to temperature is about 1%. On what basis do you say this is too large?

To look at it in another way, let's consider the gas station that buys 100 loads of fuel of 10,000 gallons each and averages the price over each tanker. Is this not equivalent to a packer putting

up 100 production lots of 10,000 packages each? The packer is permitted to average over the production lot just as the retailer averages over the sale of each tanker load. Provided no one is seriously harmed by the individual transaction variations and the average is very close to the true quantity, I suggest you cannot find that anything is out-of-tolerance. I further submit that nothing I've seen in the fairness arguments have supported that conclusion that anything is out-of-tolerance.

Do the transactions average close to zero? Yes, even Mr. Oppermann admits this in Section IV where he states, "If one looks only at the average difference between the BOL temperatures and the temperatures of the product delivered over a period of a year, the average differences are relatively small, often less than 1.5 °F." In the marketplace we find the averaging comes very close to zero, even over much shorter averaging periods, as retailers must be able to justify any significant inventory gains or losses to tax, environmental and fuel quality auditors. Most people in the retail fuel business will acknowledge that fuel sale temperatures are varying slightly, but claim that intense competition forces them to make correction for the macro impact of those variations in their everyday business decisions.

Mr. Oppermann also fails to mention that in aggregate the gains and losses in inventory at retail have traditionally been in favor of the buyer, as retailers typically sell less gross gallons than they buy. I provided a specific example for a local retailer that showed the gains and losses do average close to zero even on a weekly or monthly bases and the aggregate is close in agreement to the 1.5 F mentioned by Mr. Oppermann. I also was provided data from the Pilot Truckstops in California that confirmed similar findings. For over 120 million gallons of diesel fuel sold in 2008, the 10 Pilot truck stop locations lost a total of 114,000 gallons of inventory and I was told this is consistent year to year. This is close to 0.1% loss resulting from selling fuel about 2 F colder than they purchased it.

The weights and measures community adopts NIST Handbook 44 [3] as the regulation for assessing compliance of commercial weighing and measuring equipment. The philosophy used to set device tolerances is given in Fundamental Considerations section 2.2. Theory of Tolerances. This philosophy is entirely consistent with Handbook 133 as it is also based on keeping the average close to zero error (also see section 2.3. Theory of Adjustments). That standard declares the intent to set tolerances so as to prevent "serious harm" to either buyer or seller, yet keep the cost of the measuring equipment low. Commercial equipment needs to be practical, i.e. "good enough" to meet commercial needs. Yet ATC advocates seem to disagree with this principle as with the Handbook 133 averaging concept. They believe that variation is unacceptable and advocate using the best equipment available regardless of any cost benefit relationship. Would it not seem appropriate for them to show some serious harm in the present system? Otherwise, would it not be appropriate to show some cost benefit relationship for the improvement? I submit they have completely failed in either regard.

The California Energy Commission's Report [4] suggested a method to evaluate "fairness" through experiments to assess the significance of between station temperature variations and consumer willingness to pay the ATC costs. While we acknowledge variation exists due to temperature, no one has yet split out the within station and between station variations that comprise the total variation. The temperature data collected thus far only provides total variation. Simply stated, we do not know if the between station variations are significant! The CEC with assistance from Murphy & Topel [5] used a 10 F range to reach their conclusions that ATC did not pay economically. Yet the ATC supporters would have us commit to spend these enormous sums to implement ATC without valid facts.

We already have some consumer perspective and they are polling at least 70-30 against ATC. The consumer groups that support ATC made their pitch primarily on the basis of the hot fuel allegations with fairness being the icing on the cake. Now they are left with only the fairness to carry the entire battle. The ATA makes very powerful arguments that they do not see any benefit for them in ATC. This consumer group appears to dwarf the others in the membership they represent and in their fuel purchasing power.

In addition, the CEC plan seems to have left out the retailer. Can we conclude that the uncertainty due to between station variance is of no concern to retailers? What about competitive fairness? The retailer does not know any more or less than the retail customer how his fuel temperature compares to any of his competitors. Shouldn't we also include the retailer's interest in ATC as a factor as well? Perhaps the Commission left them out since retailers had already testified to the NCWM on the issue. That testimony indicated they strongly believed the fairness benefit they would accrue with ATC was clearly not worth the cost.

There are several other arguments made by supporters of ATC that strain to have merit. I'd like to identify several of them as they appear in Mr. Oppermann's paper and have been argued in the NCWM proceedings. The section references in () refer to Mr. Oppermann's 6/14/09 paper.

- Wholesale and Retail trade are equivalent since what is good for wholesale is good for retail (section II). I find this argument totally untenable. For one thing I estimate there are about 50 retail devices for every wholesale device. Thus the cost of ATC will have to be about 50 times greater per gallon at retail to compensate the same volume of fuel. I submit that you can't assume they have the same expectations nor would they make the same business decisions.
- Variations in temperature result in errors in unit prices that reach in excess of 1% (section IV). This of course demands that costs and margin are always passed through to the buyer at 1 for 1, and there is no feedback on incorrect business assumptions. Since the retailer makes price changes on a daily basis or perhaps even more often, the ATC advocates have not provided room for any possible minor adjustments within the system. I see the opposite in the works of Flynn [6] and Murphy & Topel, and the Alaska Fuel Project [7]. They understand that retail pricing is a dynamic process that is always working to find equilibrium. I hold that inventory gains and losses do factor into price setting and do correct for minor offsets. If retailers see inventory gains their target prices adjust down and if they see losses their target prices adjust up. Due to market factors the retailer may be forced to accept less than the target in some cases and may be able to get more than the target in others. The fairness arguments fail to allow for this flexibility and we see this same type of constraint on the market in the hot fuel allegations.
- Showing dollar figure losses are supposed to indicate significance (Section IV). Mr. Oppermann provides estimates of $0.30 cent losses at $2.00 per gallon on a 15 gallon purchase as proof of harm. But isn't harm relative? Against what standard shall we assess the relevance of these individual transaction variations? The ATC supporters have not even suggested a standard nor have they provided justification for their assessments. Instead we are asked to accept their opinion on significance without question. The authors of the Alaska Fuel Project describe this as a lottery in each purchase that both buyer and seller have a 50% chance of winning but the winnings add up to pennies.
- Gross gallon sales are like the sale of hamburger where the variation reaches 100% (Section V). We have heard this argument many times but note that it is really

meaningless as the variation we are discussing is really around 1%. Can the ATC supporters make the same claims when the delivered value varies only by 1%? The retailers consider the temperature variation to be reasonable or "in tolerance." ATC supporters have never made a case that the variation is excessive.

- Mr. Flynn's projection of gross price changes are not reflected in actual retail prices (Section VI). Here Mr. Oppermann compares two graphics and the reader is expected to see that the two graphs do not match in the pattern of change. However, it is important to note the differences in Y scale. Mr. Flynn's graphic has a 12 cent Y scale and the retail price graphic has a 160 cent Y scale. Had Mr. Oppermann redrawn Mr. Flynn's graphic in equal scale, the price changes would have almost been a straight line. It would not have had any visual impact since the variation due to temperature is totally dwarfed by the market fluctuations due to non-temperature related factors. It is unreasonable to suggest that you could conclude anything from those two graphics. Indeed, to suggest from that comparison alone that Mr. Flynn's projections are unsupported is preposterous. He was trying to show that the hot fuel profits cannot be seen in other independent studies of station profitability. He suggests that if the price changes he projects were not made, then stations in California would be almost $60,000 more profitable each year than their Minnesota peers.
- Mr. Flynn's Scenario # 1 of equal fairness when buying and selling in gross units is invalid since it contains variation (Section VIII). Why is reasonable averaging not permitted? Variation is part of every measurement system. Clearly the inventory gains and losses are small over any small period of time and this indicates that the small losses and gains in individual sales do average out very near zero error. I believe that retailers assume they are all competing at the same local average temperature and in aggregate, the system is in tolerance. There is also going to be some variation in net gallon purchases and sales. Does that mean we can also invalidate scenario 4, buying in net and selling in net, as well? I do not see how Mr. Oppermann summarily dismissed the argument without some justification that the system under scenario 1 was in fact out-of-tolerance.

'o see the crux of the argument, look near the bottom of page 1 of his paper [1] where Mr.)ppermann asks, "Are weights and measures officials interested in accurate measurement only n the basis of an annual average or are they interested in the accuracy of individual ansactions?" Clearly my answer is, neither of those is the right choice. To the extent ATC upporters make this argument, they are trying to restrict the reality to make a case. They are ssentially tossing basic W&M philosophies and premises out the window. I suggest that we ıust find the point of view where we can examine the retailer's price changes and see what npact fuel temperature and temperature variations have on those changes. The averaging one by the retailer is going to be over a rather short period, maybe less than one day to erhaps two or three days. Either way, it is much shorter than the annual average that ATC upporters try to impose as a limitation.

Aore important, can temperature variability at the individual transaction level really drive the ıarket? I conclude that is also preposterous. The retailer can't be expected to think and act in ıicro terms. It is totally unreasonable for the retailer to check the inventory and the money alance in the till after every single transaction with intent to adjust the advertised prices.

t the other extreme, the retailer can't set a price on May 15th with no further check on rofitability until COB the following May 14th. Clearly the retailer has to operate on a macro level nd the critical time frame lies somewhere in between the individual transaction and the annual verage. I suggest that the market forces the retailer to find the correct time frame in order to

stay in business. It's also critical to keep in mind that the appropriate time frame to assess temperature variations may be different than for variations in other market factors. Thus I would ask Mr. Oppermann's question in a slightly different way. Instead of asking from the W&M official's perspective, how about asking from the perspective of a buyer or seller. What real improvement will be made with ATC, if the averaging of the temperature correction with gross sales is made at the daily or tanker load level with minor corrections made for the small inventory gains and losses? Clearly the answer for both parties is little or none. This is in concert with the findings of Flynn, Murphy & Topel, and the Alaska Fuel Project who conclude the consumer cost for the same quantum of fuel will not change with ATC.

Thus I conclude that the supporters of ATC have grossly failed to make the case for ATC. I submit the system is operating within tolerance. In particular, there is no objective standard to suggest that the minor daily temperature variations in the fuel are in any way excessive. There is also no clear connection between these temperature variations and any profit or loss to either buyer or seller. Finally, critical facts regarding an analysis of between station temperature variations are missing. We are left with the cost side of the balance loaded with $210 to $410 million in costs projected by the CEC over the first 20 years in California alone. The benefit side contains only a meager $3.8 million in potential economic benefits for California and the vague promise of some increased fairness. The consumers I speak for want to know that ATC will either get them more fuel for their dollar or get them better fuel that carries their vehicle farther. Where is the evidence to suggest either will happen if we implement ATC? Frankly it does not exist!

References:

1. ATC as a Better, More Comprehensive Form of Measurement, Henry Oppermann, Weights and Measures Consulting, LLC, testimony submitted to NCWM L&R Committee, June 14, 2009.

2. Checking the Net Contents of Packaged Goods, NIST Handbook 133 (Fourth Edition), January 2005, refer to section 1.2 on pages 2-3.

3. Specifications, Tolerances and Other Technical Requirements for Weighing and Measuring Devices, NIST Handbook 44 (2009 Edition), January 2009, refer to Appendix A. Fundamental Considerations sections 2.2. and 2.3.

4. Fuel Delivery Temperature Study, California Energy Commission, Transportation Committee, January 2009, Report No. CEC-600-2009-002-CTF.

5. Comments on the California Energy Commission's Fuel Delivery Temperature Study, Kevin M. Murphy & Robert H. Topel, University of Chicago, January 12, 2009.

6. An Economic Analysis of the California Energy Commission Staff's Fuel Delivery Temperature Study and the "Hot Fuel" Allegations, Michael A. Flynn, LECG, testimony submitted to the Commission and also distributed at the NCWM Interim Meeting, January 2009.

7. Alaska Fuel Metering Project (Draft May 18, 2009), Northern Economic Research Associates, www.alaskafuelproject.com

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National Conference on Weights and Measures
Joe Gomez, Laws and Regulations Committee Chairman
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July 8, 2009

Dear Chairman Gomez:

On behalf of the Petroleum Marketers Association of America (PMAA), I would like to express my concerns regarding the upcoming voting items on automatic temperature compensation (ATC) at retail. PMAA believes national uniformity in retail motor fuels measurements benefits consumers and must be preserved. We strongly recommend that both the permissive and mandatory ATC at retail gas stations and truckstops be prohibited.

The retail petroleum business is one of the most competitive industries in the United States. Few industries advertise their prices on big signs that are visible to consumers from the highway. Because of competition, consumers are currently getting the best possible retail price everyday and fuel temperature is not a factor in retail pricing decisions. Proposals to mandate costly automated temperature compensation (ATC) equipped dispensers at retail outlets will only add most costs to consumers.

For over three years, PMAA has been actively engaged in the discussion of proposals to mandate or permit gasoline station owners to install ATC devices to compensate for temperature on a gallon of gasoline. PMAA supported the California Energy Commission's (CEC) thorough analysis which provides an independent review on the costs and benefits of ATC refueling pumps. It is our belief that NCWM officials might rely on the CEC's independent analysis in determining their decision to either vote for or against the two upcoming voting items on ATC.

PMAA applauds CEC's thorough report, which included these findings on ATC:

- The costs of ATC far outweigh the benefits, even when using the low-cost estimates. *"The cost-benefit analysis concludes that the results are negative or a net cost to society under all the options examined."* (pg. 1) *"Net costs to society amount to approximately $245 million . . . over a 20 year period."* (pgs. 76-77)

- Consumers will not receive larger gallons with no corresponding increase in retail price. *"But the perception by various stakeholders that the price of the retail fuel would not be raised to compensate for the selling of slightly larger-sized 'gallons is unrealistic'..."* (pgs 111-112)

- There will be no economic benefit to consumers. *"...it is unlikely that there are any plausible circumstances whereby some consumers could realize a small net benefit of ATC at retail in California."* (pg. 113)

- Retrofit costs would be expensive and small retailers might have to close up shop. *"If ATC was to be mandated at retail stations in California, it is possible that the expense to comply with the regulation could be onerous for some station owners. Some of these station owners may be unable to obtain adequate financing and could possibly close their business;"* (pg. 111) *"The closure of a retail station that was either the sole or one of only two sources of retail fuel for a community could create a local fuel supply availability problem."* (pg. 111)

- The NCWM should promote unity in the market-place, but under the two voting proposals, they are not supporting consistency. It is important to understand that there is consistency in fuel distribution from the rack to the customer right now. Gross gallons are distributed at the rack, gross gallons are distributed through the wholesale chain, and gross gallons are distributed at retail. What is changed (only at the rack) is the price. ATC implementation at retail will change dispensing from gross gallons to net physical gallons at the pump. This brings inconsistency into the distribution chain not greater consistency.

Permissive ATC Concerns

While states can currently mandate or permit retail ATC if they choose, it is more difficult to implement without references and guidelines from NCWM. We believe NCWM should not make it easier for states to adopt ATC because it will seriously disrupt national uniformity. Currently, mainland U.S. consumers benefit from exact measurements of the gallon. If states began mandating or permitting ATC, consumers could not compare prices and get the best price especially in state border markets. Both permissive and mandatory ATC will harm consumers rather than help them.

Mandatory ATC Concerns

Mandatory ATC will disadvantage the consumer as the costs associated with installing and maintaining ATC equipment must be passed on to the consumer with no net gain in energy. It is also important to note that one of the country's largest fuel consumer groups is on record opposing both mandatory and permissive ATC. In a letter to the NCWM dated January 14, 2008, the American Trucking Associations expressed its opposition to both ATC proposals citing that it would result in higher consumer costs.

Uncertainty regarding the first ATC Voting Proposal (232 – 1)

There is also uncertainty in the marketer community regarding the first ATC voting proposal (232 -1) – specifically, wholesale fuel transactions (Sec. 2.32.2.1). I understand that the provision would make ATC wholesale transactions permissive for ten years and then would require mandated ATC use at wholesale by January 1, 2020.

Several questions are raised by this confusion:

- What constitutes a wholesale transaction? Is that from the rack to the distributor or from the distributor to the final customer or both?
- Does this provision mean that ATC would be mandated on transports (bob trucks or tank wagons) when they deliver fuel to the customer's delivery point?
- If so, would the metering equipment for the wholesale transaction adjust the customer's price or the volume?
- Has any cost information been gathered regarding installation of temperature compensating equipment on fuel transport vehicles?

This information is needed so that I can respond accurately to the proposals being considered before the Committee.

PMAA represents over 8,000 independent petroleum marketing companies who are not "big oil." Of the 160,000 U.S. retail gasoline locations, over 97 percent are owned by independent businessmen and women. Because of the reasons stated above, I ask that you oppose both the permissive and mandatory use of ATC at retail.

PMAA would like to thank the Committee's work to date. If you have any questions or concerns regarding the comments given above, please do not hesitate to contact me.

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Motor Fuel Temperature Adjustment Fact Sheet

By law, since the early 1900's, retail sales of motor fuel in the US have been made based on a single-size volumetric gallon – defined as 231 cubic inches without reference to temperature. These standard size gallons are defined by law, reflected in dictionaries, and have long been used in the retail trade. Some parties have suggested that retail sales of gasoline and diesel be based on temperature-adjusted "gallons." Temperature adjusted gallons change in size, becoming larger or smaller as the temperature of the fuel sold rises or falls. The adjustment in the size of the gallon sold would be accomplished using an automatic temperature compensation (ATC) device installed at the retail motor-fuel dispenser.

Some propose that the NCWM mandate that every retailer install ATC equipment to adjust the measurement of all fuel dispensed. Others are against ATC and oppose any change to the current practice of retail sales of gasoline and diesel based on the standard volumetric gallon.

According to the Energy Information Administration in 2008, approximately 137 billion gallons of gasoline and 40 billion gallons of diesel (60B gallons of distillate) was consumed in the United States.[1] API believes that any analysis of temperature compensation by the NCWM should thoroughly address all aspects of ATC implementation, including economics, market issues, and potential consumer impact before any decisions are made.

The American Petroleum Institute members own about 5% of the 162,000 retail stations and operate less than half of the retail stations that they do own. When a station bears a particular API member's brand, it does not mean that the API member owns or operates the station. The vast majority of branded stations are owned and operated by independent retailers licensed to represent that brand. According to the National Association of Convenience Stores (NACS), more than half of the 162,000 retail stations in the US are owned by an individual or family. Through various branding agreements, approximately 40% of the retail stations in the US sell fuel under API members' brands.

Recently two states have released final reports on the issue of fuel delivery and metering: California and Alaska.

California

In March 2009 the **California Energy Commission** delivered a report, "Fuel Delivery Temperature Study," in response to California law AB 868. The CEC report has several important conclusions:

[1] www.eia.gov

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1. "If the ***only criterion*** for assessing the merit of mandatory ATC installations for use at California retail stations is a net benefit to consumers, the Transportation Committee (Committee) of the California Energy Commission concludes that ATCs should not be required since the results of the cost-benefit analysis show a net cost for consumers."[2]
2. "...[T]he perception by various stakeholders that the price of the retail fuel would not be raised to compensate for the selling of slightly larger-sized "gallons" is unrealistic if retail station owners are expected to maintain a similar level of profitability before and after a conversion to mandated ATC. Staff assumes that since the industry of retail station owners and operators will continue to grow and remain profitable. The conclusion is that retail station owners will in fact raise their fuel prices to compensate for selling fewer units, all other things being equal."[3]
3. "If the Legislature chooses not to mandate the use of ATC at retail stations, they should clarify if the current intent of the existing statutes is to permit or prohibit voluntary ATC at retail outlets for gasoline and diesel fuel."[4]
4. "The [CEC] recommends that the Legislature also consider whether the possible value of increased fairness, accuracy, and consistency of fuel measurement, in addition to the benefits quantified in the cost-benefit analysis, justify mandating ATC at California retail stations."[5]

CEC report conclusions regarding costs:

1. "If ATC devices are mandated, California businesses would incur a total first cost between $103.8 million and $127.4 million, or between $10,704 and $13,136 per retail outlet. Recurring costs for more expensive ATC-ready dispensers, maintenance, and higher inspection fees would total between $7.4 million and $20.6 million per year."[6]

CEC study conclusions regarding benefits to the consumer:

1. "California consumers could expect a slight financial benefit of approximately $258,000 per year due to this increased price transparency."[7] According to the website, EconomyWatch.com, the California gross state product is $1.543 trillion. Thus the benefit is essentially zero.

California Energy Commission, Fuel Delivery Temperature Study, CEC-600-2009-02-CMF, March 2009,
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CEC study conclusions regarding how fuel is purchased at wholesale and retail:

1. "According to a recent California Energy Commission (Energy Commission) survey of the distribution terminals serving California, transactions at the terminal are measured in gross gallons and then a software calculation is done using the API gravity and temperature of the dispensed fuel is used to calculate the quantity of net gallons. The net gallons are then multiplied by the posted net gallon price to calculate the total cost for that load of gross gallons of fuel."[8]
2. Thus, retailers purchasing product at the terminal receive a gross gallon that was paid for using a net calculation.
3. If ATC is implemented at the retail level, the consumer will purchase a differently sized gallon that is based on temperature.

Alaska

In July 2009 the Alaska state government released its final report, **"Alaska Fuel Metering Project"** that reviews the issue of ATC. The report has several important conclusions:

1. "The purpose of this report was to determine what definition of 'gallon' should prevail in Alaska petroleum retail markets. The conclusion of the report is that given present technology, there should be one retail petroleum gallon in Alaska – and it should be the standard 'gross' gallon already familiar to consumers. A requirement to sell 'net' gallons would force the statewide adoption of more expensive dispensing equipment, and the costs would outweigh the benefits.

   "Comment on the draft report suggested that the study may have pursued the objective of choosing the retail gallon that was the least expensive for the consumer. But that was not the objective of the study. It is tantamount to saying benefits were not considered. They were. But benefits did not justify the costs vis-à-vis a gross gallon standard."[9]
2. "It is more expensive to meter net gallons because it requires taking the temperature of the fuel and adjusting the size of the gallon, depending on that temperature. Ultimately, the cost of doing so will be borne by the consumer."[10]
3. "The gross gallon standard is not a perfect way of metering fuel, but it is the most economical. In all of the studies that were reviewed where gross gallon vs. net gallon standards were studied from a cost/benefit standard, the gross gallon

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orthern Economic Research Associates, "Alaska Fuel Metering Project, Final Report," State of Alaska partment of Transportation and Public Facilities, Measurement Standards and Commercial Vehicle forcement, July 5, 2009, p. 5
d, p. 7

proved to be superior. So it should not come as a surprise to find the same thing in Alaska."[11]

4. We are not concerned whether delivered fuel temperatures vary from 60F. We are concerned with how much temperatures variation there can be between retailers essentially across the street from one another and competing for the same customers. It makes no difference to temperature compensate fuels when temperature fluctuations are minimal between suppliers. It does not make sense to bear the cost of adjusting for something that as a practical matter makes no difference."[12]
5. "[The California Fuel Delivery Temperature Study] has now been completed and the upshot is that temperature compensation costs are not worth the limited and unclear benefits."[13]

Some have alleged that consumers are losing billions of dollars because there is no automatic temperature adjustment of retail gasoline sales. This allegation is incorrect. Consumers purchase motor fuel dispensed in a uniform measurement that is developed and approved by the NCWM, adopted by state laws and regulations, and sold in a competitive marketplace, in which prices reflect a range of factors, such as supply, demand, distribution logistics, temperature, etc. Consumers are able to compare advertising and signage at retail stations and decide which product they will purchase. By definition, consumers aren't "losing" money because they are receiving a gallon of motor fuel for every gallon of motor fuel they purchase--the very unit posted at the pump, and the very unit retailers are legally required to provide throughout the United States.

A common misconception is that temperature compensation would guarantee a uniform energy content for every gallon of gasoline. This misconception ignores many factors other than temperature that affect the energy content of gasoline.

In general, denser fuel contains more energy. Density is affected by the type of crude oil and the refining process used. The density of the gasoline also changes with the seasons where some areas use various winter-boutique fuel formulations designed in part to promote cold starts and better car performance by making the fuel more volatile, resulting in less energy per gallon. Conversely, some states mandate various summer-boutique formulations that are designed to lessen evaporation, making the fuel denser and helping to reduce ozone pollution. Further, fuels that contain ethanol contain less energy than gasoline without ethanol because ethanol contains about two-thirds of the energy of gasoline.

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[11] Id, p. 7
[12] Id, p. 12
[13] Id, p. 20

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For these reasons, among others, uniform energy content for gasoline is virtually impossible to achieve. Gasoline from different service stations will likely have different energy content per gallon even if the law was changed to mandate or permit ATC at the retail level.

Some have asked why temperature adjustment is used for wholesale gasoline transactions (supplier sales to retailers and exchanges between suppliers) but not for retail sales. Temperature compensation is **not** used in all supplier sales to retailers. By law, some states require temperature adjustment in wholesale transactions, some states allow it but do not require it, some states prohibit it altogether, and some states give the wholesale buyer the right to choose whether sales will or will not be adjusted for temperature. Thus, not all wholesale transactions are adjusted for temperature.

Certain gasoline suppliers and resellers buy and sell very large volumes of gasoline at different locations that may be hundreds or thousands of miles apart, often in markedly different climates, and at varying times of the year, all of which warrant accounting for the impact of temperature variations. In contrast, retail gasoline sales occur at far smaller quantities, in a local competitive market, at a specific time, and under specific conditions, including the specific fuel temperature.

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July 10, 2009

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COMMENTS ON L&R NCWM MEETING AGENDA ITEM

Reference L&R 2.32.1.1. Quantity, Wholesale Transactions.

"Method" of Temperature Compensation is being specified as "Density". The Coefficient of Thermal Expansion Method also needs to be included.

The "method" of Temperature Compensation is being specified in paragraph 2.32.2.1 as "Density". The widely used and accepted electronic register method for Automatic Temperature Compensation is the Coefficient of Thermal Expansion Method. The Coefficient Method needs to also be included, and the coefficients of thermal expansion for the products defined along with the densities in table 2.32.1. The coefficient for Gasoline that is normally used is .00070 for degrees F and for Diesel 0.00045.

Note that the Coefficient Method is accepted per the S&T information U.R. 3.6.1

Extracted and noted:
L&R
2.32.2. Quantity.
2.32.2.1. Quantity, Wholesale Transactions.
(a)
Effective January 1, 2010, where not in conflict with other statutes or regulations all engine fuels and non-engine fuels shall may be sold, offered, or exposed for sale to wholesale customers either in terms of liquid volume in liters or gallons or barrels, or in terms of liquid volume automatically temperature corrected to 15 °C (60 °F) (15.56 °C) in liters or gallons or barrels.

(b)
Effective January 1, 2020, where not in conflict with other statutes or regulations all engine fuels and non-engine fuels shall be sold, offered, or exposed for sale to wholesale customers in terms of liquid volume automatically temperature corrected to 15 °C (60 °F) ~~(15.56 °C)~~ in liters or gallons or barrels.

(c)
When engine fuels and non-engine fuels are sold temperature corrected to wholesale customers:

(1)

Correction shall be made automatically for the fuel temperature either based on the fuel standard dens coefficient of thermal expansion) and reference tables specified in Table 2.32.1. or based on the actu measured density of the fuel and using reference tables specified in Table 2.32.1.

(2)
If using a measured density, the seller shall maintain records of the density determination for one year shall make those records available for inspection by a weights and measures official on request during r business hours.

(3)
All primary indications of net volume quantities on measuring devices and all receipts, invoices, bills of lading, and other transfer documents shall clearly and conspicuously identify net volume quantities wit unit of measure and the terms "Volume corrected to 15 °C" (60 °F)or"Volume corrected to 15.56 °C."

Table 2.32.1. Reference Tables and Fuel Densities for Temperature Correction

Fuel	Reference Table for Wholesale or Retail Temperature Correction	Standard Fuel Density for Retail Transactions (optional density for wholesale transactions)
Gasoline, gasoline-oxygenate blends (3.7 mass percent oxygen, maximum), gasoline ethanol blends (10 volume percent maximum)	API Table 6b	62 API (730 kg/m3) Coefficient Here 0.0007 /Degree F
Diesel Fuel (grade 2-D), biodiesel blends (20 volume percent biodiesel, maximum)	API Table 6b	37 API (840 kg/m3) Coefficient Here 0.00045 /Degree F.
Other fuels TBD	–	–

Note in S&T the coefficient method is allowed per UR.3.6.1

Refer to paragraph b-1 below.
Extracted:
UR.3.6.1.23. Recorded Representations (Invoices, Receipts, and Bills of Lading).
(a) A**n written** invoice based on a reading of a device **or recorded representation issued by a device or system** that is equipped with an **active** automatic temperature compensator shall show that the volume delivered has been adjusted to the volume at 15 °C **for liters or** (60 °F) **for gallons and decimal subdivisions or fractional equivalents thereof.**
(b) The invoice issued from an electronic wholesale device equipped with an automatic temperature-compensating system shall also indicate:
(1) the API gravity, specific gravity or coefficient of expansion for the product;
(2) product temperature; and
(3) gross reading.

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