2009 Report on the Hawaii Petroleum Market under the Petroleum Industry Monitoring, Analysis and Reporting (PIMAR) Program

REDACTED

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Submitted to:

Hawaii Public Utilities Commission
Honolulu, Hawaii

Submitted by:

ICF International

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PIMAR REPORT FOREWORD

In this report, the Hawaii Public Utilities Commission (PUC) reviews the operational and pricing data submitted to the PUC by the oil industry in Hawaii, as required under Act 78 of the Hawaii Legislature. The PUC retained the services of ICF International (ICF) to assist in the compilation and analysis of the data. The period of the study extends from the initiation of the Gas Cap (September 1, 2005) to June 30, 2009. This report extends the initial report filed November 7, 2007, and the second report filed November 7, 2008.

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LIST OF EXHIBITS

NOTE: Blacked-out sections of this report represent redactions that prevent disclosure of confidential information. Where possible, certain exhibits marked [R] have been redacted to preserve public, while protecting confidential, information.

Executive Summary

The period from 2007 through mid 2009 has included the most dramatic changes in global petroleum product prices in history. Prices for the benchmark U.S. crude oil (West Texas Intermediate, or WTI) rose from $92/barrel in December 2007 and peaked at $147/barrel in July 2008. As the implications of the global financial market collapse took hold, and demand for petroleum products declined, the oil price collapsed from the July peak to as low as $40/barrel in December 2008, only 6 months later. Subsequently prices somewhat stabilized and rose to the $70/barrel level in mid 2009.

The 2009 PIMAR report assesses the impact of this extraordinary price volatility on the State, and additionally addresses a number of other key questions related to the supply and demand for petroleum products and pricing of petroleum fuels in Hawaii. The salient findings of this year's report include the following:

Key Findings

1. Hawaii wholesale prices followed the global market volatility through 2008 and 2009, although the trend in both gasoline and diesel wholesale prices tended to lag other markets by about a month for both price increases and decreases. The changes follow a strong correlation to Gulf Coast and West Coast markets.

2. Sales data reported by the PIMAR system show that 2009 petroleum demands through June have declined by about 19% from 2007 full year sales. The declines stem from reduced tourism and the impact of the economic crisis on consumer and business fuel purchases.

3. Wholesale gasoline prices in Hawaii (DTW sales to service stations) appear to be consistently in excess of the calculated gas cap based on the gas cap formula suspended in 2006. While the price level above the calculated gas cap is on the order of 3-18 cpg[1], it is likely that the formula itself may have needed to be modified for inflation of costs since 2006.

4. Wholesale diesel prices in Hawaii for ULSD (under 15 ppm sulfur diesel) sold at terminal racks appear to be at levels well above mainland markets adjusted for freight to Hawaii. This trend emerged after the extensive fall in oil prices in late 2008.

5. Hawaii's refineries have benefited competitively from the global collapse of spreads between light and heavy crude, and the relatively stronger value of residual fuel price versus crude oil due to market changes. While this has improved Hawaii's competitive position compared to other refiners, the improvement has come from the other refiners' margins being reduced to Hawaii refiner levels, not from a gain in Hawaii refiner margins.

6. Retail margins for gasoline sales at service stations increased during the sudden decline in global oil prices, but returned to more historical levels by early 2009. Retail margins for diesel fuel service station sales, while not a large volume, appear to have been extremely high in several markets through the end of this reporting period (June 2009).

[1] Cents per gallon; price range is higher for premium grades and lower (3-10 cpg) for regular grade

Impact of the Global Price Volatility on Hawaii

The PIMAR data indicate that wholesale prices in Hawaii for petroleum products moved in tandem with the global markets for all primary products[2]. The data indicated that Hawaii prices tend to lag global markets in both the upward trend and in the period where prices decline. This is a normal situation seen in Hawaii's isolated market over the study period.

The price volatility and global recession have had a much more pronounced impact on the demands for petroleum products in Hawaii. Demand for petroleum products in Hawaii appear to have declined about 19% from 2007 based on PIMAR data from the first half of 2009. This is about a reduction of 1 million gallons per day in the four primary petroleum products: gasoline, jet fuel, diesel, and residual fuel oil. The reduction in gasoline demands is actually smaller (at about 7%) than reductions in jet fuel, diesel and residual fuel oil (RFO). Lower jet fuel demand as well as RFO demand (used for ships as well as power generation) are at levels nearly 20% below 2007 and are reflective of reduced tourism. Diesel sales data in PIMAR are improved from last year's report; however, there remain several issues regarding reporting categories which need resolution with reporting Parties. It is clear that diesel demands are down, but the magnitude (36%) may not be accurate.

These declines in demand are greater than the U.S. overall reduction in petroleum demand, which was about 9.3% from 2007 full year to the first half of 2009, based on U.S. Energy Information Administration (EIA) data[3] which, in ICF's opinion, is due to Hawaii's high dependence on tourism compared to the rest of the United States.

It is also noteworthy that the demand for petroleum products has remained at lower levels despite the decline in petroleum prices from mid 2008. This indicates that the absolute price of fuel is less of an issue than the full impact of the recession on demand.

Reasonableness of Hawaii Wholesale Prices Compared to Other U.S. Markets

Analysis of the wholesale price trends in Hawaii also indicates that there is a very strong correlation between the spot market price of gasoline in the U.S. Gulf Coast and the bulk prices charged by refiners to the parties who purchase their gasoline for resale in Oahu and neighbor islands. However, the price that the resellers charge service stations for delivered gasoline does not have as strong of a correlation. In other words, as gasoline prices rise in global markets, there is a lag in when these prices are passed on to Hawaii service station dealers. The lag appears whether prices rise or prices fall, based on statistical analysis.

Analysis of Hawaii wholesale prices compared to other U.S. markets for primary products indicates that, in general the wholesale prices in Hawaii are at reasonable competitive differences with the mainland markets. This means that wholesale prices in Hawaii reasonably track markets in the mainland, and are at premiums reflective of import parity pricing. However, the current PIMAR report has identified that price differences for ULSD (ultra low sulfur diesel) used for on-road vehicles appears in 2009 in particular to be at significantly higher prices than would be expected based on typical freight costs from other markets.

[2] Gasoline, diesel fuel, jet fuel and residual fuel

[3] http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/petroleum_supply_monthly/historical/2009/2009_08/pdf/table3.pdf

Oahu Prices Compared to Neighbor Islands

The data indicate that wholesale gasoline prices to service stations have maintained relatively steady differentials from Oahu to other zones since the end of the gas cap period in 2006. Prices in higher volume zones (2, 3, 7 and 8) have been 10-18 cpg on average above Oahu, with the lower range seen in Zones 7 and 8. The differentials are reasonable given transportation (barging), storage and trucking costs to these markets. Smaller volume zones are at higher differentials due to the higher cost per barrel to move smaller volumes to these zones.

Diesel and jet fuel prices between zones have appeared to be at reasonable differentials over the period. However, beginning in late 2008 diesel prices in Maui and Hawaii (Zones 3 and 7) appear to have declined to levels well below those in Oahu. This appears inconsistent with the higher costs to move product to those markets from Oahu and it is possible this issue may be related to remaining reporting issues.

Comparison with the Gas Cap Formula

Prior reports have indicated that the petroleum industry has, on average, kept wholesale prices at levels approximately near where the gas cap formula may have set the ceiling. Prices have tended to lag the gas cap formula (i.e. be lower than) in a rising market, and exceed the gas cap formula in a falling market.

PIMAR data from 2008 showed that the market rise from January to July (about a $45/barrel rise in crude oil prices), followed by a dramatic fall (dropping over $100/barrel to as low as $40/barrel by December) resulted in gasoline DTW prices higher than the calculated gas cap formula by 10-16 cpg in major volume zones (on average). This is a significant difference, but not unexpected given the unprecedented price collapse and the historical price lag in Hawaii.

In 2009, global crude oil and gasoline prices have gradually risen from December's low price ($40/barrel); however, the DTW gasoline prices in Hawaii have remained above the calculated gas cap formula, with prices in major volume zones averaging 3-10 cpg above the gas cap formula for regular grades, and as much as 18 cpg above the calculated cap for premium.

It should be noted that the gas cap formula was established in 2005-2006. The cost basis for the formulas included assessments of costs to store, transport and deliver gasoline in all zones. These costs have likely risen in the past several years, so it would be logical that the gas cap formula may have been adjusted upward somewhat (had it still been in effect). However, it is clear that regular unleaded prices that are at the higher end of the 3-10 cpg "above the formula" result would be in excess of any inflation-type adjustment on the formula.

Retail Service Station Margins for Gasoline

Retail service station margins for gasoline did not fall under the Gas Cap legislation; however, data is available in the PIMAR system and through access to OPIS retail price information to determine service station margins. In general, these margins have been relatively stable over the entire period. Margins in Oahu have averaged about 20 cpg, and margins in Zone 2 (Kauai) and Zone 7 (Hilo) about 25-30 cpg. Zones 3 and 8 (Maui and Kona) have averaged about 40 cpg. The retail margin differences between the zones are significant components of the actual retail prices consumers pay.

There was a significant increase in retail station margins in the second half of 2008, which is the period when oil markets plunged after reaching record heights in July 2008. This probably reflected service station dealers lowering their street prices more slowly than their actual DTW purchases prices fell.

Although not the focus of this study or the PIMAR system, higher retail margins in the neighbor islands may not be unreasonable due to possibly lower throughputs at neighbor island service stations compared to the high-population Oahu market and the need for higher margins to cover fixed costs (real estate, labor, etc.). Of course, it also is possible that the pricing in those markets is higher due to less competition and is set by what the customers have been willing to pay.

Retail Service Station Margins for Diesel Fuel

Diesel fuel is sold in Hawaii for on-road usage (service stations, truck fleets, etc.) and off-road use (utilities, farms, etc.). The PIMAR data provides limited access to retail service station prices (by recording the price charged for diesel at company owned stations). The Commission's monitoring of these data identified that subsequent to the price peak in July 2008, the diesel fuel retail prices at service stations did not decline as quickly as the price of either retail and wholesale gasoline or wholesale or other non-service station diesel prices. This price anomaly was primarily seen in Oahu and Maui zones, and at times retail margins over $1.00 per gallon were seen.

The higher margins and prices did not appear to impact the volume of diesel sold, and perhaps this was due to the fact that prices were still lower than the July 2008 peak, and that retail service station diesel customers have no other option for fuel purchase.

Wholesale Margins for Gasoline

Margins for suppliers who provide gasoline to service stations, either as delivered sales on a DTW basis, or as rack sales to jobbers showed some significant volatility during the price escalation in 2008 and then rapid descent. Since 2005, the supplier margins in Oahu (Zone 1) have averaged about 23-24 cpg (cents per gallon). These margins are not unreasonable in ICF's opinion since they must cover all supplier costs of business, including delivery of fuel.

In 2008 during the price escalation, prices rose worldwide rapidly. Prices that refiners charge suppliers for fuel in Hawaii rose in lock step with global prices (there is a very strong correlation between prices in the U.S. Gulf Coast and Singapore with Hawaii prices charged by refiners to suppliers). However, as these prices rose, DTW prices to service stations lagged considerably, resulting in an average DTW margin of only about 5 cpg (average DTW price minus average bulk sale in Zone 1) in the first half of 2008.

As prices began to collapse worldwide, the Hawaii DTW prices began to fall, but (as usual) not as quickly as the global fall. Margins for suppliers in the second half of 2008 averaged about 60 cpg. Overall, 2008 had DTW margins averaging about 32 cpg in Zone 1.

The rapid transitions in price over recent years create high volatility in suppliers' earnings. Periods of high and very low margins have been seen, but overall these margins, on average, are not unreasonable for gasoline. This would be evident if global petroleum commodity prices would stabilize within reasonable bands rather than the wide variations recently seen.

Impacts of 2008 and 2009 Markets on Hawaii Refiners

Previous reports have indicated that Hawaii's refineries are configured to meet the State's need for petroleum products (high yield of jet fuel and residual fuel oil), but both refineries are competitively weak compared to other U.S. refineries. Several of the main reasons for the competitive weakness include:

- Minimal ability to run heavy, higher sulfur crude oil which is typically heavily discounted from light, low sulfur crude oil
- High yield of residual fuel oil, which is typically sold at high discounts to crude oil price

One of the two Hawaii refiners, Chevron, indicated in 2009 that they are studying[4] the possibility of shutting down their refinery and supplying Hawaii from other sources. Consequently the concern about a possible closure is a genuine issue for the Commission to consider.

Over the 2008-2009 period, the global market conditions actually worked to improve the competitive position of the Hawaii refineries. On the positive side, light sweet crude oil prices narrowed significantly to heavy crude, due to the global reduction in demand which triggered lower global crude oil processing. In addition, the relative price discount of residual fuel to crude oil also significantly declined (demand for residual fuel for power and ship bunkering was not as affected as light transportation fuels). This trend made Hawaii's estimated refinery margin very close to major refineries in the U.S. Gulf Coast.

Unfortunately, this improved competitive position stems from the fact that the profit margin of major U.S. refineries has materially declined as heavy crude discounts have narrowed, and spreads between gasoline and diesel versus crude have collapsed with lower demands. So while Hawaii's refineries are somewhat more competitive, their overall profitability has likely not materially changed. The prevailing conditions, however, may make it less likely that it is economic to supply Hawaii with imported product instead of refinery supply.

Supply and Demand of Petroleum Products in Hawaii

As demands in Hawaii for petroleum products have declined in 2008 and 2009, refiners have reduced crude runs to balance supply and demand. Crude runs overall have been reduced about [redacted], and imports of jet fuel have also been reduced. Inventory levels have been well managed during this new period of lower demands.

The lower refinery crude runs mean that the refiner's fixed costs (labor, materials, etc.) become a more difficult cost to cover if throughputs and gross margins are lower; however, the alternative of keeping crude runs higher and exporting product may be a worse economic alternative in a weak global economy.

Overall (statewide) inventory days supply has averaged about 29 days for gasoline, 35 days for diesel and about 40 days for jet fuel and residual fuel based on 2009 demand levels.

[4] http://www.bloomberg.com/apps/news?pid=20601072&sid=awtpMk3dChV8

Future Outlook for Petroleum Markets

There are a number of emerging issues that will impact petroleum markets in Hawaii. In general these issues will affect all U.S. refiners to varying degrees, but the impact for Hawaii may be disproportionately larger.

The primary issues include:

1. Continued development of U.S, initiatives to reduce gasoline consumption through higher CAFE standards, which will lower gasoline demand.

2. Continued efforts to implement higher levels of ethanol in gasoline and biodiesel usage, with the potential EPA endorsement (still under review) to increase the maximum allowable ethanol in gasoline to 15% from 10%. This will increase supply of gasoline.

   - *The increased supply (ethanol) and lower demand (CAFE standards) will compress gasoline margins and reduce refinery and supplier margins*

3. Reductions in sulfur level of off-road diesel fuel (already legislated) in 2010 and 2012, and reductions of sulfur in residual fuel oil for ship bunkering (potentially beginning as early as 2015)

   - *The lower sulfur specifications may require either significant exports of Hawaii refinery production and imports of lower sulfur products, or massive (and unlikely) investment in Hawaii refineries*

4. Implementation of reductions in the carbon content of fuels to reduce CO_2 levels in the atmosphere and control greenhouse gases. These actions could involve substitution of cellulosic ethanol in gasoline, refinery investment in either facilities or the purchase of carbon credits, development of alternative fuels such as electric vehicles, etc., and development of renewable power generation sources to reduce petroleum dependence. In Hawaii, the recent 2008 agreement[5] between the State and Hawaiian Electric (HECO), committing HECO to the following - no new coal plants, integrate up to 1,100 megawatts of renewable energy into the power grid, and convert existing fossil fuel generators to biofuels using locally grown crops, is a major initiative toward these goals.

   - *These initiatives are all working toward the goal of reducing dependence on fossil based fuels. To the degree these are successful, the likely impact on petroleum markets in Hawaii would be a significant transition to lower fossil-fuel based needs and weaker Hawaii refinery profits*

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[5] A copy of the agreement between the State and Hawaiian Electric can be accessed at: http://www.heco.com/vcmcontent/StaticFiles/pdf/STATE_HECO_Energy_Future_Agreement_10_20_08.pdf

Introduction

ICF International (ICF) has been working at the request of the Hawaii Public Utilities Commission (PUC) to develop the 2009 report on the status of the petroleum industry in Hawaii under the Petroleum Industry Monitoring and Reporting (PIMAR) program. The PIMAR program, enacted on May 5, 2006 under Act 78, requires the PUC to implement a process to obtain information from the oil companies and other relevant parties in Hawaii so that the prices, volumes, margins and profits of petroleum companies in Hawaii become more transparent.

The specific requirements for this study as outlined by the PUC include the following:

1) *Analyzing and interpreting information and data reported to the State by reporting companies, including petroleum industry distributors, and other petroleum industry participants, under HRS Chapter 486J, including HRS §§ 486J 3, 486J 4, and 486J 4.5.*

2) *Analyzing and interpreting any other necessary and relevant information obtained by the State relating to the supply, prices, margins, and profits of petroleum products, with particular emphasis on motor vehicle fuels that are manufactured or compounded, imported or exported, and sold, exchanged, or otherwise transferred or used in the State of Hawaii. The information analyses and interpretation shall include, but not be limited to:*

    a) *The nature, cause, and extent of any petroleum or petroleum product situation or condition affecting supply, price, margins, or profits;*

    b) *The prices, with particular emphasis on wholesale and retail motor vehicle fuel prices, and any significant changes in prices charged by the petroleum industry for petroleum or petroleum products sold in Hawaii and the reasons for the changes;*

    c) *The income, expenses, margins, and profits in Hawaii, both before and after taxes, of each distributor and the income, expenses, margins, and profits, both before and after taxes, of major oil companies in other regions of the United States and other countries; and*

    d) *The emerging trends relating to supply, demand, price, margins, and profits.*

3) *Analyzing the effects of state and federal policies, rules, and regulations upon the supply and pricing of petroleum products.*

4) *Analyzing gasoline transactions in Hawaii over the Study Period, to address the following questions:*

    a) *Comparison of gasoline prices in Hawaii to the gas caps, both during the Gas Cap period and after the Gas Cap was suspended*

    b) *Identification of actual margins for the suppliers (who buy from refiners) and jobbers (who buy from suppliers and refiners) in Hawaii based on data reported to the PUC*

    c) *Identification of retail service station margins for gasoline dealers in Hawaii*

The 2009 Report will examine these areas as in prior reports, but will not detail the background of the petroleum industry in Hawaii. This background is available in the 2007 and 2008 reports. Should anything regarding the industry have changed substantially, ICF will have included those changes in the current report. The report will focus directly on the analysis and the key findings on the impact on Hawaii consumers in the very volatile 2008-2009 time period in global oil markets.

Last year's PIMAR report assessed data through June 30th, 2008. The report period ended as global oil prices reached unprecedented high levels of $147 per barrel of WTI crude. Beginning in July, the impact of the high petroleum prices and the global financial crisis began significantly impacting consumer demands for petroleum products, and also demands for all consumer goods. Petroleum product prices began an even more unprecedented collapse, falling over $100 per barrel by December 2008. Prices stabilized and then began recovering. The impact on overall consumer buying patterns was much greater than just the concern about petroleum price. The erosion of savings value, including retirement plans, housing equity and job uncertainty led to a more conservative financial mindset among consumers. This fact caused a pullback in spending for travel that affected the entire Hawaii economy and petroleum industry, even after petroleum prices returned to lower levels.

A Glossary of key terms is included as Appendix 1.

Petroleum Supply and Demand

The ultimate price of a commodity is very heavily influenced by the supply and demand for the commodity in the marketplace. Hawaii's core price of petroleum products is determined by global factors on the price of oil, since Hawaii's demand for oil is a bit more than one tenth of one percent of global oil demand. Within any region, the local supply and demand for petroleum products can create price anomalies from the global market due to supply disruptions (weather, refinery outages), demand changes or regulatory changes.

The Supply and Demand section examines the components of the supply chain for petroleum products in Hawaii, including Demands, Refinery Production, Inventories, and Imports and Exports. Overall, the PIMAR data indicate that the demand for petroleum products in Hawaii in 2008 and 2009 were reduced from prior year's steady growth due to the severe market volatility and global economic recession. The petroleum industry modified operational performance to maintain a relatively smooth supply of product to Hawaii consumers by adjusting both refinery production and imports/exports. Specific discussion follows.

Demands

Analysis of Hawaii demands for primary petroleum products shows that the impact of the recession was very evident. PIMAR data tracks all wholesale sales in Hawaii, which can vary due to wholesale delivery patterns. Exhibit 1 shows actual sales by zone on a thousands gallons per day basis over the most recent six month period in the report, ending June 30, 2009.

Exhibit 1: Average Daily Petroleum Product Sales Volume by Zone, 2009 YTD
Thousand Gallons per Day [R]

Zone	Motor Gasoline	Jet Fuel	Diesel	Residual Fuel Oil	Total
1	757.9	[redacted]	225.8	[redacted]	[redacted]
2	69.8	[redacted]	79.0	[redacted]	[redacted]
3	145.2	[redacted]	220.8	[redacted]	[redacted]
4	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
5	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
6	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
7	106.3	[redacted]	34.7	[redacted]	[redacted]
8	102.2	[redacted]	47.2	[redacted]	[redacted]
Total	**1,186.5**	[redacted]	**626.4**	[redacted]	[redacted]

Source: PIMAR, PUC Transaction Database, EIA-814
Note: These totals are for illustrative purpose only and may be lower than actual due to missing some weeks for companies that filed data and also because some companies did not file reports at all.

As in prior years, the demand profile shows about 75% of Hawaii petroleum product consumption is in Zone 1, Oahu.

Exhibit 2 shows the pattern of Hawaii total demand from 2007 to 2009 for each product, and the percentage decline from 2007 levels. It is very apparent that across the board petroleum demand has declined, and has remained lower through mid-2009 despite the lower petroleum prices from mid-July 2008 peak. The decline in sales (demand) reverses a steady trend upward for U.S. and Hawaii transportation fuel demands. The demand reduction appears to include all products, with the reduction in jet fuel being the greatest on a percentage basis, as well as higher sulfur residual fuel (the fuel used for ship bunkering, so therefore also possibly tourist related). Demands in 2009 YTD average about [redacted]

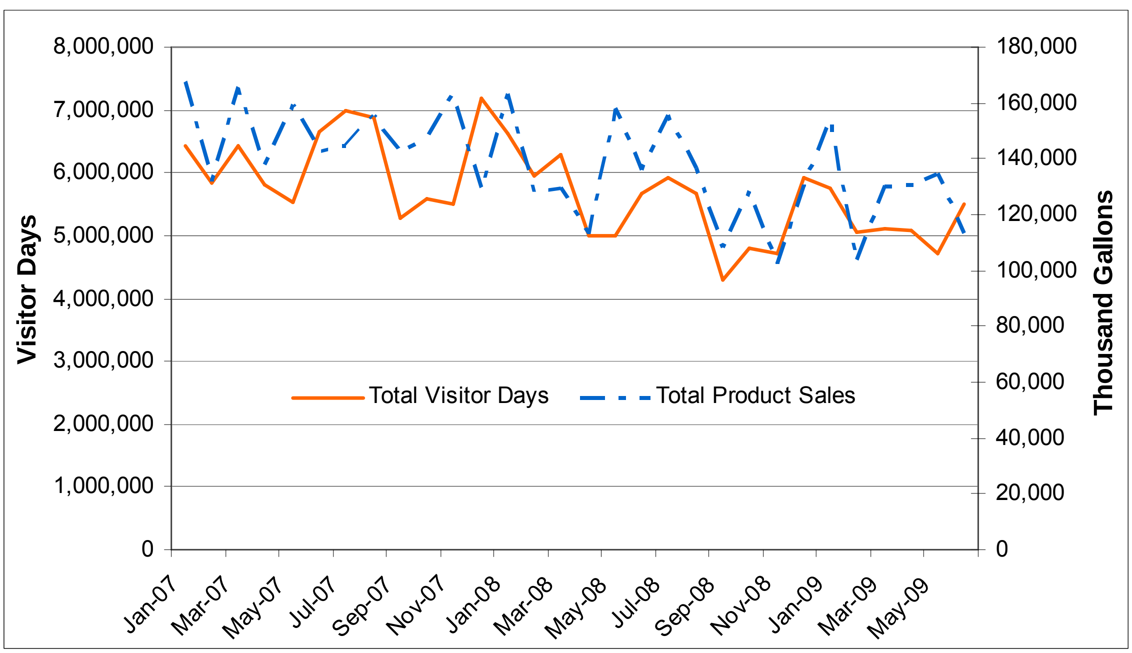
Exhibit 2: Hawaii Total Demand by Product, 2007-2009 YTD
Thousand Gallons per Day [R]

	Motor Gasoline	Jet Fuel	Diesel	Residual Fuel Oil	Total
2007	1,274.0	[redacted]	986.7	[redacted]	[redacted]
2008	1,243.1	[redacted]	818.1	[redacted]	[redacted]
2009 YTD	1,186.5	[redacted]	626.4	[redacted]	[redacted]
2007 vs. 2009	-6.9%	[redacted]	-36.5%	[redacted]	[redacted]

Source: PIMAR, PUC Transaction Database, EIA-814

The lower sales numbers stem from both reduced Hawaii consumer demands as well as the reduction in tourism and a slowing economy. Generally, a slower economy will affect diesel volumes (reduced shipments by truck). In Hawaii's case, this also affects residual fuel demand (less cruise ship traffic and consumers possibly reducing power usage) and of course jet fuel demands. Exhibit 3 shows the trend in total petroleum sales against the number of state visitors.

Exhibit 3: Gasoline Sales vs. Hawaii Visitor-Days



Source: DBEDT Monthly Visitor Statistics, PIMAR, and PUC Transaction Database.

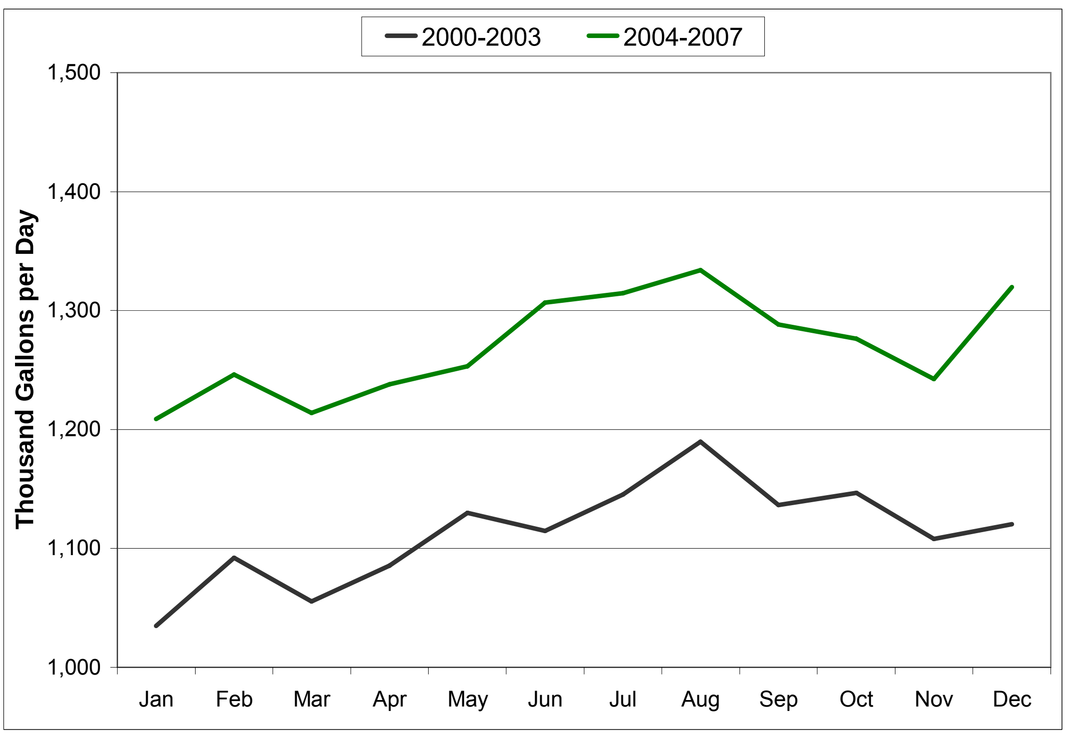
Evaluation of Hawaii Gasoline Demand Seasonality

In order to determine the variability of gasoline demand in Hawaii, ICF examined historical seasonal trends in gasoline demand through the year. Due to the huge impact of prices and the recession on 2008 and 2009, we focused on earlier periods to observe seasonal trends. Since PIMAR data was not in place over the period we examined, we utilized EIA Prime Supplier sales, which are reported monthly to EIA by primary suppliers in Hawaii.

Exhibit 4 shows the seasonality over two time periods, 2000-2003 and 2004-2007. Obviously the 2004-2007 period has higher sales levels due to demand growth in Hawaii. What is evident from both charts is that the annual movement of gasoline demand month to month follows a relatively similar pattern. Demands have a mini-peak in February, followed by a sustained rise peaking in August, and then a gradual decline with a final boost in December.

The level of change from January to August is about 13% growth in demand, or roughly 150,000 gallons per day. Since this change occurs over time, it is likely managed by the refiners through inventory planning and managing refinery operations (maximizing gasoline yields and/or occasional imports in the summer; scheduling refinery maintenance in lower demand periods, etc.). This overall change is similar to the U.S. average summer gasoline demand “peak” over January, which is also about 13% growth.

Exhibit 4: Hawaii Gasoline Demand Seasonality, M Gal/day



Source: EIA – Prime Supplier Sales Volumes

Refinery Production

Hawaii's primary petroleum supply is from the Chevron and Tesoro refineries on Oahu. Over the past 18-24 months, the refineries have had to modify their operation to recognize changing demands and market conditions. The two refiners have off-take agreements with major suppliers (Aloha, Mid Pac and Shell) as well as smaller suppliers and jobbers. The PIMAR data show a very clear change in overall refinery throughput and production during this period as seen in Exhibit 5:

Exhibit 5: Refinery Crude Runs and Production History, TBD [R]

Refinery Production (TBD)							
	Crude Inputs	Gasoline	Kerosene-type Jet Fuel	Diesel	Residual	Total	Difference
4Q 2005	[redacted]						
1Q 2006							
2Q 2006							
3Q 2006							
4Q 2006							
1Q 2007							
2Q 2007							
3Q 2007							
4Q 2007							
1Q 2008							
2Q 2008							
3Q 2008							
4Q 2008							
1Q 2009							
2Q 2009							

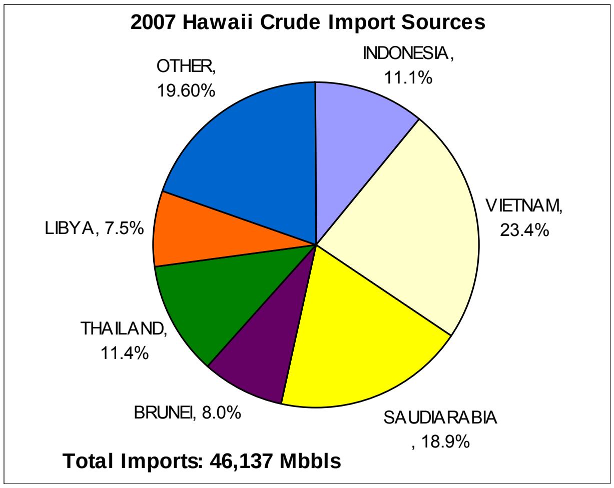
Source: IPIR and PIMAR
* Estimated due to missing data

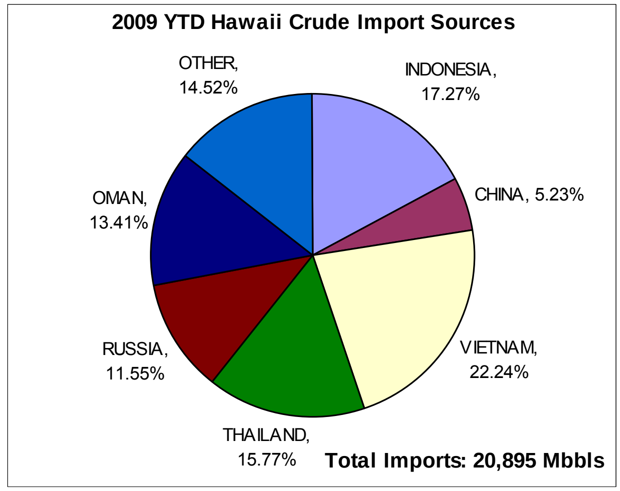
While Chevron and Tesoro, as well as other suppliers, have also modified imports and exports to balance demands, it is clear from this chart that the overall supply of petroleum products has significantly declined since the third quarter of 2007. Production has fallen from [redacted] in 2006-2007 down to about [redacted] from January 2007, a drop of 10-15%.

The crude run reduction has primarily been seen in lower jet fuel, gasoline and diesel production. The fact that residual fuel production has not declined indicates that Hawaii refiners may have been modifying their crude purchases to a heavier crude supply if economic with higher residual fuel prices relative to crude. Exhibit 6 shows the pattern of crude imports since 2007 for Chevron and Tesoro. Crude from Saudi Arabia, Libya and Brunei has been replaced with Oman and Russian crude and also additional crude from Thailand and Indonesia.

Refiners will make substitutions of crude based on the cost of the cost of the crude, yields and regional demands.

Exhibit 6: Hawaii Crude Imports by County of Origin, 2007 and 2009 YTD





Source: EIA-814 Company Level Imports

Imports and Exports of Products

Imports and exports of petroleum products have been utilized by refiners and suppliers in Hawaii to cover gaps or surpluses between refinery production and demands. In 2008 and 2009, as demands fell for key products such as gasoline, jet fuel and diesel, Hawaii refiners adjusted operation as shown in Exhibit 7 below to reduce supply and keep inventory levels from excessive building. As supply was being reduced to balance demands, imports and exports continued to be used as a "flywheel" to cover gaps. Exhibit 7 below shows the trend over the study period. (Note that this Exhibit does not include imported ethanol volumes, only petroleum-based imports.)

Exhibit 7: Import and Export Summary over Study Period [R]

(Thousand barrels/day)						
	Finished Products		All Others		Total	
Year	Imports	Exports	Imports	Exports	Imports	Exports
2006	[redacted]					
2007						
2008						
2009YTD						
Average						

Source: IPIR, PIMAR, and EIA-814

Imports and exports include finished products and other products (unfinished or partially refined product). Note that Hawaii is fairly balanced overall on petroleum product supply. The sum of imports is slightly more than the sum of exports over the period with imports somewhat higher prior to the demand declines due to the recession.

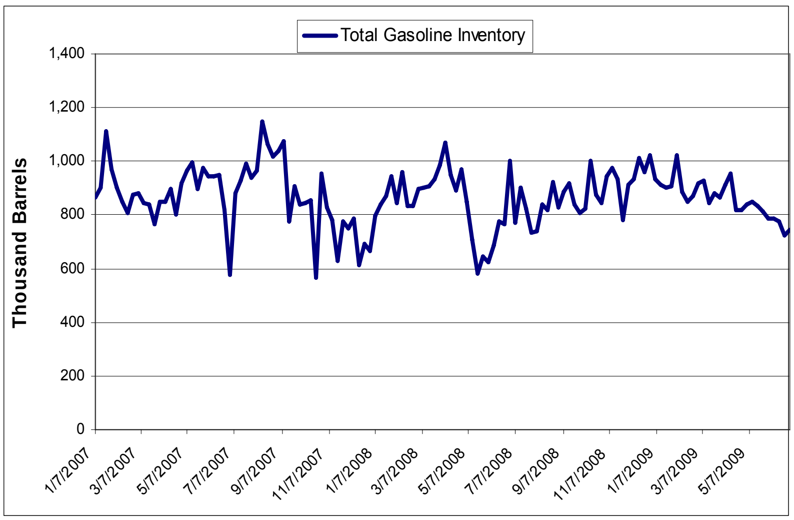
The recent slowdown in demands and reduction in refinery production has caused the 2009 YTD numbers to show that more products are being exported than imported. The large drop in finished product imports in 2009 is primarily lower jet fuel imports. The large volume of “other” or unfinished product exports is primarily refinery semi-processed gas oils which Hawaii refiners may not have had capacity to convert to finished products.

The trend in imports and exports is entirely consistent with the changing demand patterns from the recession that impacted Hawaii and the adjustments in refinery throughput to control inventory of product

Petroleum Product Inventories

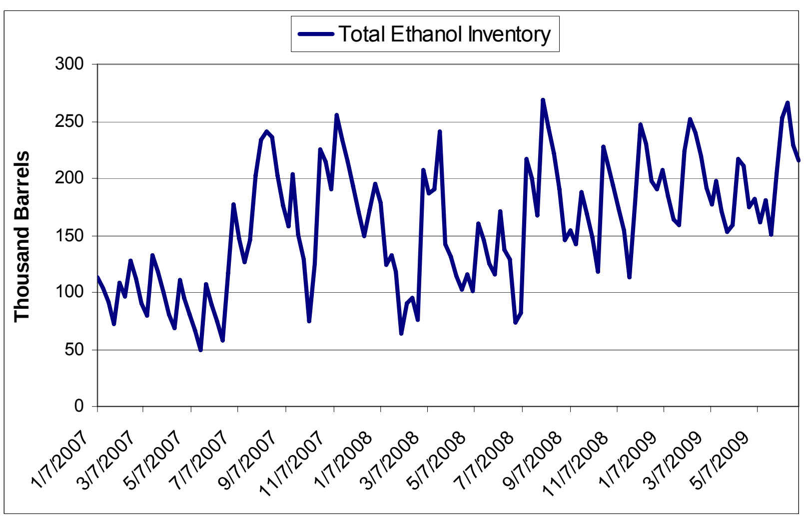
Overall inventory of petroleum product in Hawaii provides a reasonable cushion of days supply for each product. Charts below indicate suppliers and refiners are managing inventory levels well with the volatile markets and lower demands. Inventory trends of the key products are shown below from the PIMAR system.

Exhibit 8: Gasoline Inventory



Source: PIMAR

Exhibit 9: Ethanol Inventory



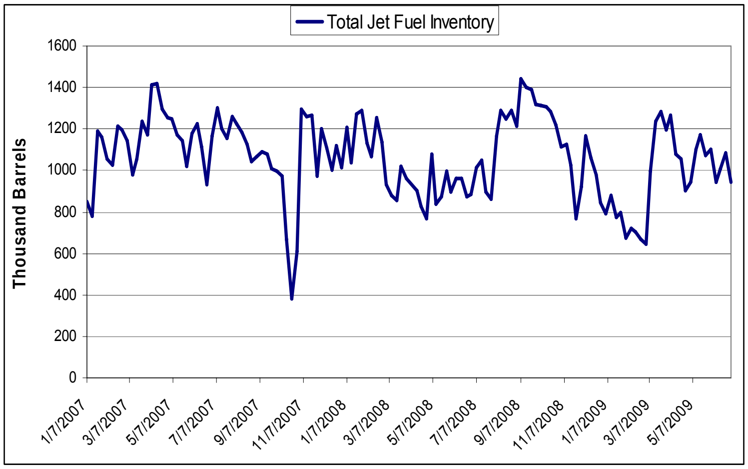
Source: PIMAR

Gasoline inventory (Exhibit 8) includes all refinery and wholesale distributor inventory of gasoline, but excludes ethanol. The inventory shown above is essentially all gasoline that must be blended with ethanol for consumer sales. Inventory levels range between 800 and 1000 thousand barrels, and averages about 29 days' supply.

The actual availability of gasoline to sell must include the ethanol inventory as well, since ethanol is blended into gasoline only as trucks are loaded for service station delivery.

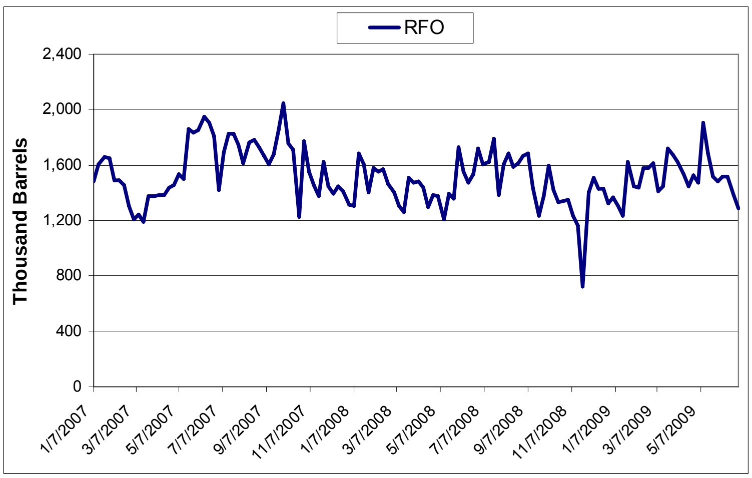
Ethanol inventory (Exhibit 9) levels have averaged about 175,000 barrels in the past year; this is about 60 days' supply of ethanol for use in E-10 blending. The ethanol inventory is "spiked" because ethanol continues to be 100% imported supply, and spikes represent deliveries of ethanol cargoes. The higher days supply of ethanol reflect the need for more contingency inventory in the event ethanol marine deliveries are delayed.

Exhibit 10: Jet Fuel Inventory



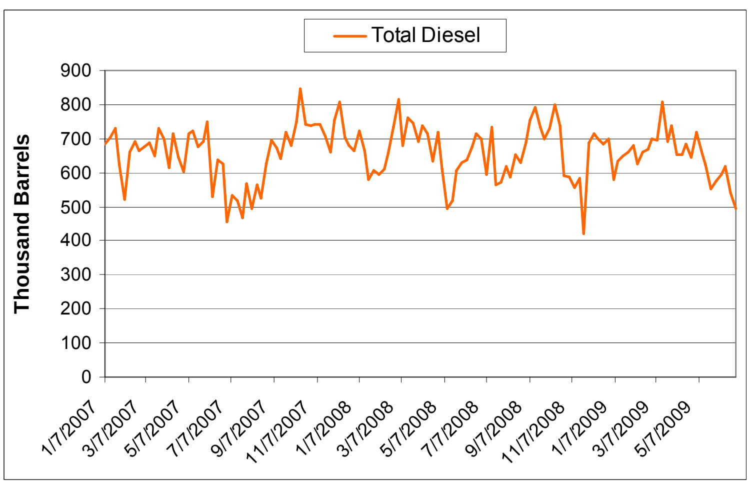
Source: PIMAR

Exhibit 11: Residual Fuel Inventory [R]



Source: PIMAR

Exhibit 12: Diesel Fuel Inventory Trend [R]



Source: PIMAR

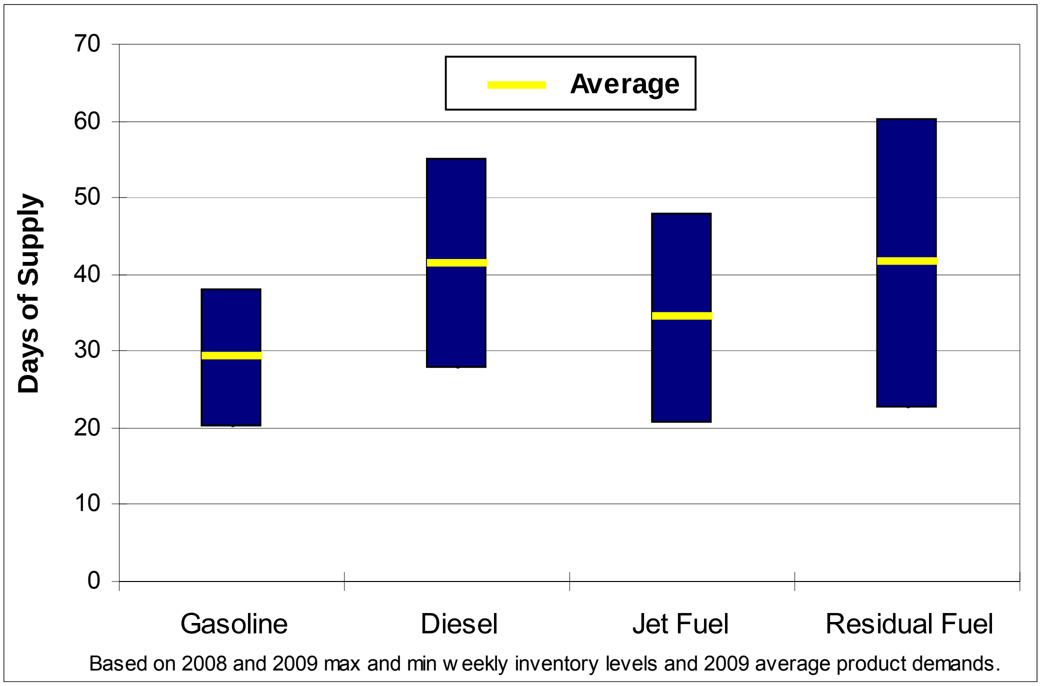
Jet fuel inventory (Exhibit 10) levels exhibit a "spike" pattern as well due to the fact that there are ongoing cargo imports of jet fuel (roughly 300,000 barrel cargoes). Despite declines in jet fuel demands with lower levels of flights into and out of Hawaii, inventory levels remain in the million barrel range, down perhaps 10% from 2007 average levels.

Residual fuel inventory is maintained by refiners as well as some of the largest consumers of residual fuel. Exhibit 11 shows the trend in both low sulfur (under 1% sulfur) and higher sulfur residual fuel over the period. Residual fuel inventories are very high compared to other petroleum products. Low sulfur residual fuel is used by a number of utilities for power generation, and they report the large majority (over [redacted]) of all low sulfur residual fuel inventory. The high inventory level is maintained presumably to insure that adequate supply is available in the event of a refinery disruption. Overall inventory of both residual fuels have been fairly stable over the period, with no significant reduction related to lower demand levels cited for the higher sulfur grade.

Diesel fuel inventory (Exhibit 12) levels in Hawaii average in the 600-700 MB range in total. Diesel fuel in Hawaii has three distinct grades of product: ULSD (ultra low sulfur diesel), required for all on-road vehicles, low sulfur diesel, required for all off-road equipment, and High sulfur diesel, which can be used in utilities for power generation (or home heating oil). As the trend shows, as Federal legislation took place in 2006 requiring all on-road sales to be ULSD, volumes of higher sulfur diesel in inventory declined. In 2012, all diesel use must be ULSD, which may require added exports and imports of diesel for compliance, unless refinery capability changes.

Exhibit 13 below shows for each of the primary products the range of days of supply in 2008 and 2009. Gasoline has the lowest days supply; however, this is a bit misleading since gasoline volumes do not include ethanol, and since all three other products (jet, diesel and residual oil) have a significant volume of reported inventory in place at consumer facilities (HFFC inventory at Honolulu airport, and utility inventory of diesel and residual oil at power plants).

Exhibit 13: Average and Range of Inventory Days Supply, 2008-2009



Source: PIMAR, PUC Transaction Database

Overall Hawaii Petroleum Product Supply and Demand

The overall supply and demand of petroleum products in Hawaii is shown in Exhibit 14. In order to show the most current profile, the exhibit shows the 2009 Year to Date (through June) supply and demand.

Exhibit 14: 2009 Hawaii Petroleum Products Supply and Demand
Hawaii Supply and Demand Balances, 2009 YTD [R]

Thousand Barrels per Day	Gasoline	Diesel	Jet	Residual
Net Production	[redacted]	[redacted]	[redacted]	[redacted]
Plus: Imports	[redacted]	[redacted]	[redacted]	[redacted]
Ethanol Imports[6]	[redacted]	[redacted]	[redacted]	[redacted]
All Other Imports	[redacted]	[redacted]	[redacted]	[redacted]
Plus: Inventory Draw	[redacted]	[redacted]	[redacted]	[redacted]
Less: Exports	[redacted]	[redacted]	[redacted]	[redacted]
Supply	[redacted]	[redacted]	[redacted]	[redacted]
Sales	[redacted]	[redacted]	[redacted]	[redacted]
Own Use	[redacted]	[redacted]	[redacted]	[redacted]
Demand	[redacted]	[redacted]	[redacted]	[redacted]

Source: PIMAR and EIA-814
Note: Using PIMAR diesel sales numbers, not 2007 DBEDT

The supply and demand data show that gasoline and residual fuel are fairly balanced, with ethanol imports required to meet E-10 blending for gasoline sales. Jet fuel demands are met by refinery production supplemented by an additional 35% jet fuel imports. Residual fuel refinery production is adequate to meet state-wide demands.

The supply and demand balance shows in one snapshot an overview of the Hawaii petroleum product balances. In an ideal world, the total supply and demand for each product would precisely balance. The PIMAR system's data integrity has improved each year since it was initiated in 2007; however, there remain data reporting inconsistencies that are gradually being resolved. The areas which remain to be resolved have been noted by the Commission based on their observations and concurrence from ICF. These include:

1. Diesel sales are not being completely reported on sales forms (W-130). There is clear improvement following Commission discussions with some Parties, but additional clarity is needed on proper diesel reporting categories, in particular for utility sales.
2. Jet fuel supply has exceeded demand in the PIMAR supply-demand balances. In the 2009 report, there appears to be about 15% more supply than demand.
3. Ethanol imports reported in the PIMAR system understate the actual ethanol required to blend E-10 gasoline. Comparison with EIA reported imports indicates that some foreign imports from trading companies may not be fully reported.

[6] Ethanol imports reported from PIMAR database. Actual imports appear higher, based on EIA data.

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Petroleum Prices

This section of the report focuses on absolute wholesale price trends for crude and primary products. It will assess relative prices in Hawaii versus other markets, prices in neighbor island zones versus Oahu, and comparisons with the gas cap pro-forma (had it been continued).

Crude Supply Cost

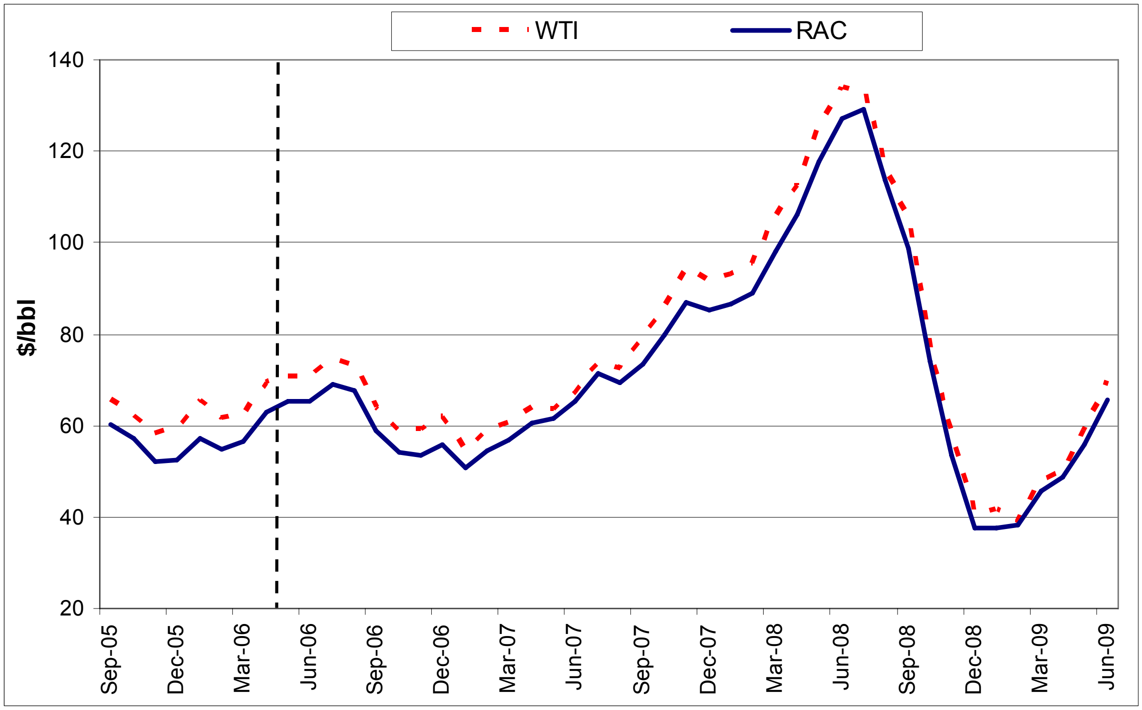
Global crude prices have seen extreme volatility in the past two years, and this has impacted Hawaii. Exhibit 15 and Exhibit 16 show a chart and a table depicting this. Hawaii's crude prices, as noted in prior reports, have tended to be significantly higher than U.S. refiner acquisition cost (RAC) prices as reported by EIA. Hawaii crude prices have typically approximated and tracked the U.S. benchmark light, sweet crude WTI (West Texas Intermediate). This has been a significant disadvantage for Hawaii refineries.

During the volatile 2008 period, these differences compressed in early 2008 as global prices rose, and Hawaii's crude price lagged the overall rise in prices (this occurred because Hawaii's crude supply is priced at the source, and a high percentage is from the Middle East and Southeast Asia, which is more distance than average supplies into the U.S. mainland (domestic crude, nearby sources such as Mexico, Canada, etc.). In other words, an average cargo required in Hawaii on a given date would have been loaded and priced out several weeks before a cargo into the Gulf Coast from Mexico.

In the second half of 2008, prices plunged at an unprecedented level due to the overall global recession, caused by significant changes in consumer demands. This situation caused Hawaii's "lag" effect to be a negative, and Hawaii refiners were heavily disadvantaged because their crude was priced several weeks before delivery, and their product sales are tied to global markets when the crude was run.

However, the dramatic impact of the recession on oil demands and prices caused OPEC to take action to reduce sales of crude oil, reducing production as much as 3.5 million barrels per day. These crude cuts and lower demands resulted in a much more compressed spread between light and heavy crude oil in 2009. This trend, which is still occurring, has resulted in Hawaii's crude cost becoming much less of a penalty in global markets. This is clearly positive for Hawaii refiners compared to refiners who run heavy crude (note the collapse in spread in Exhibit 16).

Exhibit 15: Hawaii Crude Cost Comparison to RAC and WTI [R]



Source: Hawaii- IPIR and PIMAR; WTI & RAC- EIA

Exhibit 16: Hawaii Crude Cost Comparison to RAC and WTI [R]

	Hawaii Landed Crude vs. WTI ($/bbl)	Hawaii Landed Crude vs. RAC ($/bbl)
2006	[redacted]	[redacted]
2007	[redacted]	[redacted]
1st & 2nd Q 2008	[redacted]	[redacted]
3rd & 4th Q 2008	[redacted]	[redacted]
1st & 2nd Q 2009	[redacted]	[redacted]

Source: Hawaii- IPIR and PIMAR; WTI & RAC- EIA

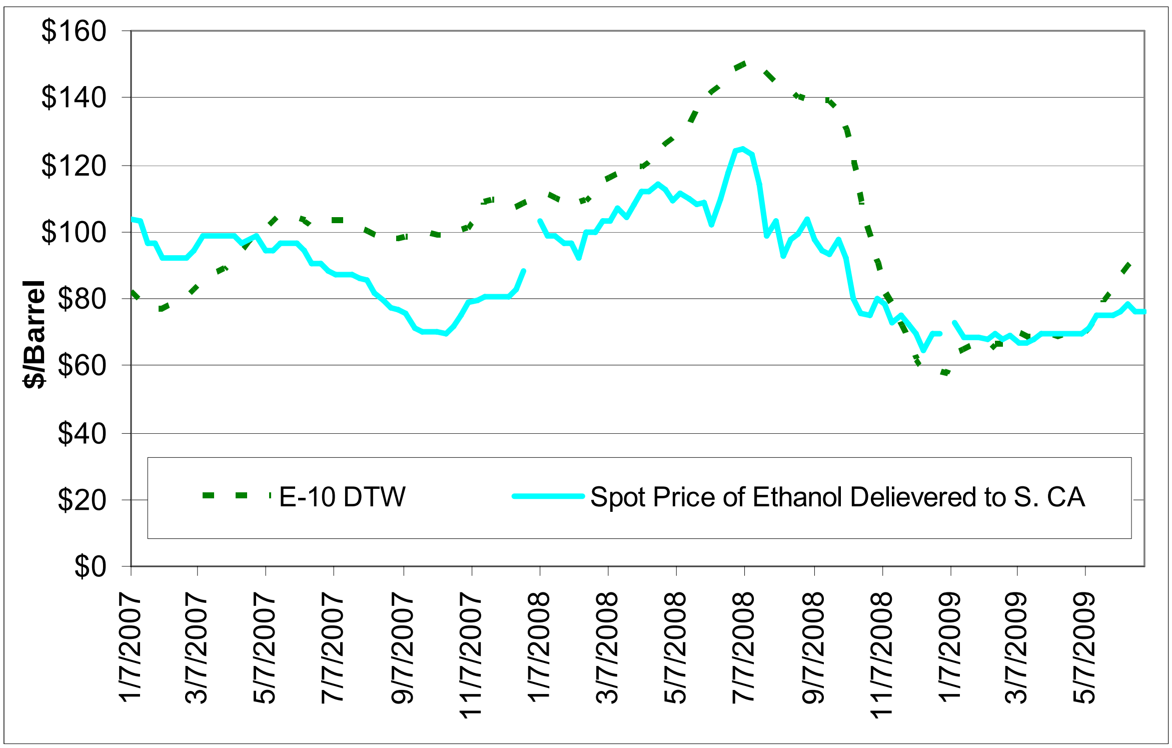
Ethanol Blendstock Prices

Exhibit 17 below compares the cost of importing ethanol (landed cost) with E-10 sold on a DTW basis and HIBOB on a bulk basis. E-10, as denoted by the name, generally consists of 10% ethanol (hence E-10) and 90% HIBOB. Refiners sell HIBOB on a bulk basis to blenders who purchase or import ethanol and blend the two products together to formulate E-10, Hawaii's primary automobile fuel. HIBOB is an intermediate product. Typically HIBOB prices are lower than DTW prices for E-10 since the E-10 product price is sold at the service station to the dealer and therefore must include distribution and trucking costs.

The actual ethanol price paid by Hawaii importers in general tracks the West Coast price for ethanol reported by Bloomberg. There are a considerable number of deliveries that are well above and well below the Los Angeles price, but the general trend of the market approximates actual delivery costs. The specific timing of the ethanol purchase, source location, freight market and terms of reference of the sale all can have a large influence in whether or not the ethanol arrives at a landed cost above or below HIBOB price.

Another key facet of the chart below is that imported ethanol can vary in being more and less expensive than E-10. The "spread" between ethanol import price and E-10 price represents a clear profit for the importer whenever ethanol is below E-10 price. Moreover, under Federal regulations, the blender receives a 45 cpg blending credit for each gallon of ethanol blended into gasoline (the credit changed from 51 cpg to 45 cpg January 1, 2009).

Exhibit 17: Ethanol Import Prices vs. Hawaii Gasoline and West Coast Ethanol [R]

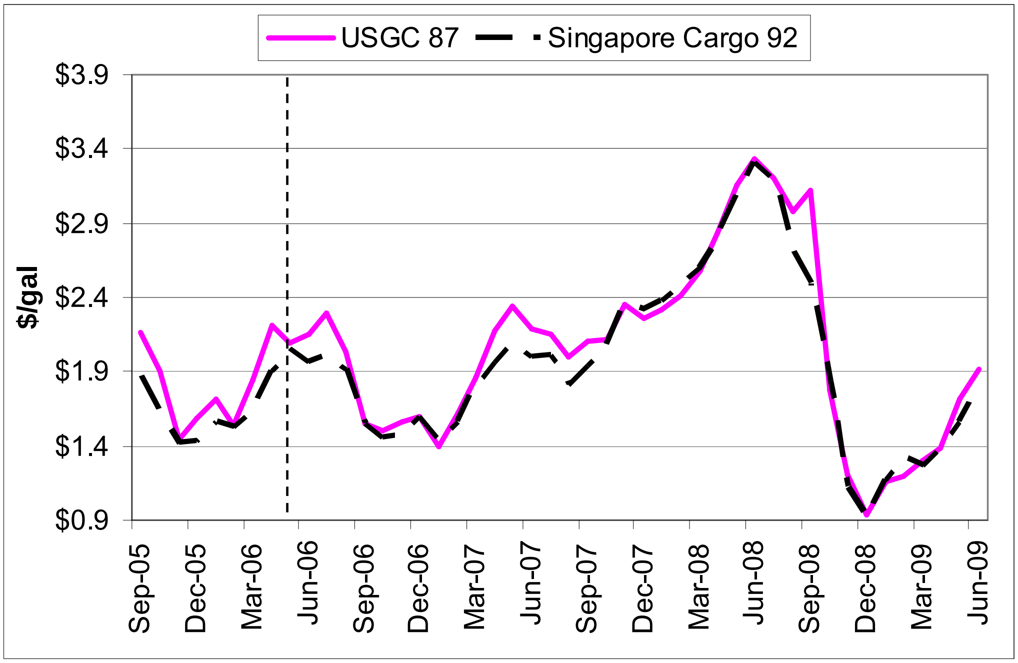


Source: Bloomberg, PIMARdb 090809, PUC Transaction Database

Gasoline Pricing Analysis

Despite the huge volatility in petroleum prices in the past 18 months, Hawaii gasoline prices continued to move with global markets in general. The first two following exhibits show that the prices for bulk gasoline sold from the two Hawaii refineries (these are prices paid by suppliers such as Aloha, Mid Pac and Shell) move extraordinarily closely to changes in bulk (spot market) prices in Singapore and (most closely) with the U.S. Gulf Coast. These charts show in a compelling manner that the cost of supply to key gasoline distributors in Hawaii moves very closely with global markets. This indicates that bulk price formulas from refiners to suppliers are likely directly linked to these global markets.

Exhibit 18: Hawaii Zone 1 Bulk Prices vs. Global Gasoline Markers



Source: PUC Transaction Database and Platts

Exhibit 19 below shows that the spread between these markets (Hawaii versus the Gulf Coast and Singapore) has been very close and stable since 2006. [redacted]

Exhibit 19: Tabular Spreads Between Hawaii Zone 1 Bulk Prices and Global Gasoline Markers During Various Periods, Regular [R]

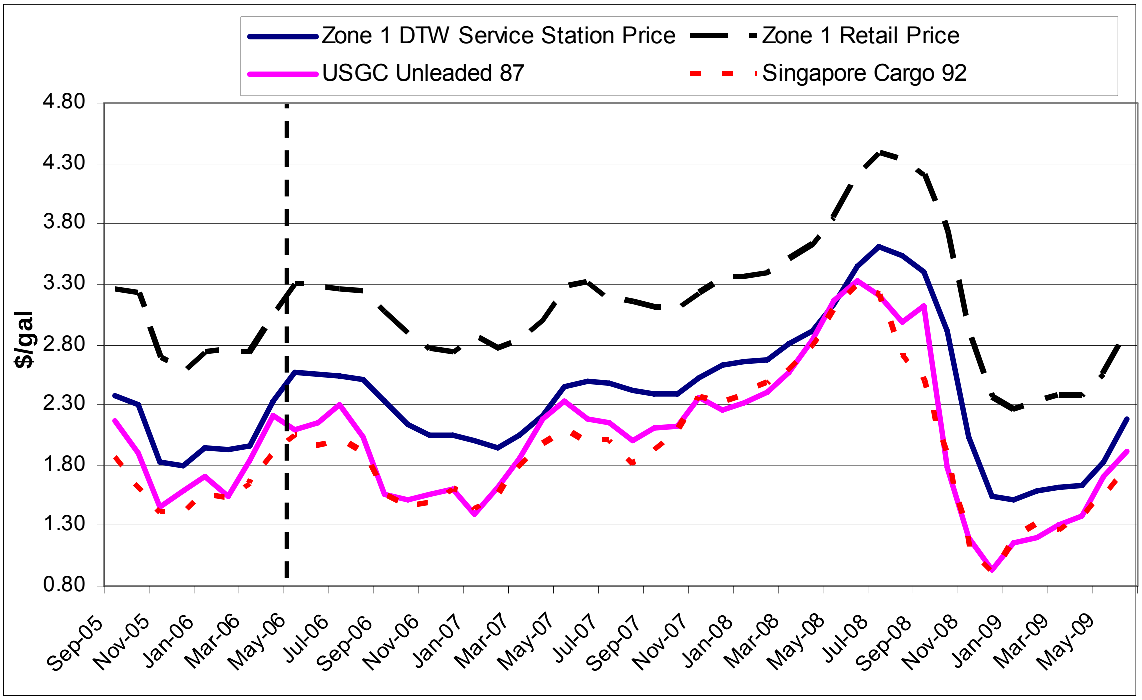
Time Period	Hawaii Bulk vs. USGC ($/gal)	Hawaii Bulk vs. Singapore ($/gal)
Pre Gas Cap	[redacted]	[redacted]
2006 Post Gas Cap	[redacted]	[redacted]
2007	[redacted]	[redacted]
2008	[redacted]	[redacted]
2009 YTD	[redacted]	[redacted]

Source: PUC Transaction Database and Platts

The next chart and table (Exhibit 20 and Exhibit 21) show that for Hawaii DTW prices (these are wholesale prices delivered to service stations), their trend versus other markets is similar, but not as "lock-step" with the U.S. Gulf Coast and Singapore. The DTW prices exhibit a lag in both rising and falling markets, but the overall trend follows global markets. Note that Hawaii retail gasoline prices follow the DTW prices much more tightly, although they are higher due to taxes and retail service station gross margins.

Most notably, the unprecedented decline in gasoline prices in the second half of 2008 was clearly replicated in Hawaii, with some minor lag. Overall, in ICF's view the movement of wholesale gasoline prices in Hawaii tracks the global market (we will discuss more on the lag effect shortly).

Exhibit 20: Hawaii and Global Gasoline Price Trends



Source: Zone 1 DTW- PUC Transaction Database; Zone 1 Retail - OPIS; USGC & Singapore - Platts
Note: OPIS retail includes taxes, Zone 1 DTW does not.

Exhibit 21: Hawaii and Global Gasoline Price Trends

	DTW vs. USGC ($/gal)	DTW vs. Singapore ($/gal)
2006	$0.40	$0.52
2007	$0.29	$0.39
2008 1st H	$0.16	$0.16
2008 2nd H	$0.63	$0.78
2009 1st H	$0.28	$0.31

Source: Zone 1 DTW- PUC Transaction Database; USGC & Singapore- Platts
Note: Zone 1 DTW does not include taxes.

The table in Exhibit 21 shows that in rising market periods the spread between DTW prices to service stations can collapse versus global markets. Clearly in periods where the price rises substantially (first half of 2008, for example), the price lag makes it very difficult for suppliers to make a profit with their cost linked to Gulf Coast markets.

One additional perspective on gasoline prices is to examine the spread between gasoline price and Hawaii Landed Crude costs over the study period. Exhibit 22 shows that the average DTW spread in Zone 1 has tended to average about [redacted] above crude cost. This margin peaked in the Fall of 2006 when crude prices fell substantially. Margins (as expected) were narrow as crude prices rose dramatically in the first half of 2008, but they did not rise to the level of 2006 in the second half of 2008 as global demands collapsed. Given the significant drop in overall demand for petroleum products, the drop in price margin likely reflects a greater sense of urgency to lower DTW prices as product market prices change to avoid losing volume.

Exhibit 22: Average Price Spread between Zone 1 DTW Price to Service Stations and Hawaii Landed Crude Cost, $/barrel [R]

Time Period	Spread (Avg.)
Gas Cap	[redacted]
2006 Post Gas Cap	
2007	
Q1 & Q2 2008	
Q3 & Q4 2008	
Q1 & Q2 2009	

Source: IPIR, PIMAR, and PUC Transaction Database

Over the entire period, however, it is evident that the relative wholesale premium for DTW sales to crude costs is fairly stable at about [redacted]

Gasoline Price Trends Between Oahu and Neighbor islands

Exhibit 23 indicates trends in DTW prices between Oahu and other zones, base on PIMAR data. The data indicate that in general gasoline price between Zones 2 and 3 (Kauai and Maui) have averaged 16-17 cpg above Oahu. This cost difference reflects the difference if freight to transport gasoline to those zones, and the incremental cost to deliver gasoline to service stations in those zones versus Oahu. These price differences have not materially changed over the entire period. Zones 5 and 6 are higher due to the more expensive cost to transport smaller volumes into these markets (Molakai and Lanai).

Exhibit 23: Hawaii DTW Service Station Sale Price Spread vs. Zone 1 (Regular), $/gallon [R]

Period	2 vs. 1	3 vs. 1	5 vs. 1	6 vs. 1	7 vs. 1	8 vs. 1
Gas Cap	[redacted]					
2006 Post Gas Cap						
2007						
2008						
2009 YTD						

Source: PUC Transaction Database
Note: No data for Zone 6 after 7/6/2008

The average price differentials in 2008 and 2009 between zones on the Big Island of Hawaii (Zones 7 and 8) versus Oahu have demonstrated a lower premium than in 2005-2007. This lower premium indicates that DTW prices on the Big Island are at lower levels than on Maui or Kauai, which are logistically closer to Oahu than the Big Island. This apparent anomaly may reflect the impact of more competition in Zones 7 and 8 as overall demand levels fell in 2008 and 2009.

DTW Prices Compared to Gasoline Price Cap

Exhibit 24 below compares the average DTW price to service stations of the major zones with the wholesale gasoline price cap for DTW sales. While the gas cap was suspended in 2006, the Commission continues to monitor the wholesale prices for gasoline in Hawaii to identify how wholesale gasoline is being bought and sold relative to the cap.

After the suspension of the gas cap, prices have consistently settled above where the calculated gas cap would have pegged them. The higher than normal gas prices in 2008 may be partly explained by extraordinarily high oil prices, however, as the gas cap formula is rooted in mainland gasoline prices. The formula is: **Regular Gas Cap = E-10 Baseline Price** ([90% of the overall 5-day average of NY, USGC, and LA gasoline spots] + [10% of the after $.51 tax[7] of overall 5-day average of NY, Chicago, and LA ethanol spots) **+ Marketing Margin** ($.18) **+ Location Adjustment Factor** ($.04) **+ Zone Adjustment Factor** (varies between zones). For midgrade and premium, a grade adjustment factor is added, $.05 and $.09 respectively.

Exhibit 24 shows that the variations above gas cap formula are most pronounced in the years when major declines occur in pricing (2006 after gas caps were suspended and 2008). This is not surprising given the lag impact on DTW prices. However, it appears that in 2009 prices are nearly 10 cpg over the price cap formula for regular, and in the 15 cpg range above the price cap formula for mid-grade and premium. This situation existed in a *rising* crude price market in 2009. The rising market generally leads to DTW prices rising slower than the bulk prices and therefore slower than the gas cap allowable ceiling. Consequently, it appears suppliers may be attempting to keep prices higher than in the past as markets rise.

It should be noted that the gas cap formula being used in this analysis was developed in 2006 based on estimated cost data from parties for transport by barge and truck, as well as terminal costs. These costs have undoubtedly increased over the period and would have resulted in a modified price cap formula to reflect those cost differences (however, it is unlikely those cost adjustments would be as high as 10 cents per gallon, since only the transportations cost portion of the gas cap formula would be affected). For example, an inflation adjustment of 5% annually would impact the zone adjustment facto for the Big Island of Hawaii by no more than 3 cpg from 2006 to 2009.

[7] This tax credit was reduced to 45 cpg of ethanol blended on January 1, 2009.

Exhibit 24: Average Price Spread between DTW Price to Service Station and Price Cap for Different Grades of Gasoline in Each Zone [R]

Gasoline Grade	Period	Oahu	Kauai	Maui excluding Hana	Puna, South & North Hilo, and Hamakua	South & North Kohala, South & North Kona and Kau
		Zone 1	Zone 2	Zone 3	Zone 7	Zone 8
Regular	Gas Cap	-0.07	-0.04	-0.05	-0.06	-0.07
	2006 Post Gas Cap	0.09	0.17	0.11	0.12	0.08
	2007	0.01	0.02	0.04	0.01	-0.01
	2008	0.14	0.16	0.14	0.09	0.09
	2009 YTD	0.09	0.10	0.11	0.04	0.03
Mid-grade	Gas Cap	[redacted]				
	2006 Post Gas Cap					
	2007					
	2008					
	2009 YTD					
Premium	Gas Cap	-0.07	-0.02	-0.06	-0.07	-0.07
	2006 Post Gas Cap	0.15	0.20	0.16	0.16	0.11
	2007	0.08	0.10	0.11	0.08	0.05
	2008	0.17	0.17	0.20	0.11	0.12
	2009 YTD	0.16	0.16	0.18	0.11	0.10

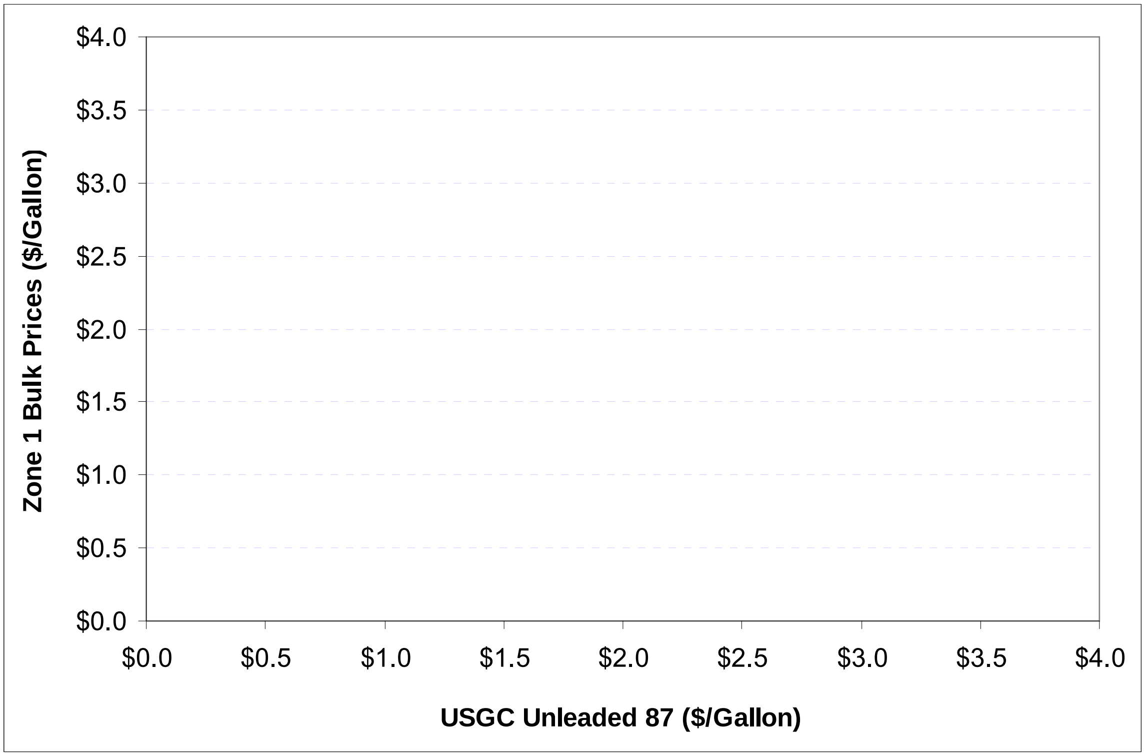
Source: PUC Transaction Database

Analysis of the Hawaii Pricing Lag

Exhibit 18 showed that there was strong correlation between the bulk sales price of regular-grade gasoline in Zone 1 (“Hawaii bulk”) and spot price of USGC conventional 87 octane non-oxygenated gasoline (“USGC 87”) from the end of the Gas Cap period and forward. Exhibit 20 showed that Hawaii Zone 1 regular-grade gasoline sold to service stations (“DTW “) prices also followed the USGC 87 price, although there appeared to be a lag in the timing of when DTW price moved. ICF examined these price relationships to determine the strength of the correlations. Correlation graphs and estimated equations for each of the relationships mentioned above are shown below.

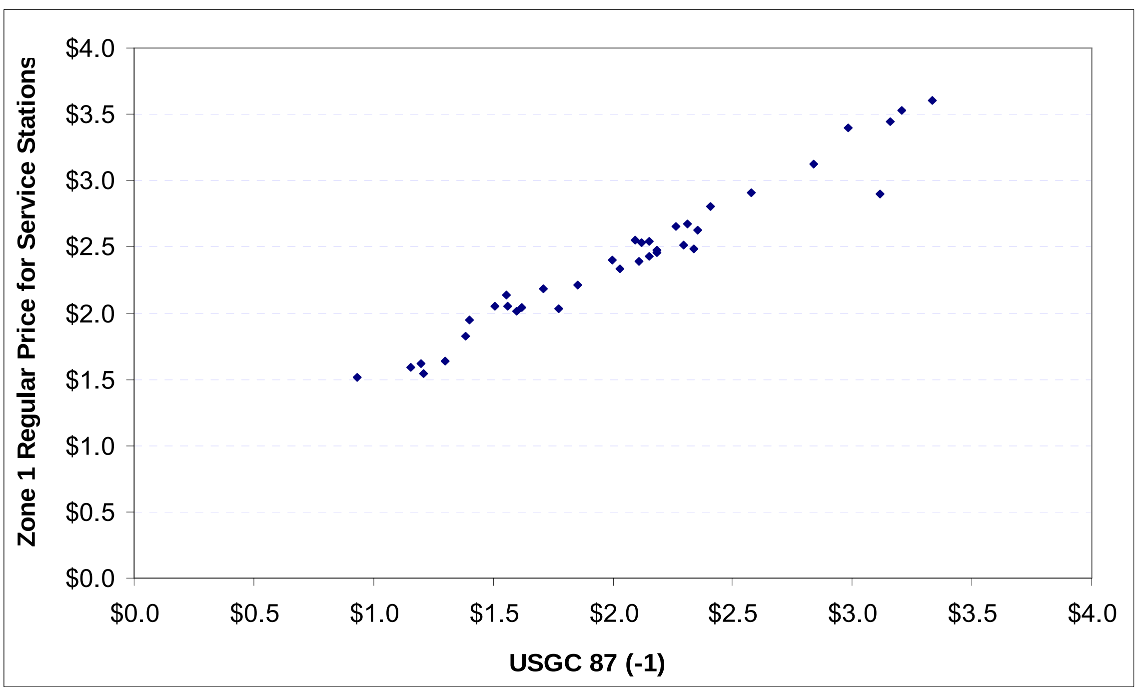
Exhibit 25 shows a very tight correlation between Hawaii bulk gasoline prices (these are HIBOB prices from the refineries) and USGC 87 prices. Exhibit 26 shows a good correlation between DTW prices and a “lagged” USGC 87 price (although not as strong as the bulk price relationship).

Exhibit 25: Correlation between Hawaii Bulk Sales Price in Zone 1 and USGC 87 [R]



Source: PUC Transaction Database

Exhibit 26: Correlation between DTW Price in Zone 1 and Lagged USGC 87



Source: PUC Transaction Database

A linear regression analysis of these data points result in the following two equations, which represent the relationships between USGC 87 and Zone 1 bulk and DTW prices, respectively.

[redacted] [redacted]

(Eq. 2) $(\text{Zone 1 DTW Price})_t = 0.63 + 0.87 * (\text{USGC 87})_{t-1}$

[redacted]

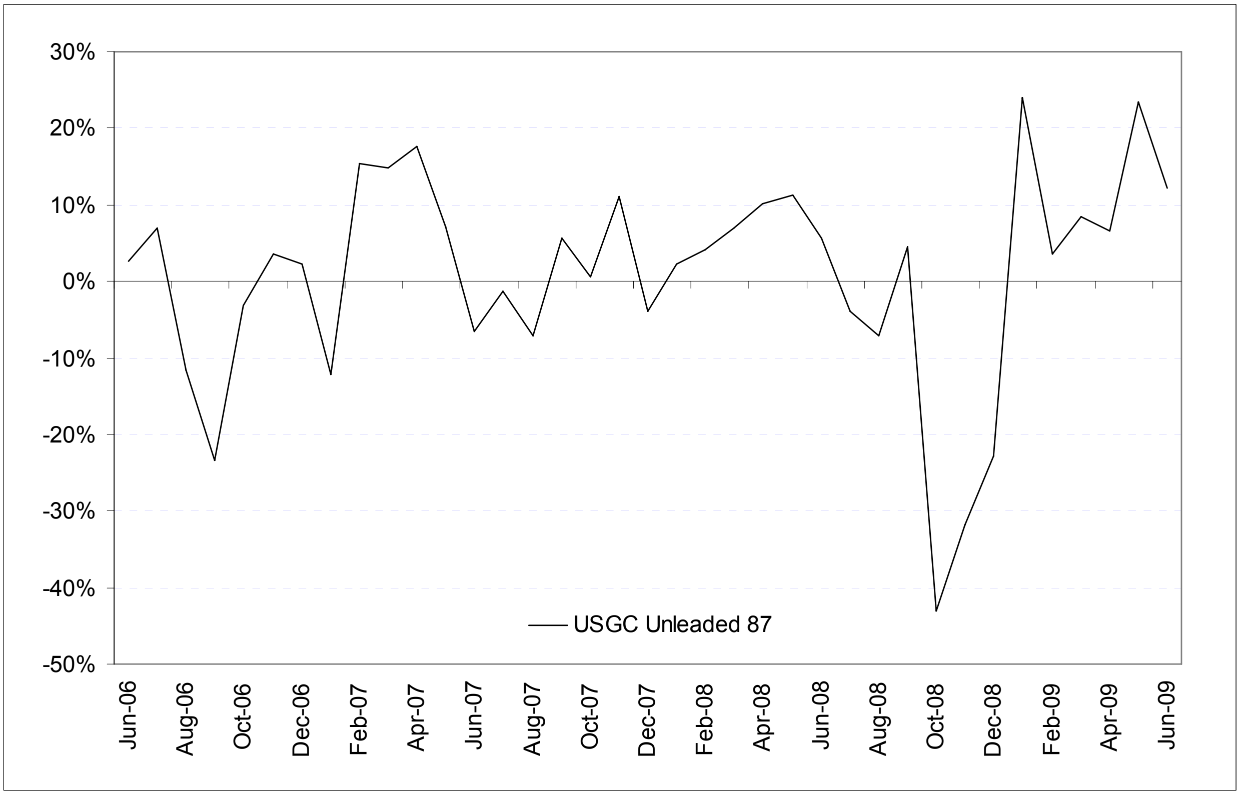
For DTW prices (Equation 2), the relationship is not as strong, as indicated by the 0.87 dependency factor on the lagged USGC 87 price. In equation 2, 87% of USGC 87 from the previous month, plus a constant factor of 63 cpg would be able to explain or predict the price of DTW sales to service stations in zone 1 for the current month. In equation 2, there is a lag effect in that the price of regular-grade gasoline for service stations in zone 1 reflects USGC 87 from the previous month.

Note that the relationships between USGC 87 and bulk and DTW apply to whether prices rise or fall. In other words, the trend of wholesale gasoline prices in Hawaii directly mirrors changes in the USGC 87 price. The bulk prices change (essentially) in lock step; the DTW prices in Zone 1 change on about a one month lag basis, with a not-so-tight “lockstep”.

ICF additionally examined plots of month-by-month actual percentage change in USGC 87 and prices of bulk and DTW sales in the next two exhibits. They illustrate the magnitude of impact that a percentage change in USGC 87 had upon the price of bulk and DTW sales during the same month.

For bulk sales, the plot shows a very tight relationship, as expected. Although there are some examples where the percentage change in Hawaii bulk prices does not fully realize the change in USGC 87 price, the relationship is maintained very well through an extremely volatile period in global petroleum prices.

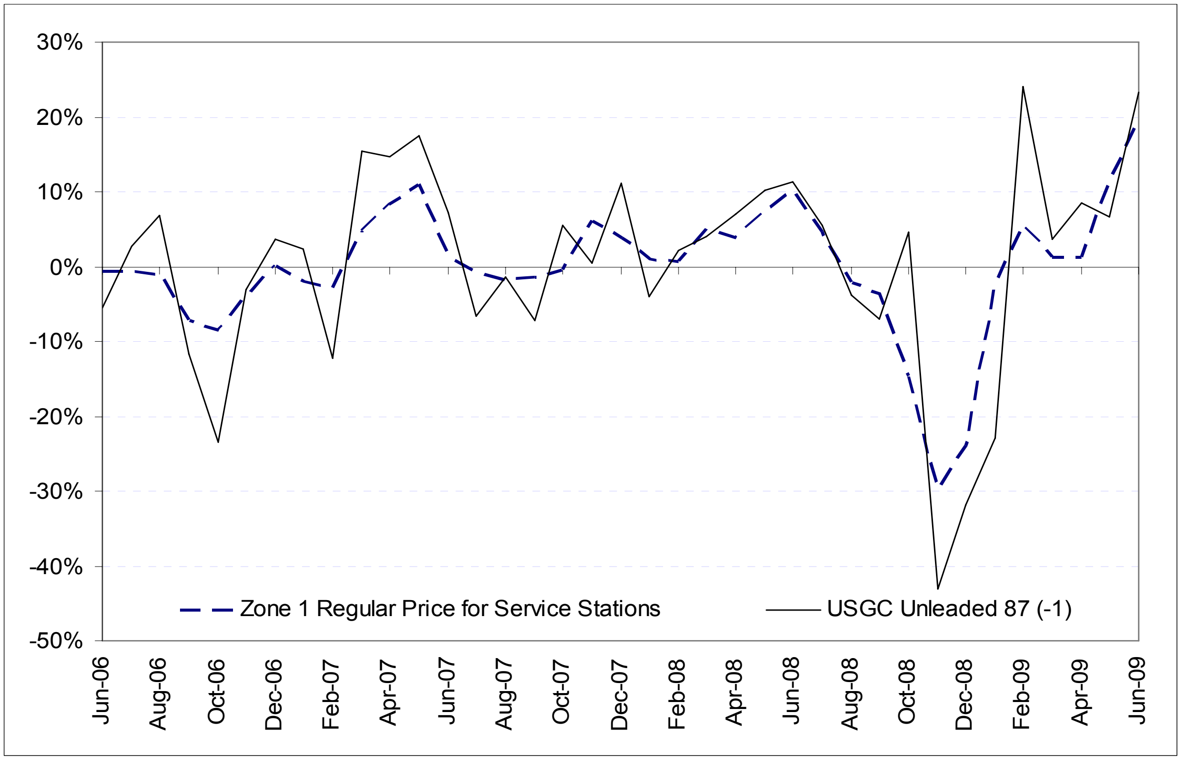
Exhibit 27: Percent Change in Zone 1 Bulk Gasoline Prices and USGC 87 [R]



Source: PUC Transaction Database

The next exhibit compares month-by-month percentage change in USGC 87, lagged by one month, with DTW price for regular-grade gasoline sold to service stations. In this relationship, it is evident throughout the period that while DTW price changes follow the USGC 87 price, they do not fully rise, or fall to the extent that the USGC 87 price changes. The utilization of the lag in the relationship allows a comparison to be made where peaks and valleys in price changes align, but it is clear that the actual DTW price changes do not match the changes in USGC 87 price, or the Hawaii bulk price.

Exhibit 28: Percentage Change in Zone 1 DTW price vs. USGC 87 (lagged by one month)



Source: PUC Transaction Database

The implications of these pricing patterns to Hawaii consumers can be summarized as follows:

1) Wholesale bulk gasoline price movements (sold by Hawaii refiners to Hawaii suppliers) clearly mirror changes in the USGC 87 gasoline price.

2) Wholesale DTW prices to service stations exhibit a lag of about a month compared to USGC 87 and Hawaii bulk prices, but do follow these prices.

3) The magnitude of the DTW price movements are less than the absolute change in USGC 87 and Hawaii bulk price. This means that in rising markets, prices are not fully passed on to Hawaii service station dealers, and the impact on Hawaii consumers (at the pump) may be less than that on other U.S. consumers. In falling markets, less of the decline would be passed on to consumers and falling prices would not be observed as quickly by Hawaii consumers.

4) Suppliers in Hawaii will tend to have their margins compressed in periods of rising prices and widened in periods of falling prices.

Diesel Fuel Pricing Analysis

There are currently three grades of diesel fuel sold in Hawaii, all differentiated by sulfur level. ULSD (ultra low sulfur diesel) is under 15 ppm sulfur, and is required for all on-road vehicle sales (automobiles, trucks, etc.). Low sulfur diesel (LSD) is a similar product, but has a sulfur level between 15 and 500 ppm sulfur. This product is consumed by off-road vehicles (tractors, other equipment such as diesel generators, commercial buildings, etc.). High sulfur diesel (HSD) is diesel that is greater than 500 ppm sulfur, and can be used for heating oil, or by utilities for power generation.

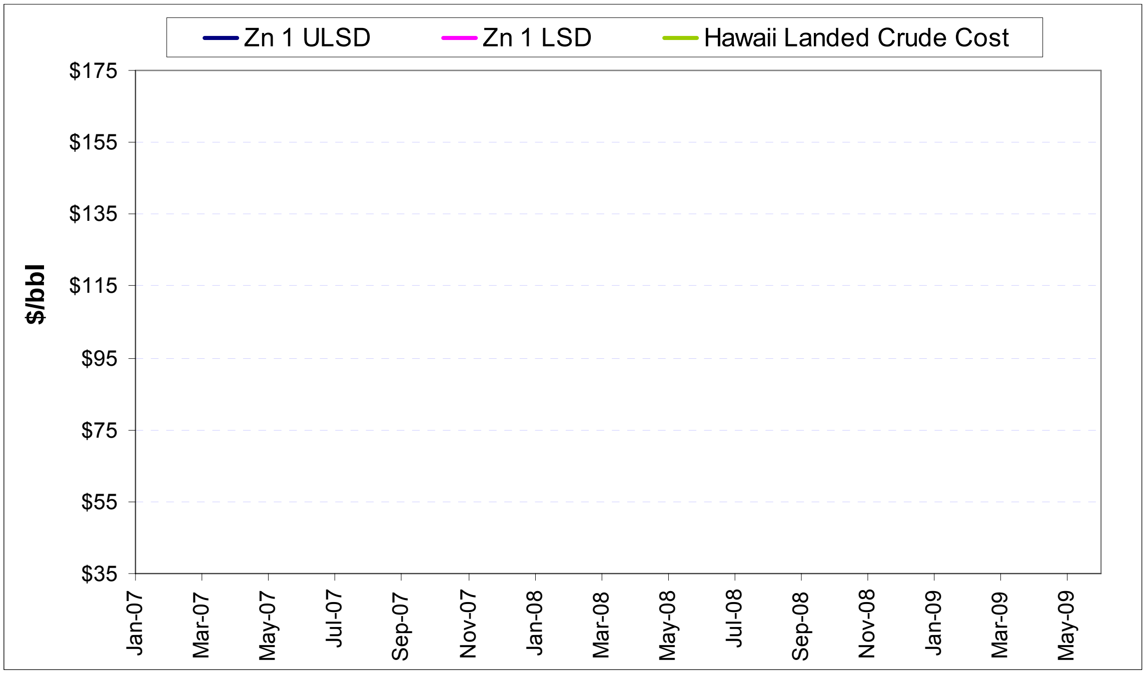
All diesel currently sold as LSD will be required to be sold as ULSD beginning in 2010. Currently ULSD is being sold retail primarily at service stations, or is sold directly to end-users on a retail basis. Wholesale sales are primarily at terminal racks to distributors or jobbers for ultimate sale to consumers. Sales of LSD and HSD are, at retail, sold directly to end users by refiners, suppliers and jobbers, and, for wholesale, sold at the terminal rack to suppliers or jobbers for final sale (and this is primarily only LSD product, as HSD is essentially all sold retail).

Consequently, the analysis of diesel fuel wholesale prices will focus on terminal rack prices for ULSD and LSD.

Diesel Price Trends and Spreads vs. Crude

Exhibit 29 show the Zone 1 wholesale diesel prices versus landed crude costs for Diesel 15 (ULSD) and Diesel 15-500 (LSD) in both a chart and table format. The spread in Exhibit 30 represents a “gross margin” for diesel fuel sales versus crude oil cost. The diesel exhibit generally follows crude price; however, it is apparent that diesel fuel margins began increasing in 2008 as global prices for diesel fuel surged. This trend reversed after the economic recession and collapse of oil prices, in good part because diesel fuel demand is a prime indicator of global economic growth (diesel is used for shipment of goods via truck, portable generators, etc.).

Exhibit 29: Hawaii Diesel Fuel Wholesale Prices vs. Landed Crude [R]



Source: IPIR and PIMARdb 090809

Exhibit 30: Spread of Diesel Fuel Wholesale Prices vs. Landed Crude [R]

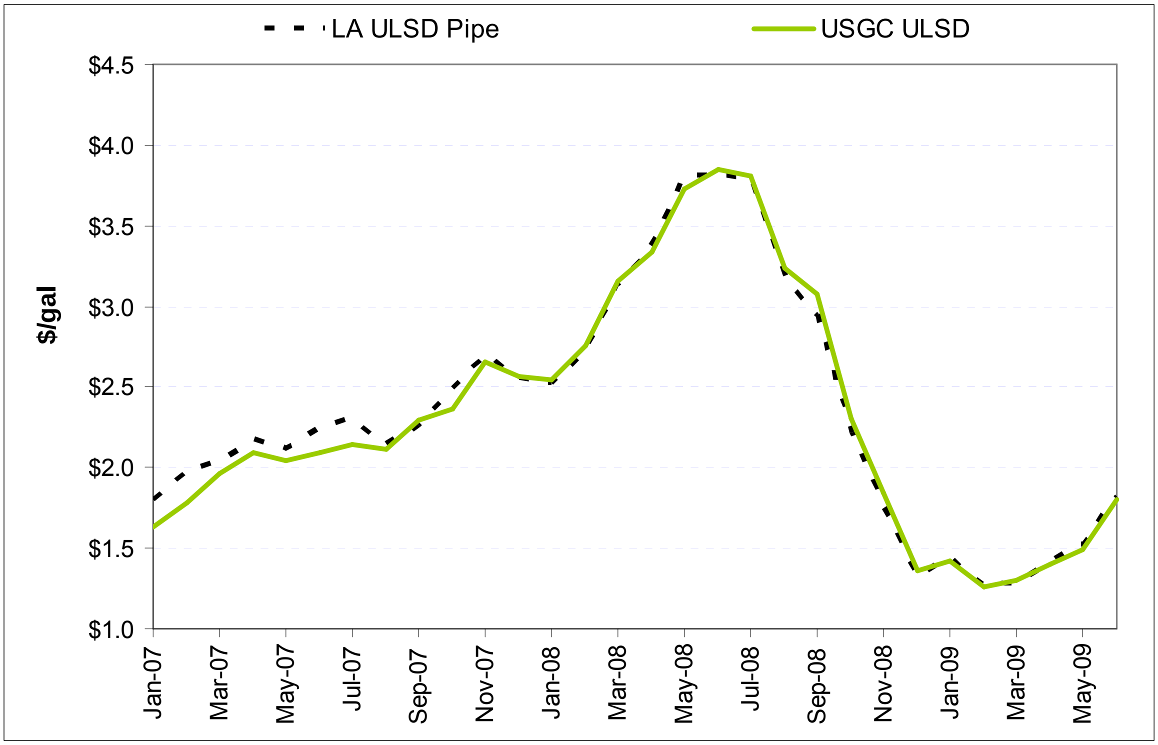
	($/bbl)	($/bbl)
Year	**ULSD**	**LSD**
2007	[redacted]	
Q1 & Q2 2008		
Q3 & Q4 2008		
2009 YTD		

Source: IPIR and PIMARdb 090809

Comparison of Diesel Prices between Markets and Grades

Exhibit 31 shows Hawaii diesel prices against similar market diesel prices on the West Coast (Los Angeles) and USGC markets. The intent of the chart is to determine if Hawaii diesel prices are priced competitively with potential markets which could be import sources into Hawaii. The exhibit indicates that the Hawaii wholesale prices for ULSD track the West Coast and USGC market prices reasonably well; however, the relative correlation is a bit less tight than the gasoline bulk price to USGC 87 presented earlier.

Exhibit 31: Wholesale ULSD Prices from Various U.S. Regions [R]

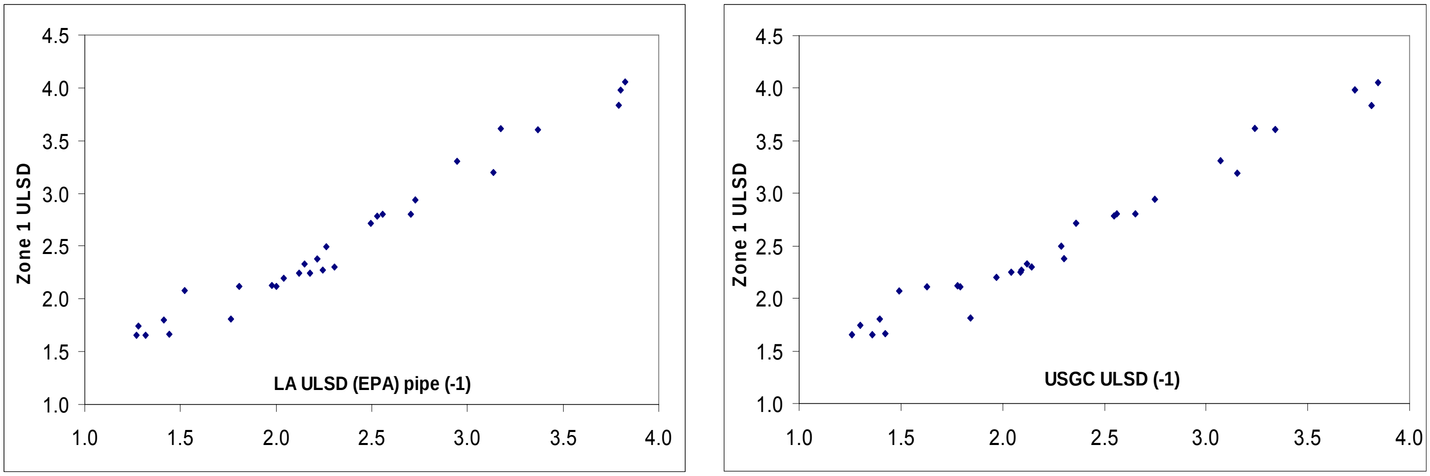


Source: Bloomberg, PIMARdb 090809, Platts

As was seen on the gasoline price, the diesel wholesale prices follow the LA and USGC market prices closely, but with about a one month lag. It is evident from the chart that the lag effect from July 2008 to December 2008 resulted in some very wide differentials between Hawaii diesel prices and other markets. As we have seen, the lag effect will occur when prices rise or fall; however, the differential in 2008 was significant and was in fact sustained well after absolute prices stabilized.

We looked at ULSD prices from both LA and USGC to determine their correlation with the price of ULSD in Zone 1. This analysis was developed by using a one month lag in the ULSD prices of LA and USGC. Charts are shown below in Exhibit 32.

Exhibit 32: Correlation of Zone 1 ULSD Prices with ULSD from LA and USGC [R]



Source: Bloomberg, PIMARdb 090809, Platts

While the trend charts and regressions clearly show that ULSD prices move in similar patterns between Hawaii diesel and mainland diesel prices, the degree of spread between the prices is an important consideration. Exhibit 33 is a table that shows the price spread between ULSD and Los Angeles and Gulf Coast market prices over the past two years plus. This table compares the prices, assuming a one month lag in the mainland market prices (The overall difference will not change by making this assumption, but the volatility of the results will be dampened.).

Exhibit 33: Spreads between ULSD Wholesale Prices Hawaii Zone 1 vs. LA and USGC (lagged by 1 month) [R]

Unit: cpg	Zone 1 ULSD	Zone 1 ULSD	Zone 1 ULSD
Qtr-Year	LA ULSD (-1)	USGC ULSD (-1)	Zone 1 LSD
Q1 & Q2 2007	[redacted]		
Q3 & Q4 2007			
Q1 & Q2 2008			
Q3 & Q4 2008			
Q1 & Q2 2009			

Source: Bloomberg, PIMARdb 090809, Platts

The results indicate that there has been over the 2008-2009 period a relatively wide spread between wholesale rack diesel prices in Hawaii and spot market prices in Los Angeles. The prices being compared are wholesale rack prices in Hawaii (prices of fuel sold at terminal racks in Oahu) against wholesale bulk spot market prices from mainland refiners. These are reasonable comparison points since in Hawaii much of the volume delivered in Zone 1 (Oahu) is from refinery loading racks. Hawaii wholesale rack prices will have a profit margin for the seller, so it should be expected that a “parity” comparison would be (for example) Los Angeles or Gulf Coast spot market price plus freight plus some margin.

The cost of freight from the mainland will vary with the market rate for U.S.-flag vessels; however, from Los Angeles that rate may vary from 6-15 cpg[8], with a few additional cents per

[8] ICF estimate

gallon for harbor duties and distribution cost. Consequently, price spreads over a portion of the period may be reasonably competitive to Los Angeles, but in 2008 and especially 2009 they appear to be higher than previous periods.

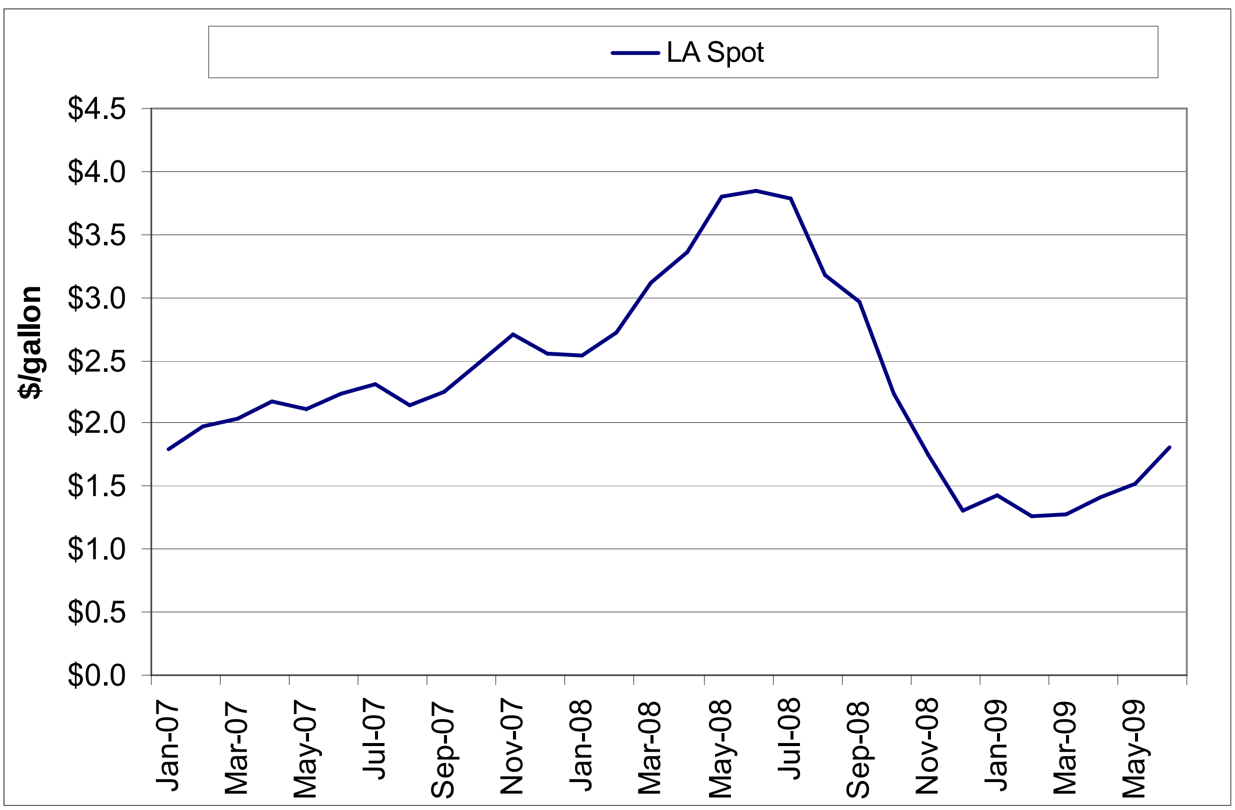
Exhibit 33 also shows that the spread between ULSD and LSD wholesale prices has generally widened over the period. As indicated earlier, with more and more diesel sales channels being required to convert to using ULSD rather than LSD or HSD, these spreads are likely to widen since the ability to produce ULSD is limited in Hawaii and it may be necessary to export surplus diesel (LSD).

ULSD Wholesale Prices vs. Los Angeles Spot

The chart and table below (Exhibit 34 and Exhibit 35) show the different wholesale channels of ULSD sales in Zone 1 versus the Los Angeles spot market for ULSD. Note that the linkage of the Hawaii bulk price to LA spot is very close, and averages about a [redacted] spread over the period (in the range of the freight cost difference).

Rack and DTW prices are higher as may be expected to cover distributor costs and profits and (for DTW) trucking costs. However, in 2008 and 2009 as prices fell and then stabilized, these margins became high relative to history for both wholesale classes of trade.

Exhibit 34: ULSD Wholesale Prices vs. Los Angeles Spot [R]



Source: PIMAR – Categories 3, 4, and 5. Bloomberg

Exhibit 35: ULSD Wholesale Prices vs. Los Angeles Spot [R]

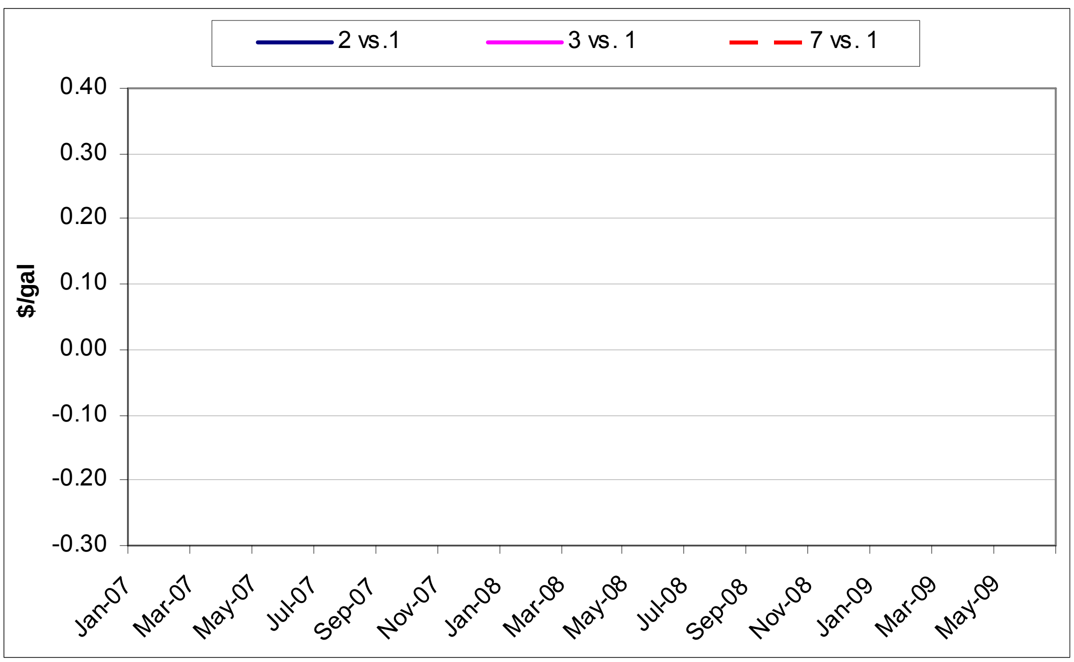
	DTW vs. LA Spot ($/gal)	Rack vs. LA Spot ($/gal)	Bulk vs. LA Spot ($/gal)
2007 1st H	[redacted]	[redacted]	[redacted]
2007 2nd H	[redacted]	[redacted]	[redacted]
2008 1st H	[redacted]	[redacted]	[redacted]
2008 2nd H	[redacted]	[redacted]	[redacted]
2009 1st H	[redacted]	[redacted]	[redacted]

Source: PIMAR – Categories 3, 4, and 5. Bloomberg

Diesel Pricing Differences between Oahu and Other Zones

Exhibit 36 shows the differential in wholesale diesel prices between Zone 1 (Oahu) and other major zones over the 2007 to 2009 mid year period. The reported data indicate that Zones 3 and Zone 7 became significantly lower in price than Zone 1 in late 2008. This effect coincided with the addition of new reported volumes and prices from one party, and at this time it is unclear whether this is a data reporting issue or a true market situation.

Exhibit 36: ULSD Wholesale Prices Zone 1 vs. Zones 2, 3, and 7 [R]



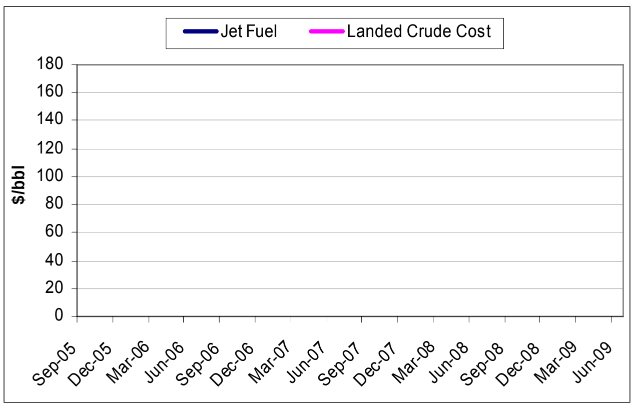
Source: PIMAR - Category 4

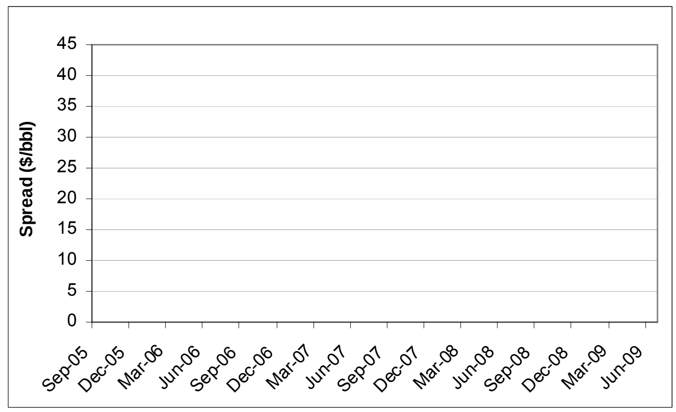
Jet Fuel Pricing Analysis

Jet fuel pricing will be analyzed similar to gasoline and diesel sales, first by comparison with landed crude costs and then compared to price in other markets, and then compared to prices in other zones.

Exhibit 37 shows the trend in Zone 1 jet fuel price compared to crude. The jet fuel price follows crude price extremely closely, although at a premium most of the time.

Exhibit 37: Jet Fuel Trend and Spread vs. Landed Crude Cost, $/bbl [R]





Source: IPIR and PIMAR – Category 9 (Jan '07-Jun '09)

Jet fuel margins peaked in early 2008 as crude prices were rising. Unlike gasoline DTW prices and diesel rack prices, jet fuel sales price tended to track global market prices directly, without an apparent one month lag. This is likely related to the sales contract terms for jet fuel, which may link the sales price to prompt spot markets for crude or diesel prices.

Exhibit 38 shows the jet fuel price spread versus crude on a half year basis, similar to that shown for gasoline and diesel.

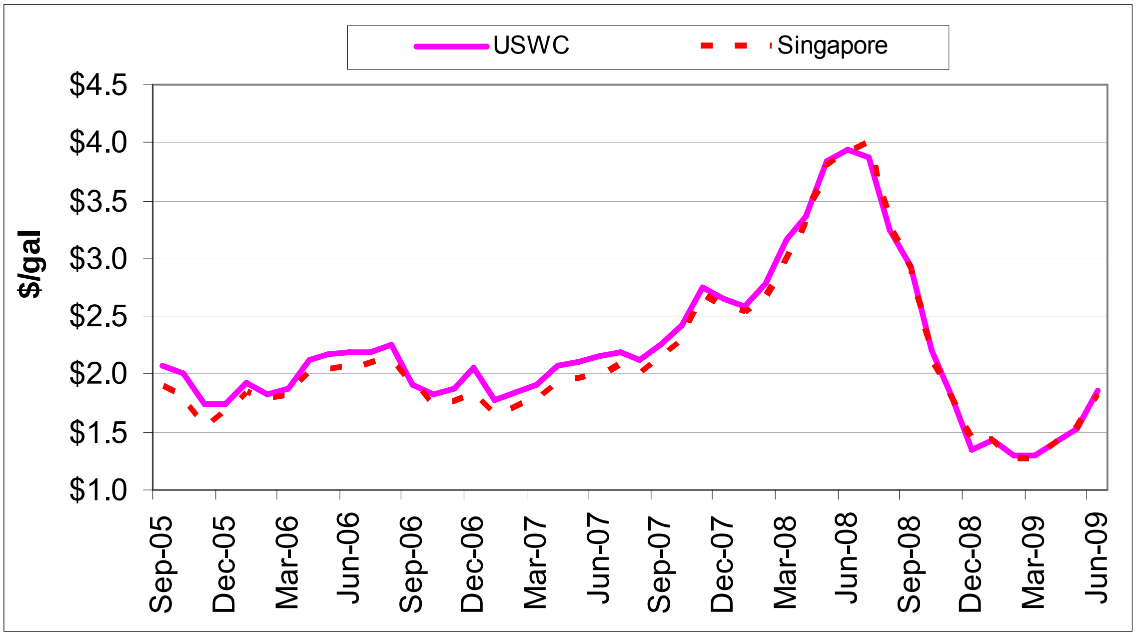
Exhibit 38: Jet Fuel Spread vs. Landed Crude, $/bbl [R]

	Jet Fuel vs. Landed Crude ($/bbl)
2007 1st H	[redacted]
2007 2nd H	[redacted]
2008 1st H	[redacted]
2008 2nd H	[redacted]
2009 1st H	[redacted]
Entire Period	[redacted]

Source: PIMAR – Category 9

Jet fuel wholesale prices in Hawaii show a remarkable correlation to jet fuel spot market prices on the West Coast (see Exhibit 39):as well as with prices in Singapore.

Exhibit 39: Comparison of Jet Fuel Prices in Hawaii to West Coast and Singapore [R]



Source: IPIR, PIMAR - Category 9 (Jan '07-Jun '09), and Platts

The differential in price between Hawaii jet fuel prices and West Coast and Singapore markets is shown in the table below (Exhibit 40). These spreads are slim compared to gasoline and diesel wholesale prices over alternate source markets, and appear to be less than the cost to import by cargo from these markets. Jet fuel imports into Hawaii are almost all from Korea, where refiners typically export product to other markets in Asia. It is likely that sellers in Korea need to discount the price below Singapore or U.S. West Coast to move the product. Normally jet fuel prices would have to be high enough in Hawaii to overcome the freight costs and attract imported supply.

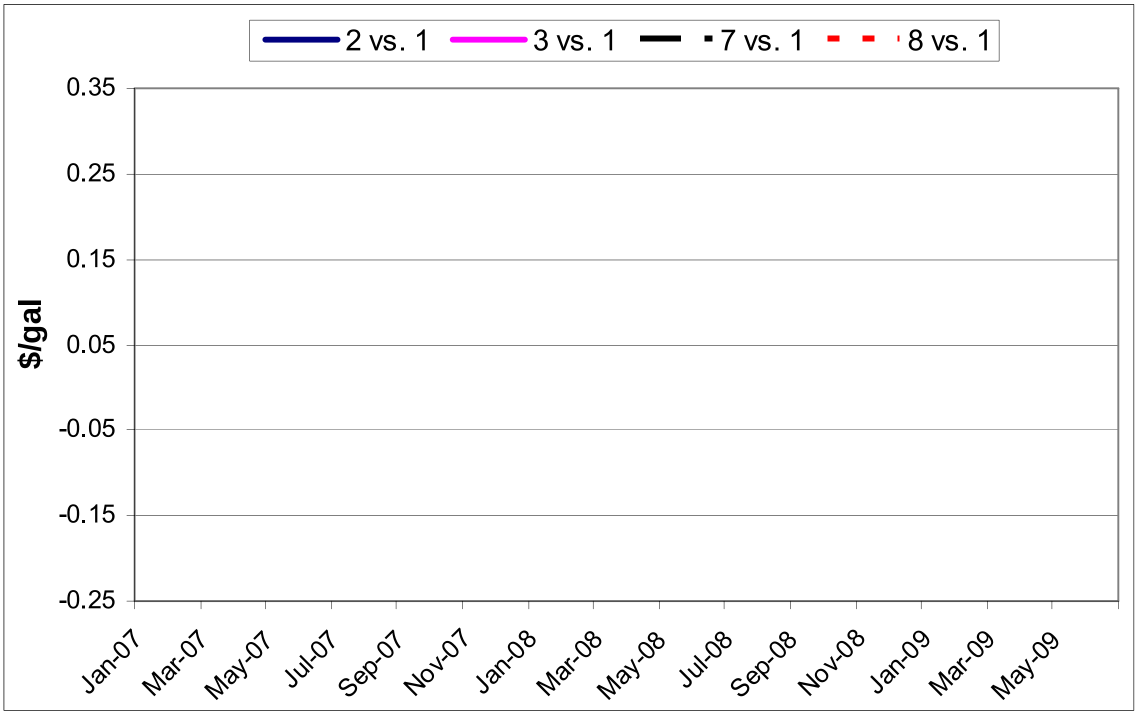
Exhibit 40: Tabular Comparison of Jet Fuel Market Differentials [R]

	Zone 1 vs USWC ($/gal)	Zone 1 vs Singapore ($/gal)
2006 1st H	[redacted]	
2006 2nd H		
2007 1st H		
2007 2nd H		
2008 1st H		
2008 2nd H		
2009 1st H		

Source: IPIR, PIMAR - Category 9 (Jan '07-Jun '09), and Platts

Finally, jet fuel pricing in different zones in Hawaii was examined. The analysis shows (see Exhibit 41) that prices in the neighbor island zones are higher than Oahu and reflect a reasonable premium over Oahu pricing. Premiums reflect transportation cost as well as distribution costs, and average about [redacted] over the period, except Maui. Maui's cost differential is lower in all likelihood due to higher volumes.

Exhibit 41: Hawaii Jet Fuel Pricing Between Zones [R]



Source: PIMAR, Category 9

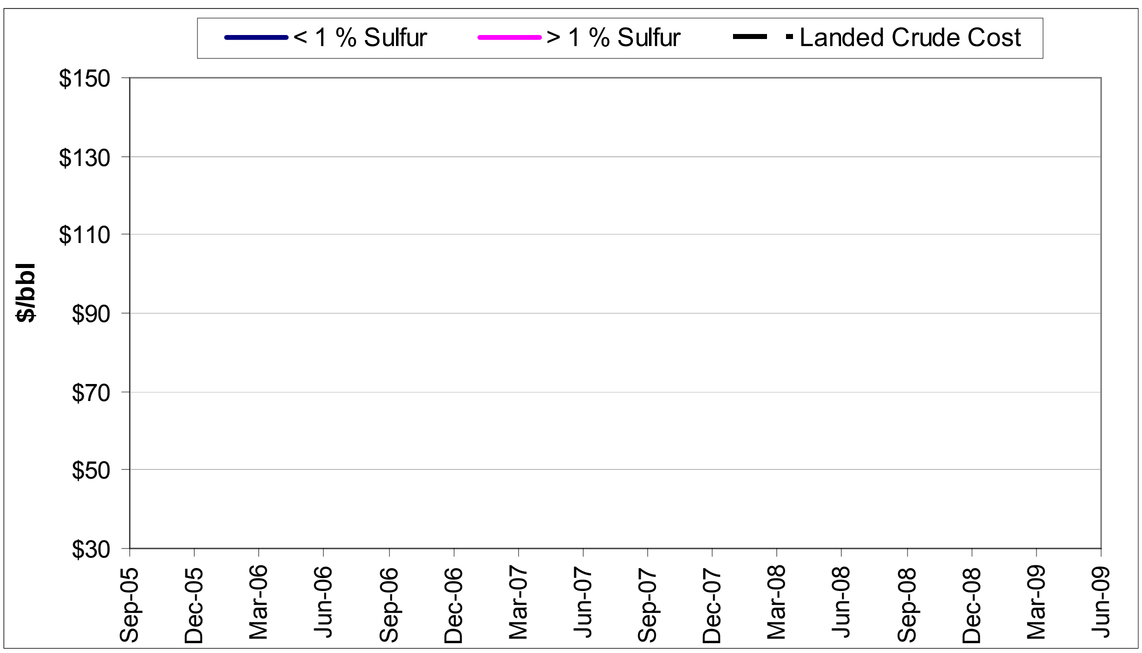
Residual Fuel Pricing Analysis

Residual fuel oil (RFO) is a very large component of petroleum consumption in Hawaii. It is used in two primary areas: power generation and ship propulsion (bunkering). Residual fuel is a high percentage of refinery yield and therefore the price of residual fuel and its trend is a critical component of refinery profitability. For this reason, this report examines movement of RFO prices in Hawaii.

Residual Fuel Price vs. Crude

Exhibit 42 shows the progression of prices for the two different grades of RFO with landed crude cost in Hawaii. Like the price of gasoline and diesel on the island, the price of RFO also lags landed crude cost in Hawaii by about one month. Prior to 2008, the spread between RFO with less than 1% in sulfur content and crude has been quite wide. It averaged discounts of [redacted] nominal USD/bbl below the landed cost of crude in Hawaii for the Gas Cap, 2006 post-Gas Cap, and 2007 periods, respectively. However, Exhibit 42 shows that by the second half of 2008, the price of RFO with less than 1% in sulfur content actually exceeded the landed cost of crude in the state. For RFO with more than 1% in sulfur content, its price remained lower than the landed crude cost; yet, the spread narrowed significantly.

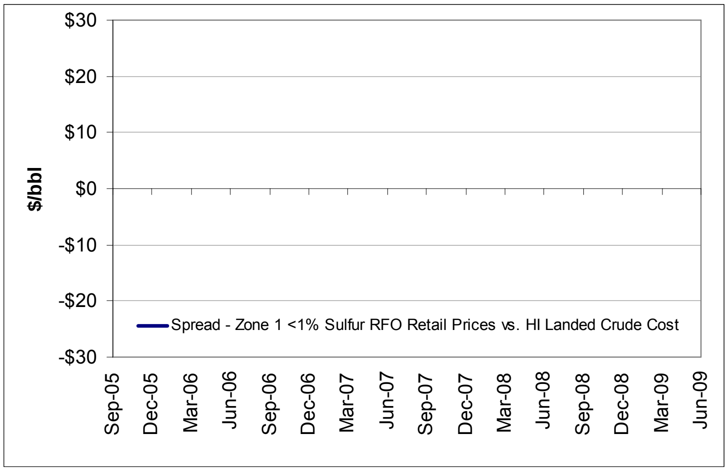
Exhibit 42: Zone 1 Residual Fuel Retail Prices vs. Hawaii Landed Crude Cost [R]



Source: IPIR, PIMARdb 090809 – Category 9

Exhibit 43 illustrates more specifically the spread between RFO with less than 1% in sulfur content and landed crude cost in Hawaii. During the second half of 2008, the price of RFO<1% in sulfur overtook the cost of Hawaii Landed Crude, resulting in the negative spread seen in the chart below.

Exhibit 43: Spread of RFO <1% Sulfur and Hawaii Landed Crude Cost [R]

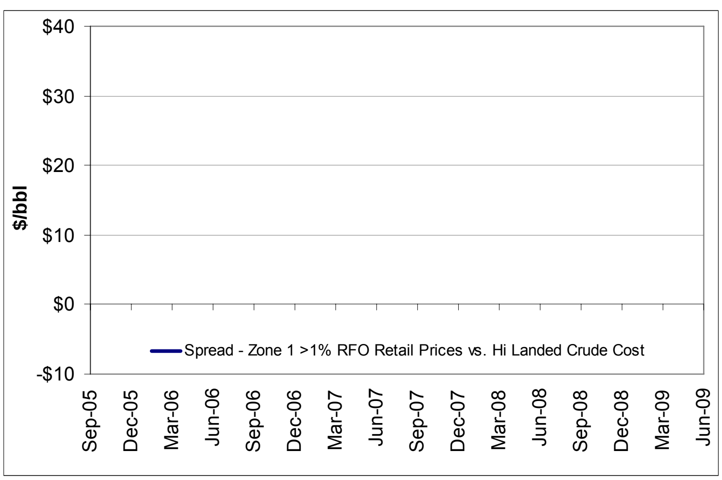


Time Period	RFO < 1% vs. Landed Crude Cost ($/bbl)
Gas Cap	[redacted]
2006 Post Gas Cap	[redacted]
Q1 & Q2 2007	[redacted]
Q3 & Q4 2007	[redacted]
Q1 & Q2 2008	[redacted]
Q3 & Q4 2008	[redacted]
2009 YTD	[redacted]

Source: IPIR, PIMARdb 090809 – Category 9

Exhibit 44 demonstrates that the same effect occurred for residual fuel over 1% sulfur in Hawaii. In fact in 2009 the RFO over 1% sulfur actually had a HIGHER price than the lower sulfur RFO. The overall impact of this remarkable change in the discount for both low and high sulfur residual fuel prices in Hawaii would have been a very positive benefit to the refiner's financial performance in 2008 (although this was clearly temporary, through the first half of 2009 the discount remained lower than history)

Exhibit 44: Spread of RFO >1% Sulfur and Hawaii Landed Crude Cost [R]



Time Period	RFO > 1% vs. Landed Crude Cost ($/bbl)
Gas Cap	[redacted]
2006 Post Gas Cap	[redacted]
Q1 & Q2 2007	[redacted]
Q3 & Q4 2007	[redacted]
Q1 & Q2 2008	[redacted]
Q3 & Q4 2008	[redacted]
2009 YTD	[redacted]

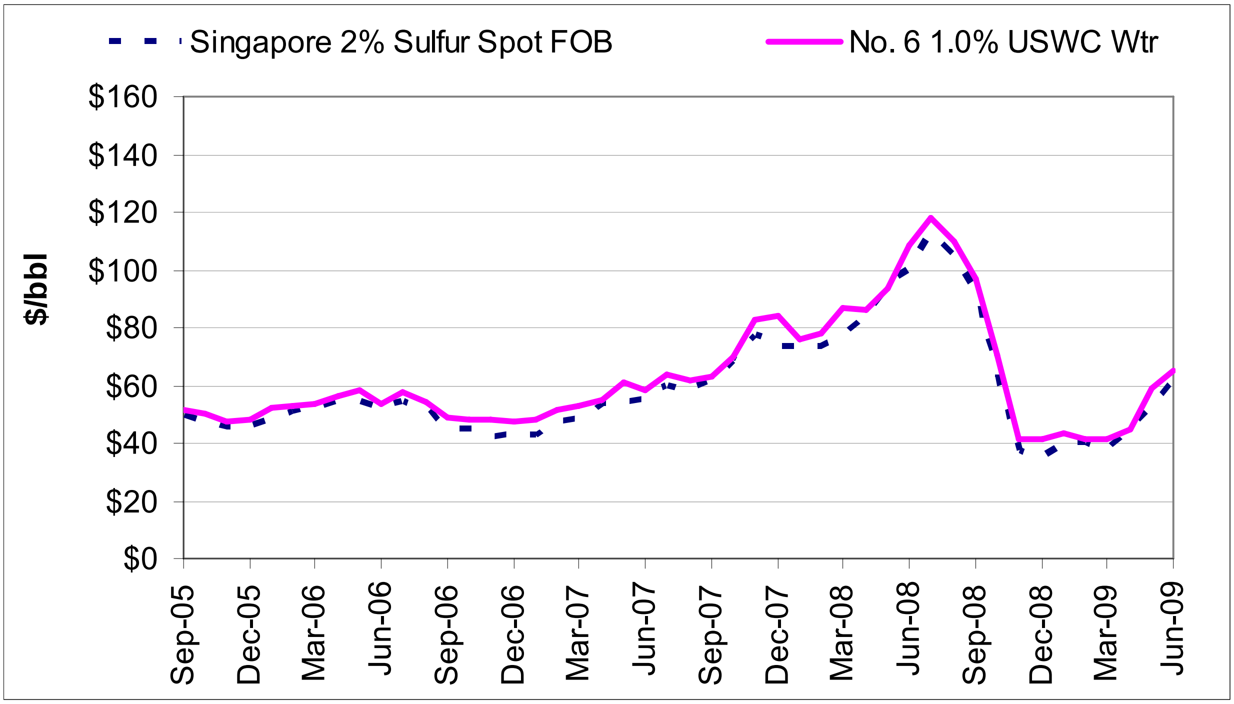
Source: IPIR, PIMARdb 090809 – Category 9

Residual Fuel Price vs. Other Markets

An examination of Hawaii's residual fuel prices versus that of other markets (shown in Exhibit 45 for low sulfur residual fuel) indicates that Hawaii prices followed the trend for RFO in other regions of the world. A comparison with USWC 1% and Singapore 2% sulfur RFO in Singapore indicate that RFO prices around the world followed a single trend. Exhibit 46 shows the spread between Zone 1 <1% and Singapore 2% and USWC 1% sulfur RFO for different periods. Since

Q4 2008, the differential between fuel oil with low and high sulfur contents have narrowed and fluctuated, defying historical patterns observed for these types of fuel oil.

Exhibit 45: Comparison of Zone 1 <1% with Singapore 2% and USWC 1% Sulfur RFO [R]



Source: Bloomberg, PIMARdb 090809 - Category 9, Platts

Exhibit 46: Spread between Zone 1 <1% with Singapore 2% and USWC 1% Sulfur RFO [R]

Time Period	RFO < 1% vs. Singapore 2% Sulfur ($/bbl)	RFO < 1% vs. USWC 1% Sulfur ($/bbl)
Gas Cap	[redacted]	[redacted]
2006 Post Gas Cap	[redacted]	[redacted]
Q1 & Q2 2007	[redacted]	[redacted]
Q3 & Q4 2007	[redacted]	[redacted]
Q1 & Q2 2008	[redacted]	[redacted]
Q3 & Q4 2008	[redacted]	[redacted]
2009 YTD	[redacted]	[redacted]

Source: Bloomberg, PIMARdb 090809, Platts

Petroleum Product Margins

The previous section of the report identified absolute pricing trends for crude and petroleum products as well as relative spreads between prices in Hawaii and in other markets to assess the reasonableness of wholesale price trends in Hawaii. This section of the report assesses key petroleum product margins based primarily on estimates from PIMAR data on the actual gross profit margin for refiners, suppliers, and in some cases retail service stations.

Gross profit margins are key indicators of the relative financial performance of the business sector being evaluated. They do not incorporate specific cost information such as fixed and variable costs (manpower, utilities, chemical usage, etc.) or in the case of refining, byproduct values; however, over time they provide a measure of general trends in overall profit level.

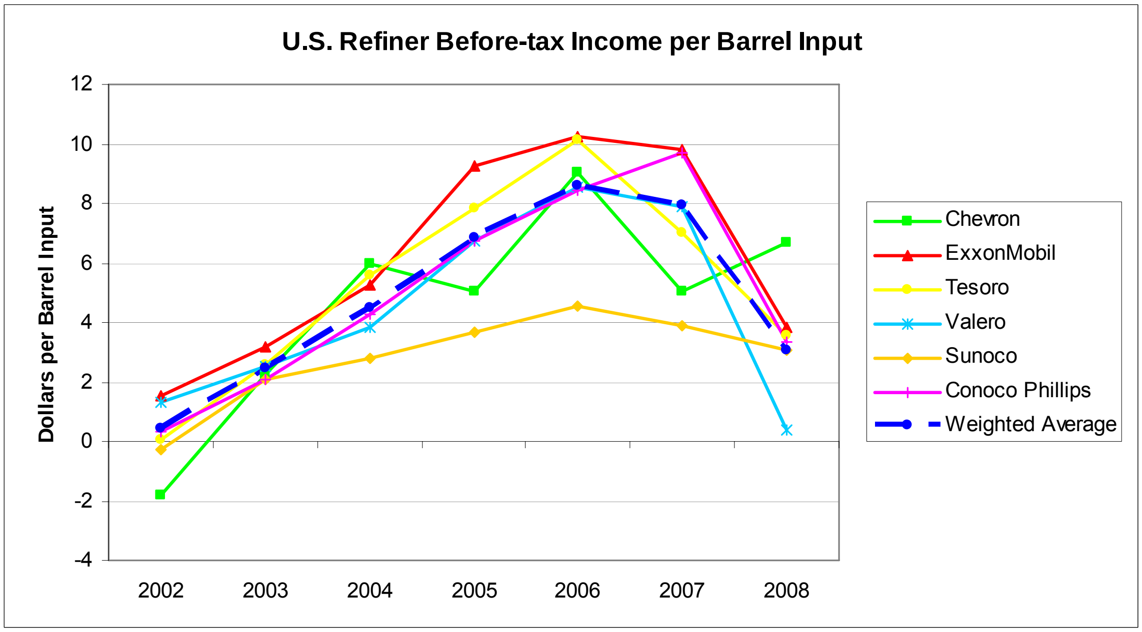
This section will examine gross margin trends for Hawaii refiners, suppliers and jobbers and retail service stations.

Refining Gross Margins

Over the course of 2008 and 2009 U.S Refining margins and profits collapsed from prior years. This occurred for several reasons. First, the reversal of years of demand growth brought on by the global recession reduced the demand for petroleum products and caused significant pressure to reduce crude runs to control inventory levels. Secondly, the reaction of OPEC to the lower demand levels and lower prices was to cut supply of crude to global markets both to manage their inventory and to control prices. The OPEC crude cuts tend to be primarily in the medium to heavier grades of crude oil (which cuts volumes but minimizes the loss in revenue as the more expensive lighter crudes are not cut as much).

These actions had a powerful impact on global refining margins as can be see in Exhibit 47 below. This Exhibit shows the trend in a number of the largest U.S. refiner's downstream profits through 2008 based on analysis of refiner 10-K reports, with profits examined on a dollar per barrel of input basis.

Exhibit 47: U.S. Refiner Profits from 2002-2008

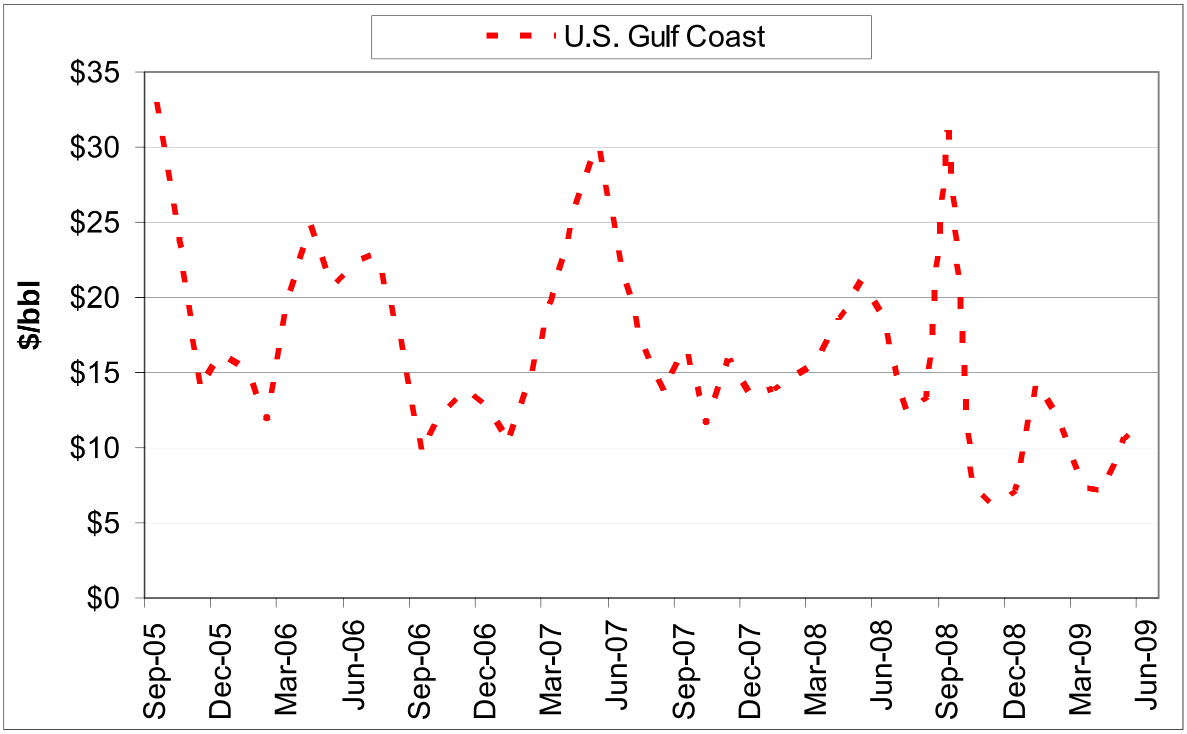


Source: SEC 10-K and 10-Q Filings

The global market conditions also impacted Hawaii refiners; however, the relative impact was considerably less for several reasons. First, as we have seen on Exhibit 15 earlier in this report, the OPEC reductions tended to lower the wide spreads that had existed for a number of years between the light sweet crudes processed by Hawaii refiners and the heavier crudes processed by most U.S, refiners. This dramatic change has resulted in Hawaii refiners having a much lower crude cost disadvantage than ever before. In addition, as worldwide crude runs were reduced due to lower global demand, there is a disproportionate reduction in the production of residual fuel oil. This occurs because of OPEC's actions on reducing production of the heavier crude oil grades (which produce more residual fuel). This action resulted in the prices for residual fuel, which have been heavily discounted in the past, strengthening versus the crude oil price (as shown in Exhibit 42 in the discussion of residual fuel price).

These two changes have greatly reduced the competitive disadvantage for Hawaii refineries in late 2008 and into 2009. Exhibit 48 shows the trend in refiner margins in the U.S. Gulf Coast as well as Hawaii over the past several years. Note that the exhibit shows U.S. refiner margins based on typical U.S. Gulf Coast yields, and Hawaii margins based on average Hawaii refiner yields. Pricing assumed is spot market pricing for the U.S. Gulf Coast for products and the actual average PADD 3 refiner acquisition cost (RAC) of crude as reported to EIA. [redacted]

Exhibit 48: Comparison of Refiner Margins: Hawaii vs. U.S. Gulf Coast [R]



Source: IPIR & PIMAR and EIA

The chart above shows clearly that Hawaii refining gross margins were consistently below USGC margins from 2005 to mid 2008, but are the same or better than U.S. Gulf Coast refiners since late 2008. There are three additional points to make on this market situation:

1. The margin levels of U.S. Gulf Coast refiners in 2008 (with the exception of the brief hurricane spike in the Fall) was weak compared to prior years and resulted in the poor profit levels seen in Exhibit 48 above.

2. The "Gross Margin" comparison does not reflect key cost issues for refineries, which are obviously a crucial element of final profitability. Hawaii refineries are far less complex than U.S. Gulf Coast refineries and therefore have less manpower, maintenance costs, fuel usage, etc. This means that Hawaii's refineries actually may have better profit levels than the mainland refineries since their operating costs per barrel are lower (if their gross margins are equal).

3. Despite these positive signs for Hawaii refiners, it is unlikely that this margin scenario will be sustained when global demands recover as the global economy recovers. As global crude runs increase, competition will resume for light sweet crudes and it is likely that light/heavy spreads will widen again.

Chevron announced in early 2009 that they are studying the Hawaii refinery's long term profitability and the economics of using the refinery storage as a terminal. This would (presumably) allow Chevron to maintain supply through imports of products rather than through operation of the refinery.

A decision of this nature would impact jobs in Hawaii, both in the refinery as well as all the support services that are used by the refinery in the state.

Overall refinery margins in Hawaii have not materially improved from prior years, as seen in Exhibit 49 below. The improved competitive position has resulted from more complex refineries losing their advantages over Hawaii due to market conditions.

Exhibit 49: Hawaii Average Gross Margins, 2005-2009 YTD [R]

	Hawaii Refining Margin ($/bbl)
2005 (Sept-Dec)	[redacted]
2006	
2007	
2008	
2009 YTD	

Source: IPIR & PIMAR, PUC Transaction Database, and EIA

The overall direction of policy in the United States and within the state of Hawaii is to further reduce the demand for petroleum based fuels. As these initiatives succeed, they will further lower demands for petroleum fuel in Hawaii and tend to discount product prices and refinery margins. This will, sooner or later, result in inadequate refinery margins and closure of one or both of Hawaii's refineries.

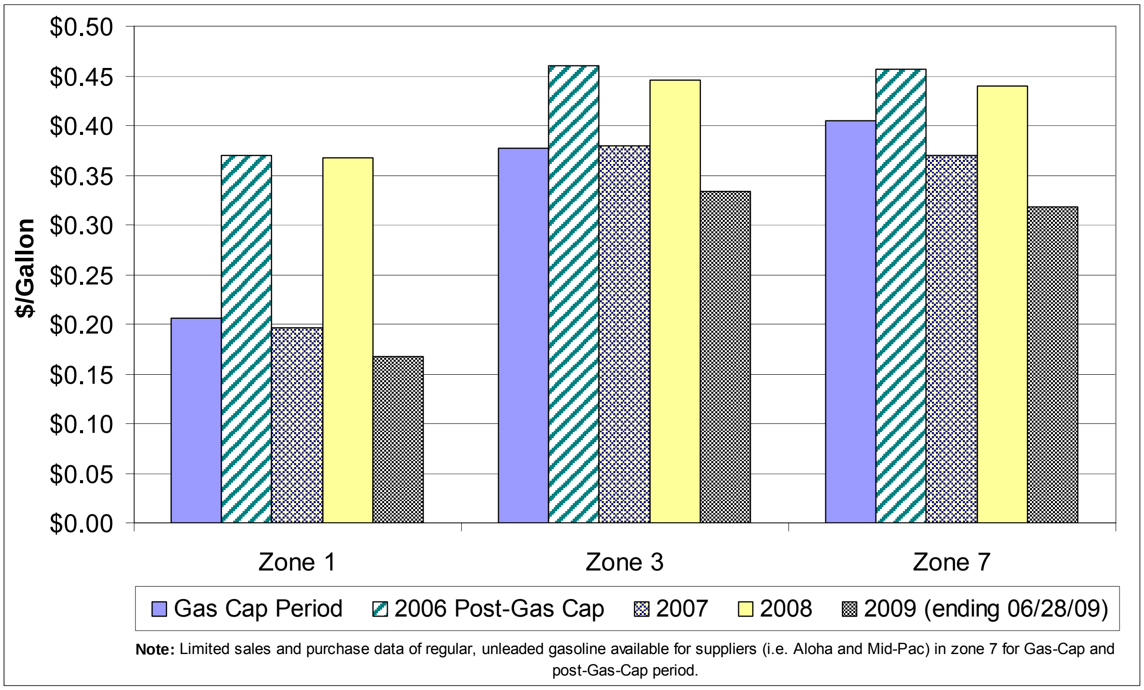
Suppliers' Gross Margins for Gasoline

The analysis of major suppliers' gasoline margins involves evaluation of the reported purchase cost and sales realization (price) based on information in the M-100 and M-101 reports filed by suppliers (primarily Aloha, Mid Pac and Shell). These gross margins must cover the suppliers' cost of doing business in Hawaii, including cost to receive product at a terminal, load it into a truck and deliver it to the service station. These costs will vary for each company based on their distribution network and specific contracts with suppliers.

ICF has examined these margins in prior reports by individual supplier to compare relative margins between suppliers. These data are available; however, the focus of this report is to study the average margin of all suppliers to determine the average level of gross margin among major suppliers (excluding refiners).

Exhibit 50 below shows the trend and magnitude of supplier margins in three zones where there is substantial activity among multiple suppliers. The margins represent the DTW price charged to service stations for delivered gasoline (regular grade) minus the cost of acquisition of the gasoline from refiners. Note that the gross margin for suppliers in Zone 1 (Oahu) is considerably lower than on Maui or the Big Island (Hilo Zone), and this has been the case throughout the period.

Exhibit 50: Supplier Wholesale Margins by Zones



Source: PIMARdb 090809

The higher supplier wholesale margins in Zone 3 (Maui without Hana) and Zone 7 (Hilo) stem from several factors. First, Zone 1 (Oahu) margins reflect the fact that gasoline is delivered essentially directly from the refineries and hence there is no added cost for transportation to Zones 3 and 7 (contracts with refiners will reflect a locational differential, but this differential may be greater than the refiners' actual cost). Second, the trucking cost to distribute gasoline on Oahu is, on average less than the cost to distribute to customers on Maui and the Big Island[9], and these costs likely have escalated. Finally, the suppliers may have been able to command higher prices in the more remote tourist-oriented areas of the state.

The supplier margins can be very volatile in rising or falling markets due to the timing of their contracts with refiners and market conditions within the state. Exhibit 51 shows the trend in supplier margins during several discrete periods since 2005.

Exhibit 51: Supplier Wholesale Margins by Zone, 2005-2009, cpg

Time Period	Zone 1	Zone 3	Zone 7
Gas Cap Period	0.21	0.38	0.40
2006 Post-Gas Cap	0.36	0.46	0.45
2007	0.20	0.38	0.37
Q1 & Q2 2008	0.06	0.35	0.20
Q3 & Q4 2008	0.66	0.56	0.63
2009 (ending 06/28/09)	0.17	0.33	0.32
Average	**0.28**	**0.41**	**0.40**

Source: PIMARdb 090809

[9] Based on input provided by reporting parties in the development of the gas cap formula

The periods of lower spread correspond to periods of rising markets and higher spreads occur as markets fall. Over the entire period an average of about 28 cpg was seen for Oahu and about 40 cpg in Zones 3 and 7 (Maui (without Hana) and Hilo).

Jobber Margins

Jobbers are smaller distributors who purchase from suppliers (or in some cases refiners) and resell gasoline and diesel to customers. ICF has followed the jobber margins in prior reports and has included an update of the jobber margins by company and zone in the Appendix (see Appendix 2).

The jobber margins tend to average in the [redacted] cpg range over the period. The most recent margins (2009) show a decline from prior years by about 5 cpg for most companies. This may reflect the more competitive market with lower overall demands.

Retail Service Station Margins: Gasoline

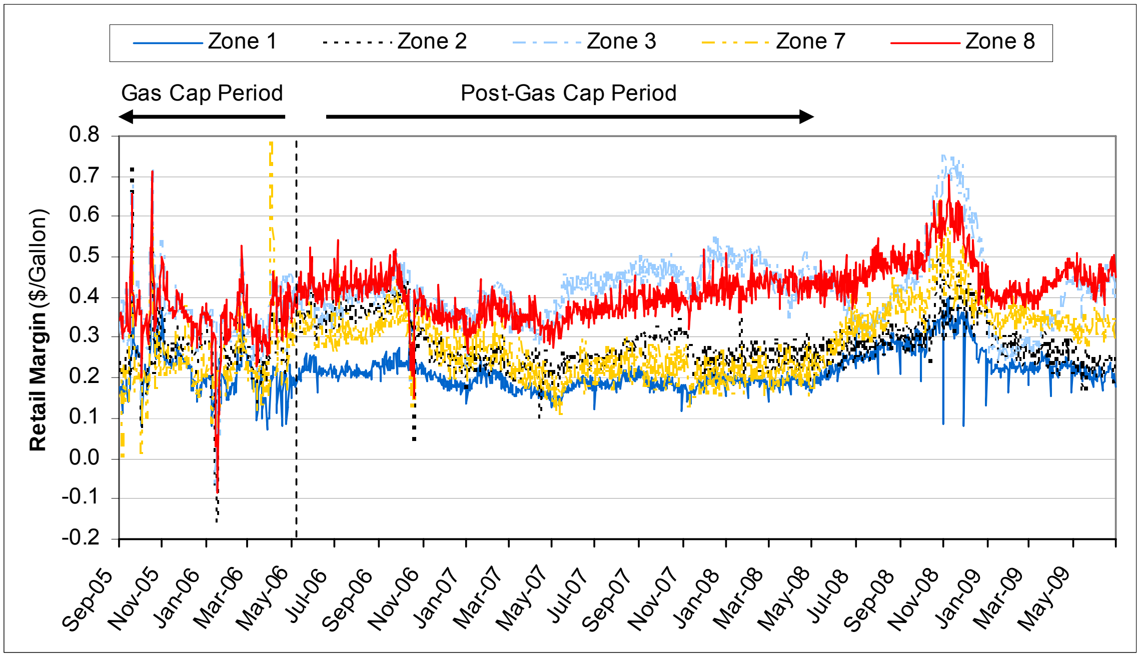
Prior reports have tracked the retail service station margins in Hawaii. Data exists through the PIMAR system for costs to service station owners, and through OPIS (Oil Price Information Service) for retail sales prices. This information, coupled with knowledge of federal, state and local taxes allows the calculation to be made. (See Appendix 3 for the process and tax assumptions).

The 2009 retail margin calculation result involved comparing the daily OPIS average retail price in each zone (netted for taxes) with the daily average DTW price from all refiners, suppliers and jobbers in each zone. This graph is shown on Exhibit 52 below. The exhibit is very busy and contains data for all zones except Zones 4 (Hana) and 6 (Lanai). However, the intent in showing this exhibit is to demonstrate that despite some volatility in the daily pricing and occasional spikes up and down, the underlying range of retail margins in Hawaii continues to appear to vary from about $0.15/gallon, or 15 cpg up to $0.60/gallon, or 60 cpg (during the peak period). These margins are different for each zone, although in general it appears the retail margins increased immediately after the Gas Cap was suspended, and then began declining somewhat in late 2006.

Margins from mid-2007 tended to be stable until June 2008 when margins appear to have increased. It is possible retailers began increasing street prices to gain higher margins to compensate for lower sales volumes due to higher prices or less tourism volume. Once overall world petroleum prices began declining rapidly in the second half of 2008, it appears retailers did not adjust their prices down as rapidly as the market moved, resulting in a period of higher retail margins during the second half of 2008.

The relative retail margins between zones show Zone 1 with the lowest margins. Zones 3 and Zone 8 have much higher margins than the other higher volume zones.

Exhibit 52: Service Station Net Margin by Zone [R]

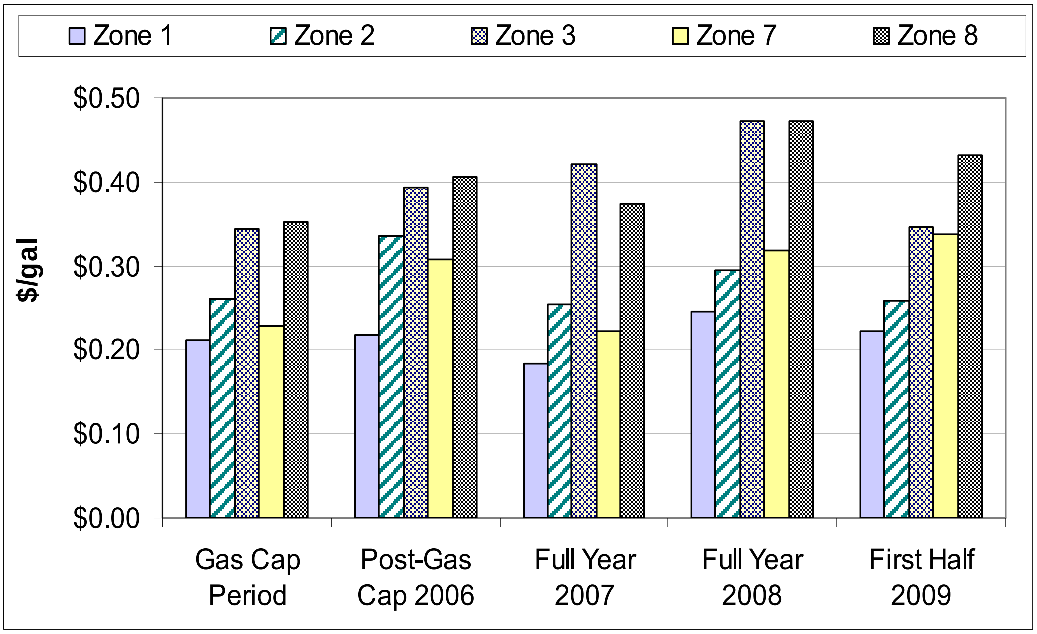


Source: OPIS and PUC Transactions Database

Exhibit 53 shows the same data on an overall average basis during and after the Gas Cap period by zone. Except for Zones 1 and 2 (Oahu and Kauai), the other zones have tended to migrate to higher retail margins in recent years. However, 2009 YTD numbers show some pullback, especially in Maui (Zone 3).

The overall higher margins in neighbor islands versus Oahu may be due to lower throughput levels in service stations outside the major Oahu metropolitan center. This would require service station owners to cover their costs (rent, labor, etc.) on less gasoline volume and therefore tend to push margins up. It could also mean in some markets like Maui and the Big Island, it is possible the service stations in that zone have recognized that they can increase retail price without losing volume. The pullback in 2009 in Maui may indicate that possibility may not be always true.

Exhibit 53: Service Station Net Margins over the Study Period



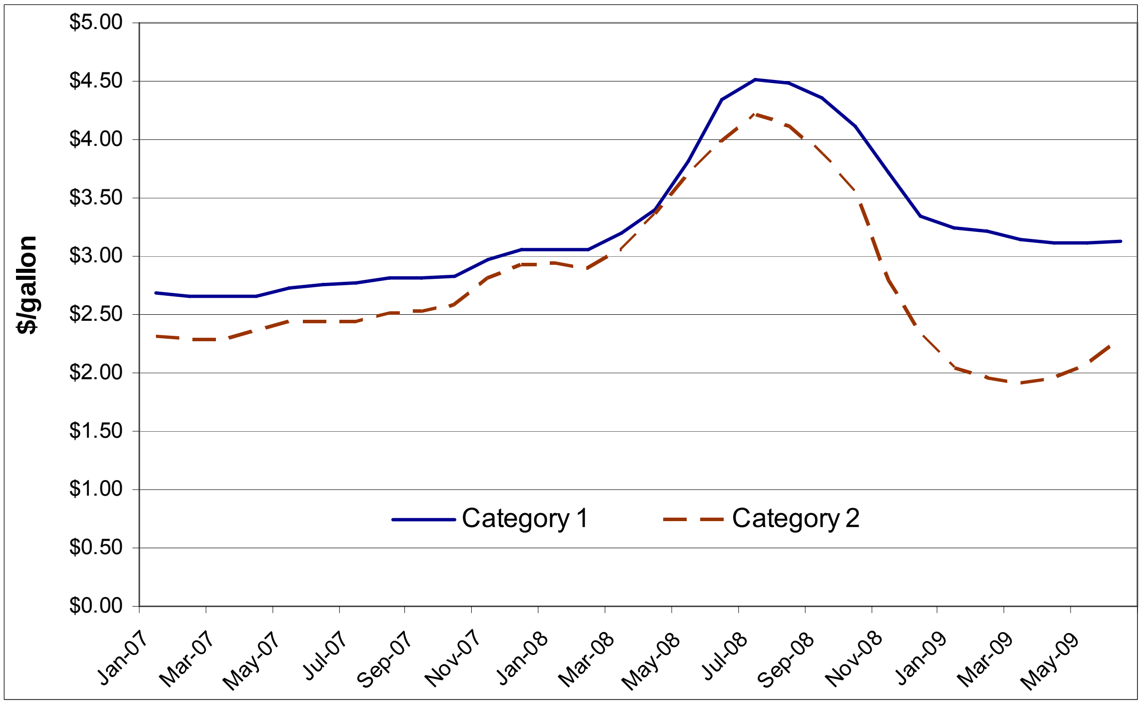
Source: OPIS and PUC Transactions Database

Retail Diesel Service Station and Other Margins: Diesel

For ULSD, PIMAR data includes several measures of retail pricing. Retail prices at company operated service stations are reported in the PIMAR system, as well as retail prices to "other end users". These sales would include direct deliveries to on-road diesel customers (for example, UPS or FedEx truck fleets, etc.). The retail sales would normally be expected to be at a premium to rack ULSD prices and bulk ULSD prices.

Exhibit 54 shows a trend of Zone 1 retail prices (both sales to salary operated service stations – Category 1 in PIMAR – and sales to other end users – Category 2). These prices are tracked versus wholesale rack prices (Category 4) and bulk prices (Category 5) in Hawaii.

Exhibit 54: Zone 1 Retail vs. Wholesale ULSD Prices [R]



Source: PIMAR – Categories 1, 2, 4, and 5
Note: Category 1 is “Retail through Company-Operated Retail Outlets,” Category 2 is “Retail to Other End Users,” Category 4 is “Wholesale Rack,” and Category 5 is “Wholesale Bulk.”

The exhibit shows that with the decline in overall prices in 2008, the sales to all categories dropped in relative “harmony” with the exception of Category 1, sales to company operated service stations. The service station sales prices reported were at levels in late 2008 (and sustained through 2009) well above all other categories and appear to have remained at those levels even as all other wholesale and retail prices have fallen considerably.

Exhibit 55 shows that sales to other retail end users were [redacted] lower than sales through the company operated service stations. Spot checks of retail prices posted in Honolulu for ULSD through websites such as GasBuddy.com indicated that while there was wide disparity between individual service stations ULSD price, all stations were at very high levels compared to other retail sales and rack and bulk sales.

Exhibit 55: Spreads Between Retail Service Station ULSD Price and Other ULSD Channels [R]

	Cat 1 - Cat 2 ($/gal)	Cat 1 - Cat 4 ($/gal)	Cat 1 - Cat 5 ($/gal)
2007 1st H	$0.34	[redacted]	[redacted]
2007 2nd H	$0.24	[redacted]	[redacted]
2008 1st H	$0.16	[redacted]	[redacted]
2008 2nd H	$0.61	[redacted]	[redacted]
2009 1st H	$1.12	[redacted]	[redacted]

Source: PIMAR – Categories 1, 2, 4, and 5
Note: Category 1 is “Retail through Company-Operated Retail Outlets,” Category 2 is “Retail to Other End Users,” Category 4 is “Wholesale Rack,” and Category 5 is “Wholesale Bulk.”

The overall level of ULSD sold for vehicles is far lower than gasoline sales in Zone 1, and since early 2009, there did not appear to be any competitive pressure at work to drive the service station street prices down.

Outlook for Petroleum Markets in Hawaii

There are a number of existing and emerging policies and potential regulations that will impact petroleum markets in Hawaii. The primary areas include the following:

1) Reductions in Diesel Fuel Sulfur level for off-road use

On June 1, 2010 off-road diesel sulfur content will be reduced to a maximum of 15 ppm (ULSD). The sulfur content of locomotive and marine diesel fuel will be reduced to 15 ppm beginning June 1, 2012. These laws are already in place.

This change in off-road sulfur levels will ultimately require all diesel sales in Hawaii to be ULSD at the 15 ppm level (except diesel used for power generation). The reduction in the sulfur level for on-road diesel (which took effect in 2006) has already impacted Hawaii since only one refiner has the capability to produce ULSD. When all diesel fuel use for on and off road must be ULSD, it will be necessary to import ULSD from other markets, and export higher sulfur diesel fuels or gas oils to balance supply. This transition may adversely affect refiners and make the costs of supplying product that meets sulfur requirements higher for Hawaii refiners and, ultimately, consumers.

2) Passage of the Federal 2007 Energy Independence and Security Act (EISA) in December 2007, and subsequent alterations by the new Administration

This legislation, discussed in the 2008 PIMAR report, directly impacts the petroleum market in Hawaii in two ways.

First, the legislation mandates a significant improvement in CAFE standards for automobiles and light duty trucks, increasing from 25 miles per gallon to 35 miles per gallon by 2020[10]. This change will, over time, result in lower gasoline consumption per mile traveled by increasing the miles per gallon for the domestic car fleet. This will contribute to lower gasoline demands than would otherwise have occurred over the period.

In May 2009, the Obama administration first proposed CAFE standards that would require a fleetwide average of 35.5 miles per gallon by 2016, four years ahead of the schedule laid out in EISA 2007. Then in September 2009, the administration released a notice of upcoming rulemaking by the EPA and Department of Transportation (DOT) to establish vehicle GHG emissions standards and CAFE standards. Specifically, the EPA intends to propose a national CO_2 vehicle emissions standard under section 202 of the CAA (EPA is considering a standard of 250 grams/mile of CO_2 in model year 2016), and the National Highway Transportation Safety Administration (NHTSA) is expected to propose appropriate related CAFE standards. More information on these proposals can be found at http://www.epa.gov/oms/climate/regulations.htm.

These alterations may accelerate the implementation of higher CAFE standards and lower gasoline consumption.

Second, the EISA increases the required use of ethanol in the U.S. fuel supply in the Renewable Fuel Standard (RFS) originally promulgated in the Energy Act of 2005. This change

[10] EISA 2007 sets a fleet-wide standard of 35 mpg by model year 2020.

requires an increase in biofuel usage in the United States from roughly 7 billion gallons per year (bgy) in 2007 to 36 bgy by 2022. This legislation stipulates specific increases in ethanol usage from still non-commercial cellulosic biomass feedstocks.

While the specific method to increase ethanol usage is not identified, current gasoline quality requirements limit ethanol content to 10% (which Hawaii is already at in the state gasoline mix). Meeting higher percentages of ethanol will require massive increases in E-85 usage (a blend of 85% ethanol and 15% gasoline basestock) which must be used only in flex-fuel ready vehicles. Alternatively, the EPA may opt to increase allowable ethanol content from 10 to 15% in normal vehicles. This is a matter for technical and scientific study due to possible impacts on valves and seals in existing vehicles. The EPA is currently handling a Clean Air Act (CAA) waiver request to expand the allowable ethanol content in fuels up to E15. The EPA is currently assessing whether vehicles and engines can meet emissions and durability standards while using E15. See the following notice on the CAA waiver request for E15, which can be accessed at: http://www.epa.gov/otaq/additive.htm.

If the conversion to E15 is allowed, it is reasonable to assume that demand for petroleum based gasoline will decline. If Hawaii increases ethanol substitution for petroleum based gasoline consistent with an E15 blend, it will weaken refinery margins as gasoline will become a surplus commodity, increasingly displaced by ethanol.

3) Potential Reductions in Residual Fuel Oil for Ship Bunkering

The October 2008 amendment of the International Convention on Prevention of Pollution from Ships (MARPOL 73/78) limits sulfur content in fuel oil to 0.1% for SO_x Emission Control Areas by 2015 and 0.5% for the world by 2020[11]. Due to likely enforcement of policies aimed to reduce SO_x emissions from ships in the future, it is possible that the residual fuel sold in Hawaii for fueling vessels may need to be significantly lower in sulfur by 2020. This may require substantial investment in Hawaii refineries to lower the sulfur level, and it is highly unlikely that either refiner would find that a project of this nature would be profitable.

4) Reduce Greenhouse Gas Emissions/Establish Low Carbon Fuel Standards

There has not as yet been passage of Federal legislation to manage greenhouse gas (GHG) emissions although there has been activity in this direction with the House passing H.R. 2454 in June 2009, and the Senate currently considering a similar bill, S.B. 1733. In addition, multiple states are following California's lead after the passage of their AB32 and Low Carbon Fuel Standard legislation to reduce carbon content in fuels and control carbon dioxide and other greenhouse gases from refineries and other Manufacturing facilities. The U.S. EPA is also pursuing direct regulation of GHGs under the Clean Air Act, which can be expected to increase regulatory uncertainty and potentially add new compliance costs.

Hawaii is also working toward this goal, as the Hawaii House passed Act 234, which directs that Hawaii study and implement reductions in GHG emissions to 1990 levels by 2020. More specifically, the recent 2008 agreement[12] between the State and Hawaiian Electric (HECO), committing HECO to the following - no new coal plants, integrate up to 1,100 megawatts of

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[11] International Maritime Organization. "Prevention of Air Pollution from Ship." 2002. http://www.imo.org/Environment/mainframe.asp?topic_id=233

[12] A copy of the agreement between the State and Hawaiian Electric can be accessed at: http://www.heco.com/vcmcontent/StaticFiles/pdf/STATE_HECO_Energy_Future_Agreement_10_20_08.pdf

renewable energy into the power grid, and convert existing fossil fuel generators to biofuels using locally grown crops, is a major initiative. This announcement is linked to the effort to create 70 percent of Hawaii's energy use from clean energy sources by 2030. Currently, the state gets about 10 percent of its energy from renewable sources.

The commitment to move Hawaii in this direction is huge, and has huge ramifications for the petroleum industry. The practical ability to implement the change being considered will certainly be studied from both technical and economic perspectives. However, assuming that this goal is in fact realized, as well as the implementation of increased ethanol use, higher CAFE standards and control of CO_2 emissions from refineries, the petroleum industry impacts would include the following:

a. The reduction in use of residual fuel oil and diesel fuel for power generation will eliminate a significant outlet for Hawaii's refinery product. The alternative to sales of these products to utilities or other power generators ([redacted]) would be to either reduce the volume of crude processed or sell the surplus fuel into the global market. Reducing crude runs would lower gasoline and jet fuel production as well, and runs could not be lowered enough to eliminate the need to export residual fuel. Practically then, if the refineries continue to operate, it will be necessary to export both residual fuel and diesel in significant volumes from the Port of Honolulu to balance supply and demand.

b. Higher ethanol usage and higher CAFE standards will drive lower consumption of petroleum based gasoline, which is an objective of these programs. The lower petroleum based gasoline demand may result in excessive supply of gasoline in Hawaii which would require either reduced crude runs or exports of gasoline to balance supply.

c. Potential Federal requirements to control CO_2 combustion emissions from the refineries will necessitate that the refiners 1) purchase carbon credits; 2) invest to capture and sequester combustion CO_2 emissions; or 3) reduce production of combustion CO_2. Carbon credit costs and investment costs for Hawaii's refineries will be very expensive and result in poorer refinery profits unless prices of all petroleum products are increased to pass on the costs.

Petroleum Market Outlook Summary

The net effect of these changes from the perspective of the Hawaii refiners may be that there is minimal outlook for a reasonably profitable future. ICF strongly recommends that the Commission consider the full implications of the potential closure of one or both of the refineries in Hawaii. This may require review of proposed the closure and re-supply plans of the refiner(s) who are considering shutting down to ensure steady supply of key petroleum products, including gasoline, jet fuel, diesel and residual fuel, for all businesses and consumers in the state. Chevron has already indicated that it is studying the closure of their refinery in Hawaii. Clearly, the goal of many Federal and Hawaii based legislative initiatives is to reduce dependence on petroleum fuels, and as these goals over time become realized, it is reasonable to assume that operation of one or both refineries in Hawaii will become less profitable.

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APPENDIX

APPENDIX 1: GLOSSARY

Act 78, Session Laws of Hawaii 2006	Established the Petroleum Industry Monitoring, Analysis, and Reporting Program and Special Fund; indefinitely suspended maximum pre-tax wholesale gasoline price until reinstatement by Governor; prohibited unfair practices by petroleum industry.
API Gravity	American Petroleum Institute measure of specific gravity of petroleum products in degrees. An arbitrary scale expressing the gravity or density of liquid petroleum products. The measuring scale is calibrated in terms of degrees API; it is calculated as follows: Degrees API = (141.5 / specific gravity at 60°F) − 131.5
Barrel	A unit of volume equal to 42 U.S. gallons. Abbreviated bbl.
Bulk Sales	Wholesale sales of gasoline in individual transactions which exceed the size of a truckload.
CAFE Standards	Corporate Average Fuel Efficiency Standards, is the term used for the sales weighted average fuel economy (in MPG) for a manufacturer's fleet of passenger cars and light trucks. Enacted in response to the 1973-74 Arab oil embargo, these standards are regulated by the National Highway Traffic Safety Administration and the Environmental Protection Agency.
Conventional Gasoline	Finished motor gasoline not included in the oxygenated or reformulated gasoline categories.
CPG	Cents per gallon.
Crude Oil	Raw material for refinery processing into products.
Crude Unit	The initial refining operation in which the basic cuts of fuel are distilled out of crude oil.
DBEDT	Department of Business, Economic Development and Tourism of the State of Hawaii.
Dealer Tank Wagon (DTW)	The price that the dealer pays to its supplier, usually a jobber or refiner. Dealer prices are usually higher than rack prices because they include transportation costs. A tank wagon is the actual vehicle that the supplier or jobber uses to transport product to the dealer.
Distillates	A general classification for one of the petroleum fractions produced in conventional distillation operations. It includes diesel fuels and fuel oils. Products known as No. 1, No. 2, and No. 4 diesel fuel are used in on-highway diesel engines, such as those in trucks and

automobiles, as well as off-highway engines, such as those in railroad locomotives and agricultural machinery. Products known as No. 1, No. 2, and No. 4 fuel oils are used primarily for space heating and electric power generation.

E-10 Gasoline that contains 10% ethanol.

EIA Energy Information Administration, the independent data and statistics division of the Department of Energy that compiles data on petroleum supply and demand on a weekly and monthly basis. These figures are not as timely as API statistics, but are considered more accurate.

Ethanol An alcohol which is most often derived from corn. Ethanol is designed to be blended with gasoline to produce a cleaner burning fuel, and is an accepted oxygenate component for the oxygenated seasons mandated by the EPA.

FOB Terms of a transaction where the seller agrees to make the product available within an agreed-upon time period at a given location. Literally means free on board. Does not include any transportation costs or excise and duty.

Heavy, Sour Crude Crude oil that has the following qualities: (1) less than 25° in API gravity, (2) equal to or greater than 1.5% in sulfur content. The market typically prices this type of crude oil at a discount to light, sweet crude.

HIBOB Hawaii Blendstock for Oxygenate Blending. A gasoline blendstock that is lower in octane level and in vapor pressure than conventional gasoline. Blended with ethanol to make E-10.

HSD High Sulfur Diesel Fuel (>500 ppm sulfur).

Import Parity The market-based cost of landing imported petroleum products which includes all source, transportation, and handling costs.

Jet Fuel A refined petroleum product used in jet aircraft engines. It includes kerosene-type jet fuel and naphtha-type jet fuel.

Jobber Someone who purchases refined products at the wholesale level and then transfers or resells the product at the retail level. The retail level sale/transfer can occur at facilities owned by the jobber, independent dealers or commercial accounts.

Landed Crude Cost The price of crude oil at the port of discharge, including charges associated with purchasing, transporting, and insuring a cargo from the purchase point to the port of discharge. The cost does not include charges incurred at the discharger port (e.g., import tariffs or fees, wharfage charges, and demurrage).

Landed Ethanol Cost	The price of ethanol at the port of discharge, including charges associated with purchasing, transporting, and insuring a cargo from the purchase point to the port of discharge. The cost does not include charges incurred at the discharge port (e.g., import tariffs or fees, wharfage charges, and demurrage).
Light, Sweet Crude	Crude oil that has the following qualities: (1) greater than 35° in API gravity, (2) maximum of 0.5% in sulfur content. Since light, sweet crudes are generally easier to refine than heavy sour crudes, they are typically at a premium to heavy sour crudes.
LSD	Low Sulfur Diesel Fuel (between 15 ppm and 500 ppm sulfur).
Midgrade Gasoline	Gasoline having a road antiknock index, i.e., octane rating, greater than or equal to 88 and less than or equal to 90. Typically 89 Rd in U.S. markets.
NYMEX	New York Mercantile Exchange.
Octane	A number used to indicate gasoline's antiknock performance in motor vehicle engines. The two recognized laboratory engine test methods for determining the antiknock rating, i.e., octane rating, of gasolines are the Research method and the Motor method. To provide a single number as guidance to the consumer, the antiknock index (R + M)/2, which is the average of the Research and Motor octane numbers, was developed.
OPIS	Oil Price Information Service. OPIS focuses on reporting U.S. rack and spot market prices, publishes reported prices at multiple U.S. terminals.
Petroleum Administration for Defense Districts (PADD)	Five geographic area into which the United States was divided by the Petroleum Administration for Defense for purposes of administration during federal price controls or oil allocation. PADD V includes Hawaii, Alaska, Washington, Oregon, California, Arizona and Nevada. Most energy data are reported on a PADD level basis.
PIMAR	Established under Act 78, the Petroleum Industry Monitoring, Analysis, and Reporting Program was created to monitor and report on Hawaii’s oil industry.
Platts	Oil price information service that tracks U.S. and global pricing transactions. Platts quotes are judged reliable benchmarks for contractual transactions.
Premium Gasoline	Gasoline having a road antiknock index, i.e., octane rating, greater than 90. Typically either 93 Rd or 92 Rd in U.S. markets; Hawaii Premium is 92 Rd.

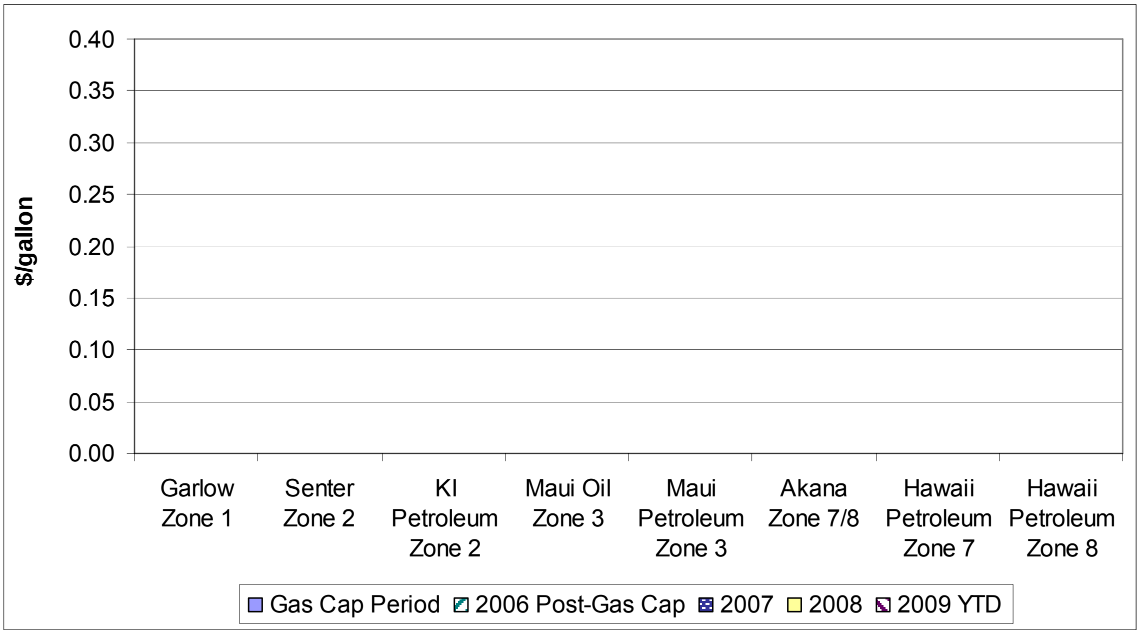
Parties	Companies affected by the PIMAR and/or gasoline price cap legislation.
PUC	Public Utilities Commission, the agency charged with the oversight of regulated utilities in the State of Hawaii. The PUC Transaction database refers to purchases and sales data submitted to the PUC by oil companies.
Rack	Petroleum products sold at the wholesale level from primary terminal storage. Refers to loading racks where tanker trucks fill up.
RBOB	Reformulated Gasoline Blendstock for Oxygenates Blending.
Ratable	Relatively consistent volume over a period of time.
Refiner Acquisition Cost (RAC)	The cost of crude oil, including transportation and other fees paid by the refiner. The composite cost is the weighted average of domestic and imported crude oil costs. *Note*: The refiner acquisition cost does not include the cost of crude oil purchased for the Strategic Petroleum Reserve (SPR).
Refinery	An installation that manufacturers finished petroleum products from crude oil, unfinished oils, natural gas liquids, other hydrocarbons and oxygenates.
Refinery Utilization Rate	Represents the use of the atmospheric crude oil distillation units. The rate is calculated by dividing the gross input to these units by the operable refining capacity of the units.
Regular Gasoline	Gasoline having a road antiknock index, i.e., octane rating, greater than or equal to 85 and less than 88. Typically 87 Rd in U.S. markets.
Residual Fuel	A general classification for the heavier oils, known as No. 5 and No. 6 fuel oils, that remain after the distillate fuel oils and lighter hydrocarbons are distilled away in refinery operations. It is used in steam-powered vessels in government service and inshore power plants. No. 6 fuel oil includes Bunker C fuel oil and is used for the production of electric power, space heating, vessel bunkering, and various industrial purposes.
RVP	Reid Vapor Pressure; used to measure pressure in terms of pounds per square inch (psi). In terms of gasoline, RVP is used as an ozone control mechanism.
Ship Bunkering	The act or process of supplying a ship with fuel.

Spot	A deal for supply at an agreed point in time wherein the price is negotiated between the buyer and the seller, and the supply commitment varies.
Spot Market	The prevailing cost to buy or sell a given petroleum product in the near future. Since this market reacts quickly, and is an alternative to wholesale sales, it provides a good indication of the direction of wholesale price trends.
Terminal	A facility used primarily for the storage and/or marketing of petroleum products, which has a total storage capacity of up to 500,000 barrels or more and/or receives petroleum products by tanker, barge, or pipeline.
ULSD	Ultra Low Sulfur Diesel fuel (<15 ppm sulfur).
USGC	U.S. Gulf Coast.
West Texas Intermediate (WTI)	A light sweet crude oil produced in the United States, which serves as a benchmark grade on the NYMEX.
Wholesale	Sales transactions between suppliers such as refineries and purchasers who resell the product to either other wholesalers or end users (retail sales). In this report, wholesale sales include Bulk, Rack and DTW sales.

APPENDIX 2: JOBBER MARGINS

The Exhibit below shows jobber margins for the entire period of study by company and zone.

Exhibit 56: Jobber Margins by Company and Zone [R]



Source: IPIR, PIMAR, and PUC Transaction Database

APPENDIX 3: DETERMINATION OF RETAIL MARGINS FOR GASOLINE

The reporting mechanism established by the PUC in 2005 collected all transactions between refiners, suppliers and jobbers with buyers and sellers identified. These transactions included all transactions of sales of gasoline to service stations in Hawaii. The DTW transactions from refiners, suppliers and jobbers to service stations provided transparency to the actual cost of gasoline to all service stations in Hawaii except the company owned and operated stations (these stations were not included in the Gas Cap process because there was no wholesale transaction in the delivery chain to those stations).

Therefore, the “purchase” cost for a number of service stations is known. The actual retail prices (or “street” prices visible to consumers) for a number of Hawaii service stations in Zones 1, 2, 3, 5, 7 and 8 were obtained by the PUC from the Oil Price Information Service (OPIS), which tracked and reported daily “street” prices, including taxes, for over 140 service stations in Hawaii. These stations include about 35 service stations which were also included in the PUC transaction database.

Access to this information enabled a determination to be made of the retail service station margins in Hawaii by several different methods. The determination must first adjust the retail prices in each zone for the applicable taxes. The table below shows the tax assumptions in each zone used to determine the net (after tax) retail price in each zone and for each applicable time period.

Tax Assumptions Used to determine Net Service Station Retail Price

		Date (if applicable)	City and County of Honolulu	County of Maui	County of Hawaii	County of Kauai
Fixed fuel taxes (per gallon)						
Federal			$0.184			
State-level	Hawaii Fuel Tax	Before Jul 1, 2007	$0.16			
		Beginning Jul 1, 2007	$0.17			
	Environmental Response Tax		$0.00119			
County-level		Before Oct 1, 2007	$0.165	$0.18	$0.088	$0.13
		Beginning Oct 1, 2007		$0.16		
Percentage sales taxes						
State-level	General Excise Tax	Before Apr 1, 2006	4%			
		Apr 1–Dec 31, 2006	0%*			
		Jan 1–Jun 30, 2007	4%			
		Beginning Jul 1, 2007	0%*			
County-level	County Surcharge Tax	Jan 1–Jun 30, 2007	0.5%			

* Except Zones 5 and 6, where the GET remains effective at 4%; E-10 gasoline was not adopted in Molokai and Lanai so the exemption does not apply.

Example:
Total taxes on a gallon of gasoline that retailed for $3.509 on the island of Maui on Apr 19, 2008 can be computed as follows:
Fixed tax total = 0.184 + 0.16 + 0.00119 + 0.16 = 0.505
Taxable amount = 3.509 − 0.505 = 3.004; Sales tax total = 4% × 3.004 = 0.120
Total taxes = 0.505 + 0.120 = 0.625

Sources: State tax increase 16 cents to 17 cents- Hawaii Senate Bill 1285; Maui County tax decrease 18 cents to 16 cents (Maui County Resolution 06-44)- Department of Taxation Announcement No. 2006-08; Federal Fuel Tax- EIA; Honolulu County Surcharge Tax- Department of Taxation Announcement No. 2006-15
The adjustments reflected changes in the Maui County tax in 2006, the GET tax increase for Honolulu County in 2007, and the varying application of the GET tax in all counties selling gasoline with 10% ethanol. The GET tax was exempted in 2006 when

ethanol blending was initiated, but then was applicable as of January 1, 2007 when the Legislature did not extend the exemption. The exemption was reinstated on July 1, 2007. The GET exemption again sunset on June 30, 2009 (which does not affect the analysis in this report).

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