STAFF REPORT

of the

Domestic Policy Subcommittee Majority staff
Oversight and Government Reform Committee
House of Representatives

Dennis J. Kucinich, Chairman

American Consumers will pay a Hot Fuel Premium of 1.5 Billion Dollars on Regular Gasoline Purchased during the Summer 2007

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Findings:

- **The oil industry has known for 100 years that gasoline expands with temperature. As it warms, gasoline expands by volume but not by weight or energy content. Since the 1920's, the oil industry has taken temperature into account for wholesale transactions, and use a 60 degree Fahrenheit standard when measuring gasoline at wholesale. But the oil industry does not adjust for temperature in retail sales to consumers. As a result, consumers pay a Hot Fuel Premium when gasoline temperatures exceed 60 degrees, as they do during the summer.**

- **513.8 million gallons of gasoline sold in the summer 2007 will be attributable to the thermal expansion of gasoline.**

- **Consumers will pay a hot fuel premium of about $1.5 billion in the summer 2007.**

BACKGROUND

Gasoline expands when temperatures rise and contracts when temperatures fall. The energy content of gasoline, however, is directly related to its weight, not its volume. Therefore, the energy content of gasoline does not correspondingly increase when gasoline volume expands. The standard coefficient of gasoline's expansion/contraction equals 0.069 % per degree Fahrenheit.

At wholesale, oil companies buy and sell to each other at a 60 degree standard.

Since the 1920's, oil companies have taken into account temperature's effect on the volume of gasoline in transactions among one another at the wholesale level. Wholesale transactions are temperature-compensated at a standard of 60 degrees.

For instance, if Wholesaler A sells to Wholesale customer B the quantity of 10,000 gallons, the temperature of that gasoline will first be determined before a price is calculated. Let's say that the temperature was measured at 90 degrees Fahrenheit at the time of sale. Then the difference between the actual temperature and the 60 degree standard would be multiplied by the coefficient of expansion for gasoline to determine the expansion factor at the temperature of sale. This figure would then be used to adjust, in this case downward, the deal's volume to a 60 degree standard. In the example above, that would yield 9793 temperature-adjusted gallons. Price would then be calculated on temperature-adjusted gallons.

At retail, oil companies buy at one temperature and sell to consumers at another.

However, retail sales are not temperature-adjusted. Though technology exists and has been accepted for near universal use in Canada, no U.S. retailer of gasoline compensates for temperature when selling to consumers. As a result, when temperatures of gasoline rise above the 60 degree standard, as is the case in the U.S. during the summer, the amount of gasoline by weight decreases in a gallon, and the effective price per gallon increases.

For instance, let's say that Consumer C pumps 20 gallons at Retailer D's gas station, and assume that the actual temperature of the gasoline is 90 degrees Fahrenheit, and the consumer is paying $3.50 per gallon. Due to the thermal expansion of gasoline, the retailer only had to deliver 19.59 temperature adjusted gallons to make 20 gallons at 90 degrees. The consumer, therefore, paid the retailer a premium on top of his costs for the gasoline and station operation, profit and excise taxes of $1.44. Stated another way, the consumer effectively paid about $3.57 per gallon, not the advertised $3.50.

METHODOLOGY and SOURCES

The National Institute of Standards and Technology provided the Subcommittee with a temperature survey of actual gasoline temperatures taken in underground gasoline storage tanks. The survey was conducted in 2003 in nearly all states. For our 2007 projection, we assumed that gasoline temperatures would be constant at 2003 levels. National

projected average price of gasoline comes from EIA projections for gasoline prices, http://.tonto.eia.doe.gov/steo_query/app/priceresult.asp. Summer gasoline volume sales data is conservatively assumed to be identical to summer 2006 figures.

The Subcommittee calculated the summer hot fuel premium paid by retail consumers in 2007 in the following way:

a) the average temperature of retail gasoline, by state and by month, was subtracted from the industry standard of 60 degrees Fahrenheit;
b) the difference (a) was multiplied by the expansion coefficient of gasoline, which is 0.00069;
c) the product (b) was multiplied by the number of gallons of gasoline sold, by state and by month;
d) this product (c) was then multiplied by the average price of gasoline, by state and by month. The result (d) is the cost attributable to the expansion of gasoline by volume, without a change in its weight. A negative number indicates that the cost was borne by the retail consumer.

The calculation includes all states with the exception of Nebraska, North Dakota, South Dakota, Hawaii and Minnesota. Nebraska and the Dakotas are excluded for lack of temperature data. Hawaii is excluded because the State, since the 1970's, has temperature adjusted the volume of gasoline to an 80 degree standard. Minnesota is excluded because the State has prohibited temperature compensation at all points in the supply chain, including wholesale.

RESULTS

Our calculations reveal that 513.8 million gallons of gasoline sold in the summer 2007 will be attributable to the thermal expansion of gasoline, and that consumers will pay a hot fuel premium this summer in the range of $1.5 billion.

See attached tables for calculations.