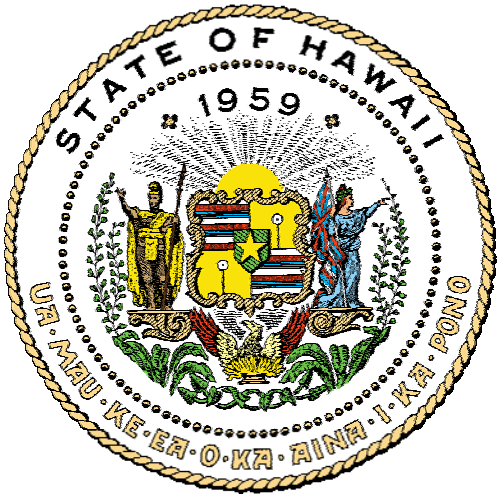


PUBLIC UTILITIES COMMISSION
STATE OF HAWAII

PETROLEUM INDUSTRY MONITORING, ANALYSIS AND REPORTING PROGRAM

SUMMARY REPORT FOR 2007

November 2007

PUBLIC UTILITIES COMMISSION
STATE OF HAWAII

Petroleum Industry Monitoring, Analysis and Reporting Program Summary Report for 2007

November 2007

Introduction

The Public Utilities Commission ("commission") presents its inaugural report to the legislature on the petroleum industry in Hawaii. This summary document and the attached report, "Initial Report on Gasoline Price Monitoring Under the Petroleum Industry Monitoring, Analysis & Reporting (PIMAR) Program" ("ICF Report"), prepared by consultant ICF International ("ICF"), analyze available petroleum industry data based on criteria set forth in Hawaii Revised Statutes ("HRS"), Chapter 486J, as provided under HRS § 486J-5.[1]

As required by statute, the commission must annually publish and submit to the governor and legislature a summary report on the information submitted to it by distributors, as defined in HRS § 486J-1. Publication of this "Petroleum Industry Monitoring, Analysis and Reporting Program Summary Report for 2007," along with the commission's Petroleum Industry Monitoring, Analysis and Reporting ("PIMAR") Weekly Reports,[2] are part of initial steps toward achieving greater petroleum industry transparency.

The commission is pleased to have obtained ICF's analysis of the petroleum industry in Hawaii from September 1, 2005 to May 27, 2007 ("Report Period"), which includes ideas, suggestions and conclusions that may be expanded upon as the PIMAR Program further develops. However, great care should be taken when reviewing the analysis contained herein. According to ICF, "[i]t is very easy to come to incorrect conclusions without understanding all the factors around any

[1]This ICF Report is a redacted version of a confidential report completed by ICF, which contains company-specific, detailed data and information that are filed with the commission under confidential protective order and cannot be publicly disclosed unless aggregated to the extent necessary to maintain confidentiality.

[2]In accordance with HRS § 486J-8, the commission publishes its PIMAR Weekly Reports on its website each week, which includes a compilation and aggregation of data and information that reporting entities file with the commission on a weekly basis.

numbers presented."[3] ICF's analysis was primarily based on information collected by the commission on initial petroleum industry reporting forms prepared by the Department of Business, Economic Development and Tourism ("DBEDT"), and on purchase and sales data collected by the commission for purposes of monitoring compliance with HRS § 486H-13. Even though such extensive data was available to ICF, some desirable data, such as information on distributors' cost of doing business, was simply not available. Without information on the cost of doing business, it is not possible to ascertain the margins necessary to sustain the business. Any conclusions regarding wholesale prices or margins cannot be automatically extended to explain retail prices. For example, relatively higher wholesale prices do not necessarily mean that retail prices would be higher.

At this time, the commission continues to collect data from petroleum distributors doing business in Hawaii and is refining its data collections procedures and analysis. On a weekly basis, the commission collects confidential petroleum industry data and information from approximately twenty-five (25) distributors and publishes a summary of certain data on its website. The commission began to receive its first weekly reports from the industry on 22 August 2007 for the weekly report period ending 1 July 2007. The weekly PIMAR reports that the commission collects from reporting entities include company-specific, detailed data and information regarding petroleum product imports, exports, inventories, production, retail and wholesale transactions, and gross margins. Most of the data and information submitted to the commission is filed under confidential seal by the reporting entities under confidential protective order and HRS Chapter 486J. Additionally, the commission continues to work with ICF on the next annual PIMAR report and other relevant and appropriate analyses.

The attached ICF Report is not intended to represent the analysis and absolute views of the commission. Instead, it is intended to present an independent analysis of the petroleum industry in Hawaii based on available data (much of which is confidential). The following pages briefly highlight certain findings in the ICF Report.

SUMMARY REPORT

[3]ICF Report Forward, page i.

Petroleum Margins, Supply, and Price

As discussed below, the ICF analysis indicates that suppliers (parties who buy gasoline from refiners and resell) are getting competitive market prices from refiners for their supply. Supplier margins are well above mainland markets, as are retail service station margins.

Margins

Refiner Margins

Refiner margins on bulk sales of gasoline and jet fuel are competitive with other markets. Hawaii refiner gasoline margins (gasoline price less crude cost) on bulk sales of gasoline were below those of US Gulf Coast refiners. According to ICF, "refineries in Hawaii appear to be selling product to suppliers at prices competitive with prices for those products in other global markets."[4] In other words, suppliers are paying prices similar to or lower than prices they would pay to import the product themselves.

Relatively high production of residual fuel in Hawaii provides lower refinery margin potential compared to an average US refinery. Total yield of "clean" products (gasoline, diesel and jet fuel) in Hawaii refineries is significantly lower than the US average of over 80%.[5] This is an important factor in refinery gross margin, since clean products' market prices are typically well above crude (raw material) costs, and residual fuel prices are well below crude costs. According to discussions with ICF, a lower clean product yield of 10% (and higher residual fuel yield) would mean a lower refinery gross margin of $2/barrel based on an estimated spread of $20/barrel between clean and residual products. Hawaii refinery clean product yields are at least 10% lower than an average US refinery.

Supplier Margins

Suppliers had gross margins for regular gasoline over the gas cap period that often exceeded $0.20/gallon in Zone 1 (Oahu), and were in some cases significantly higher in other zones.[6] Margins were higher for most suppliers after the gas caps were suspended, and suppliers in particular increased margins for premium and midgrade fuels in the post-cap period.[7]

---

[4]ICF Report, page 9.

[5]Ibid, page 46.

[6]Ibid, page 112.

[7]Ibid, page 9.

Jobber Margins

Jobber margins across all zones tended to range between $0.05/gallon and $0.15/gallon during the gas cap period, with some jobbers increasing their margin by an additional $0.10/gallon or more in the period following gas cap suspension.[8]

Retail Service Station Margins

Zone 1 (Oahu) has the highest number of gas stations to serve the highest gasoline consumption among all zones. Service stations in Zones 1, 2, 3 and 7 (Oahu, Kauai, Maui except Hana, and Hilo) have average gasoline sales that are close to, or higher than the U.S. average throughput. The stations in Zones 4, 5, 6 and 8 (Hana, Molokai, Lanai, and Kona) have much lower throughputs. It is reasonable to infer that stations with lower throughput require higher margins per gallon of fuel sold in order to cover costs.

Retail service station margins in Hawaii ranged from $0.15/gallon to $0.50/gallon over the Report Period depending on the zone, based on actual transaction data on service station costs and retail prices. The higher margins are in the zones outside of Zone 1 (Oahu), with Zone 3, 8, and 6 (Maui, Kona, and Lanai) being significantly higher than Oahu. Retail margins in Zone 1 (Oahu) averaged about $0.20/gallon and were not materially different during and after the gas cap period. Comparison with estimated retail margins in other states (using EIA data[9]) appear to indicate that Hawaii state average retail margins are about $0.10-0.15/gallon above mainland states such as California, Washington and Massachusetts.

All three comparison states have major population centers with very high real estate values compared to the U.S. average, although Hawaii values are likely higher. A comparison of cost of doing business would be needed in order to ascertain the reasonableness of Hawaii retail station margin premiums versus stations in the comparison states. However, there is insufficient data to determine the relative costs of operating a retail gas station in Hawaii versus California, Washington, and Massachusetts.[10]

Supply

Hawaii Refineries

The Hawaii petroleum market is small compared to most markets on the mainland. There are two refineries, both located on Oahu, that supply most of the petroleum products required in the State of Hawaii ("State"). The Chevron

[8]Ibid, page 10.

[9]EIA is the United States Energy Information Administration.

[10]ICF Report, page 110.

refinery at Kapolei has a daily crude processing capacity of 54,000 barrels per day ("bpd") and the Tesoro refinery at Kapolei has a processing capacity of 94,000 bpd. The daily consumption of petroleum products in Hawaii averaged 140,000 bpd in 2005.[11]

Hawaii's refineries are configured significantly differently than almost all other US refineries. The refineries have been designed to maximize jet fuel (due to high jet demands), and residual fuel yield to supply required fuel for power generation and ship bunkering.

Relatively Higher Costs

There are a variety of factors that make Hawaii's refineries relatively more costly to operate than refineries on the mainland. Hawaii refineries are significantly smaller than the average US refiner with a much lower degree of complexity. These disadvantages cause Hawaii refineries to have higher average crude oil costs than larger, more sophisticated refineries. Fuel specifications reducing sulfur content in fuels also have required Hawaii refineries to process sweeter crude (more expensive) than average US refineries. Additionally, freight costs to Hawaii are more expensive per barrel than freight to an average US refinery due to distance and relatively smaller size of shipment vessels. In total, the higher crude and freight costs have resulted in Hawaii landed crude costs being $3 - $10/barrel higher than U.S. average landed crude costs over the study period.[12]

Hawaii refinery requirements for sweet and higher gravity crude oils limit purchase options. While the primary crude sources are four or five countries[13] with crude that appears to economically fit each refiner, the fact that a large number of other crude cargoes are procured from time to time indicates that the refiners are actively looking for "spot" crude cargoes that would be economic to process in the refinery. In 2002, Hawaii refiners were able to procure crude from 41 different countries, plus some domestic Alaska North Slope ("ANS") crude. In 2006, import records indicate that Hawaii refiners purchased crude from 48 different countries.

[11]ICF Report, page 26.

[12]Specifically, in some months the actual Hawaii refiner costs were only $3/barrel above the US average; in other months they were as high as $10/barrel above the US average.

[13]Indonesia, China, Vietnam, Saudi Arabia, Brunei. ICF Report, page 34.

Price

Jet Fuel

Hawaii refiners produce a relatively high percentage of jet fuel. Frequent imports of jet fuel augment refinery production to meet demand.[14] The jet fuel price over the Report Period appears to track the crude oil price reasonably well. ICF concludes that jet fuel market prices in Hawaii represent market competitive prices and are also reasonable values for refiners.[15]

Gasoline

Bulk gasoline prices from refiners to suppliers appear market competitive.[16] Hawaii's pre-tax higher gasoline price profile appears to be driven more by higher wholesale and retail marketing margins than by refiner bulk sales margins.[17]

Diesel Fuel[18]

ICF concludes that wholesale diesel fuel prices for low sulfur diesel ("LSD") appear to be significantly higher than other markets, even with consideration of freight costs. However, there is insufficient data to indicate if they are unreasonably high. Low sulfur diesel wholesale prices also appear to have a significant price premium versus high sulfur diesel ("HSD") in Zone 1 (Oahu).

Diesel fuel sales are a complicated market to track, and the changing specifications and reporting methodology (categorization of products) may need clarifications to produce better analysis.

The need for fairly steady imports of Ultra Low Sulfur Diesel ("ULSD") is likely to continue unless refiners add equipment to produce ULSD in greater quantities. Exports of unfinished product increased after June of 2006,[19] which may indicate that refiners are exporting higher sulfur stocks to manage inventory and sulfur handling limitations.

---

[14] Ibid, page 8.

[15] Ibid, page 123.

[16] Ibid, page 112.

[17] Ibid, page 10.

[18] Ibid, page 131.

[19] June of 2006 is when the mandate to lower sulfur levels to 15 ppm in on-road diesel sales took effect.

Residual Fuel[20]

Residual fuel prices in Hawaii appear reasonably competitive with other global markets for both low and high sulfur residual fuel. Periods where residual fuel has been imported indicate that Hawaii prices are high enough to attract economic imports, but not excessively high.

Trends in Supply, Demand, Price, Margin and Profit

Over the past few years global oil markets have shown a relentless drive to higher prices. These changes have been driven by a number of factors, but are primarily evidence of higher global demands for petroleum products as many developing countries, particularly in Asia, enjoy strong economic growth. At the same time, global crude oil production has seen geopolitical disruptions which impact supply in key producing nations, and refining capacity additions have lagged demand growth.[21]

The petroleum market in Hawaii over the Report Period has experienced similar volatility in petroleum prices as other regions in the world. This basic volatility has been complicated for both the petroleum industry and consumers by the various legislated changes in Hawaii law (gas caps, ethanol, tax changes, PIMAR), as well as changes driven by the Federal government on sulfur specifications.[22]

Refiner Margin Trends

The data show that the profit levels for US petroleum companies increased dramatically over the 2002-2006 period.[23] The relative difference in profits between these companies in any year can be significant. The difference stems from a number of factors, including throughput and sales, average refinery size, marketing assets, location (West Coast refiner/marketers enjoyed better margins than others), and cost control practices.

The margins peaked in 2005 and 2006 due to sustained demands, the impact of Gulf Coast hurricanes and a period of multiple refinery outages due to planned and unplanned shutdowns. Conversion to lower sulfur levels in gasoline and diesel fuel also required planned shutdown for tie-in of capital investments. Mainland refiner/marketers enjoyed higher margins over the Report Period, which would directly impact profits. It is likely that the profits of Hawaii

[20]ICF Report, page 137.

[21]Ibid, page 23.

[22]Ibid, page 26.

[23]Ibid, page 142.

refiner/marketers also were high in the 2005 and 2006 periods. Hawaii refiners pay more for crude, but tend to get higher product prices than average mainland refineries. Data has shown that prices in Hawaii for most products tend to follow global market prices. [24]

Gasoline Price Trends

Between September 1, 2005 and May 2007, global oil markets were volatile, and have remained volatile. Gasoline prices fell dramatically everywhere at the beginning of the period in the months after Hurricanes Katrina and Rita, and then have experienced significant spikes in both the springs of 2006 and 2007. The result was tight gasoline inventory and higher prices relative to crude oil.

Hawaii prices have moved with global markets both during and after the gas cap period. The Hawaii dealer tankwagon ("DTW") and retail prices are well above the U.S. and Singapore spot prices, which is expected since the Hawaii prices are not spot prices but wholesale delivered prices and retail prices (with taxes).[25]

Hawaii refiners and suppliers appear to be linking their pricing actions (at least to some degree) based on changes in the Singapore market. This serves to mute some of the price volatility seen on the US mainland.[26] Refiners and suppliers appear to price bulk gasoline at a competitive value versus the most appropriate alternate supply options into Hawaii.[27]

Recently (late Spring 2007), the premium and mid-grade price spreads have increased even further, to 10 cpg and higher above the spreads observed during the gas cap period.[28] The price difference for premium and mid-grade gasoline versus regular at the DTW level increased following suspension of the gas caps. These prices initially increased to offset higher bulk prices from refiners (which increased due to higher spot prices for premium grades in the U.S. market). The higher spreads for premium and mid-grade versus regular have been sustained despite subsequent declines in refiner bulk premiums versus mid-grade.[29]

---

[24]Ibid, pages 144-145.

[25]Ibid, page 63.

[26]Ibid, page 67.

[27]Ibid, page 69.

[28]Ibid, page 72.

[29]Ibid, page 112.

Gasoline Demand Trends

Most gasoline sold at the wholesale level in Hawaii is transacted on a DTW basis. Most companies buying gasoline on said basis are typically receiving deliveries of gasoline in volumes at or under 9,000 gallons per transaction.[30] Most of the DTW customers are retail gasoline service stations that buy gasoline from the jobbers or suppliers and pay the prevailing wholesale price on that day. However, the DTW customers also include some large volume customers such as the military, hypermarketers such as Costco, and car rental companies that buy gasoline through DTW transactions and generally pay a discounted price based on negotiated long-term contracts.[31]

Tax receipt data indicate that sales of gasoline have trended up over the Report Period with an average annual growth of 2.5% through the 2006 fiscal year (ending mid-2006). The data show that over 60% of the sales are in Zone 1 (Oahu), with the Zones 3, 7 and 8 (Maui except Hana, Hilo, and Kona) having the second and third largest sales volumes.[32]

Consumers appear to be responding to high prices by reducing their demand for premium fuel. According to EIA data, consumer demand for premium gasoline in Hawaii has declined from just under 25% of total gasoline consumption in 2002 to just over 16% in 2006.[33]

Collective Price Changes[34]

ICF analysis showed that there is no conclusive pattern to price changes. No one supplier leads price changes; there are no "collective" moves on prices – some parties update DTW prices weekly or randomly; others more frequently; prices sometimes change following changes in the market centers (e.g., Gulf Coast, Singapore) but almost never on the same day or following day, and it is different for each supplier.

The analysis, while not revealing a pattern, does in fact support a contention that the Hawaii market is different than the mainland. On the mainland, it would be extremely unusual to have futures prices or spot market prices change by several

[30]The largest tanker truck delivering fuel products in Hawaii is about 9,000 gallons; many delivery trucks are smaller than this. In addition, one truck may deliver multiple grades of gasoline at one or more locations, resulting in multiple transactions from one delivery.

[31]ICF Report, page 62.

[32]Ibid, page 51

[33]Ibid, page 8.

[34]Ibid, pages 116-117.

cents per gallon without a commensurate change in all suppliers' prices at racks and for DTW accounts. That does not happen in Hawaii.

Effects (on supply and price) of State and Federal Policies, Rules, and Regulations[35]

Regulations tend to increase the cost of refining petroleum crude oil into products everywhere, including Hawaii. Some laws and regulations also adversely affect the profitability and the profit potential of Hawaii's refineries if retail prices of products do not also increase.

The Gas Cap

The gas cap that was in effect from September 2005 until May 2006 tied wholesale prices in Hawaii to mainland US wholesale prices. During the period of the price cap, gasoline prices in Hawaii changed as mainland prices changed. This caused gasoline prices in Hawaii to be much more volatile than they had been in the past.

The petroleum industry complied with the wholesale gasoline price cap while it was in effect, but the cap did not provide market-based pricing that replicated commercial agreements between refiners and suppliers. The gas cap tied wholesale prices in Hawaii to those in three US mainland markets (New York, Gulf Coast, and Los Angeles). According to ICF, commercial agreements between refiners and suppliers are at least partially based on Far East markets. ICF also found that reactions of consumers and market participants to the gas cap price changes tended to "upset the supply chain and created some outage issues".[36]

Although the gas cap may have not met its intended purpose of surrogating market-based pricing, ICF recommends that retaining the gas caps as "suspended" (rather than repealed) may serve as a deterrent to possible market misbehavior.[37]

PIMAR Program[38]

The intent of the PIMAR program was to replace the gas cap with an improved transparency tool for the state to use to monitor the oil industry in Hawaii. While the reporting requirement does require significant work and resource cost on the part of oil industry parties in Hawaii to provide data in a timely manner to the

[35]Ibid, pages 154-155.

[36]Ibid, 113.

[37]Ibid, page 117.

[38]Ibid, pages 150-151.

PUC, the primary benefit of this process to the state will be as an ongoing observation tool.

There is a risk that the PIMAR process may inhibit some industry participants from attempting to enter the Hawaii market due to the reporting requirement and potential threat of additional regulation.

Ethanol Blending[39]

Blending ethanol with motor vehicle fuel requires separate facilities to import, distribute and blend ethanol with gasoline. Building and maintaining a separate infrastructure for ethanol is costly. Local ethanol production is yet undeveloped and thus ethanol must be imported. As ethanol is imported, locally refined gasoline, or gasoline blendstocks, have been exported in order to balance supply and demand.

Federal Sulfur Specifications

Recent federal rules have reduced the amount of sulfur allowable in both gasoline and diesel fuels. In order to meet new federal requirements for sulfur content in gasoline and diesel fuels, Hawaii refineries (and other small refineries) must process relatively sweeter,[40] more expensive crude. Lower federal sulfur content thresholds in Hawaii have resulted in increases in low sulfur diesel imports as well as exports of higher sulfur diesel or diesel blendstocks.[41]

For residual fuels, a bill in Congress,[42] if passed, would limit all marine fuels used in the territorial waters of the United States to a maximum sulfur content of 1.5%. The two refineries in Hawaii would have to either process residual fuel further (a very expensive proposition) or rely exclusively on even lower sulfur crude oils, just at the time that other countries are also following this option.[43]

Reduce Greenhouse Gas Emissions[44]

The US Congress has been subjected to increasing pressure over the past 5 years to deal with the problem of Greenhouse Gas emissions ("GHG"). Currently there are six bills in Congress dealing with the problem. Generally speaking they are economy wide and range in severity.

---

[39]Ibid, page 150.

[40]Sweet crude has lower sulfur content compared to other crude.

[41]ICF Report, 151.

[42]Marine Pollution Prevention Act of 2007.

[43]ICF Report, 153.

[44]Ibid, pages 152-154.

More significantly, Act 234, Session Laws of Hawaii 2007, directs that Hawaii study and implement reductions in GHG emissions to 1990 levels by 2020.

Unless the refineries in Hawaii can develop mitigation tactics (further energy efficiency, carbon sequestration, etc), they are likely to be severely impacted by these bills. Initial modeling has shown that the impact of the more severe bills may result in the closure of the weaker refineries in the country and an increase in product imports from those parts of the world not subject to carbon caps. Supply security is an issue in the event one or both of Hawaii's refineries are required to close if economic modifications cannot be found.

Conclusion

ICF found that the petroleum market in Hawaii is reasonably competitive, but clearly without the number of participants and level of competition in mainland markets. It is difficult for existing participants to gain market share through more competitive pricing since there are barriers to securing the additional supply required. The report concludes that there are several things that are different about the petroleum market in Hawaii than the mainland. Prices of petroleum products in Hawaii (without gas caps) are less volatile and consistently higher than the US on average, but prices do tend to follow world markets. There are also a number of factors that make the refinery business in Hawaii less attractive than in other locales. State and federal rules, and regulations, coupled with refinery configuration and size factors, have also required increasingly more expensive crude supply, which appear to be squeezing refiner margins.

The commission hopes its "Petroleum Industry Monitoring, Analysis and Reporting Program Summary Report for 2007" will stimulate productive discussion about Hawaii's present and future energy needs and alternatives. This report is one increment of the State's efforts in gaining a fundamental understanding of the workings of the petroleum industry in Hawaii. Each increment should be used by policymakers and regulators to make informed decisions on how to transform Hawaii's energy market away from a petroleum dependent economy.

To this end, the commission will continue to implement, refine and improve upon the PIMAR program as required under HRS Chapter 486J, including expanding its data-collection and other efforts made thus far.[45] In the long run, the PIMAR Program should increase the transparency of the Hawaii petroleum industry and market, which will help to promote sound state policymaking and to help protect consumer interests.

[45]Data-collection and other efforts relating to the PIMAR Program are also discussed briefly in the commission's Annual Report for Fiscal Year 2006-07.

Initial Report on Gasoline Price Monitoring Under the Petroleum Industry Monitoring, Analysis & Reporting (PIMAR) Program

November 7, 2007

Submitted to:
Hawaii Public Utilities Commission
Honolulu, Hawaii

Submitted by:
ICF International

ICF INTERNATIONAL

[This page intentionally left blank]

PIMAR REPORT FOREWORD

This report is an initial review by the Hawaii Public Utilities Commission (PUC) of 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 May 27, 2007.

The information contained in this report is highly confidential in nature, since it includes specific price data from petroleum fuels transactions, as well as data on margins and volumes from all industry participants in Hawaii. The amount of data presented is extensive, and the amount of data submitted and reviewed is much greater. There are several important issues that the reader must recognize in reviewing this report:

a. This is an initial report covering the Hawaii petroleum industry under the Petroleum Industry Monitoring, Analysis, and Reporting (PIMAR) Program. The parties involved have expended a great deal of effort to provide information through several different reporting mechanisms in the past several years. The data collection process is continuing to evolve, and there are clearly areas for improvement in defining information needs as well as consistency and accuracy of data submitted.
b. The amount of information provided is extensive, and can easily be misrepresented, or misinterpreted without great care to insure that all price and volume information are properly compared, aggregated, and analyzed. It is very easy to come to incorrect conclusions without understanding all the factors around any numbers presented.
c. There are several areas of the report which are not fully completed due to delays in receipt of information from the parties. The delays are not due to lack of effort, as in some cases the PUC has modified data reporting requirements to improve the completeness of the data gathered, and in some case the Parties have asked for more time to provide information over and above what the PUC required. The PUC has acceded to the delay requests in the interest of receiving better data.
d. This comprehensive report, as noted, contains extensive amounts of confidential information. Due to the limited number of market participants in Hawaii, both in refining and in the supplier & jobber categories, the public redacted report requires that a great deal of information must be masked or excluded to avoid providing any competitive insight to market participants.

Act 78 provided funding and instructions for the PUC to establish the PIMAR program to monitor and report on the oil industry in Hawaii. This report is the initial mechanism being used to report on the oil industry to all parties in the state. The intent of this portion of the Act was to replace the Gas Cap with an improved transparency tool for the state to use to monitor the oil industry in Hawaii.

As will be described in the report, this initial effort serves both to report on the oil business in Hawaii over the past two years and to identify the longer term needs of the PIMAR process to monitor the industry more effectively and efficiently.

[This page intentionally left blank]

Table of Contents

[This page intentionally left blank]

List of Exhibits

[This page intentionally left blank]

Glossary

Act 78	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.
ANS	Alaska North Slope; term used to designate crude oil of that region.
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 / sp.gr.60 deg.F/60 deg.F) - 131.5.
Barge	A vessel carrying oil usually on rivers - containing between 8,000 to 50,000 bbl or weighing 1,000 to 10,000 mt. In the United States, barges can be up to 200,000 bbl, and are often used for ocean transport. The barge typically requires a tugboat to provide propulsion.
Barrel	A unit of volume equal to 42 U.S. gallons. Abbreviated bbl.
Branded	A specific supply arrangement with a supplier that markets a specific brand. The supplier is usually contractually obligated to sell a specific amount of product to the reseller.
Bulk Sales	Wholesale sales of gasoline in individual transactions which exceed the size of a truckload.
CARBOB	California Reformulated gasoline Blendstock for Oxygenates Blending
Company-operated Station	Retail gasoline station that sells gasoline branded by the refinery where it was produced and is owned and operated by company personnel.
Conventional Gasoline	Finished motor gasoline not included in the oxygenated or reformulated gasoline categories.
CPG	Cents per Gallon.

Crack Spread	Term applied to the differential between the value that a typical refined products mix would yield, and the value of crude. The common crack spread features a per bbl reference derived of 66.6% unleaded gasoline and 33.4% No. 2 oil. The resulting average is compared to the WTI (West Texas Intermediate Crude) price for the resulting "crack spread."
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 Tankwagon (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 tankwagon 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.
Duri Crude	Heavy sweet Indonesian crude.
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.
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.
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.
Naphtha	Refined or partly refined light distillates that are blended further or mixed with other materials, they make high-grade motor gasoline or jet fuel. Also, used as solvents, petrochemical feedstocks, or as raw materials for the production of town gas.
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.
Oxygenated Gasoline	Finished motor gasoline, other than reformulated gasoline, having oxygen content of 2.7 percent or higher by weight.

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.
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.
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.
Reformulated Gasoline (RFG)	Finished motor gasoline, the composition and properties of which meets the requirements of the reformulated gasoline regulations promulgated by the U.S. EPA under Section 211(k) of the Clean Air Act.
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.
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).
Unbranded	A supply arrangement with a supplier that is usually not contractual, and does not usually guarantee a specific amount of supply.
USGC	U.S. Gulf Coast.

[This page intentionally left blank]

Executive Summary

This report is an initial review by the Hawaii Public Utilities Commission (PUC) of the operational and pricing data submitted to the PUC by the oil industry in Hawaii, as required under Act 78, Session laws of Hawaii 2006. Act 78 provided funding and instructions for the PUC to establish the PIMAR system to monitor and report on the oil industry in Hawaii. The intent of this portion of the Act was to provide an alternative to gasoline price controls by establishing a mechanism to improve the transparency of the petroleum business in the state of Hawaii.

Report Development

This report and analysis was developed using a significant amount of data from the petroleum industry in Hawaii over the period from September 2005 through May, 2007 (Study Period). The primary data sources include 1) the gasoline transaction database established by the PUC following implementation of the Gas Cap legislation in 2005, 2) the oil industry data collection process established by the Department of Business, Economic Development and Tourism (DBEDT) well before the gas caps were established (called Initial Petroleum Information Reports (IPIR) in this study) and 3) the new Petroleum Industry Monitoring, Analysis and Reporting (PIMAR) data collection process.

The required timing of this report submission and the initial PIMAR data collection process (initial reports submitted in late August and September 2007) did not permit inclusion of a significant amount of PIMAR data in this report. The formatting of the PIMAR data submissions, vetting of the data submitted to validate consistency with PIMAR guidelines, as well as completion of key reports such as profit reports and annual reports remain to be resolved.

The data available for analysis does represent an extraordinary amount of information on volumes, prices, margins and market conditions that was accessible for the report. There are many areas where the IPIR data did not provide complete enough information for some desired reports (for example inventory tracking, supply & demand balances), however further effort with the reporting parties on the PIMAR database will improve overall data integrity and the quality and depth of future reports.

The data provided by the parties to the PUC in all areas represents extremely confidential information which must be protected from public disclosure. Accordingly, this report was developed as presented here with full disclosure of confidential information. This report will be provided to the PUC for their use. A redacted report will be made public which will provide non-confidential sections of this report. To the degree possible, the Executive Summary will attempt to present results with a minimum of redactable data.

Hawaii Petroleum Market over the Study Period

The study period represents a time of significant change in the Hawaii petroleum market as well as global markets. In Hawaii, gasoline price controls were implemented and subsequently suspended. An ethanol mandate was implemented. Significant changes occurred in the required sulfur levels in on-road diesel fuels nationwide. The PIMAR reporting process was initiated.

Global oil markets showed sustained escalation in price along with continued volatility in prices stemming from geo-political events, weather issues, and tight refinery capacity.

The key overall observations on the petroleum market in Hawaii over the study period are as follows:

- Hawaii refineries operated well over the study period, running at higher utilization rates than the overall U.S. refining industry

- Average crude costs in Hawaii were significantly higher than the U.S. average crude cost. Hawaii landed crude costs to refiners were as low as $3/barrel above the U.S. average to as high as $10/barrel above the U.S. average based on monthly averages. This was due to the need to process more expensive lower sulfur and lighter crude oil in Hawaii than the U.S. average, as well as higher freight costs to deliver crude to Hawaii in smaller vessels. This is a significant competitive disadvantage to Hawaii refineries.

- Hawaii refineries are far less complex than the average U.S. refinery. Hawaii's refineries are configured to meet Hawaii's high demand for residual fuel oil and jet fuel. Gasoline and diesel fuel yields are lower than average U.S. refineries; jet fuel and residual fuel yields are substantially higher. The higher yield of residual fuel penalizes Hawaii refiners further since residual fuel is generally sold at discounts to crude oil price. During the study period, the Hawaii refiners sold residual fuel oil below the crude oil price.

- Hawaii's petroleum market requires ongoing imports and exports of petroleum products to balance supply and demand. Gasoline demands require importing of ethanol, and exporting of some gasoline blendstocks; Jet fuel demands require relatively frequent imports to augment high refinery jet fuel production; Diesel demands require imports of very low sulfur diesel, and exports of higher sulfur stocks. Residual fuel is near balanced with local refinery production.

- Hawaii's crude oil supply and product import and exports are increasingly focused on the Far East and Middle East as sources and destinations for supply.

- Hawaii gasoline consumption has trended upward by, on average at a 2.5% growth per year since 2000. Consumer demand for premium gasoline has declined from just under 25% of consumption in 2002 to just over 16% in 2006.

Assessment of Prices and Margins in Hawaii

The report provides an extensive analysis of prices and margins for refiners, suppliers, jobbers and retailers in Hawaii. These analyses cover both the gas cap period and after the gas caps were suspended, and include, to the degree possible, all major products being sold (gasoline, jet fuel, diesel and residual fuel). Overall, the results of this analysis provide the following key conclusions:

Refiner Prices & Margins

- The analysis indicated that Hawaii refiner margins for gasoline bulk price to suppliers, as well as jet fuel wholesale prices and residual fuel retail/wholesale prices are competitive with other markets. Gasoline bulk margins versus crude cost were below similar margins for US mainland refiners. Diesel fuel prices, in particular low sulfur diesel, appear to have a premium price in Hawaii above other markets.

- A comparison of Hawaii refiner product gross margins versus landed crude costs over the study period showed a gross margin estimate (based on prices and yields of gasoline, jet, diesel and residual fuel in Hawaii) that was more than [redacted]/barrel below the estimated gross margin of a Gulf Coast refiner processing crude in the Gulf Coast with a typical Gulf Coast full upgrading yield pattern and average landed cost.

- Overall refineries in Hawaii appear to be selling product to suppliers at prices competitive with prices for those products in other global markets.

Supplier Margins

- Suppliers (parties who buy gasoline from refiners and resell) had gross margins for regular gasoline over the gas cap period that often exceeded $0.20/gallon in Zone 1, and were in some cases significantly higher in other zones. The wholesale prices were all within the allowable gas cap, but the margins tended to be greater than $ 0.18/gallon estimated in the gas cap because the supplier's actual cost for gasoline had a different basis than the gas cap formula. The supplier margins tended to increase after the gas caps were suspended, although they decreased slightly for some suppliers (the reasons stem from different acquisition contracts from the refiners).

- The period when the Gas Caps were in place created a situation where refiners, suppliers and jobbers tended to price close to the Gas Caps. The actual average DTW price versus the gas cap maximum was $0.07/gallon under the gas cap in zone 1, and $0.05/gallon below statewide. However, this reflected a mix of some marketers pricing right at the gas cap and others pricing lower. The marketers who priced further below the gas cap also tended to price strategically lower than the higher price marketers even when no caps were in place.

- The price difference for premium and mid-grade gasoline versus regular at the DTW level was controlled during the gas cap period, and increased following suspension of the gas caps. These prices initially increased to offset higher bulk prices from refiners (which increased due to higher spot prices for premium grades versus regular in the U.S. market), but remained at higher levels even after the U.S. premium vs. regular spreads declined.

- Bottom Line: Supplier margins were high but prices were below the gas cap when the gas caps were in effect. Margins were higher for most suppliers after the gas caps were suspended, and suppliers in particular increased margins for premium and midgrade in the post-cap period.

Jobber Margins

- Jobber margins across all zones tended to range between $0.05/gallon and $0.15/gallon during the gas cap period, with some jobbers increasing their margin by an additional $0.10/gallon or more in the period following gas cap suspension.

Retail Service Station Margins

- Retail service station margins in Hawaii ranged from $0.15/gallon to $0.50/gallon over the study period depending on the zone. The higher margins are in the zones outside of Oahu, with Maui, Hawaii Zone 8, and Lanai being significantly higher than Oahu. Retail margins were not part of the Gas Cap process, and information on retail station costs are not accessible in PIMAR. However, comparison with estimated retail margins in other states would appear to indicate that Hawaii retail margins are about $0.10-0.15/gallon above mainland states such as California, Washington and Massachusetts.

Gasoline Price and Margin Conclusion

In summary, the bulk gasoline prices from refiners to suppliers appear market competitive. Supplier margins overall, and in particular for premium grades, appear high. Jobber margins are lower than supplier margins, with a couple exceptions that have had higher margins following gas cap suspension. Retail margins are higher than relatively comparable states on the mainland, with some zones much higher.

Net conclusion is that Hawaii's pre-tax higher gasoline price profile appears to be driven more by higher wholesale and retail marketing margins than by refiner bulk sales margins. (Obviously, the Hawaii refiner companies also market product on a DTW basis as well as through company operated stations, so they also gain a significant marketing uplift on the gasoline they sell to their customers)

Gas Cap Impact

The goal expressed by the gas cap legislation was to provide a market based wholesale price cap that would modify Hawaii gasoline prices based on a mainland benchmark plus freight adjustment, with a fixed marketing and zone margin. The gas cap process controlled prices, and the oil industry complied, however it did not necessarily provide true market based pricing.

The start of the gas caps coincidental with the U.S. market's roiling from hurricanes created extreme volatility in Hawaii prices. Many consumers and market participants tried to "time" gasoline purchases or sales based on the PUC's weekly publication of the following week's gas caps. This upset the supply chain and created some outage issues. The fact that the gas cap calculation was based on mainland prices, and refiner/supplier commercial agreements were on a different basis created some significant fluctuation in supplier margins (higher) solely due to the gas cap formula. The use of "high trucking costs" in the gas cap zone adjustment

calculations also allowed most suppliers and jobbers to price higher in each zone than their actual cost of trucking[1].

During the gas cap period, DTW prices to service stations were held below the published gas cap, averaging about $0.07/gallon below the published cap in Zone 1, and a bit less in other zones. After the gas caps were suspended, market prices declined in the summer of 2006 and through the fall. In this period, prices for regular gasoline from suppliers and jobbers also declined, but lagged the overall global market. In this period, continuation of gas caps (as modified by PUC Decision Order 22451) would have resulted in lower prices to service stations. In the spring of 2007, as global market prices increased significantly, prices from suppliers and jobbers also increased, but also lagged the global market. In this period, the continuation of the gas caps would have resulted in higher prices to service stations. Overall, wholesale prices to retail stations may have been lower by $0.05-0.10/gallon across different zones had gas caps been continued and suppliers maintained their normal pricing patterns versus each other. The savings would have been passed on to the retail consumer only if retail margins had stayed at the levels actually seen.

The gas caps created a market in Hawaii that was driven solely by U.S. mainland prices for gasoline as defined by legislators. The commercial agreements between refiners and suppliers were on a different basis that appeared to include pricing from both U.S. and Singapore or other Far East markets. Consequently, significant price events in the U.S. created undue influence on Hawaii prices during the gas cap period. Actual Hawaii petroleum crude oil supply and product movements, as noted earlier, are becoming more centered on Far East markets. This misalignment is a fundamental flaw of the gas cap process.

Potential Options to Improve Competition and Reduce Gasoline Price in Hawaii

Competition in the wholesale market is constrained by Hawaii's small market size, disconnection from other markets, and lack of incentive for any existing market participants to alter their profile as discussed above. With access to HIBOB controlled by the refiners, and potentially less ability to import HIBOB-compatible blendstock than conventional gasoline, it is difficult to see how competition can be increased, and therefore wholesale prices reduced.

While there is capability for Aloha, Mid-Pac and Shell to import gasoline into Hawaii, there are several obstacles.

- One is that the party importing gasoline could jeopardize their supply contract with a refiner by attempting to increase market share. In Hawaii's closed market, incremental gasoline imported into Hawaii means either reducing crude runs or exporting surplus gasoline, which clearly impacts refiners.
- Two is that following the ethanol mandate, the importer would be required to arrange the import of a HIBOB type product suitable for ethanol blending. It may be possible to arrange this, but it does make it more difficult than the prior alternative of simply buying spot market gasoline for Hawaii.

[1] This was necessary to allow some jobbers who supplied outlying locations to remain profitable. Exclusion of these jobbers from the Gas Cap law was not in the PUC's authority.

- Third, the suppliers may not really have any incentive to import, as long as they feel they are buying product from the refiners at competitive market prices. Attempting to increase market share by importing will tend to drive prices down, jeopardize supply contracts, and likely not net more income.

As the gasoline analysis indicates, it appears that the suppliers are getting competitive market prices from the refiners for their supply. Supplier margins are well above mainland markets, as are retail service station margins. The situation as it is appears favorable to all parties.

Given that, it is important that the following recommendations (some are clearly already underway) be considered which may work to keep gasoline prices in Hawaii under control without the need to re-implement a price control process:

1. The primary recommendation is to continue the development of the PIMAR program with a number of modifications as identified in the last section of this report. The transparency that this program can provide will provide significant value over time. Market participants will understand that their actions are being monitored, and will be visible. The report and its process need to be less burdensome to market participants, as well as the PUC.

2. Continue to have the Gas Cap legislation suspended. Consider recommendations to the legislature for modifications to the Gas Cap factors which will better align gas cap baseline price and location differential to commercial terms. It may be necessary to keep the Gas Cap legislation in a suspended mode (rather than repealing the legislation) as a possible control mechanism if the PIMAR process does not achieve desired results.

3. Emphasize to Hawaii consumers, potentially with support from DBEDT, that use of premium and mid-grade gasoline may not be a requirement as per the car manufacturer's driver instructions. Using regular gasoline may save many consumers unnecessary expense.

4. Achieve a better understanding of the costs of the wholesale supply business in Hawaii. The supplier margins are high, and as noted, there is minimal incentive for any supplier to push prices lower to improve market share. Gross margins appear even higher in most zones outside Zone 1, but costs are also greater in most cases.

5. Retail service station margins in Hawaii in all zones appear to be quite a bit higher than several mainland states, with many zones outside Zone 1 again having much higher margins. While analyzing retail margins was not an objective of the PIMAR process, a better understanding of the need for higher retail margins should be explored.

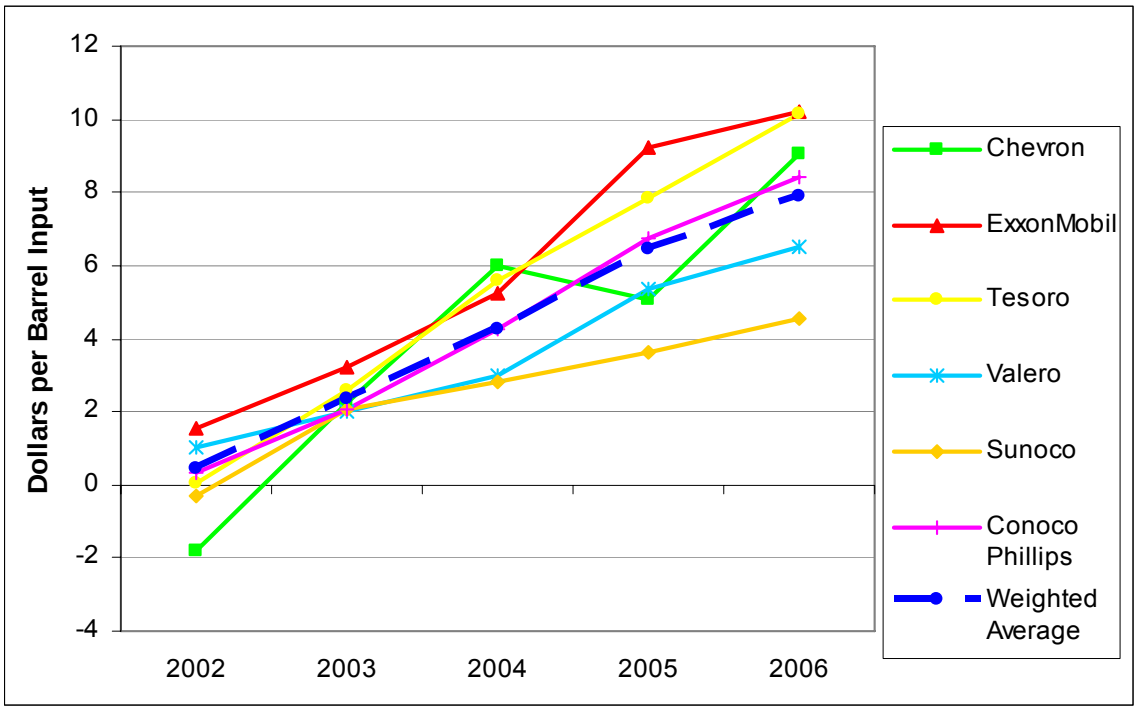
Comparison of Hawaii Profits Estimates to U.S. Downstream Refiner/Marketers

The data on actual profits (net margins as opposed to gross margins) are still being developed by refiners and suppliers. This is taking significant time because most of the parties obligated to report do not have accounting systems that account for costs on a state basis. These reports are expected in November, and are not available for this report.

ICF examined the annual reports and 10-K data from six major U.S. refiner/marketers over the past six years to identify how profits have changed for them over this period (See below). Not

surprisingly, each company shows significant growth in before tax income per barrel of input. In addition, the overall profit level of all refiners in the 2002-2003 period were very low.

U.S. Refiner/Marketer Before-Tax Profits



Source: SEC 10-K and 10-Q Filings

Since this report has shown that Hawaii prices and margins do tend to track overall global product prices, it can be anticipated that Hawaii refiner/marketer profits may also be relatively high in the study time frame (2005-2006). This observation however may be tempered by the significant rise in premiums that Hawaii refiners have had to pay for sweet crude over this period.

Potential Impacts of Future Federal and State Policies upon Supply & Pricing of Petroleum Products

The petroleum market in Hawaii has seen a number of changes in the past two years due to global market changes as well as the impact of State and Federal policies. The policy changes have created additional costs on the oil industry in Hawaii in the form of investments and operational costs for ethanol blending, operational costs to reduce sulfur levels in gasoline and diesel fuel, and resource costs associated with the gas cap program as well as the PIMAR reporting system.

ICF examined these and a number of emerging issues which could impact the price and supply of gasoline in Hawaii in future years. These issues include the following:

1. Further reductions in sulfur level for off-road diesel (the majority of Hawaii diesel sales) by 2010-2012 to ULSD levels (15 ppm)

2. Federal (or State) actions to mandate higher levels of biofuels (ethanol and biodiesel, for example) in gasoline and diesel fuel

3. Federal or State actions to reduce Greenhouse Gas (GHG) Emissions (for example, Hawaii H.B.226, which directs that Hawaii study and implement actions to reduce GHG Emissions to 1990 levels by 2020).

4. Potential Federal or International Maritime Organization (IMO) actions to lower the sulfur level in bunker (residual) fuels

5. Potential Federal actions to implement higher CAFÉ standards

Other than the Federal off-road diesel issue, each of these potential laws are not sufficiently defined or finalized enough to permit efficient analysis of the potential impact. However, several generalizations can be made:

a. Most of these laws or potential laws will increase the cost of refining petroleum crude oil into products everywhere, including Hawaii. It will also adversely affect the profitability and the profit potential of Hawaii's refineries if retail prices of products do not increase. Supply security is an issue in the event one or both refineries close.

b. The impact of the laws may mean more imports of ethanol and low sulfur diesel, and increased exports of higher sulfur distillate components and gasoline blendstocks or naphtha. This generally would lower a refiner's margin and also result in increased marine traffic at a busy port.

c. The need to process more expensive crudes, and the operational costs to meet many of the new laws will erode the profit margin of these refineries.

d. The most significant area which may be a threat to supply security in Hawaii is the issue of Greenhouse Gas controls. This area, depending on compliance requirements, could have a dramatic impact on the viability of the refinery operation and profitability, or potentially require a level of investment which could not be economically justified.

The combined effect of these changes could jeopardize the profitability of the Hawaii refineries, and ultimately their ability to remain operational. Remaining operational may require even higher prices for Hawaii consumers for all refinery products to sustain a reasonably profitable business at the refineries. The alternative would be a refinery closure and massive imports of all products to meet Hawaii needs. It will be important to monitor refinery performance over time, and the PIMAR process will provide that oversight.

Future Report Enhancements

This initial report was developed based on a significant amount of data. The report development process, and data management process has indicated a number of possible improvements which will result in better analysis, and more timely analysis in the future. The recommendations are included in the report, and will benefit the parties reporting as well as the PUC and Hawaii residents if adopted.

Introduction

ICF International (ICF) has been working at the request of the Hawaii Public Utilities Commission (PUC) to develop an initial 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

5) Provide recommendations on the following:

a) How can competition in the gasoline wholesale market in the State of Hawaii be increased?

b) How can the pre-tax wholesale price of gasoline in the State of Hawaii be decreased?

c) How can the market or the efficiency of the market for gasoline in the State of Hawaii be improved?

The report below provides information that addresses most of the above issues. The PUC requested a complete assessment of the gasoline prices in Hawaii under Item 4 above to specifically address concerns about the prices in Hawaii both under the Gas Cap law and after the law was suspended. This analysis also incorporated a review of wholesale and retail margins. The report therefore focuses more extensively on gasoline than other product. Additionally, the report describes the development process and identifies a number of recommendations for the PUC to consider to enhance the effectiveness and efficiency of both the development of the report as well as petroleum industry monitoring processes. The structure of the report as outlined in the table of contents is repeated below:

1) Report Development Process
   a) Report Time Period
   b) Source of Data for Analysis
   c) Organization of the Data
   d) Data Analysis Approach

2) Description of the Petroleum Market in Hawaii over the Study Period
   a) Hawaii Market Background
   b) Overview of Petroleum Market Structure in Hawaii
   c) Overview of the Petroleum Supply Chain
   d) Hawaii Crude Oil Supply & Costs
   e) Refinery Operational Analysis
   f) Import and Export Analysis
   g) Distribution & Sales

3) Assessment of Prices and Margins in Hawaii:
   a) Gasoline Price Analysis
   b) Gasoline Supply Chain & Classes of Trade
   c) Hawaii Prices vs. the Gas Cap
   d) Supplier & Jobber Margins
   e) Retail Service Station Margins
   f) Gasoline Market Observations and Issues

4) Assessment of Other Prices & Margins in Hawaii
   a) Jet Fuel Price Analysis
   b) Diesel Fuel Price Analysis

c) Residual Fuel Price Analysis
d) Refinery Gross Margin Estimation Over the Study Period

5) Comparison of Hawaii Profit Estimates with U.S. Domestic Downstream Refiner/Marketers

6) Potential impacts of Federal and State Policies upon Supply and Pricing of Petroleum Products

7) Future Report Enhancements

8) Appendix

[This page intentionally left blank]

1 Report Development Process

Report Time Period

This report requires analysis of petroleum markets in Hawaii beginning with the implementation of the Gas Caps in September, 2005. The report focuses on the gasoline market, and also reports on all other major petroleum products in Hawaii.

The Hawaii gasoline market can be divided into three discrete time periods for the purpose of understanding the pricing mechanisms adopted by suppliers and distributors:

1. Period before September 1, 2005 (Pre Gas Cap period): The wholesale gasoline market in Hawaii before September 1, 2005 was unregulated and the prices were set purely by market forces similar to all markets on the mainland U.S. During this period the gasoline sold was required to be of the conventional variety similar to that on the mainland. The Parties were not required to submit any business data during this period. Therefore, the margin analysis presented in this report does not include any information on the pre- gas cap period.
2. Period from September 1, 2005 to May 5, 2006 (Gas Cap period): During this period wholesale gasoline price caps were in effect in the state of Hawaii. All refiners, suppliers and distributors could sell gasoline to other resellers such as service stations, hypermarketers, the military, etc., at a price which was not to exceed the weekly published cap.
3. Period from May 6, 2006 to the present (Post Gas Cap period): In accordance with the Hawaii legislature's decision, known as Act 78 signed on May 5, 2006, the Gas Cap law was suspended. After this date, suppliers and distributors were free to set the wholesale gasoline prices as per market forces. The Commission's order on revised calculation of gas caps reflecting the ethanol blending (E-10 gasoline) was issued on May 3, 2006, just before the law was suspended by Act 78. The Commission never published the caps using the new E-10 formula that was established by Decision and Order No. 22451 but continued to calculate them for PIMAR monitoring purposes. The E-10 formula is reflected in the gas cap calculation for the post- gas cap period.

Act 78 also authorized the Commission to monitor and report on Hawaii's fuels markets, expanded the range of data that the oil industry is required to report in HRS 486J-3, 4 and 4.5, and to implement a program (PIMAR) to monitor the actions and pricing of the oil industry in the state to increase transparency. Under the law the Governor has the authority to reinstate the caps if it is determined that it will be beneficial to consumers.

Source of Data for Analysis

The major sources of data to perform the market analysis in Hawaii are noted below:

- Transaction data reported to the PUC for all wholesale gasoline sales in Hawaii under the original Gas Cap legislation and under the PIMAR program for 2007 (Reports M-100 and M-101). These data are referred to as the "PUC Transaction Database". These transactions include all sales from refiners to suppliers, suppliers to jobbers, and all

sellers to retail service stations (with the exception of company owned and operated stations).
- Calculated gas caps history provided by the PUC for each zone and grade of product during the original Gas Cap period (September 1, 2005 through May 5, 2006)
- Calculated gas caps provided by the PUC for the period May 6, 2006 through June 30, 2007 based on the revised Gas Cap formula under Decision Order 22451 (published but not implemented due to suspension of the caps under Act 78).
- Data provided by certain Distributors to the Hawaii Department of Business, Economic Development and Tourism (DBEDT) under forms prescribed by DBEDT. These data had been collected by DBEDT and were provided to ICF to provide historical data back to the initiation of the Gas Caps. These data will be referred to as "Initial Petroleum Information Reporting" (IPIR) for this report. Data is included for all petroleum products in Hawaii as part of IPIR.
- Data provided under the Petroleum Information, Monitoring & Reporting (PIMAR) Program. Reporting parties were required to submit PIMAR data by August 31st, 2007 for the period from January 1st to June 24th, 2007. As with the IPIR data, gasoline as well as all other petroleum product data in Hawaii is included in PIMAR data.
- Data provided by the Oil Price Information Service (OPIS) on the retail prices (including taxes) at approximately 130-170 service stations in Hawaii on a daily basis over the study period. These prices include a number of company owned and operated stations.
- Other data used in this analysis was secured from the U.S. Energy Information Administration (EIA) and other sources (for example, Platt's) referenced in the report.

The data evaluated in the study covered information transactions from Sept 1, 2005 when the Gas Cap Law took effect till May 27, 2007, the latest available date of data before the start of the analysis. This period will henceforth be called the "study period" in this report.

Organization of the Data

PUC Transaction Database: The data in the PUC transaction database was a primary source of analysis for gasoline price and margins. Each transaction had the following information associated with it:

- Date of transaction
- Zone number (1 to 8) in which the transaction took place
- Volume of regular, mid-grade and premium gasoline supplied in the transaction (gallons)
- Pre-tax price of the regular, mid-grade and premium gasoline supplied in the transaction ($ per gallon)
- Name of Supplier
- Name of Purchaser
- Type of sale (Bulk, Rack, DTW, Retail)
- Invoice/Order Number

The data was organized into two transaction types, purchases and sales. The purchase transaction involved oil companies that bought gasoline from refiners or other oil companies. Most of these transactions were in the bulk category.

The sales data included transactions from oil companies to re-sellers and end-users. Re-sellers include jobbers, service stations, Costco and other wholesalers. End-users include large purchasers of gasoline like military bases and some small consumers who buy directly from the suppliers or jobbers rather than through a service station.

Both data sets were organized to provide segregation of data based on zone, buyer/seller, grade, price, price basis (bulk, rack, DTW, etc).

IPIR Data: Data provided by the Parties in this database included information on refinery input and production, inventory, sales data (volumes and pricing), and imports and exports. The data includes many of the information categories included in the new PIMAR reports, however there are significant gaps in data from time to time and in certain categories.

The IPIR data was segregated into files which permitted aggregation and analysis over the study period. Since the IPIR reports did not collect data from some stakeholders (such as the Hawaii Fueling Facility Company at the airport, and Utilities), is missing some data from refineries (production of HIBOB following the ethanol mandate implementation), and has numerous instances of data entry errors, the data was carefully reviewed prior to use in the study.

PIMAR Data: The data submission requirements for Parties under the new PIMAR reporting system required initial submissions to the PUC beginning on August 22, 2007 for operations the week of June 25, 2007, through July 1, 2007. Data was due on August 31st, 2007 for all weeks from January 1, 2007, through June 24, 2007. The timing of the receipt of these reports necessitated the use of IPIR data for a number of the exhibits in this report; however this did not impact the PUC Gasoline Transaction Database information (which is identical to the PIMAR M-100 and M-101 reports from January 2007).

Data Analysis Approach

The primary data used for the gasoline price caps and margin analysis presented in this report were the PUC Transaction Database as defined above. The PIMAR M-100 and M-101 forms contain identical data from Jan 1, 2007 onwards.

The analysis of gasoline transactions and the task of showing average trends over two distinct time periods — period when the Gas Cap was in effect and the period after it was suspended — presented the following challenges:

1. The gas caps changed weekly as the baseline price calculated from the average of three mainland U.S. spot gasoline prices changed everyday and the baseline price was re-calculated every week.
2. The State of Hawaii is divided into eight zones for the purposes of petroleum market reporting. One of the components used to calculate gas caps is the zone adjustment factor which is different for each zone resulting in different gas caps for different zones during any given week.
3. Ethanol was introduced into the Hawaii gasoline making it necessary to include ethanol prices into the gas cap. Therefore, Decision Order 22451 altered the formula of gasoline price cap to include a 10% ethanol component and estimate the price cap for E-10

gasoline. A blending credit of 51 cents per gallon (cpg) was made available for suppliers who blended ethanol and sold E-10 gasoline. The zone adjustment factors were also altered.

4. Retail E-10 gasoline sales were exempt from the general excise tax (GET) for part of the study period. The exemption was effective from April 1, 2006 through December 31, 2006. The 4% GET was reinstated on January 1, 2007. In addition, the City and County of Honolulu began to levy a 0.5% county surcharge on the GET on January 1, 2007, bringing the GET for Oahu to 4.5%. The ethanol exemption again took effect on July 1, 2007.

The changes taking place in the gas caps due to the numerous factors mentioned above presented a serious challenge when trying to develop a methodology for equivalent comparison of transactions by different parties in different zones and different time periods (although the GET issue only affected retail sales). In order to normalize the data for all the changing variables, ICF elected to make the analysis based on the price difference between a given transaction price and the gas cap it was subjected to. This price difference was calculated as follows:

1. Every transaction was assigned the applicable gas cap based on the date of transaction, the zone it took place, and the grade of gasoline.
2. The difference between the transaction price and the gas cap for each transaction, henceforth referred to as 'price spread', was calculated. A negative difference implies that the transaction took place below the cap and a positive difference implies that the transaction took place above the gas cap.
3. The price spread for each transaction was weighted by the transaction volume when estimating the weighted average spread for a given week, or month, or zone, or a combination thereof.

A big advantage of normalizing the data and using the 'price spread' was to allow comparison of transactions when the gas caps were in effect to transactions when the gas caps were no longer in effect. The periods where the Gas Cap was suspended (after May 5, 2006) continued to be monitored by the Commission, with Gas Caps calculated under the new terms of PUC DO 22451, which adjusted the gas cap calculation for the costs of procuring and blending ethanol into the gasoline supply in Hawaii.

2 Description of the Petroleum Market in Hawaii over the Study Period

This section of the report will discuss the overall status of the Petroleum market in Hawaii over the period of study (from the Gas Caps forward). The section presents on a high level basis the overall supply chain in Hawaii, introduce refiners, suppliers, jobbers, etc as well as the supply zones. The primary focus will be a review of volumes and flows of petroleum supply, with some initial pricing discussion. The flow of the section is as follows:

a. Hawaii Market Background

b. Market Participants & Zones

c. Overview of the Petroleum Supply Chain in Hawaii

d. Hawaii Crude Oil Supply & Costs

e. Refinery Operational Analysis

f. Imports & Exports Analysis

g. Distribution & Sales

Hawaii Market Background

Over the past few years global oil markets have shown a relentless drive to higher prices. These changes have been driven by a number of factors, but are primarily evidence of higher global demands for petroleum products as many developing countries, particularly in Asia, enjoy strong economic growth. At the same time, global crude oil production has seen geopolitical disruptions which impact supply in key producing nations, and refining capacity additions have lagged demand growth.

These changes have had an impact on Hawaii as well as other markets. In Hawaii, the changes in price have generated concern among citizens, businesses and legislature. In addition to dealing with the higher global prices, several other events over the past few years have affected the gasoline markets in the State of Hawaii. These events included implementation and subsequent repeal of price caps at the wholesale level, lowering of sulfur levels in gasoline and diesel fuel, mandated introduction of ethanol in gasoline and the implementation of the Petroleum Industry Monitoring, Analysis and Reporting (PIMAR) program.

Each of these transitions has caused an impact on the state of Hawaii as well as the companies that provide petroleum products and consume petroleum products.

Implementation & Suspension of Wholesale Gasoline Price Controls

The wholesale gasoline prices in the State of Hawaii were subject to a gasoline price cap beginning September 1, 2005 as stipulated under HRS 486H and under implementation criteria as defined in PUC Decision Order No. 21952 on August 1, 2005. The price caps linked the wholesale prices in Hawaii to an average of U.S. mainland prices in New York, the Gulf Coast, and Los Angeles, and included adjustments for freight to Hawaii, a fixed marketing margin, adjustments for premium and mid-grade gasoline, and adjustments for transportation and costs to zones outside Oahu. The intent of the price caps was to link Hawaii prices to mainland spot markets and to provide a ceiling on marketing margins to allow refiners, suppliers and distributors to make money above operational and business costs. It was anticipated that this legislation would result in more volatility of prices in Hawaii, but with more assurance that margins for suppliers and jobbers would not become excessive.

This report will show that the implementation of the gas caps changed the behavior of companies marketing in Hawaii by causing the gasoline price to service stations to change as the calculated gas caps changed. In addition, the disruptions in the U.S. markets caused by Hurricane Katrina at the very exact moment that gas caps were initiated, followed by Hurricane Rita, resulted in extreme volatility in gasoline prices in Hawaii. Moreover, commercial agreements between refiners and suppliers in Hawaii during this period were based on different assessments of imported parity price in Hawaii than the legislated calculation in the Gas Cap formula. The commercial formulas included markets not impacted by the hurricanes (for example, Singapore), which did not experience the significant run-up in prices versus the U.S. Therefore, some suppliers had contracts which enabled them to procure product at prices cheaper than the Gas Cap formula assumed and sell the product at or near the gas caps and earn a higher margin than intended by the legislation.

In addition, in order to protect margins to smaller jobbers who serviced more remote service stations, the Gas Cap Decision Order allowed zone adjustment factors to reflect the highest trucking costs reported by the parties in each zone. This decision, while necessary to protect smaller jobber margins, allowed parties with service stations located nearer to terminal sources to price customers at or near the DTW price cap and increase margins above the levels intended in the legislation.

Finally, consumers and dealers were able to predict the changes in prices from week to week as new gas cap calculations were published in advance of their implementation. This created some aberrant behavior in the supply chain with consumers and petroleum suppliers changing their buying or selling patterns with advanced insight on price trends.

In summary, the Gas Cap achieved the legislature's goal of controlling gasoline prices to a mainland benchmark. However, the extreme volatility of the mainland prices during this period (both up and down) created some significant problems for Hawaii businesses and consumers. In addition, the Gas Cap price basis of three mainland market prices was inconsistent with the commercial terms between Hawaii refiners and suppliers, creating higher or lower supplier margins than intended by the legislation. Suppliers and jobbers also tended to price close to the allowable gas caps for service station sales and often moved service station prices in step with gas cap changes. This will be discussed in the body of the report.

Implementation of Ethanol Mandate

At the same time as the gas caps were implemented, refiners, suppliers and jobbers in Hawaii were working to prepare for the implementation of ethanol in gasoline in 2006. The state law Section 486J(10) of the Hawaii Revised Statutes and rules in Chapter 15-35 of the Hawaii Administrative Rules required parties to sell at least 85% of their gasoline in Hawaii with 10% ethanol by April 2, 2006. This product is called E-10. This mandate required refiners and suppliers to procure ethanol from foreign sources, modify terminal and service station equipment and tankage, and modify refinery processes for blending gasoline. Since ethanol must be maintained and shipped separately from gasoline[2], it was necessary to develop two parallel supply chains in Hawaii; one for ethanol and one for the gasoline blendstock, called HIBOB. These products are blended at terminals directly into delivery trucks for transport into service stations. The conversion to ethanol involved added costs to refiners, suppliers and jobbers. These added costs were provided to the PUC and were studied to determine how the gas caps should be modified to allow refiners, suppliers and jobbers to recover their costs associated with the ethanol implementation. Recommended modifications were published by the PUC on May 3, 2006 (Decision Order #22451) for implementation into a revised Gas Cap formula.

At about the same time as when the ethanol mandate was implemented, legislation was passed (Act 78) to indefinitely suspend the Gas Cap in Hawaii. May 5, 2006 was the last day on which the caps were effective. At this point refiners, suppliers and jobbers were again free to price gasoline at levels the market would bear, and to attempt to recover the cost of modifications to their systems for ethanol, and for the purchase of ethanol.

Implementation of Sulfur Specification Changes

In addition to the above state-imposed mandates and legislations, refiners and suppliers were required to deal with nationwide regulation changes in the sulfur levels of gasoline and diesel fuel within this same overall time period. Gasoline sulfur levels have been reduced in a phased manner over the past few years, but are now set at 30 ppm (parts per million) sulfur for all gasoline produced and imported. Diesel fuel sulfur levels for all on-road usage have been at 15 ppm since June 1, 2006, and off-road diesel's maximum sulfur level was reduced to 500 ppm as of June 1, 2007. The impact of this legislation on Hawaii has been to alter the operational performance of the refineries, with some increases in export of unfinished refinery stocks, and limitations on the range of crude oils processed.

[2] The affinity of ethanol for any trace amounts of water in gasoline requires that the ethanol be transported and stored separately from the gasoline blendstock that it is to be blended with (otherwise the trace water amounts in gasoline will extract ethanol from the gasoline). Ethanol and gasoline are only blended into the delivery truck to the service station. Consequently, separate storage tanks, barge compartments, etc., are necessary components of a gasoline/ethanol based gasoline marketplace.

Implementation of PIMAR Program

Act 78 also provided funding for the PUC to establish the PIMAR program to monitor and report on the oil industry in Hawaii. As noted, this report is the initial mechanism being used to report on the oil industry to all parties in the state.

The intent of this portion of the Act was to replace the Gas Cap with an improved transparency tool for the state to use to monitor the oil industry in Hawaii. While the report does require significant work and resource cost on the part of oil industry parties in Hawaii to provide data in a timely manner to the PUC, the primary benefit of this process to the state will be as an ongoing watchdog tool.

As will be described in the report, this initial effort serves both to report on the oil business in Hawaii over the past two years and to identify the longer term needs of the PIMAR process. These needs include timely receipt of data in a consistent manner, access to all the data required from all parties so that future reports can be developed more readily, and clear knowledge of procedures and data management needs for all reporting parties and the PUC.

Hawaii Market Background Summary

The petroleum market in Hawaii over the study period has experienced similar volatility in petroleum prices as other regions in the world. This basic volatility has been complicated for both the petroleum industry and consumers by the various legislated changes in Hawaii (Gas Caps, Ethanol, Tax changes, PIMAR), as well as changes driven by the Federal government on sulfur specifications.

Overview of Petroleum Market Structure in Hawaii

The Hawaii petroleum market is small compared to most markets on the mainland. There are two refineries, both located on Oahu, that supply most of the petroleum products required in the State. The Chevron refinery at Kapolei has a daily crude processing capacity of 54,000 bpd and the Tesoro refinery at Kapolei has a processing capacity of 94,000 bpd. The daily consumption of petroleum products on Hawaii averaged 140,000 bpd in 2005[3].

Zones

For the purposes of the gasoline price controls, the State of Hawaii was divided into eight 'zones' based on their geographic location and specific market characteristics. The island of Oahu forms Zone 1 and all the other zones are comprised of the neighbor islands. Exhibit 2.1 gives an overview of the zone definitions.

[3] State Energy Profiles for Hawaii, Energy Information Administration, available on the web at http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=HI

Exhibit 2.1 Definition of Zones under PIMAR and IPIR

Zone	Geographic Definition
1	Island of Oahu
2	Island of Kauai
3	Island of Maui, except the district of Hana
4	District of Hana on the island of Maui
5	Island of Molokai
6	Island of Lanai
7	Districts of Puna, south Hilo, north Hilo, and Hamakua on the island of Hawaii
8	Districts of north Kohala, south Kohala, north Kona, south Kona, and Lau on the island of Hawaii

Consumption of petroleum products in different zones depends on the population and commercial or military facilities located in them. Exhibit 2.2 gives a perspective of the petroleum market size on each of the zones for the key products. The zones with higher consumption have more petroleum market participants. For example, Zone 1 has the highest gasoline consumption and also the highest number of gasoline stations. Jet fuel consumption is mainly limited to Zones 1 and 3 that cater to large commercial jet airplanes. Other zones have smaller volumes reflecting inter-island air traffic.

Exhibit 2.2 Average Petroleum Product Consumption in Different Zones

Thousand gallons per day					
Zone	**Gasoline**	**Jet Fuel**	**Diesel Fuel**	**Residual Fuel Oil**	**Total**
1					**3,340.8**
2					**168.7**
3					**377.7**
4					**0.2**
5					**13.5**
6					**8.9**
7					**255.7**
8					**203.1**
Total	**1,195.3**	**1,221.4**	**560.0**	**1,391.9**	**4,368.6**

Source: IPIR
Note: These totals are for illustrative purpose only. IPIR data totals 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.

Overview of the Petroleum Supply Chain

Oahu, with its two refineries and large marine import facilities at Barbers Point and Port of Honolulu, acts as the hub for the petroleum supply chain in Hawaii. Along with production and import capabilities, Oahu also has large storage terminals owned by the refineries and suppliers that make up the hub. Petroleum products are distributed from Oahu to the neighboring islands using barges. Gasoline and Diesel sold through the service stations normally moves through

one or more wholesale transaction before reaching the service station. A typical supply chain can involve a refiner selling gasoline as a bulk transaction to a supplier, who in turn sells it on a DTW basis to a service station or on a Rack basis to a jobber. The jobber, in turn, sells that product to a service station on DTW basis. The Bulk sales can be made by the refinery supplying product to a terminal in Oahu connected by pipeline, or by a supplier lifting the product at the refinery rack, or a refiner/supplier sending production to another zone on a barge. Refiners and suppliers also send some product directly to the service stations they own and operate without going through intermediate transactions with other supplier or jobbers. The transaction structure for gasoline is shown in greater detail in Exhibit 3.1. Sales of residual fuel oil are generally made directly as retail sales by the refiner to the end-user such as power plants or the port facility.

Exhibit 2.3 lists the refiners, suppliers, and jobbers involved in wholesale transactions in the various zones in Hawaii. It also shows the major DTW accounts in the various zones. The Military buys gasoline in Zones 1 and 2, whereas Costco stations are located in Zones 1 and 8. Service stations are located in all zones. However, the number of stations and the average volume of gasoline dispensed by each station differs from zone to zone as shown in Exhibit 2.4.

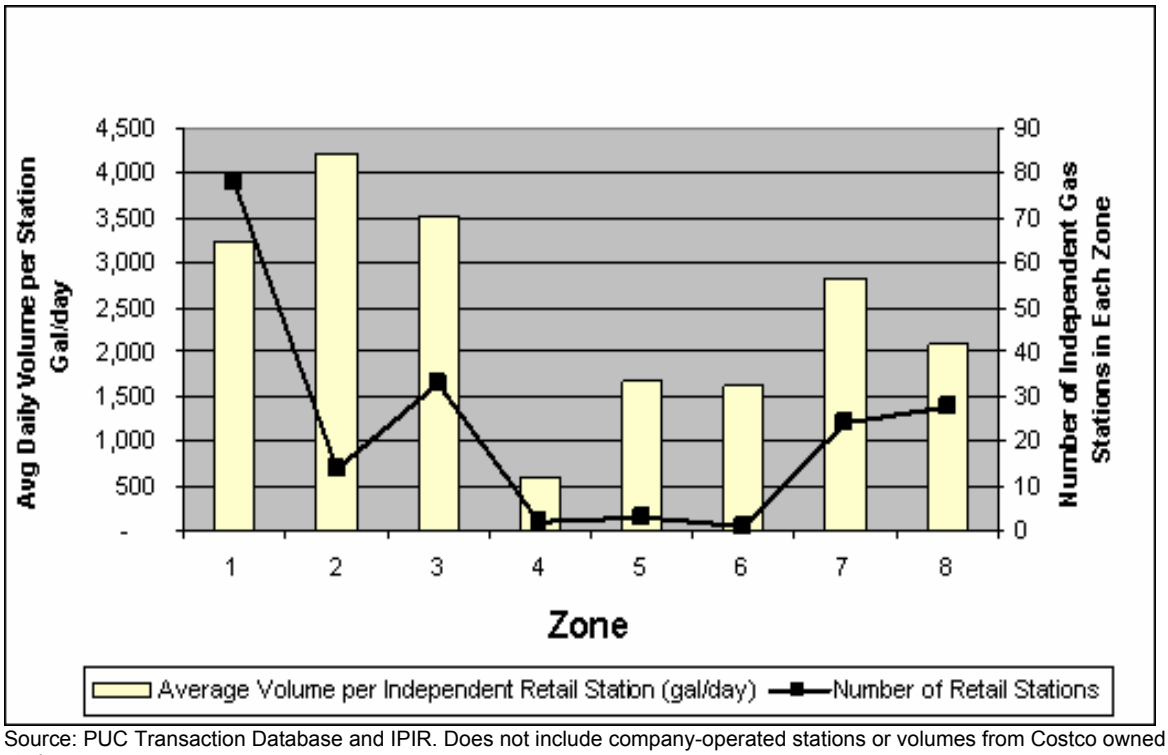
Exhibit 2.3 Major Market Participants in the Hawaii Petroleum Market

Company	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8
Refiners	Chevron Tesoro							
Suppliers	Aloha Mid Pac Shell	Mid Pac Shell	Mid Pac Shell				Aloha Mid Pac Shell	Aloha Mid Pac Shell
Jobbers	B&E Petroleum Garlow	Senter	Maui Oil Maui Petroleum	Maui Oil	Island	Lanai Oil	Akana Hawaii Petroleum	Akana Hawaii Petroleum
DTW Accounts								

Transaction	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8
Bulk Sales								
Rack Sales								
DTW Sales								

Source: PUC Transaction Database

Exhibit 2.4: Number of Independently Operated Service Stations and Daily Volume Sold by Zone



Source: PUC Transaction Database and IPIR. Does not include company-operated stations or volumes from Costco owned stations.

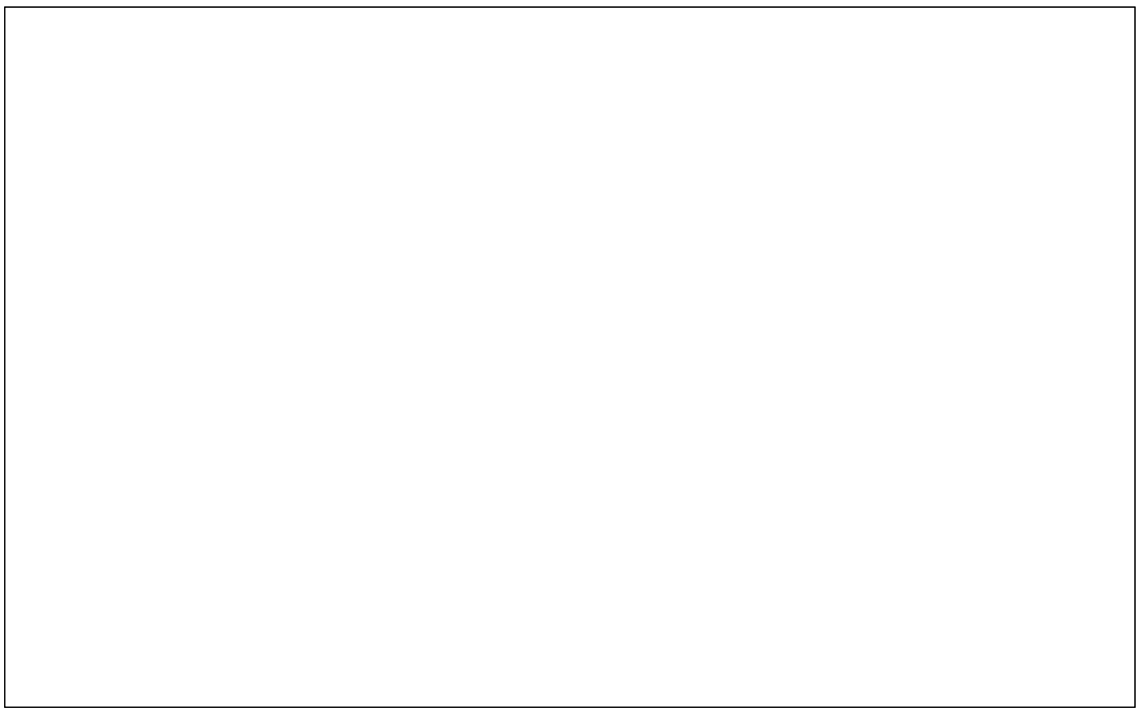
Hawaii Crude Oil Supply & Costs

Crude Oil Cost

This section presents Hawaii's crude oil supply and costs over the study period. Hawaii refiners process a relatively light, sweet (low sulfur content) crude mix which is expensive compared to U.S. average crude costs into refineries.

Exhibit 2.5 shows that Hawaii crude costs (average) declined initially over the period and then rose substantially from December 2005 through September 2006 from about [redacted] up to a peak of about [redacted]. Prices then declined over the subsequent six months to about [redacted], and have steadily risen since that time through June 2007. [redacted]

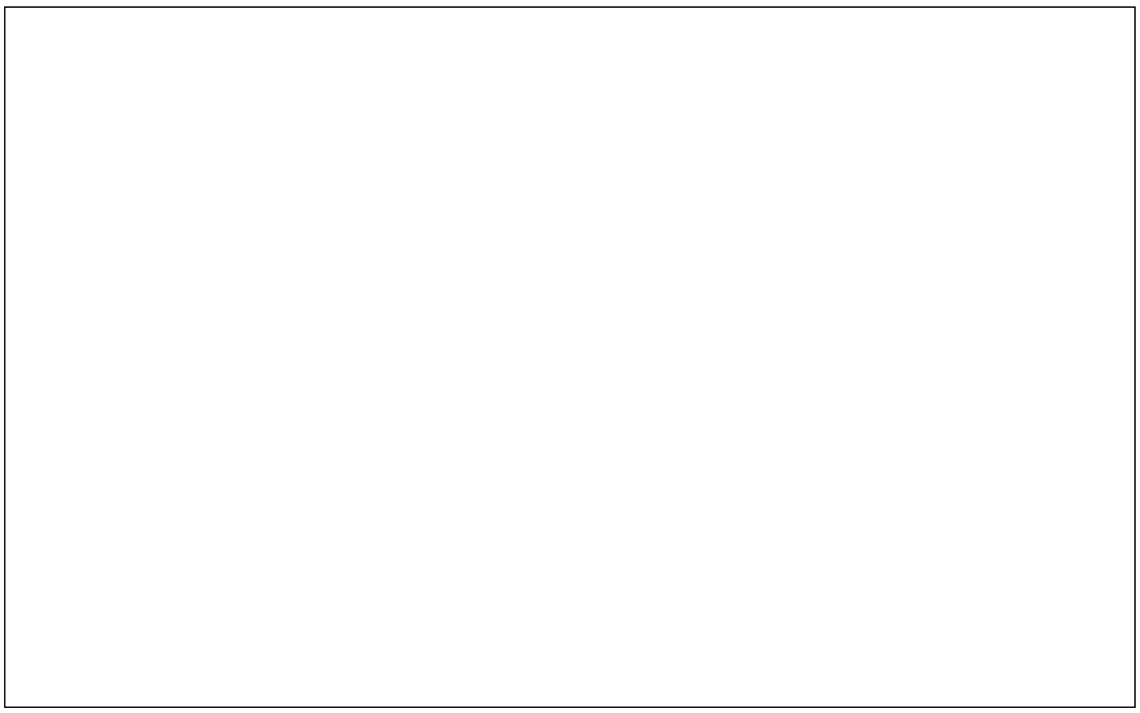
Exhibit 2.5 Hawaii Landed Crude Costs



Source: IPIR

Exhibit 2.6 compares Hawaii's average crude cost with the U.S. benchmark West Texas Intermediate crude (WTI), as well as the U.S. average landed cost of all crude (RAC, or Refiner's Average Cost). Hawaii crude costs are consistently much higher than the US average cost. Hawaii costs track the US WTI benchmark (Both the WTI crude and Hawaii's typical crude supply tend to be light, sweet crude oil). The overall pattern of crude costs in Hawaii track global crude markets, as indicated by the WTI price and also the RAC price (RAC represents both US domestic crude price as well as the price of much larger volumes of crude imported from Canada, Mexico, Venezuela, Saudi Arabia, Nigeria and many other sources)

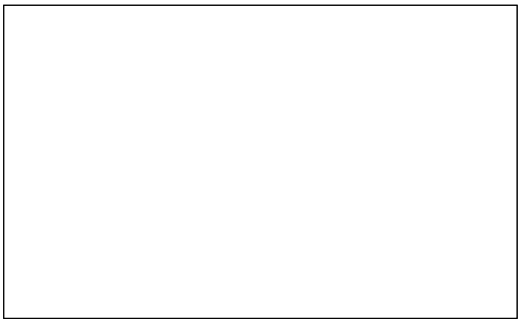
Exhibit 2.6 Hawaii Crude Cost Comparison to RAC and WTI



Sources: Hawaii- IPIR; WTI & RAC- EIA

Hawaii average landed crude costs over the study period have averaged as low as $3/barrel above the U.S. RAC price and as high as $10 above the RAC price. This variation can occur when one of the Hawaii refiners may be purchasing a particular crude cargo that may be lower in quality (and therefore price) than the average light, sweet crude purchased in Hawaii. [redacted] The higher cost paid by Hawaii for crude is based on the fact that Hawaii's refiners must process higher quality crudes, and also that shipping costs for crude into Hawaii can be expensive.

Exhibit 2.7 Hawaii Landed Crude Cost Comparison to RAC and WTI

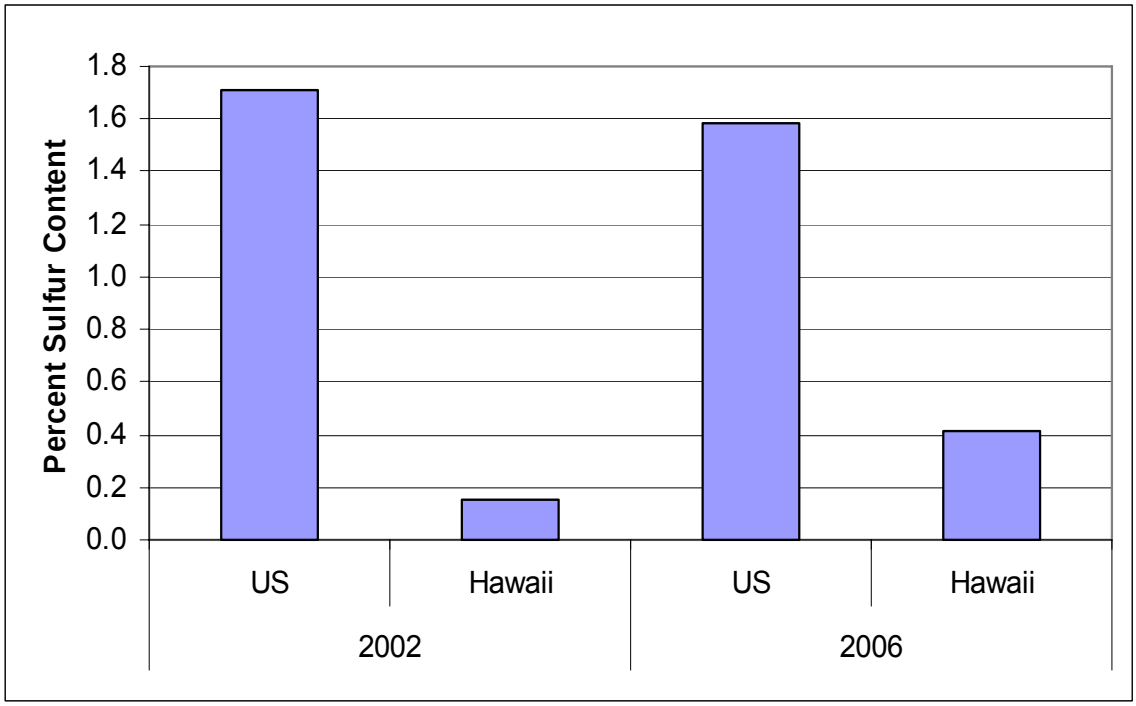


Sources: Hawaii- IPIR; WTI & RAC- EIA

Crude Supply & Sources

The quality and cost of crude purchased by Hawaii refiners is constrained by the configuration and design of the refineries, and the product quality requirements dictated in the marketplace. Hawaii's refineries are older and significantly less capable to process the heavier[4] gravity and higher sulfur content crudes that most U.S. refineries can process. Exhibit 2.8 below shows Hawaii's crude oil sulfur content and Exhibit 2.9 shows Hawaii's API gravity versus the average U.S. crude processed in 2002 and 2006:

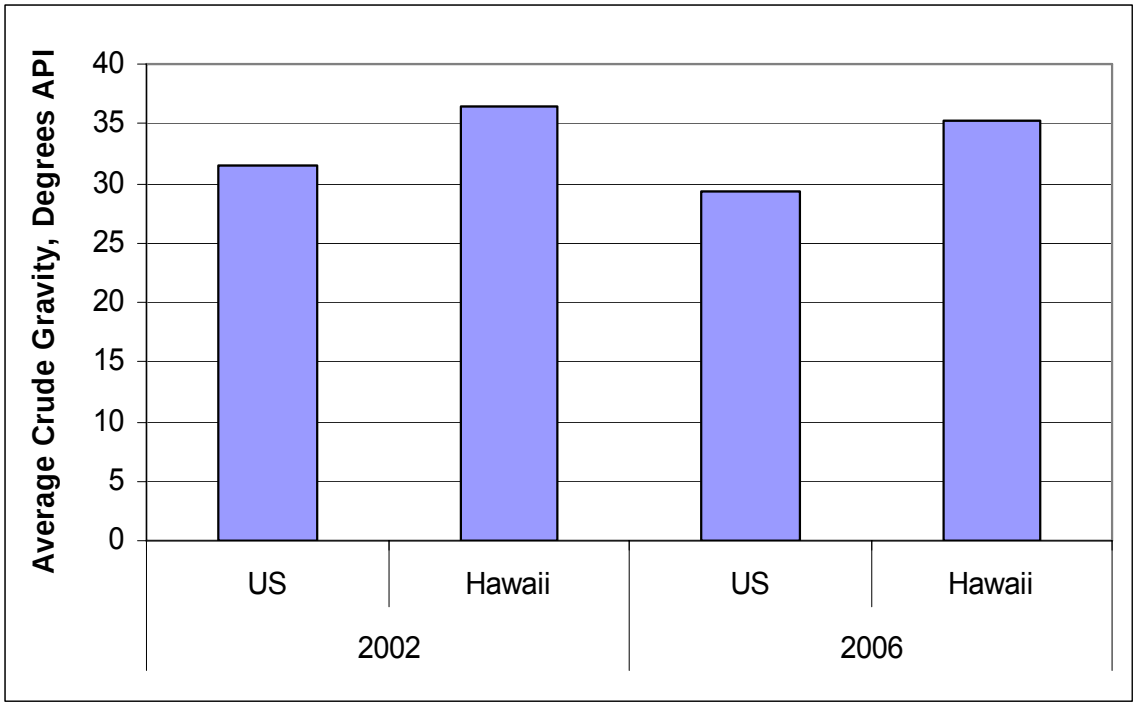
Exhibit 2.8 Hawaii and U.S. Crude Sulfur Content, 2002 and 2006



Source: EIA 814 Imported Crude Data, 2002 and 2006

[4] Heavier means a lower API gravity, meaning the density of the crude oil. Heavier crudes are much more difficult to refine into lighter products such as gasolines and distillates.

Exhibit 2.9 Hawaii and U.S. Crude API Gravity, 2002 and 2006



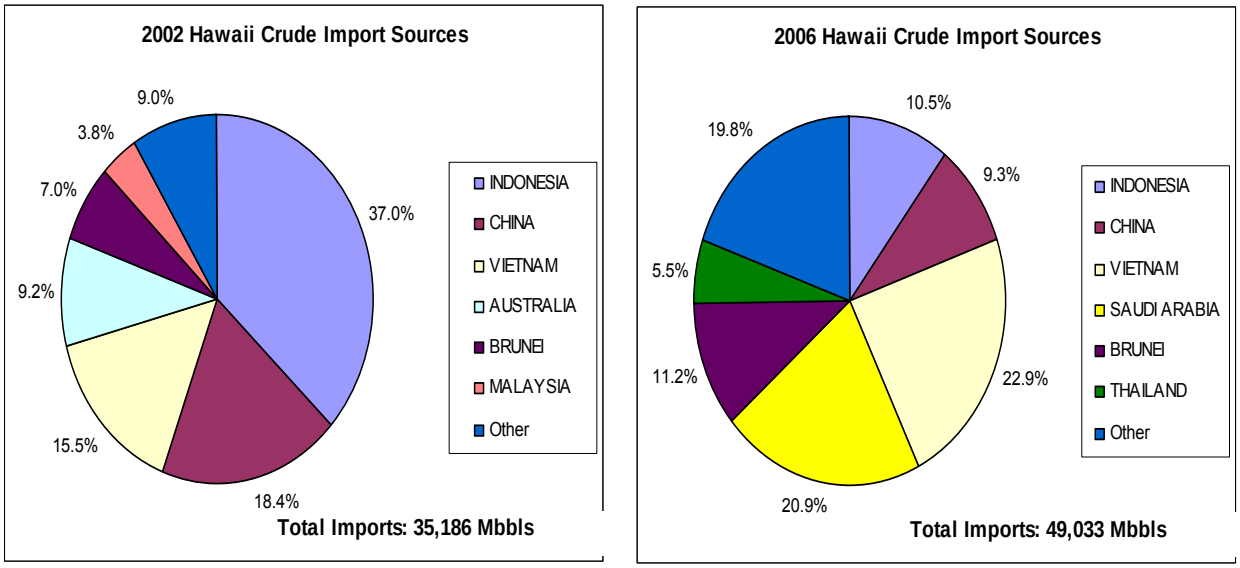
Source: EIA 814 Imported Crude Data, 2002 and 2006

The two exhibits above indicate that Hawaii's imported crude purchases have a much lower sulfur content than the US average (0.4% sulfur versus the US average of 1.6% sulfur content in 2006). In addition, Hawaii crudes are much lighter in gravity (less dense) than US average crudes, averaging 35 API gravity versus the US average of about 30 in 2006.

Crudes are valued in commodity markets based on their quality. In most cases, low sulfur crudes are more expensive than higher sulfur crudes, and higher gravity crudes are more expensive than lower gravity crudes. Consequently, it is not surprising that Hawaii refiners have a much higher crude cost than the average US refiner.

The sources of crude oil for Hawaii's refineries has been primarily from foreign countries. Hawaii's crude import sources have changed somewhat from 2002 as seen in Exhibit 2.10 below. The exhibits show a higher level of imported crude in 2006 versus 2002. This is because in 2002 Hawaii refiners also processed some domestic North Slope crude oil (ANS), which has essentially been discontinued in 2006. The major changes (other than North Slope) involve an increased reliance on Vietnam and Saudi Arabia for crude, and somewhat less dependence on Indonesia.

Exhibit 2.10 Hawaii Crude Sources, 2002 and 2006



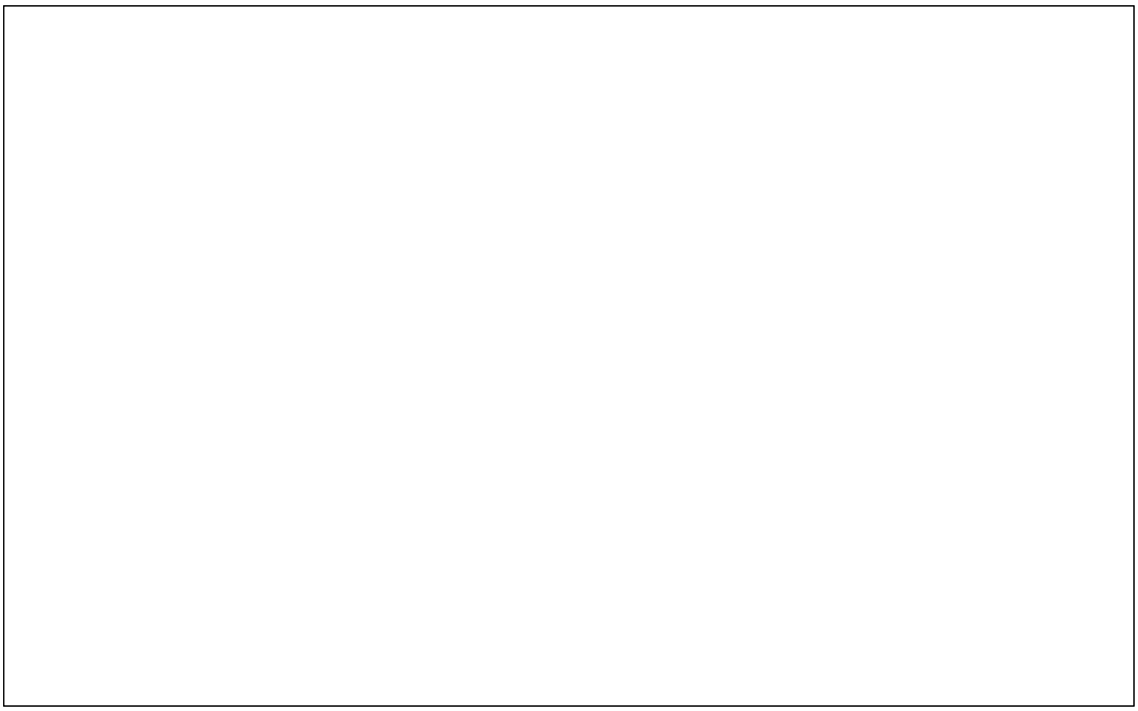
Source: EIA 814 Imported Crude Data, 2002 and 2006

The refinery requirements for sweet and higher gravity crude oils limit purchase options. In 2002, Hawaii refiners were able to procure crude from 41 different countries, plus ANS. In 2006, import records indicate that Hawaii refiners purchased crude from 48 different countries. While the primary crude sources are four or five countries with crude that appears to economically fit each refiner, the fact that a large number of other crudes are procured from time to time indicates that the refiners are actively looking for “spot” crude cargoes that would be economic in the refinery. Pacific Rim countries are the primary sources, although the refiners appear to be able to procure occasional cargoes of crude from other sources.

Freight Costs to Deliver Crude

Hawaii’s location and the relatively small size of the Hawaii refineries result in higher freight costs to deliver crude into the state. Freight costs are impacted by world freight markets (the value of tonnage), the size of delivery vessels, and the distance to deliver the products. An analysis of Hawaii’s freight costs from source countries supplying crude oil over the study period is outlined below in Exhibit 2.11.

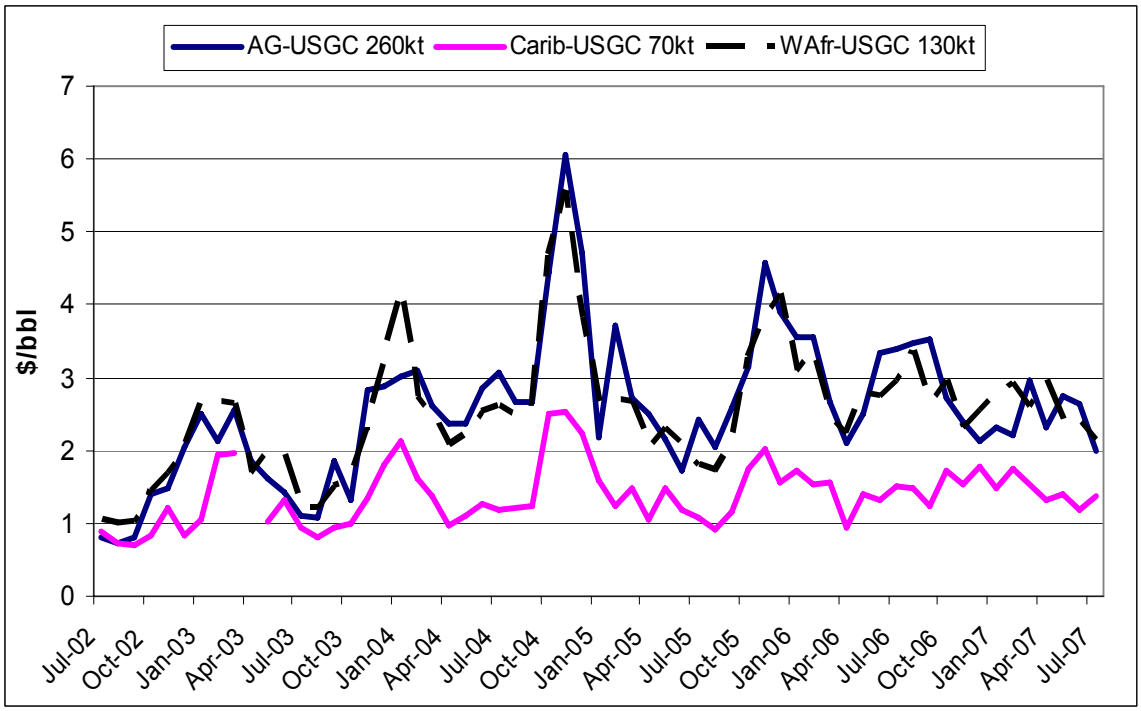
Exhibit 2.11 Crude Oil Freight Costs to Hawaii



Source: IPIR

The exhibit above shows that, on average, Hawaii's major crude import sources (Saudi Arabia, Vietnam, China, Thailand, Indonesia, Brunei, etc) have tended to average between [redacted] freight cost. Exhibit 2.12 below shows the cost to deliver crude into the US Gulf Coast from major import sources (Saudi Arabia, West Africa, Latin America). These freight costs are from Platt's and reflect movement of crude oil into the U.S. Gulf Coast (USGC) from the Arabian Gulf (AG) on VLCC's (Very Large Crude Carriers with 2,000 MB crude), from West Africa (WAFR) on LR-2 size vessels (about 980 MB) and from the Caribbean/Latin America on 500 MB vessels.

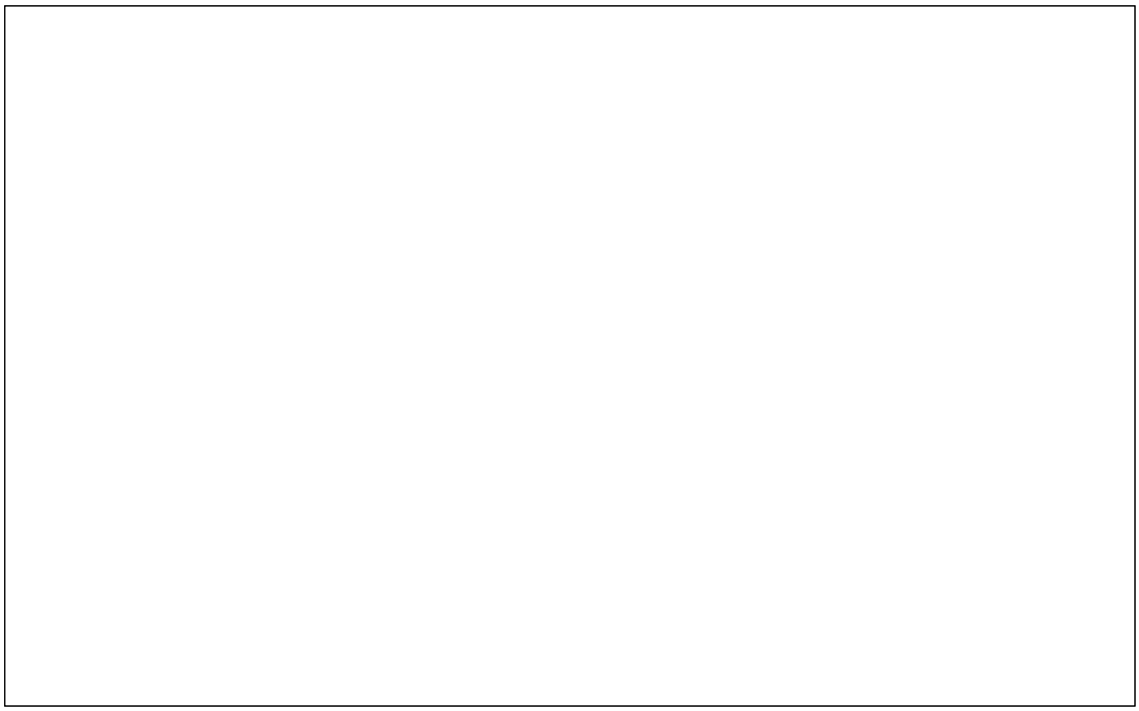
Exhibit 2.12 Crude Freight Market Costs to USGC from Various Sources



Source: Platts

The freight costs indicate that Hawaii's normal crude freight costs of [redacted] shown in Exhibit 2.11 are about a $1-2/barrel higher freight cost than typical crude sources into the Gulf Coast refiners. A comparison of actual crude delivery costs into Hawaii for Saudi Arabia crude versus Saudi supply in the Gulf Coast is shown on Exhibit 2.13 below:

Exhibit 2.13 Hawaii Freight Costs from Saudi Arabia vs, Saudi Costs to USGC



Source: Platts

This exhibit has some data gaps (crude was not delivered each month into Hawaii from Saudi Arabia), however it indicates that in most months there is a sizable premium for freight into Hawaii versus the US Gulf Coast. Although the distance in this case is roughly similar (about 9,500 miles to both Honolulu and Houston fro Saudi Arabia), Hawaii deliveries are on smaller vessels and the freight route is not a mainline route for crude cargo vessels, hence the cost per barrel is higher.

Crude Summary

Data submitted by the Parties importing crude, as well as analysis of import records indicate that Hawaii's refiners are required to pay a significant premium for crude oil compared to the average U.S. refiner, ranging from $3-10/barrel above the U.S. average crude cost into refineries. Most of the higher cost appears to stem from the need to purchase more expensive crude than mainland refiners due to the Hawaii refineries' need for lighter and sweeter crude. Freight costs comprise [redacted] of that total penalty.

The higher raw material cost is a major impediment to Hawaii refineries' ability to earn a similar return on investment to mainland refiners. In the 2003 Stillwater study,[5] it was estimated that in 2002 the Hawaii refinery crude costs averaged $3/barrel above the cost incurred by California refiners. The data reviewed in this study indicates that Hawaii crudes are averaging [redacted]

[5] Study of Fuel Prices and Legislative Initiatives for the State of Hawaii, August 5, 2003, pages 38 and 39

[redacted] above the U.S. average crude cost**.** This is a far greater penalty than in 2002 and has worsened since then due to higher global demand for sweeter crude to help refineries meet lower product sulfur specifications.

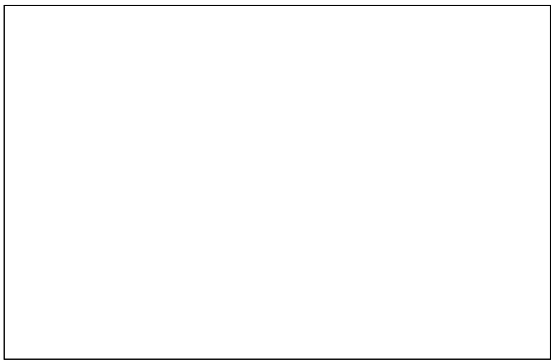
Refinery Operational Analysis

Refinery crude runs and utilization over the study period

Hawaii's refineries averaged relatively high crude runs over the study period. Both refiners' reports contained some weeks of missing or questionable data which were excluded from the exhibits. The exhibits indicate periods of higher or lower crude rates during various periods. These variations, while not specifically explained in the IPIR form comment section, typically reflect periods of required maintenance (planned or unplanned) for one or more of the refinery process units. The variation may also reflect different crudes being processed in any given period.

[redacted]

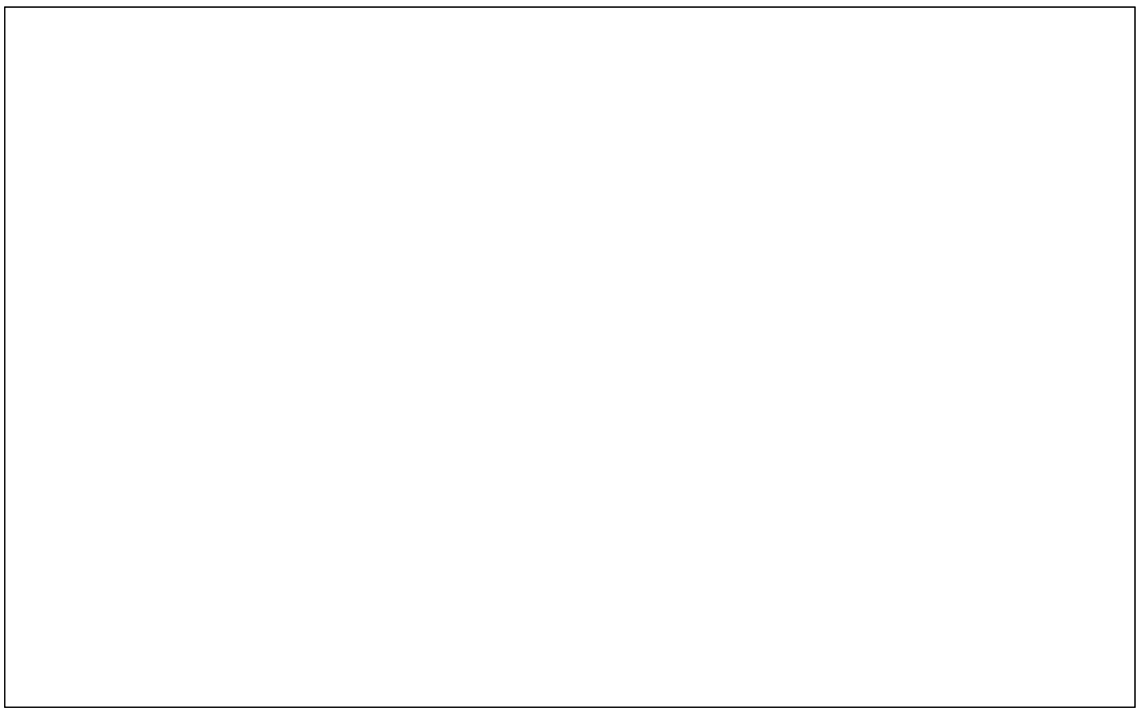
Exhibit 2.14 Hawaii Refinery Crude Runs by Quarter, 2005 to 2007



Source: IPIR

[redacted]

Exhibit 2.15 Daily Crude Processing Trend: Hawaii Refineries

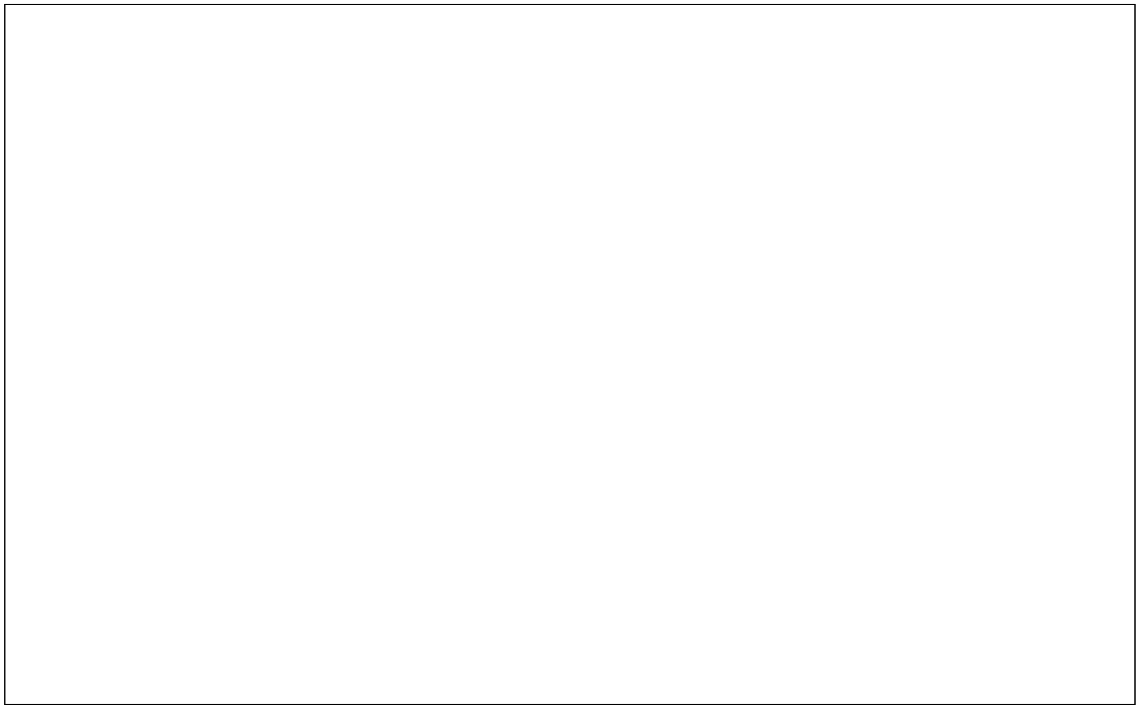


Source: IPIR

Exhibit 2.16 below shows the Hawaii refinery utilization over the period[6]. Refinery Utilization averaged about [redacted] over the study period. This compares to the US refinery average of 88% over the same time frame.

[6] Refinery utilization is a measure of the crude processed in a refinery versus the crude capacity

Exhibit 2.16 Utilization Trend: Hawaii Refineries



Sources: Hawaii- IPIR

The US utilization was clearly impacted early in the period due to Hurricanes Katrina and Rita, however with the exception of lower Hawaii crude runs in late 2006, Hawaii utilizations have typically been above the US average.

Refinery Yields of Key Products

The yields of key products from each refinery were tracked over the study period, as shown in the exhibits below. Comments on each of the exhibits are noted.

Gasoline

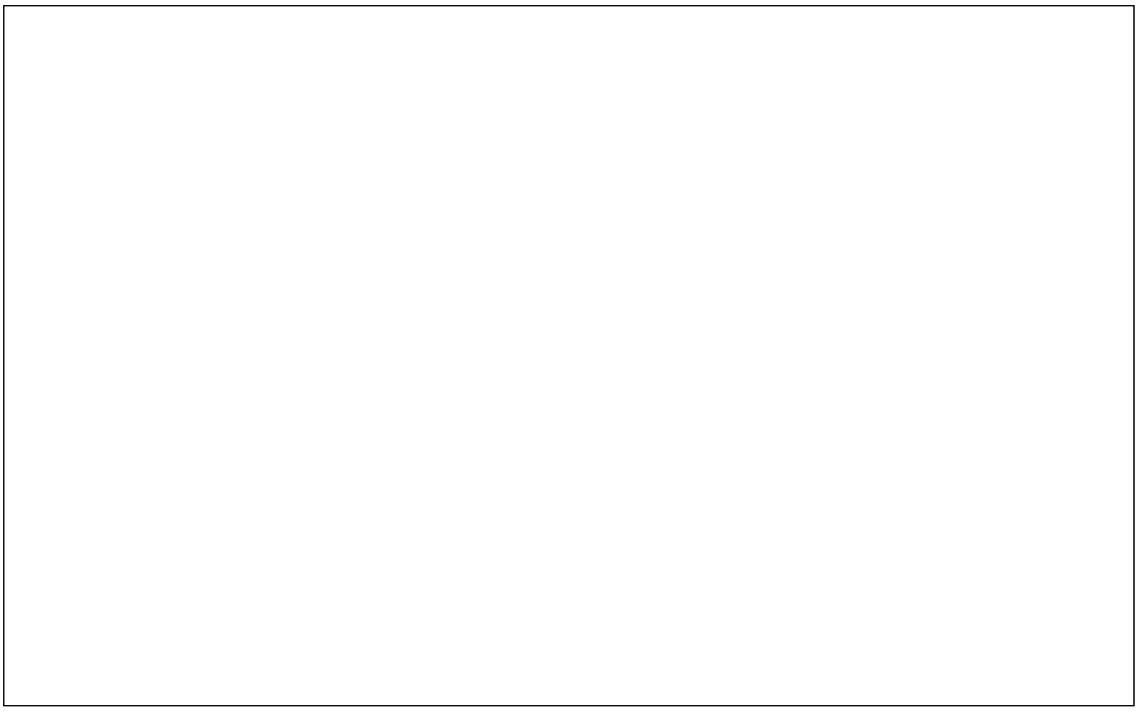
Exhibit 2.17 shows the pattern of gasoline production from both refiners. [redacted] Data is erratic from week to week as (presumably) refinery gasoline blending into finished product or blendstock was not ratable[7]. Gasoline yields are tracked only through March of 2006. After March, IPIR reports did not show gasoline production since the refiners had converted to HIBOB production for ethanol blending. Over this period (during gas caps), refiner gasoline production was relatively stable, except for one brief period in early December for an apparent refinery operational problem.

[7] IPIR forms allow for an explanation of operational issues that affect weekly data, but these were not provided by the refiners

In some cases there were weekly periods when no data was reported at all. These are shown as breaks on the exhibit. With the initiation of PIMAR reports in 2007, gasoline production was again available to be included on the exhibit. Note that volumes reported in 2007 are for HIBOB product[8]

[redacted]

Exhibit 2.17 Gasoline Production Trend

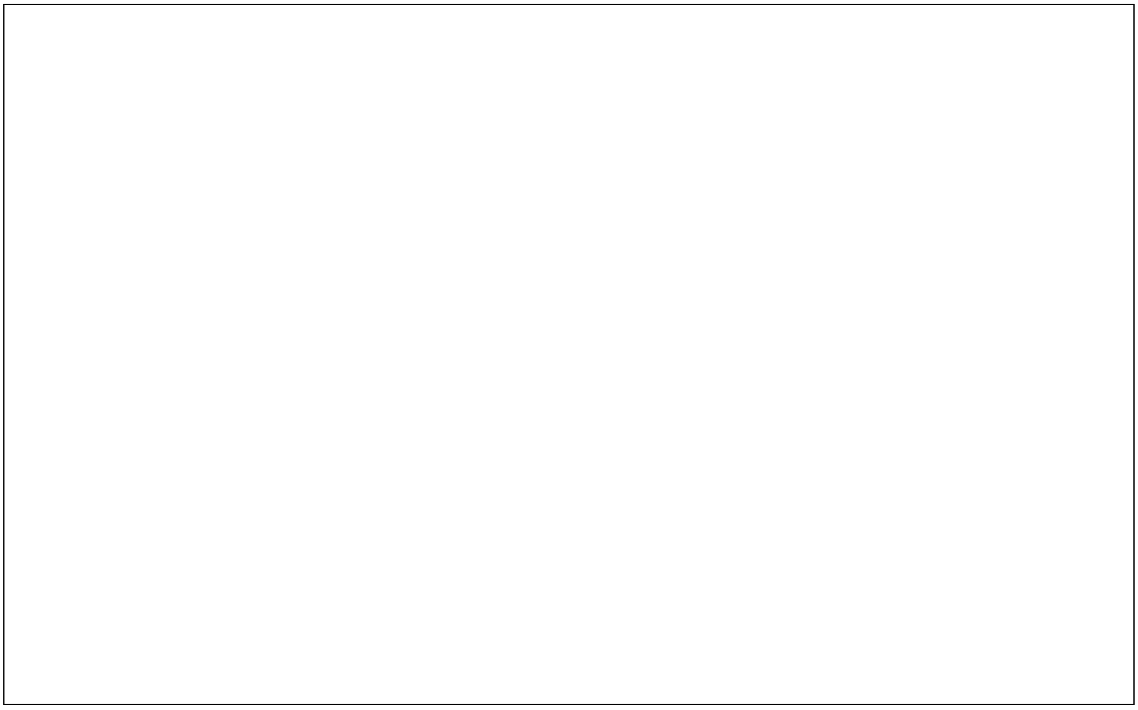


Source: IPIR. PIMAR

Exhibit 2.18 below shows the trend in Jet Fuel production at the refineries. Jet fuel is the largest single volume of product produced in Hawaii. [redacted]

[8] Hawaii Blendstock for Oxygenate Blending (HIBOB). This is now the primary refinery gasoline being shipped for ethanol blending at the terminals.

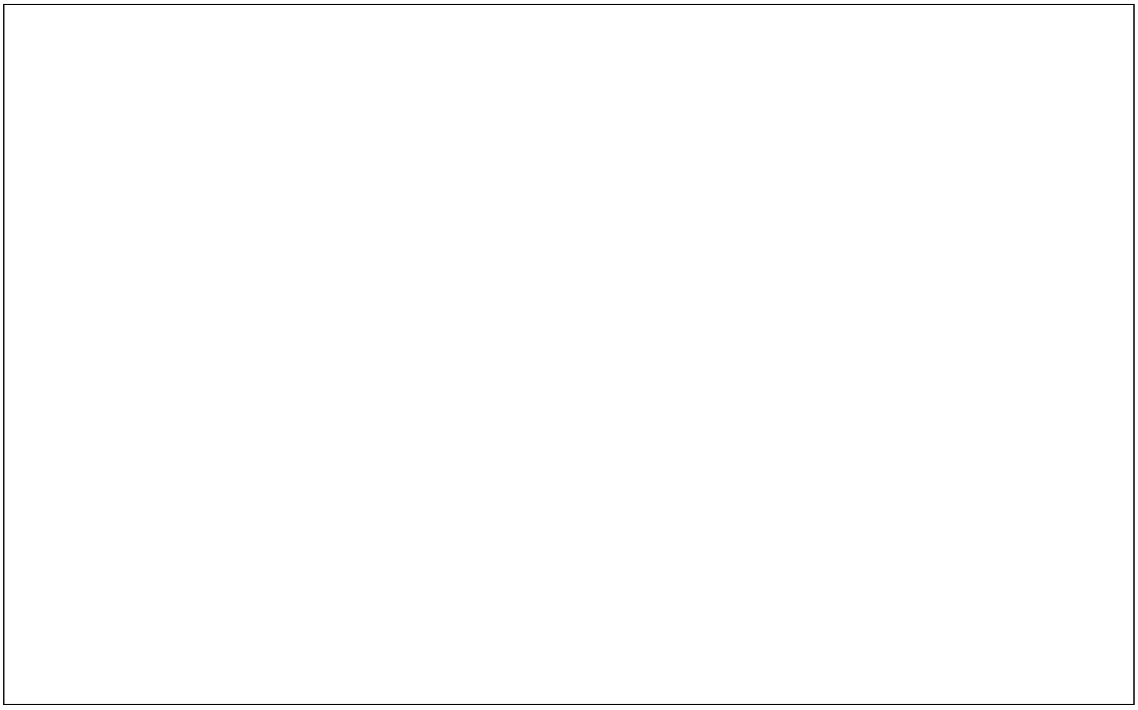
Exhibit 2.18 Jet Fuel Production Trend



Source: IPIR

Diesel fuel yields are presented in Exhibit 2.19 as combined low sulfur diesel (under 500 ppm sulfur) and higher sulfur (over 500 ppm sulfur). The overall diesel production is relatively stable over the period; however the week to week variability is high due to the timing of diesel production batches. [redacted]

Exhibit 2.19 Diesel Fuel Production Trend



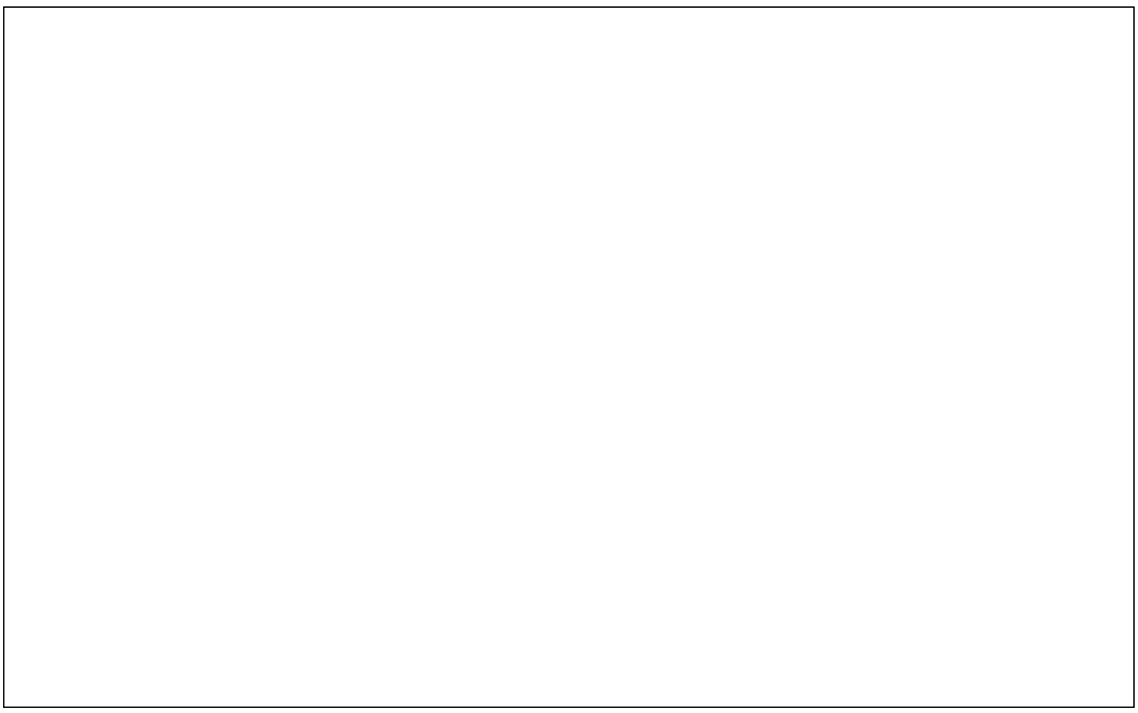
Source: IPIR

Residual fuel production numbers are shown in Exhibit 2.20 and are being reported as combined for both under 1% sulfur and over 1% sulfur. Residual fuel production numbers can vary more significantly based on the specific type of crude oil being processed, and the need to batch blend residual fuel with other stocks to meet viscosity requirements of the residual fuel[9]. Some crudes can have over 30% residual fuel yield and others under 5%. Most refinery residual yield must be blended with lighter stocks to "cut" the residual fuel viscosity so that it can be shipped and used in burners. Consequently, some refiners produce residual fuel ratably and others have more of a batch approach to blending the finished residual fuel.

Residual fuel production and yield in Hawaii refineries is much higher than almost all other U.S. refineries. There is a strong demand for residual fuel in Hawaii for both power generation and ship bunkering, so the refiners are configured to meet those demand needs. However, the value of residual fuel in commodity markets is far lower than gasoline and distillate product. This, as with the very high crude cost, is a significant penalty to Hawaii refinery margins versus mainland refiners.

[9] Viscosity is the characteristic that measures the ability of heavy fuels to flow, be pumped, etc.

Exhibit 2.20 Residual Fuel Production Trend

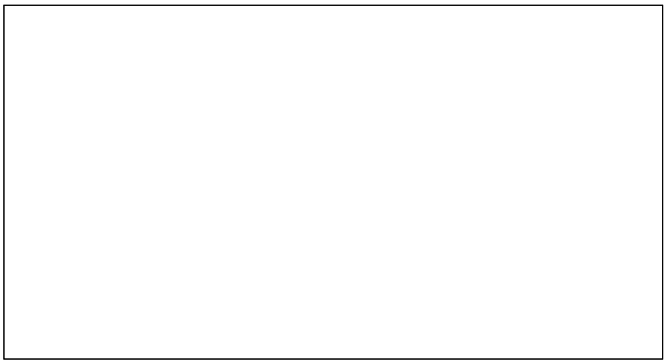


Source: IPIR

Summary

The table below (Exhibit 2.21) shows total Hawaii production of gasoline, jet, diesel and residual fuel by quarter over the study period. It is apparent that jet fuel and residual fuel production are [redacted] and are therefore very key factors in refinery economic performance.

Exhibit 2.21 Hawaii Refinery Production by Quarter over the Study Period



Source: IPIR, PIMAR

Hawaii yields compared to the US average

Hawaii's refineries are configured significantly different than almost all other US refineries. The refineries have been built and designed to align with the product demands in the Hawaii market. Hence they are structured to maximize jet fuel production (due to high jet demands), and residual fuel yield to supply required fuel for power generation and ship bunkering. This means that the degree of process equipment (cost and technology) required is less than many other US refineries. The Hawaii refineries also do not have the metallurgy or sulfur handling facilities to tolerate higher sulfur crude oils, as noted earlier.

Hawaii's key product yields are shown below (Exhibit 2.22) versus the US average[10]:

Exhibit 2.22 Hawaii Yield Comparison to U.S. Average Refineries

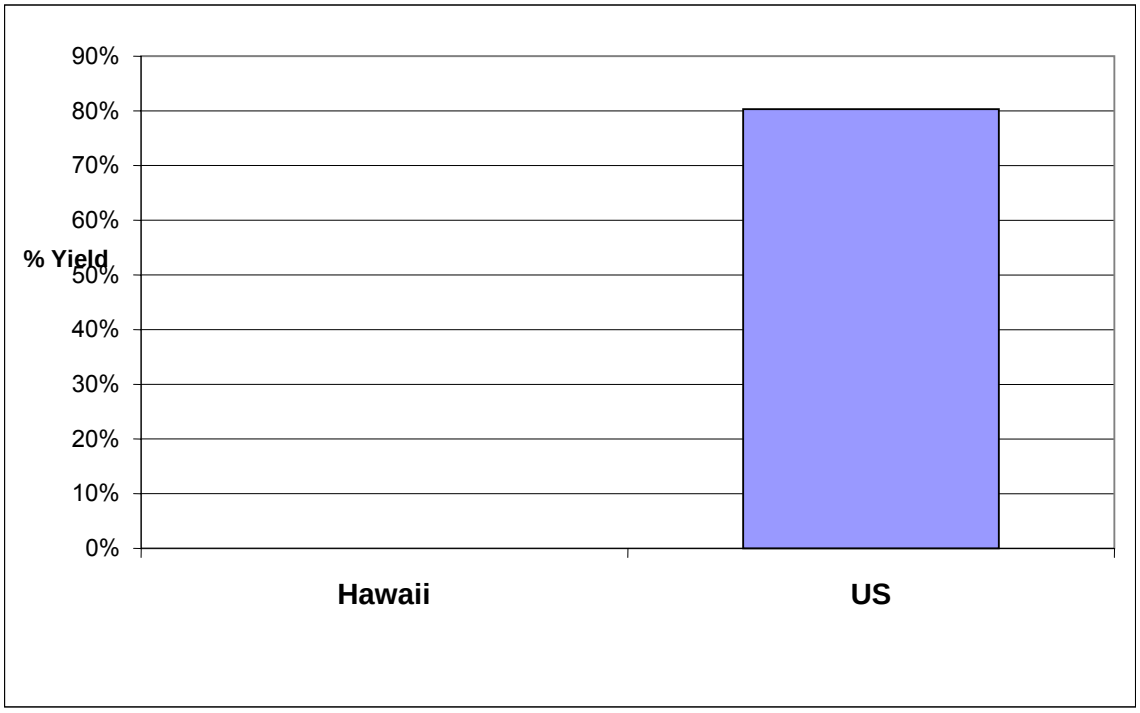
Sources: Hawaii- IPIR; US- EIA

US refinery gasoline yields average [redacted] Hawaii's gasoline yields, primarily due to more sophisticated refinery process units in typical US refineries. The higher degree of sophistication also is reflected in the much lower residual fuel yield in US refineries (about 4%) versus Hawaii's yield of [redacted]. Hawaii refineries' produce [redacted]. The higher jet yield reflects specific process design to maximize jet fuel yields to meet Hawaii's high demand for jet fuel. Diesel yield is [redacted] lower in Hawaii than the US overall.

[10] Hawaii yield is TBD of product production divided by TBD crude input. The EIA data is calculated in the same manner per EIA definition.

Total yield of “clean” products (gasoline, diesel and jet fuel) in Hawaii refineries averages about [redacted] versus the US average of over 80% (See Exhibit 2.23). This is an important factor in refinery gross margin, since clean products’ market prices are typically well above crude (raw material) costs, and residual fuel prices are well below crude costs. For example, Hawaii refinery’s [redacted] lower clean product yield (and higher residual fuel yield) would mean a lower refinery gross margin of [redacted]/barrel based on an estimated spread of $20/barrel between clean and residual products.

Exhibit 2.23 Hawaii Clean Product Yield vs. U.S. Average



Sources: Hawaii- IPIR; US- EIA

Import and Export Analysis

This section will show the flow of product imports (non-crude) and exports into and out of the Hawaii market over the study period. The intent is to show how the oil industry is balancing demand needs against refinery capability to meet Hawaii fuel requirements, and/or to balance their system as efficiently as possible.

Overview

The data used for this analysis includes information from the IPIR import and export report forms, supplemented by US EIA import data. In a number of cases imported deliveries occurred from parties who were not required to complete the IPIR forms (for example HFFC). To the degree imports were from foreign sources and captured by EIA’s reporting process, those volumes are reflected. Exhibit 2.24 below identifies the overall volume of fuel products imported and exported from Hawaii by quarter from October 2005.

The table indicates on average that imports of finished products and other products (unfinished oils which require additional processing) averaged about 12.3 TBD, with virtually all the volume being finished product.

Exhibit 2.24 Import and Export Summary over Study Period

(Thousand barrels/day)				
	Finished Products		All Others	
Quarter	Imports	Exports	Imports	Exports
4Q 2005	3.4	1.4	0.0	8.4
1Q 2006	5.6	1.8	2.5	6.4
2Q 2006	10.1	5.6	0.3	8.1
3Q 2006	12.4	5.1	0.0	11.9
4Q 2006	15.6	1.7	0.0	9.0
1Q 2007	15.3	2.7	0.0	9.3
2Q 2007	19.7	6.9	1.1	10.3
Average	11.7	3.6	0.6	9.1

Sources: IPIR and EIA 814

The volume being exported amounted to about 12.6 TBD of product, and in the export case, the majority of the volume exported was unfinished products, including blendstocks. Overall, Hawaii processed about [redacted] crude oil over the same period, and in order to balance demand needs with refinery capability, about 12-13 TBD of both imports and exports of varying products were required. The movement of products into and out of Hawaii is therefore critical to the continuity of supply of petroleum products in the state. Inability to move product in or out could quickly result in supply shortages if imports were curtailed or unavailable. Exports are essential to avoid surplus unfinished product which could require crude processing reductions to control inventory.

The import total does not reflect ethanol imports to meet E-10 gasoline requirements beginning in 2006 (See Exhibit 2.25). Ethanol imports amounted to about 3 TBD additional imported volume subsequent to initial deliveries in March 2006 (data is available for foreign imports of ethanol only, since IPIR reports did not capture domestic ethanol imports).

Exhibit 2.25 Ethanol Imports, 2006 and 2007 YTD

(Mbbls)					
Month	China	El Salvador	Jamaica	Trinidad & Tobago	Total
Feb-06		114			114
Mar-06		151			151
May-06		90			90
Jun-06				166	166
Jul-06		174			174
Aug-06	42				42
Sep-06		103	100		203
Oct-06		78			78
Nov-06			78		78
Dec-06		81			81
Feb-07		78			78
Mar-07			81		81
Apr-07			98		98
Jun-07			94		94
Total	42	869	451	166	1,528

Source: EIA 814

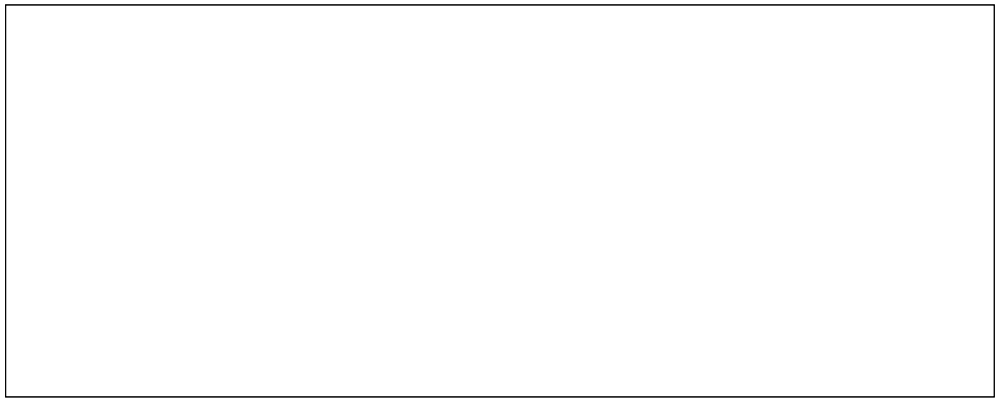
Imported ethanol sources were primarily from the Caribbean, with the likelihood that the origin country was Brazil (Brazil exports ethanol to the Caribbean where it is processed to be denatured for ultimate export for fuel blending).

Import Analysis

The volume of imports into Hawaii is dominated by jet fuel as seen on Exhibit 2.26. Despite high refinery production levels, on average over the study period about 8 TBD of jet fuel was imported to meet demands. [redacted]

Residual fuel imports occur sporadically as required to meet demands, averaging 2.6 TBD over the period. Gasoline imports are virtually non-existent, and diesel imports are also low. However, imports of lower sulfur diesel increased in mid 2006 and have continued. The lower sulfur diesel is more difficult to produce in the Hawaii refineries.

Exhibit 2.26 Hawaii Import Volume Detail

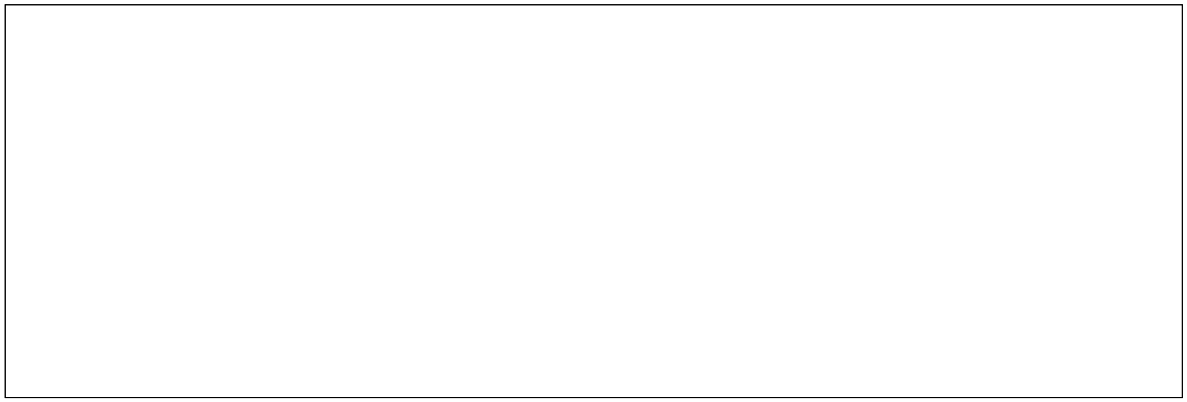


Sources: IPIR and EIA 814

Export Analysis

Refiners will export product from a region when the market in that region does not have an economic demand for the product versus other alternatives. The Exhibit below (Exhibit 2.27) shows the volumes of exports out of the Hawaii market over the study period:

Exhibit 2.27 Hawaii Export Volume Detail



Source: IPIR

The export volume table indicates that subsequent to the implementation of the ethanol mandate in May, 2006 and the low sulfur on-road diesel mandate in June 2006, several trends emerged. First, exports of gasoline and gasoline blendstocks from Hawaii increased somewhat. This likely occurred for two reasons: 1) addition of 3 TBD ethanol into Hawaii's gasoline supply reduced demand for refiner produced gasoline and 2) the greater difficulty in producing HIBOB gasoline for blending ethanol resulted in surplus supply of more difficult to blend gasoline components.

Second, exports of higher sulfur diesel fuel increased following the low sulfur diesel implementation, as well as exports of unfinished oils. Both may reflect the difficulty in converting some refinery crude oil gas oil or secondary unit gas oil streams into low sulfur diesel.

Moving unfinished gas oils or gasoline blendstocks into other markets where a company's other refineries, or another refiner's facility may be better equipped to process or blend the volume into saleable product is a far more economic choice for a refiner than simply reducing Hawaii crude runs to balance supply (because that will disrupt the balance of the other key refinery products).

Distribution & Sales

One of the intents of the PIMAR process is to be able to identify trends in petroleum product inventory and consumption (or sales) during the study periods. Similarly, trends in sales for the state as a whole and within each zone should be readily accessible from the submitted data. However, there are gaps in the IPIR data in several key areas which make presentation of the information questionable and therefore not suitable for presentation in this initial report. Some examples include the lack of complete inventory volumes of HIBOB gasoline following the introduction of E-10 in 2006, lack of Jet fuel inventory at HFFC[11] and sales data anomalies, questionable data on residual fuel inventory (and exclusion of utilities' inventory in IPIR), and others.

The issues should be resolved with the new data collection process in PIMAR. The initial PIMAR reports will be reviewed and procedures modified as necessary to insure that all required data is collected and is screened. Initial review of the PIMAR data has already resulted in some modifications of procedures to the parties reporting, and it is expected that more will be needed.

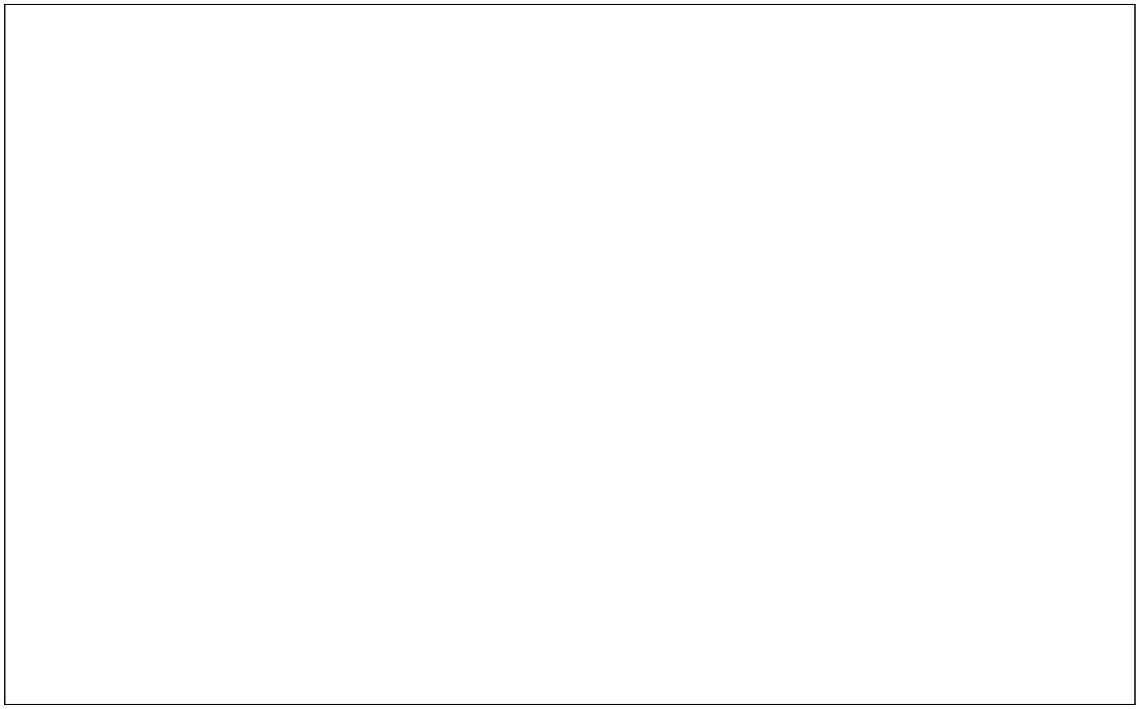
Based on the data received in IPIR that is appropriate to present, and several other data sources, there are still a number of exhibits that can be shown that provide information in these reporting areas.

Gasoline Sales

Gasoline Sales Customer Base and Trends: Sales of gasoline in Hawaii are primarily to traditional service stations, with gasoline sold on a "DTW" basis (Dealer TankWagon delivery). The service station pays a delivered price for the product to the refiner, supplier or jobber. However, other customers receive product on a DTW basis, including Military Bases, hypermarketers and other commercial accounts (e.g. rental car companies). The relative sales levels to these different customer bases over the study period are shown in Exhibit 2.28 below:

[11] Hawaii Fueling Facilities Company, located at the airport and a major holder of jet inventory. HFFC was not required to submit inventory in the IPIR, but is in PIMAR

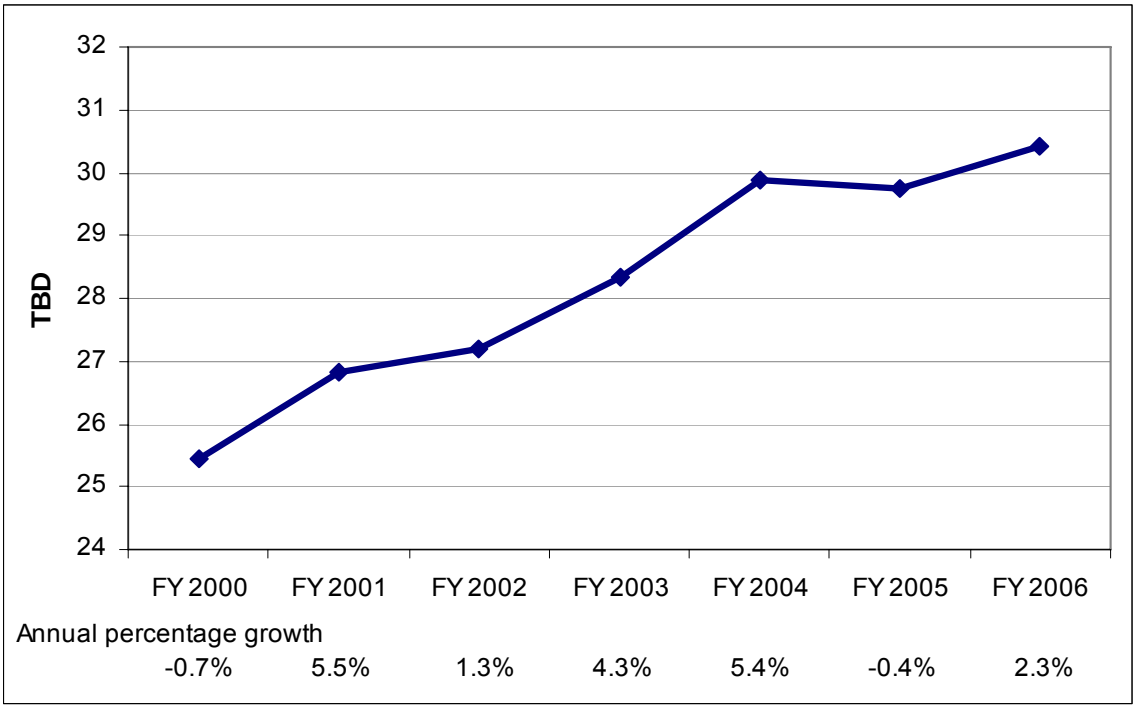
Exhibit 2.28 Hawaii Gasoline Sales by Channel



Source: IPIR and PUC Transaction Database

The data indicate ratable demands from the military, hypermarketer, and commercial channels. Service station demands are a summary of the DTW transactions in the PUC database and IPIR sales at company operated service stations. Sales are generally ratable over the period, with an extended period of lower sales just after initiation of the gas caps. Exhibit 2.29 shows Hawaii gasoline sales over a longer period of time on a thousand barrels per day basis (TBD). The sales data are based on tax receipt data received by the Hawaii Department of Taxation. The sales have trended up over the period with an average annual growth of 2.5% through the 2006 fiscal year (ending mid-2006)

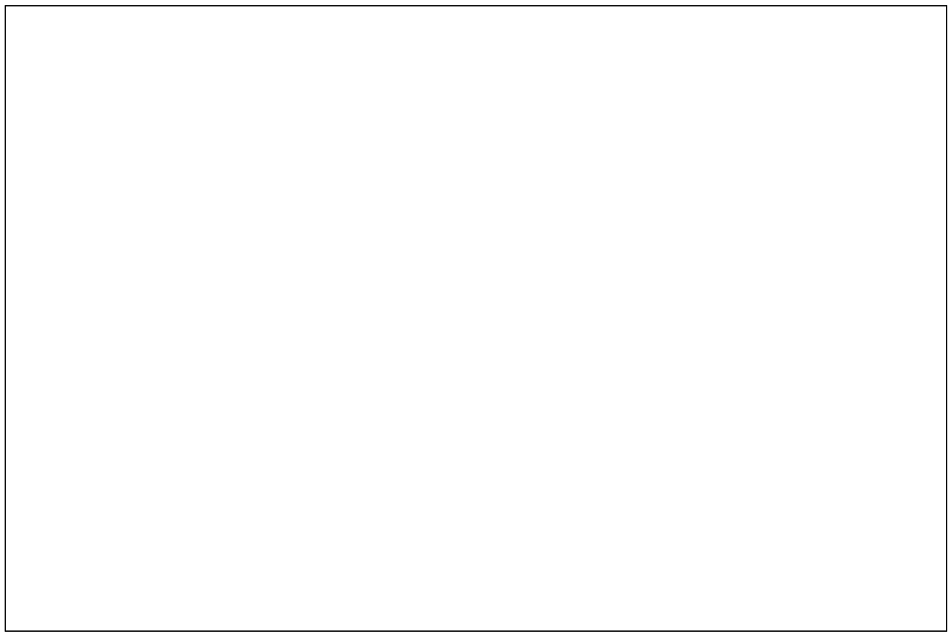
Exhibit 2.29 Hawaii Gasoline Sales Growth from FY 2000



Source: Hawaii Department of Taxation

Exhibit 2.30 shows a breakdown of gasoline sales by reporting Zone over the study period. The data show that over 60% of the sales are in Zone 1, with the Counties of Hawaii (Zones 7 and 8) and Maui having the second and third largest sales volumes.

Exhibit 2.30 Gasoline Sales Percentages by Zone over the Study Period

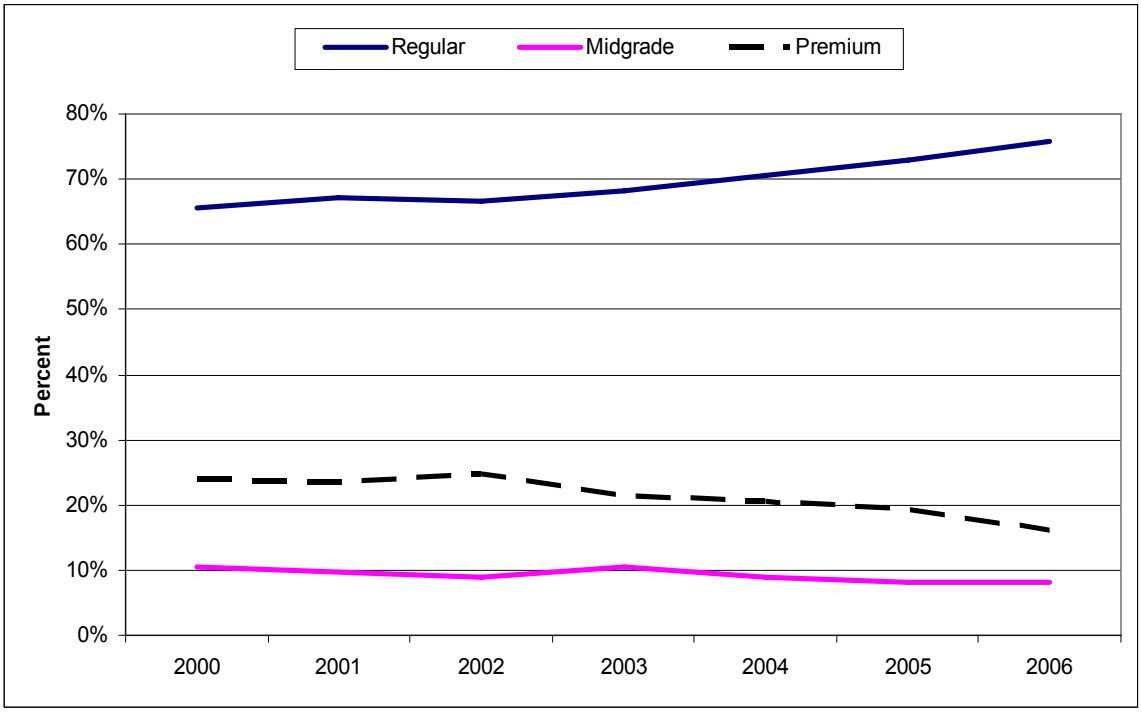


Source: PUC Transaction Database and IPIR

Percentage of gasoline sales as premium, midgrade and regular unleaded

Exhibit 2.31 below shows trends in Hawaii gasoline sales from 2002 using data from the US EIA (based on company filed reports to EIA). The trend shows that the Hawaii consumers have been reducing the purchases of Premium grade gasoline since 2002, with Premium sales declining from under 25% of all gasoline sales to just over 16%. This is likely due primarily to price concerns, but may also stem from the recommendation in the 2003 Stillwater report to DBEDT that Hawaii consumers were unnecessarily consuming premium gasoline when regular would be adequate in many vehicles.

Exhibit 2.31 Trends of Gasoline Grade Sales Percentages, 2002-2006



Source: EIA Prime Supplier Sales

Other Products

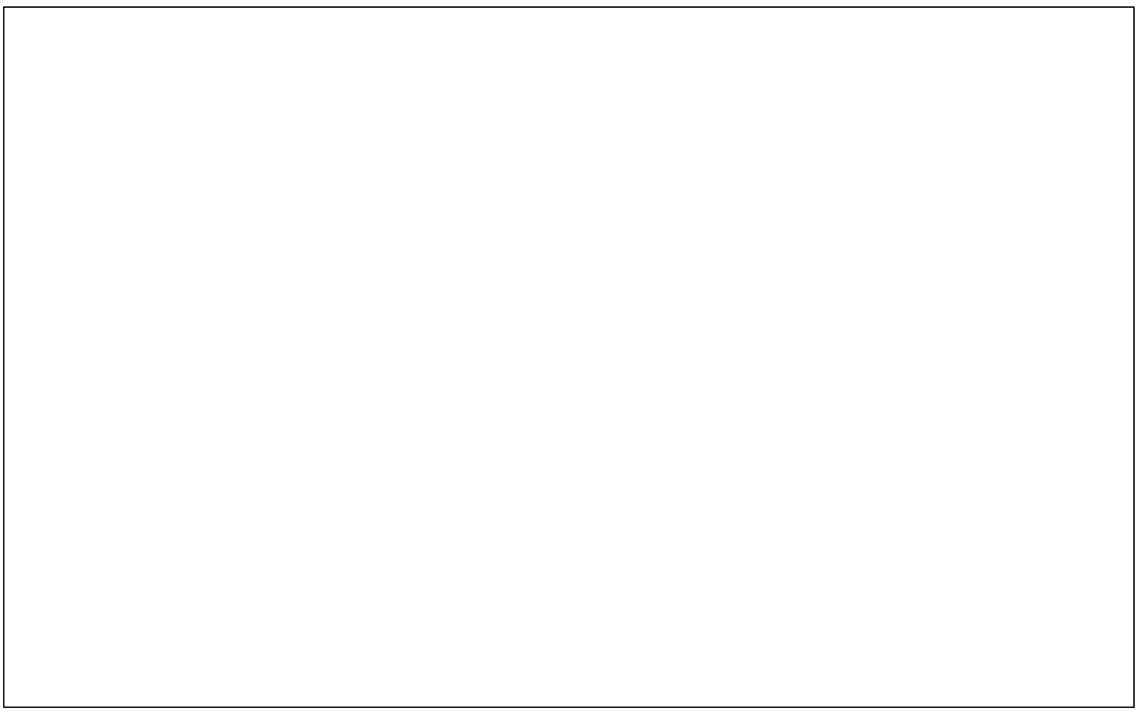
Exhibit 2.32, Exhibit 2.33 and Exhibit 2.34 show sales levels reported in IPIR for Jet Fuel and Diesel Fuel (Diesel under 500 ppm sulfur, and Diesel over 500 ppm sulfur). These exhibits are presented to indicate some of the anomalies that need to be resolved in the data reporting process. Jet fuel sales levels average [redacted] thousand gallons per day, or [redacted] TBD. This sales volume is below average refinery production of about [redacted] shown in Exhibit 2.18, which does not include average Jet imports of 8 TBD over the period.

Diesel sales levels are very erratic and seem incomplete based on early reporting months' (Fall 2005) very low volumes.

The most likely rationale for the anomalies is that the IPIR forms did not clearly delineate all possible sales channels for every product. For example, it is possible that bonded[12] jet fuel sales were not reported by the parties. There are many sales channels for diesel fuels, including utilities, and not all of these may have been included.

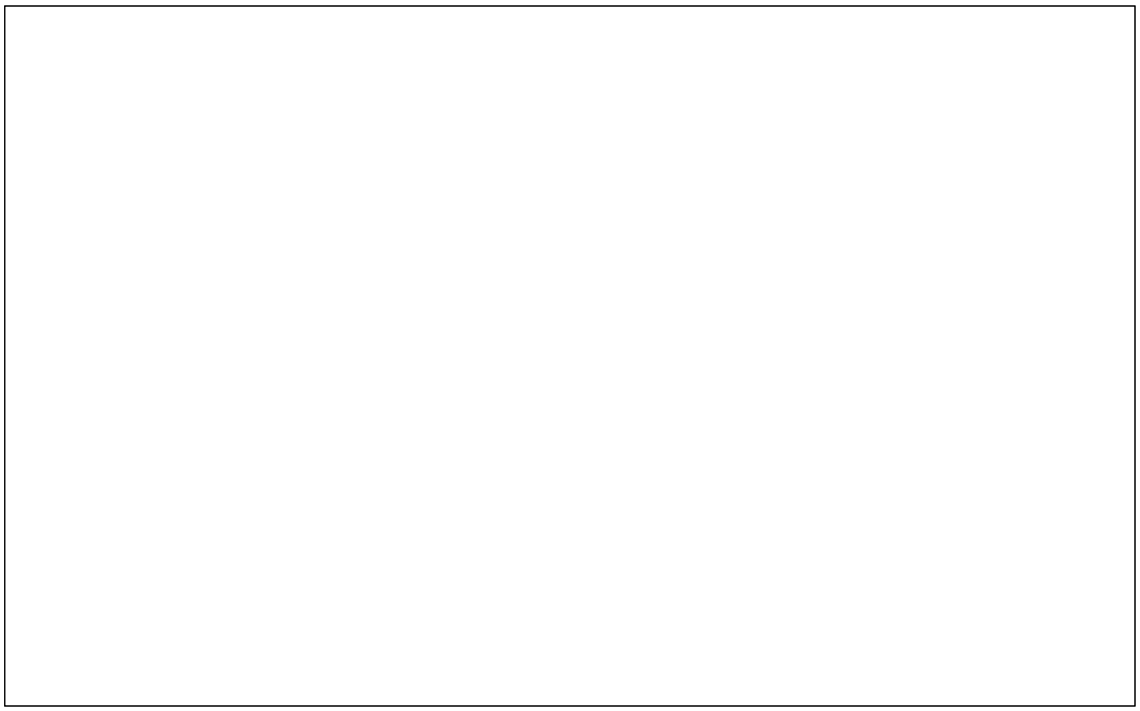
[12] Bonded Jet fuel is Jet Fuel sold from product imported into Hawaii for use on international flights. It can be imported Jet fuel, or Jet fuel produced from imported crude.

Exhibit 2.32 Jet Fuel Sales Trends by Zone



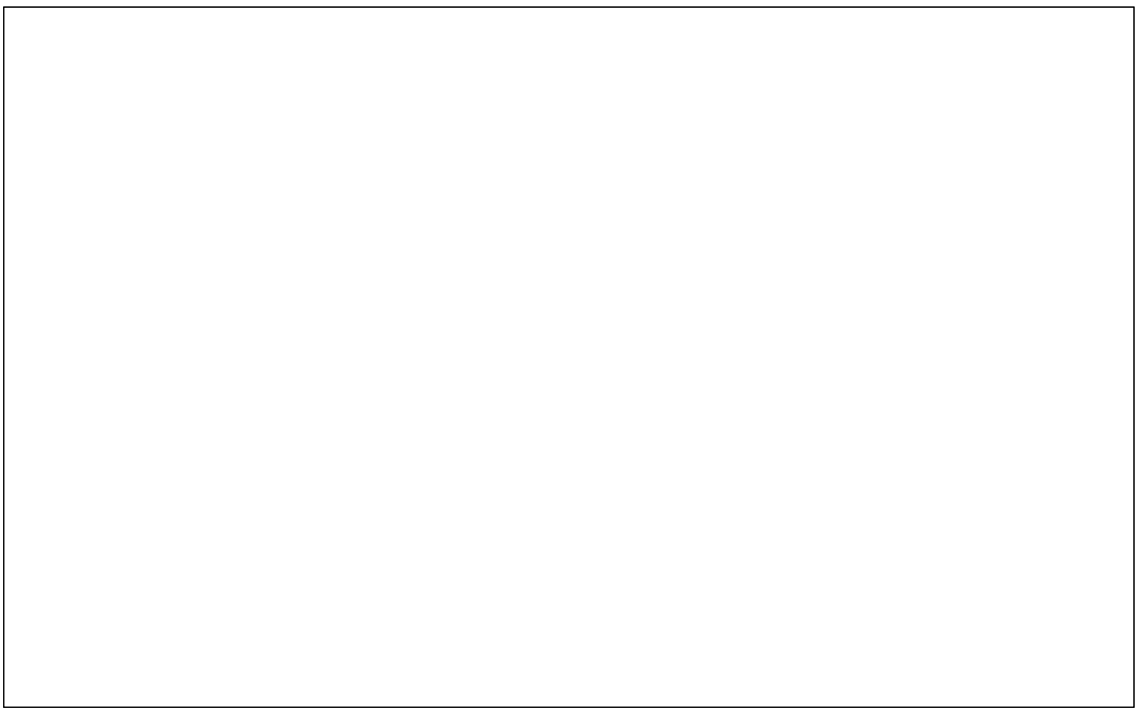
Source: IPIR

Exhibit 2.33 Diesel Fuel (under 500 ppm) Sales Trends by Zone



Source: IPIR

Exhibit 2.34 Diesel Fuel (over 500 ppm) Sales Trends by Zone

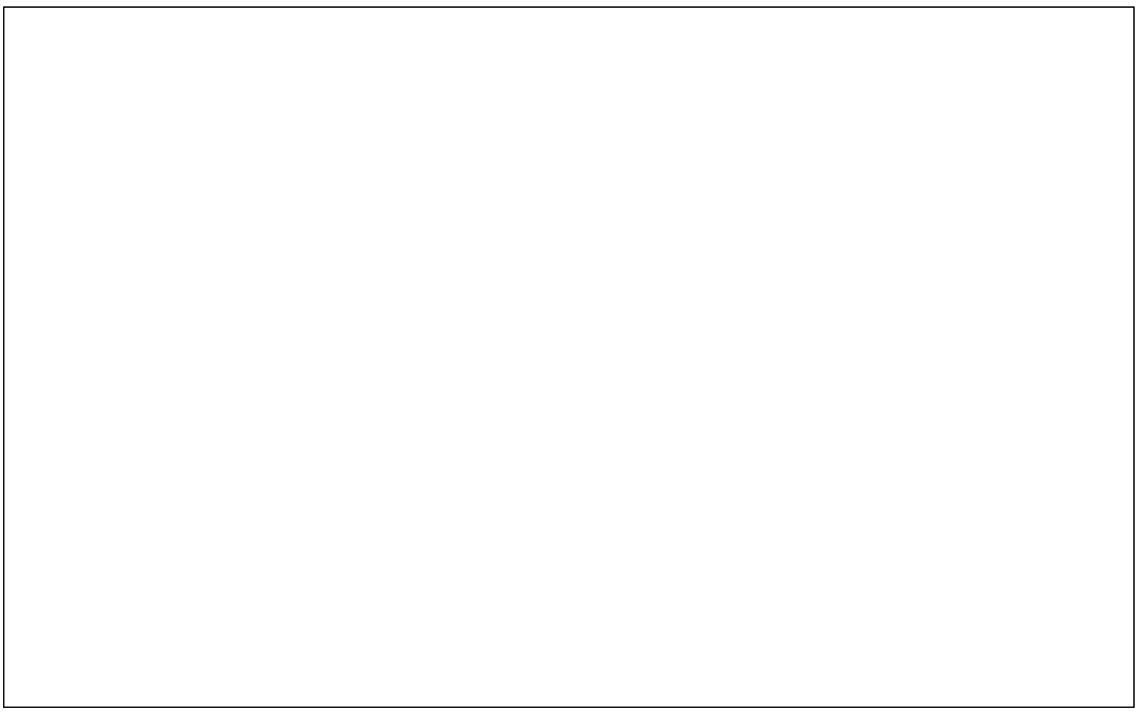


Source: IPIR

Exhibit 2.35 shows Residual fuel sales levels by grade of residual fuel (over or under 1%). These sales volumes reported in IPIR for Zone 1 are more consistent with refinery reported data, with the exception of the initial couple months in the study period[13]. The data show that most of Hawaii's residual fuel production is under 1% sulfur. This is in large measure due to the low sulfur crude processed by Hawaii refiners. Similar to crude oil, lower sulfur residual fuel also will carry a premium in the commodity markets.

[13] Data in other zones is more periodic and inconsistent. Most of the state's residual fuel sales are in Zone 1

Exhibit 2.35 Residual Fuel Sales Trend (Low and Higher Sulfur) in Zone 1



Source: IPIR

Inventory

The data provided on inventory in the IPIR process is not comprehensive or complete enough to present. The inventory data in the PIMAR database is better[14],however the PIMAR data only includes 2007 and was provided by the parties in late August and September and could not be sorted and aggregated for this report.

[14] The PIMAR database has more inventory collection points, and clarifies the need to provide data on HIBOB inventory.

[This page intentionally left blank]

3 Assessment of Prices and Margins in Hawaii

This section of the report provides an extensive analysis of prices and margins in Hawaii over the study period. This section of the report incorporates the integration of IPIR data, the PUC gasoline transaction database, as well as Platt's and OPIS market data to assess Hawaii prices and margins. There will be a significant portion on gasoline prices based on the requirement to analyze gasoline prices against the gas cap and to determine and report gross margins for gasoline sales channels. This section will also incorporate an analysis of products such as jet, diesel, and residual fuels, which have a significant impact on Hawaii, and overall prices of these products versus market centers (West Coast, Singapore, etc) as well as versus Hawaii crude costs.

The information presented covers the state as a whole, and also the individual zones as identified in the Gas Cap legislation.

Gasoline Price Analysis

The gasoline price analysis will cover a wide range of information on Hawaii gasoline prices. The discussion is organized to cover the following areas in order:

- Gasoline Supply Chain & Classes of Trade
- Overall Price Trends
- Hawaii Prices vs. Gas Cap
- Supplier & Jobber Margins
- Retail Service Station Margins
- Gasoline Market Observations and Issues

This section of the report presents the findings from the analysis of the transaction data provided by the parties to the PUC over the study period, IPIR data, as well as global market pricing data for gasoline. The findings of the study are presented in a format to address the primary questions that were required to be evaluated:

1. Comparison of gasoline prices in Hawaii to the gas caps, both during the Gas Cap period and after the Gas Cap was suspended
2. 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
3. Identification of retail service station margins for gasoline dealers in Hawaii
4. Potential for improving competition and efficiency of the wholesale gasoline market in Hawaii, as well as reducing gasoline prices

The findings presented are believed to represent an accurate representation of prices and margins over the study period utilizing actual price data. The discussion on the gasoline market and prices follows.

Gasoline Supply Chain & Classes of Trade

Characterization of the Gasoline Market in Hawaii

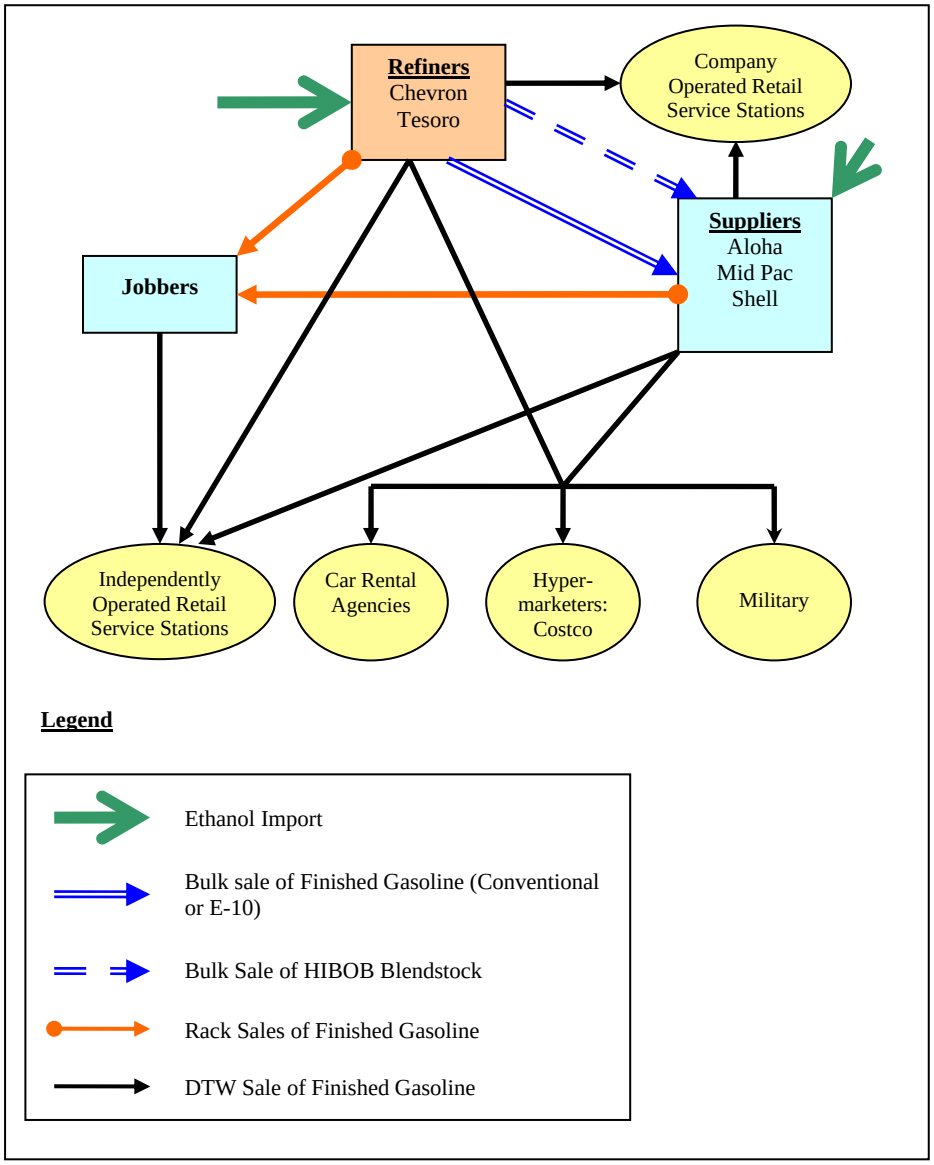
The gasoline market in Hawaii has a number of characteristics different than other markets in the United States, primarily stemming from its geographical isolation from alternative sources of supply.

The gasoline supply is provided from the two refineries in the state, Chevron and Tesoro, with minimal historical need for gasoline imports. The gasoline consumed in the state has been "conventional" gasoline, and as of May 2006, the gasoline has been blended with 10% ethanol. Ethanol is blended in essentially all the gasoline in Hawaii, with the exception of Zones 5 and 6 (Molokai and Lanai), which receive "conventional" gasoline due to the low volumes sold in those zones and costs to modify tankage.

The Gasoline Supply Chain in Hawaii

The gasoline supply chain is depicted in Exhibit 3.1. Chevron and Tesoro market the gasoline from the refineries in several channels. The first channel is Bulk sales to major suppliers. These are volumes of either HIBOB blendstock or blended E10 gasoline sold to Aloha, Mid-Pac and Shell in various zones. Chevron and Tesoro receive large volume commitments from the suppliers to buy the gasoline each month, and these long-term commitments are typically at negotiated prices that are designed to simulate the price that the buyers could alternatively import gasoline into Hawaii (i.e. "import parity"). The contracts are different with each party. Acquisition of the gasoline from the refiners represents the sole source of supply for Aloha, Mid-Pac and Shell; the price represents the "cost" basis for all rack and DTW sales transactions for these parties.

Exhibit 3.1 Hawaii Gasoline Supply Chain



The second channel of sales is DTW (dealer tankwagon) sales to retail service stations or other resellers (e.g., the military, hypermarketers, car rental agencies, etc). DTW sales are transactions where the supplier delivers gasoline directly to the service station and the service station pays for the delivered gasoline. The DTW price represents the revenue point for the supplier's gasoline sale and the cost point to determine retail service station margins. The DTW price to other resellers may be different from the service station price (usually lower) because the other resellers are typically not branded company service stations and hence have a lower cost to the supplier for providing product. Both refiners and suppliers sell gasoline on a DTW basis in Hawaii.

The third channel of sales is rack sales. These sales represent the transaction price between a refiner/supplier and the jobber. The jobber will have his own or chartered trucks which can pick

up gasoline at a refiner/suppliers terminal loading rack and deliver that gasoline into his own tankage or a customer's tankage. The rack price represents the revenue point for the refiner/marketer for this channel of sale and the cost point for the jobber. Rack prices are generally lower than DTW prices since the jobber is picking the product up at the terminal rather than having the refiner/supplier deliver the fuel. The jobbers will resell the product on a DTW basis to their customers; the DTW price less the rack acquisition price represents the jobber margin.

The fourth channel of sale is sales through company owned and operated stations. These are retail sales which were not part of the Gas Cap legislation. Refiners and suppliers own the site and the station, and use company personnel to operate the facility. There is no wholesale transaction between any party prior to the final retail sale of the gasoline to the consumer at the pump. Consequently, the revenue point for this sale is the price consumers pay at the pump (including all taxes) and the cost point is either a) the refinery raw material costs or b) the supplier's acquisition cost for gasoline from Tesoro or Chevron.

The conversion to using 10% ethanol in gasoline in April 2006 did not impact the fundamental channels of sales described above. However, the use of ethanol in gasoline created a separate, parallel supply chain which must be managed to insure that gasoline deliveries to service stations in zones marketing E-10 (all but Zones 5 and 6) have 10% ethanol, and that the gasoline meets all other specifications. This supply chain involves importing ethanol into Hawaii and redistributing to terminals in other zones for blending into the HIBOB product now manufactured at the two refineries. This supply chain must be sustained by periodic ethanol cargoes and redistribution in barges taking care to keep the ethanol separate from the HIBOB product until being loaded into the service station delivery truck.

DTW Customer Classes

Most gasoline sold at the wholesale level in Hawaii is transacted on a dealer tankwagon (DTW). Most companies buying gasoline on said basis are typically receiving deliveries of gasoline in volumes at or under 9,000 gallons per transaction[15]. Most of the DTW customers are retail gasoline service stations that buy gasoline from the jobbers or suppliers and pay the prevailing wholesale price on that day. However, the DTW customers also include some large volume customers such as the military, hypermarketers such as Costco, and car rental companies that buy gasoline through DTW transactions but pay a price based on negotiated long-term contracts.

In an open market, most parties selling gasoline to service stations will adjust their DTW price as their acquisition cost changes, and to maintain a pricing strategy versus other retail gasoline stations in the local marketing area. In Hawaii, large DTW customers (non- service stations) often buy gasoline under contracts with large volumes and long-term commitments. In addition, unlike branded retail outlets, the oil company does not have marketing costs (for example, advertising, station maintenance, property costs, etc) associated with such sales, and will typically be charged a lower DTW price than retail branded service stations. Consequently, it is important to distinguish between the different categories of DTW customers because the prices

[15] The largest tanker truck delivering fuel products in Hawaii is about 9,000 gallons; many delivery trucks are smaller than this. In addition, one truck may deliver multiple grades of gasoline at one or more locations, resulting in multiple transactions from one delivery.

received by the service stations are the highest and influences what the individual consumers pay at the pump. Therefore, the DTW transactions for Costco, the military and car rental agencies are separated and analyzed independently to enable a clear analysis to be made of each channel of DTW sale.

After separating out the transactions for large volume customers, the remaining transactions are categorized as 'service station'. In fact, this category might contain some other end-users such as transportation fleet operators or marine excursions outfits. It is not possible to clearly delineate all end-users from service stations based only on their name since IPIR and PIMAR data do not distinguish them. There are very few transactions involving these end-users, which acquire small volumes of gasoline at prices comparable to those received by service stations. Therefore, these other users have been left in the service station category for the purpose of this analysis.

Gasoline Price Trends

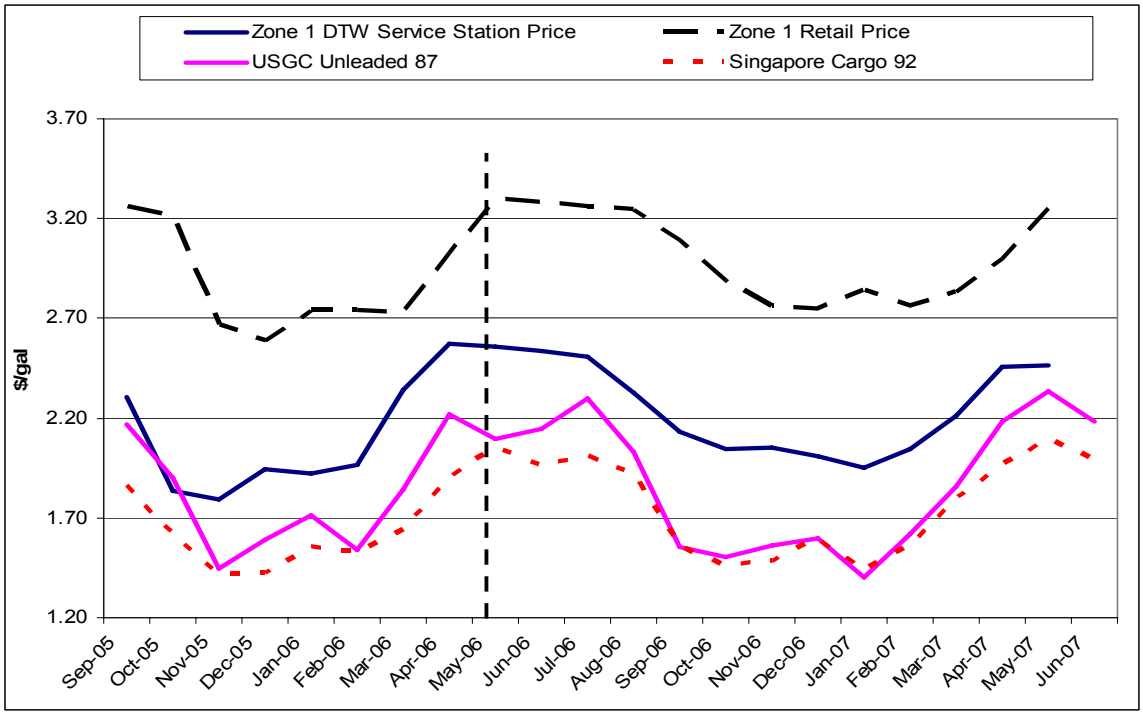
The period of study is from September 1, 2005 through May 2007. During this period, global oil markets were volatile, and have remained volatile. Exhibit 3.2 tracks the gasoline prices in Hawaii over the study period versus key benchmark gasoline prices. The prices charted include spot market prices for U.S. Gulf Coast unleaded, Singapore 92 octane unleaded[16], the average Zone 1 service station wholesale DTW price, and average service station pump price (including taxes). This exhibit follows a similar pattern to the crude costs, but with far more volatility. Gasoline prices fell dramatically everywhere at the beginning of the period in the months after Hurricanes Katrina and Rita, and then have experienced significant spikes in both the springs of 2006 and 2007. The spring period is typically prone to price spikes as U.S. refiners typically perform maintenance during this period, and also must convert the gasoline produced to a lower RVP[17]. The extent of the problems in both years were greater than normal due to extended repairs required post-Katrina, and multiple operational problems which kept refinery throughputs lower than normal for a longer period. The result was tight gasoline inventory and higher prices relative to crude oil.

The higher prices in mainland U.S. attracted increased levels of foreign imports, and, coupled with restored refinery runs in late summer 2006, prices began an extended decline. Hawaii prices mirrored these changes, in particular through April 2006, the last month the gas caps were in place. Singapore prices followed the U.S., but with more muted peaks and valleys. The Hawaii DTW and retail prices are well above the U.S. and Singapore spot prices, which is expected since the Hawaii prices are not spot prices but wholesale delivered prices and retail prices (with taxes). The intent is to show that Hawaii prices have moved with global markets both during and after the Gas Cap period.

[16] Singapore 92 octane is a Research octane number equivalent to 87 Road octane regular gasoline

[17] Lower RVP means lower vapor pressure, required by the EPA and also necessary to reduce vapor lock potential during the summer

Exhibit 3.2 Hawaii and Global Gasoline Price Trends

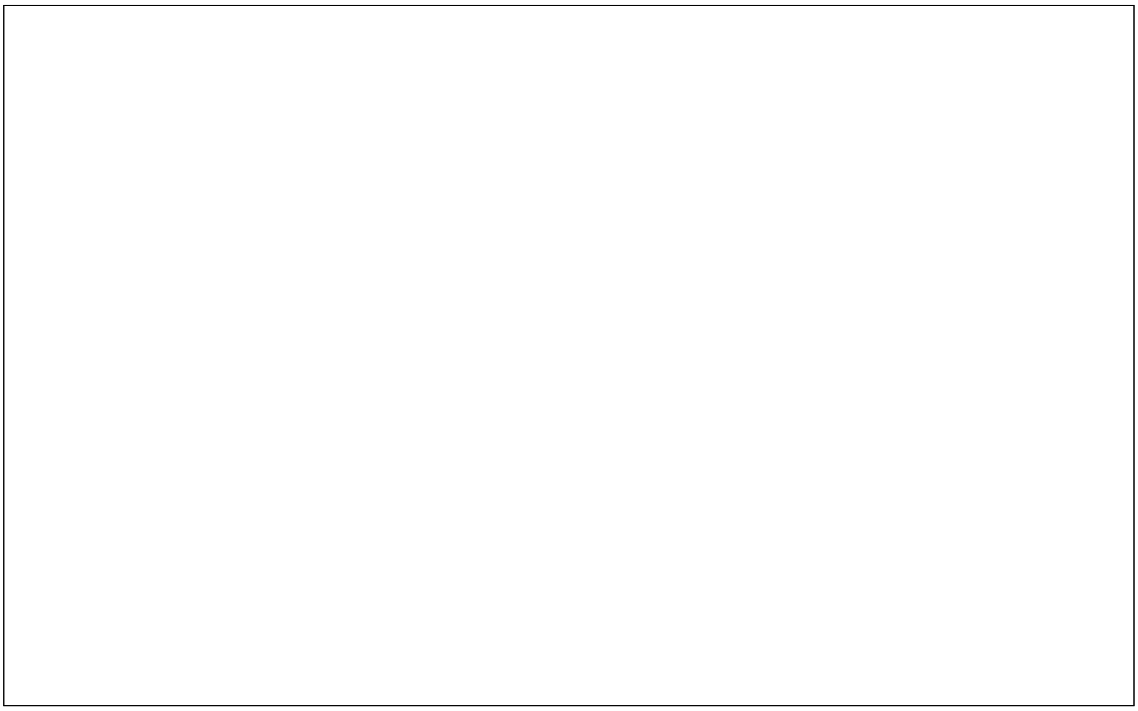


Sources: Zone 1 DTW- PUC Transaction Database; Zone 1 Retail- OPIS; USGC & Singapore- Platts.

Exhibit 3.3 below tracks Hawaii Zone 1 gasoline DTW prices versus Hawaii landed crude costs. Key takeaways are that during the gas cap period the DTW price did not track the crude cost well at all times. Hawaii DTW prices declined significantly in October 2005 following restoration of US gasoline supply following the hurricanes (this reduction was driven by the gas cap formula). Similarly, DTW increases in spring 2006 were driven by the gas cap increases based on the gas cap formula (all three US market price markers increased over the period, in particular Los Angeles). In both cases the crude price was (comparatively) stable.

Subsequent to the gas cap suspension, the DTW and crude price relationship appeared to be more in sync. However, it is important to note that the "spread" between the DTW price and the crude price represents a margin of revenue for refiners. In all global markets, that "spread" will rise or fall based on the relative supply and demand for gasoline in that market. When refining capacity is tight, or when demands outpace supply, the gasoline to crude spread will widen, indicating higher refining margins, higher prices to consumers, and higher refining profits.

Exhibit 3.3 Hawaii Zone 1 DTW Service Station Gasoline Price vs. Landed Crude Cost

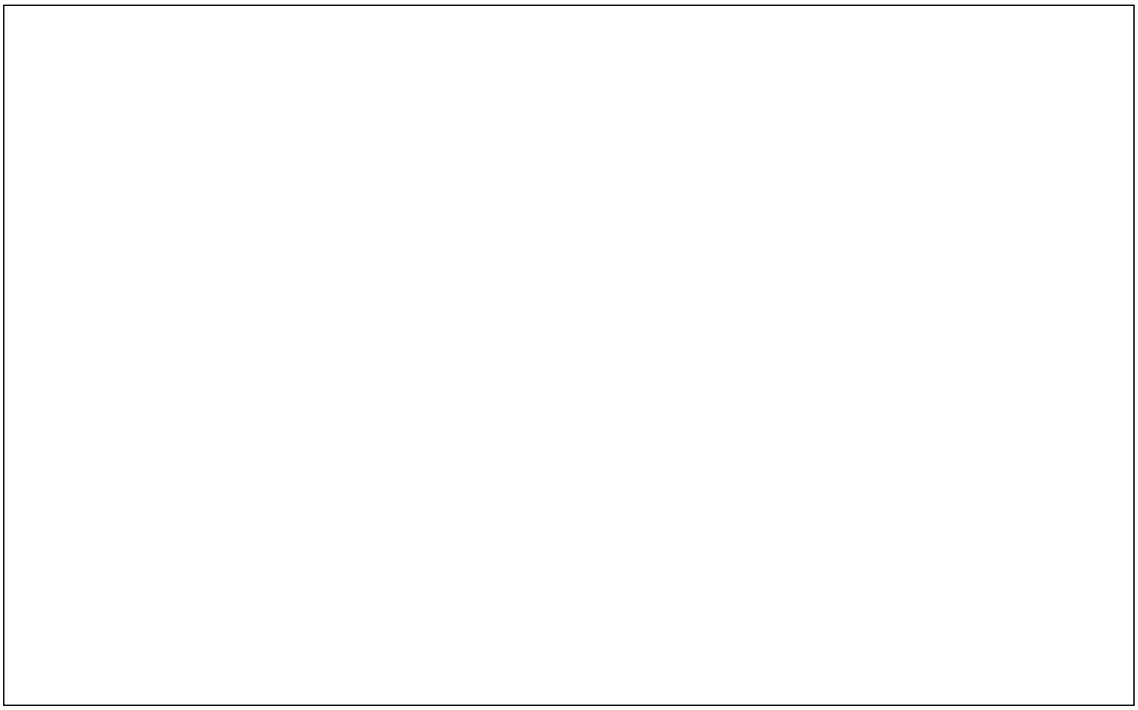


Source: IPIR and PUC Transaction Database

A similar spread relationship exists when the DTW price is compared to several of the typical crudes that have been processed in Hawaii refineries[18]. (See Exhibit 3.4) While generally similar to the landed crude cost exhibit, it does not appear that, following gas cap suspension, DTW prices are changed based on crude cost.

[18] These crudes are varying grades of Indonesian and Far East sweet crudes that have been processed in Hawaii, and are common crudes traded in the marketplace.

Exhibit 3.4 Hawaii Zone 1 DTW Service Station Gasoline Price vs. Selected Crude Prices



Source: PUC Transaction Database and Platts

The next exhibit (Exhibit 3.5) tracks the Hawaii Zone 1 DTW price against several comparable global spot market prices for regular unleaded gasoline. As noted, the Hawaii Zone 1 DTW price is a wholesale price that is a delivered price to the service station The DTW prices incorporate terminal and trucking costs and wholesale profits, and therefore are typically higher than spot market prices in any given market. However, DTW prices will trend with the spot markets, and the intent of this exhibit is to determine how well the Hawaii prices track various global gasoline markets.

Prior to the gas cap suspension the Hawaii DTW prices tracked the global markets, although it directly tracked the USGC 87, Los Angeles 87, and New York Harbor 87 prices (averaged together) because that was the gas cap formula base. When the gas caps were lifted in May 2006, the Hawaii DTW prices appeared to more closely follow the trend of the Singapore 92 octane gasoline pricing[19] than the other markers, although the general trends were similar. Additionally, the steep drop in US spot gasoline prices from July to October 2006 (about 80 cpg) occurred at the same time a lower 55 cpg drop took place in Singapore. Hawaii DTW prices fell about 40 cpg in the same timeframe, much closer to the Singapore decline. When prices rose in

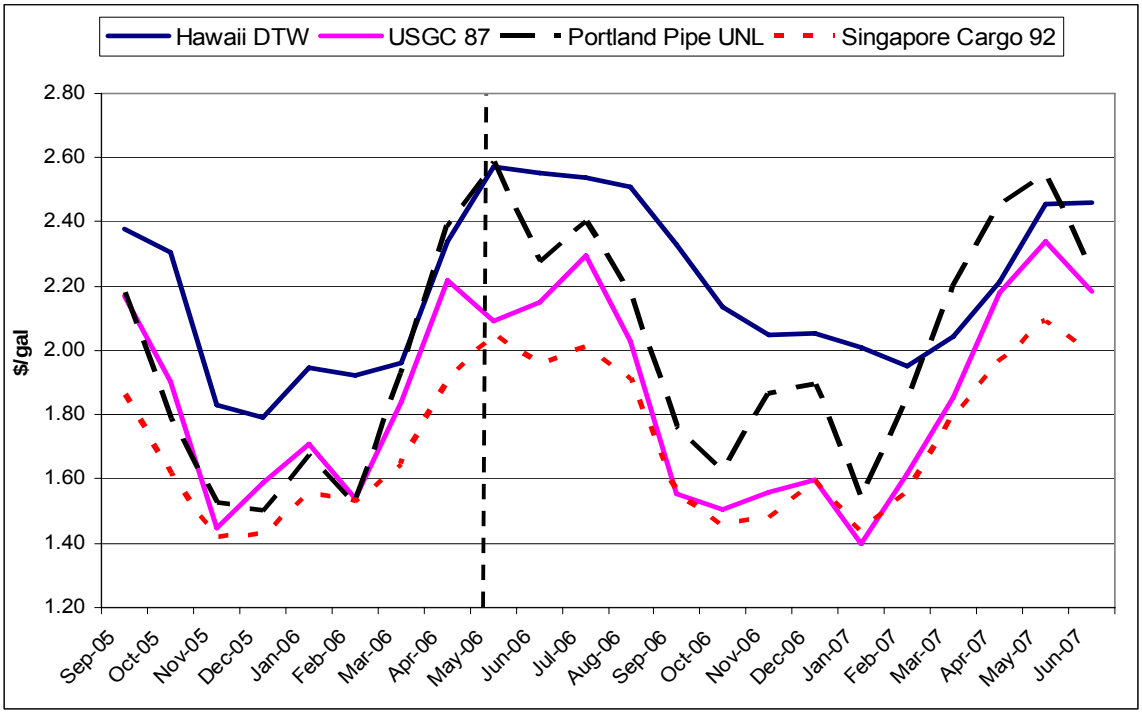
[19] Singapore 92 octane is a 92 "Research" octane rating, comparable to the US conventional gasoline 87 "Road" octane rating.

the US from January through May 2007 by 90-100 cpg, Singapore prices increased about 65 cpg while Hawaii DTW prices moved only 45 cpg.

The US price variations over this period reflected overall global trends in oil prices stemming from crude price declines and then increases, further impacted by local US gasoline supply and demand issues. In late summer/fall 2006, healthy refinery runs and lack of hurricanes resulted in weaker US refinery margins, and gasoline prices declined more than crude. In 2007, a sustained period of refinery outages (many unscheduled) coupled with lower imports of gasoline and high consumer demand caused US gasoline prices to increase even more than crude price.

The global market changes noted above impacted Hawaii, however the impact was more muted than the US average because the Hawaii market (*after the Gas Caps were suspended)* is separate than the US mainland. In addition, it appears that the Hawaii refiners and suppliers are linking their pricing actions (at least to some degree) based on changes in the Singapore market. Over this period, this also served to mute the volatility seen on the US mainland.

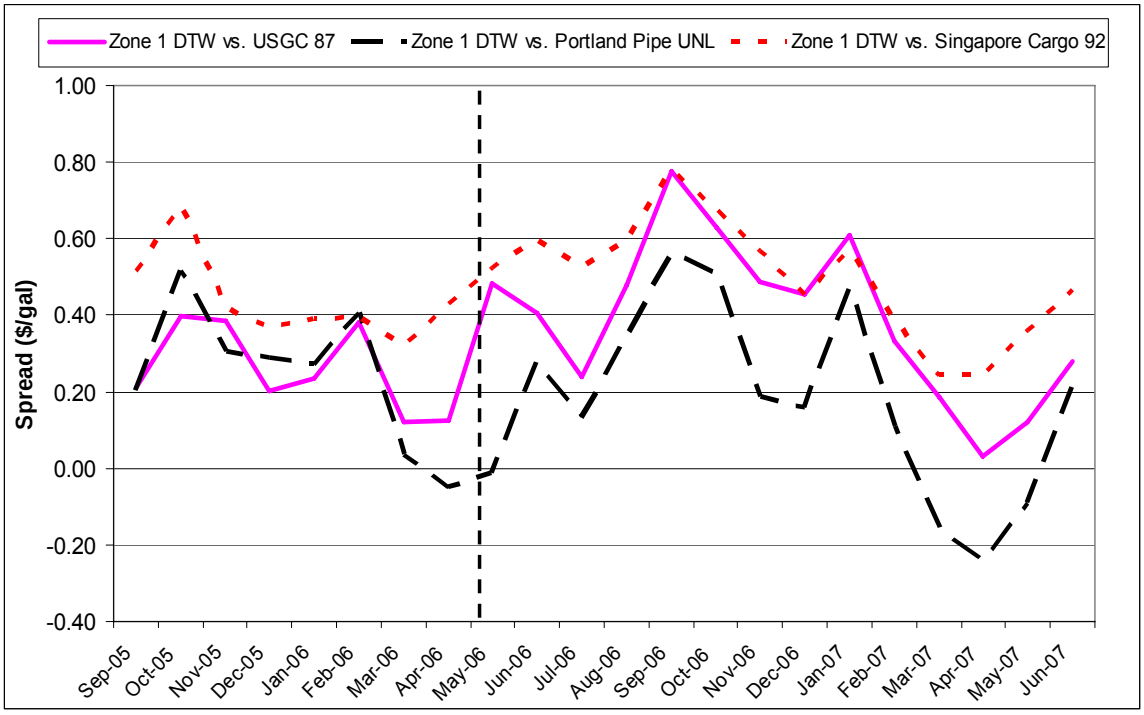
Exhibit 3.5 Hawaii Zone 1 DTW Service Station Prices vs. Global Gasoline Markers



Source: PUC Transaction Database and Platts

Exhibit 3.6 below tracks the Hawaii DTW prices as a difference versus the global prices shown above. This exhibit shows the relatively greater correlation, as indicated by the least amount of volatility in the price difference, between Hawaii DTW prices and Singapore, as compared to the US Gulf Coast and Portland, Oregon markets. It additionally shows that the spread between Hawaii DTW prices and all marker prices, particularly the U.S. prices narrowed substantially in the spring of 2007.

Exhibit 3.6 Spreads Between Hawaii Zone 1 DTW Service Station Prices and Global Gasoline Markers

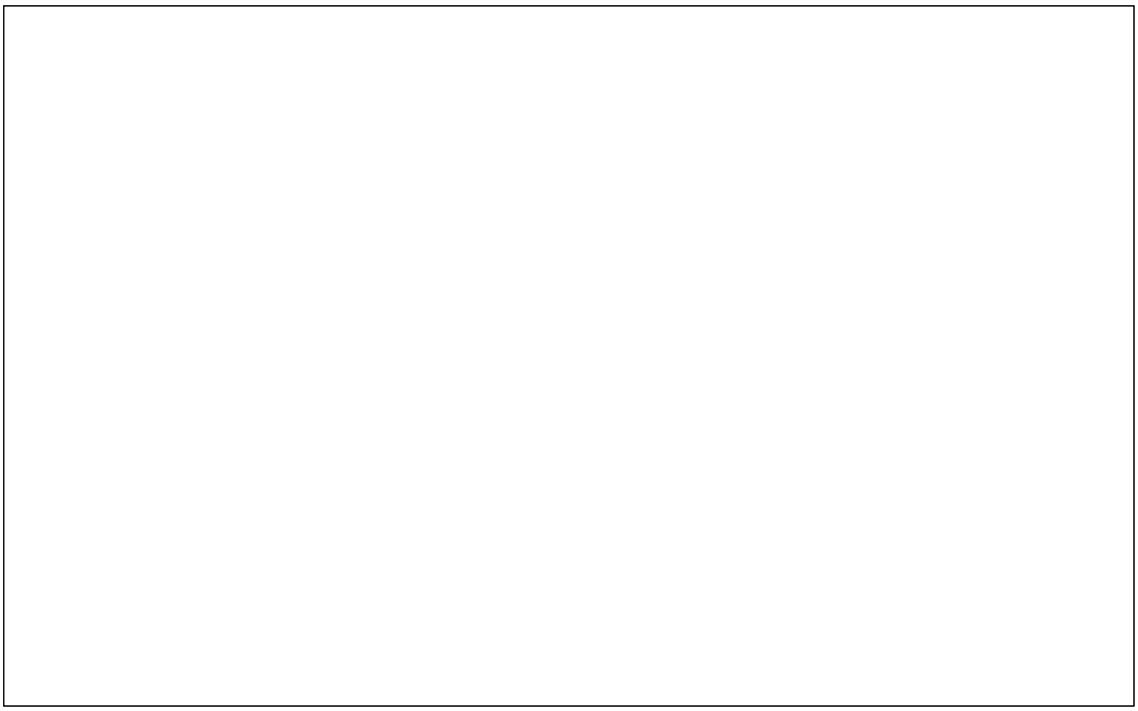


Source: PUC Transaction Database and Platts

The next exhibit (Exhibit 3.7) compares the Bulk based gasoline prices in Hawaii versus the same global gasoline market benchmarks. The bulk prices FOB the refinery are the prices that provide a sales basis to compute refining margins, and are the supply costs to the parties purchasing gasoline from both refiners. The actual bulk prices shown are weighted averages of bulk transactions based on commercial agreements between the refiners and the three major suppliers (Aloha, Mid-Pac and Shell). This exhibit may not reflect all bulk (HIBOB) sales following suspension of the gas caps.

Unlike the prior exhibits, this exhibit is comparing bulk prices FOB a refinery in all markets, including Hawaii. It is clear from this exhibit that the trends in bulk prices FOB refineries in Hawaii are tracking global marker prices more closely than the trends in Hawaii DTW prices.

Exhibit 3.7 Hawaii Zone 1 Bulk Prices vs. Global Gasoline Markers



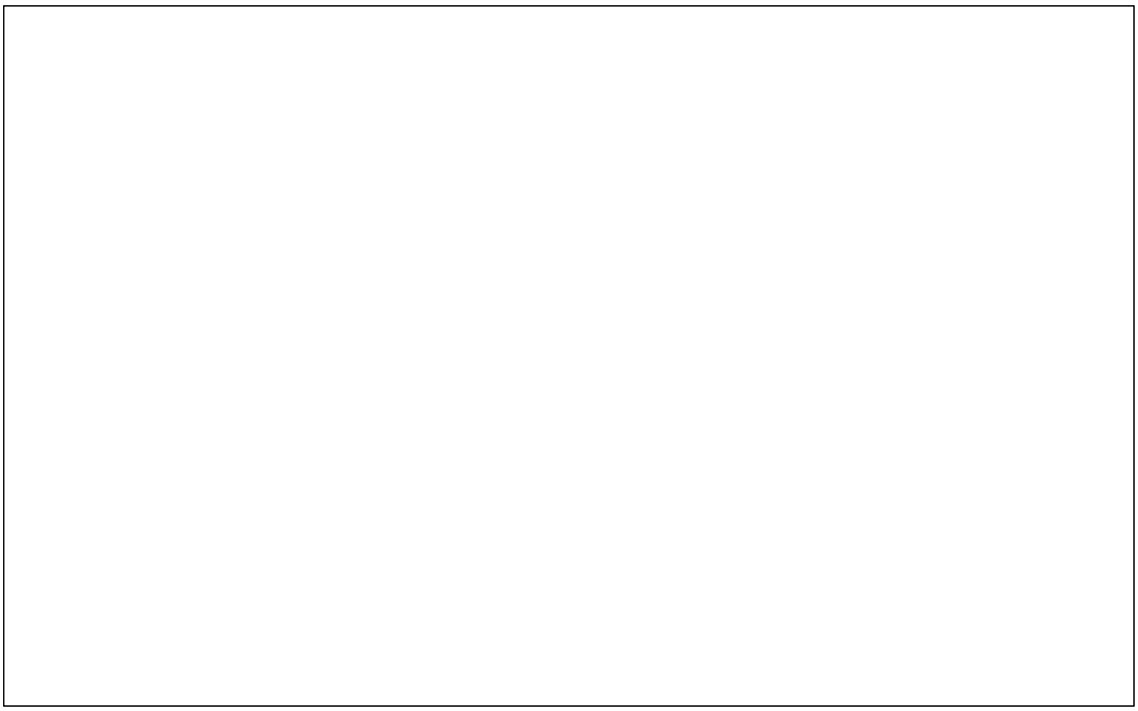
Source: PUC Transaction Database and Platts

Exhibit 3.8 below takes the prices in the Exhibit 3.7 above and identifies the price spreads between Hawaii bulk prices and the global markets. There are several key points.

First, the Hawaii bulk prices appear to have a relatively steady offset from both the Gulf Coast and Singapore prices over the entire period. Although the prices are offset by about 10 and 20 cpg, respectively, and have some variation, they tend to be in a relatively stable band. Price variations versus the more unstable West Coast marker (Portland spot market) have wider variations, particularly during the annual spring West Coast gasoline price spike period.

Second, the apparent correlation between the Hawaii Bulk price to suppliers and the Singapore and Gulf Coast prices corroborates the view that the commercial terms with suppliers reflect a baseline price from both markets plus a location differential into Hawaii reflecting freight costs. This indicates that the refiners and suppliers are attempting to price bulk gasoline at a competitive value versus the most appropriate alternate supply options into Hawaii. Use of West Coast prices (Portland in this case, as well as Los Angeles and San Francisco market prices) would be both higher and more unstable.

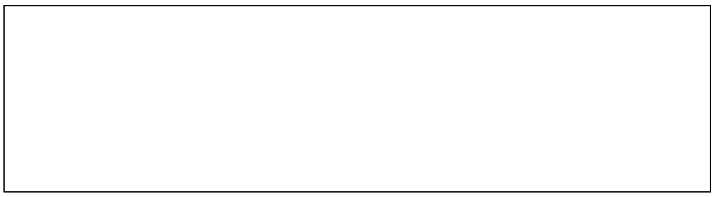
Exhibit 3.8 Spreads Between Hawaii Zone 1 DTW Service Station Prices and Global Gasoline Markers



Source: PUC Transaction Database and Platts

As noted earlier, there are several different classes of trade that take place within the DTW sales category. Comparisons of DTW price in this report to the gas cap, crude price, etc have used the service station DTW price, since that is the primary gasoline price visible to consumers, and the largest percentage DTW volume. However, there are three other sales channels evident from analysis of the transaction database. The channels and relative volume percentages and prices for Zone 1 are noted in Exhibit 3.9 below:

Exhibit 3.9 Hawaii DTW Sales Channels and Price Comparisons, Zone 1



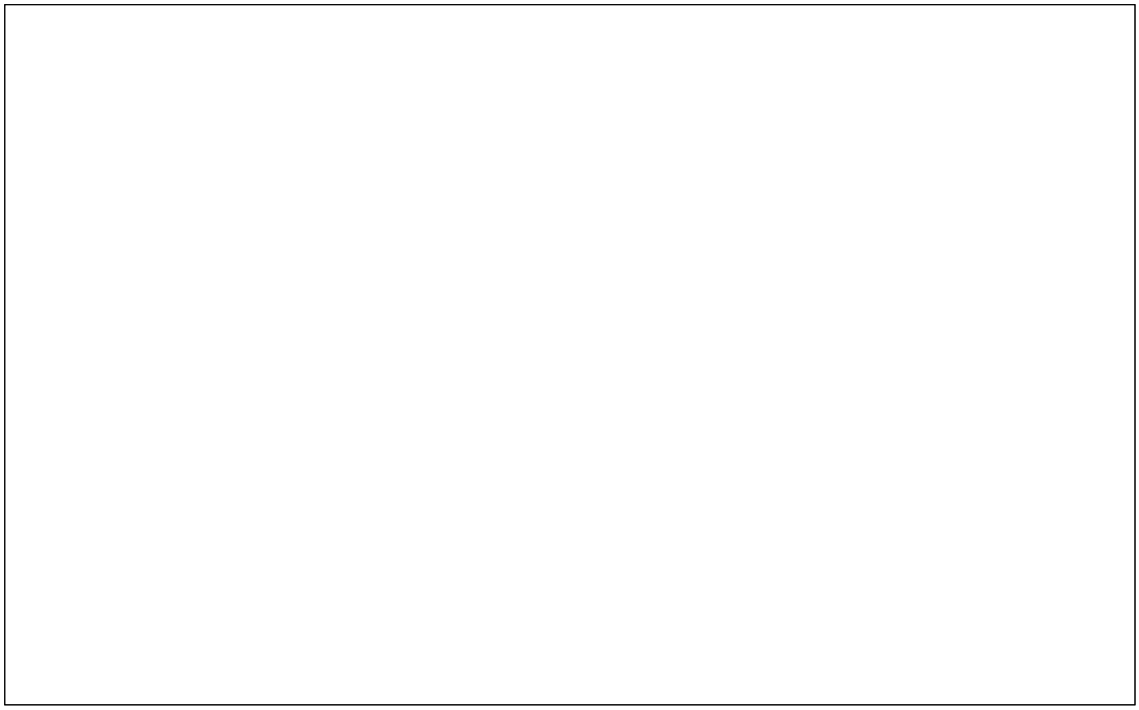
Source: PUC Transaction Database

Commercial sales are fairly close to service sales in price, and represent a relatively small percentage of total DTW sales (rental car agencies, etc). Sales to the Military are well below service station DTW prices, and represent [redacted] of total DTW sales over the period. The Military prices are lower because the seller has virtually no costs associated with the dispensing of the gasoline at the Military base. DTW sales of branded gasoline at service stations can include multiple costs to the supplier for branding, advertising, signage, rent, taxes, maintenance, etc which are all incurred by the Military facility. Similarly, sales to hypermarketers

such as Costco can be negotiated at prices well below service station DTW prices for the same reasons as the Military.

The next exhibit (Exhibit 3.10) clearly shows that the different DTW trade classes have very different price profiles versus service station sales. It is likely that the contractual agreements between suppliers and the non-service station accounts are negotiated on an annual basis, or some basis other than the daily or frequent price changes that occur for service stations, and the prices appear to be tied to market prices in other areas (terms are not known). The trend in the relative pricing appears to indicate that the rather significant discounts to service station prices enjoyed by the Military and hypermarketers narrow significantly in a rising spot market and inflate in a falling spot market, indicating the timing of Military and hypermarket DTW prices are more directly tied to spot market changes than service station prices.

Exhibit 3.10 Hawaii DTW Sales Channels' Price Trends, Zone 1

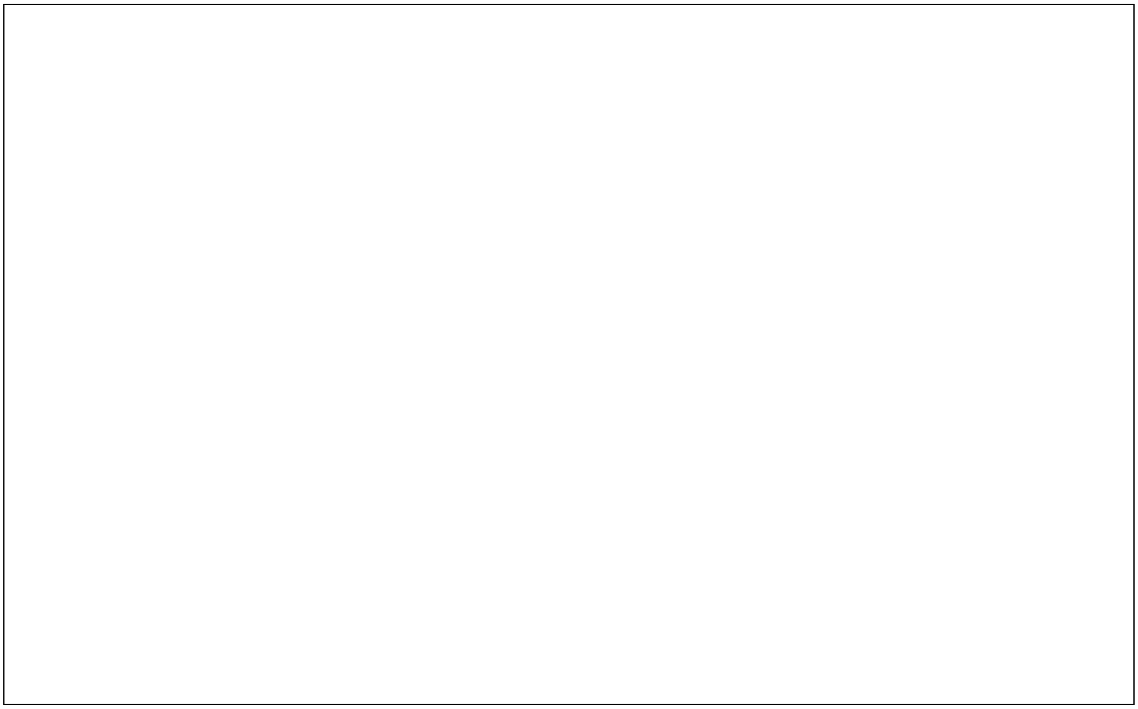


Source: PUC Transaction Database

The next exhibit evaluates the relative DTW prices in the other Zones versus Zone 1. This is to assess the relative premium charged for marketing on the other zones versus Oahu, and the analysis will focus on the trend in that spread pre- and post gas caps (i.e. did elimination of the gas caps increase the spreads?).

The Gas Cap legislation recognized the higher cost to supply gasoline to the other zones relative to Zone 1 based on actual cost data provided by the parties. The trends in Exhibit 3.11 below indicate that zone pricing adjustments while the gas caps were in effect moved in lock step with the Oahu price changes (which makes sense since all service station DTW prices were kept at or near the price cap in all zones). Following the lifting of the caps, all zone prices (which the exception of the small volume zone 6 which has limited shipments) continued to move relatively closely with changes in the Oahu price.

Exhibit 3.11 Hawaii DTW Service Station Sale Prices by Zone

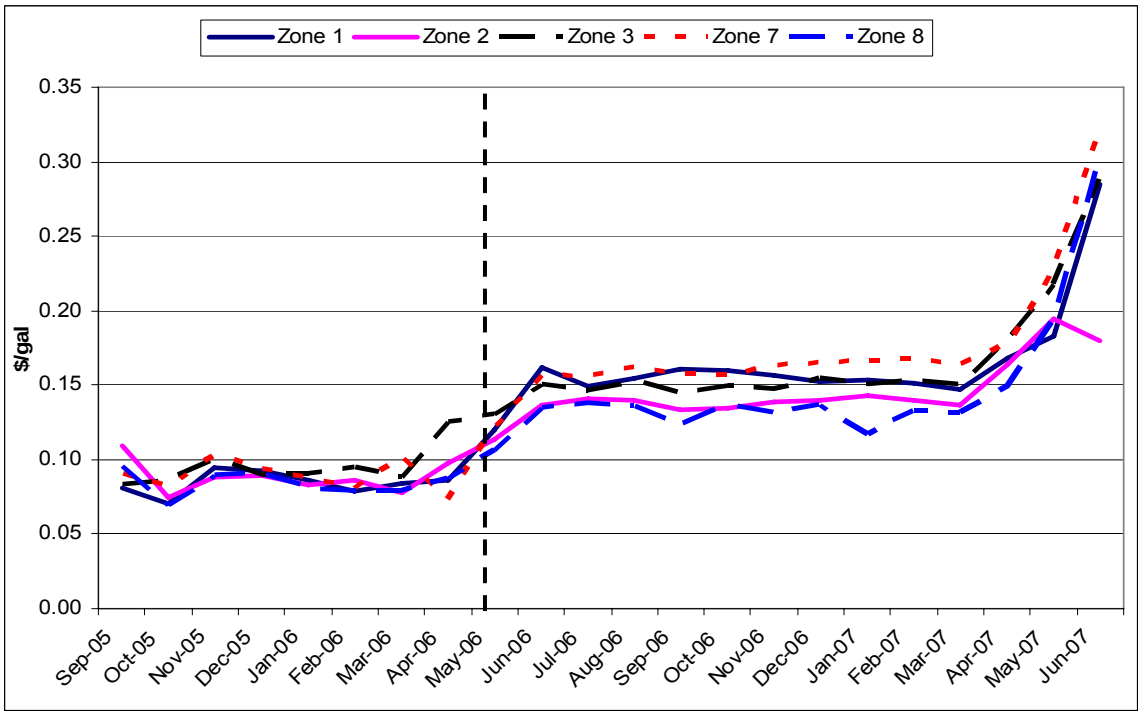


Source: PUC Transaction Database

The next area to evaluate is the pricing for premium and mid-grade gasoline. Exhibit 3.12 and Exhibit 3.13 below track the spread in price between premium gasoline and regular, and mid-grade and regular over the study period. The exhibits below indicate that the spreads for both premium and midgrade versus regular grade gasoline increased after the gas caps were suspended. In the case of premium, the increase was immediate and significant, with the spread increasing from about 10 cpg under the gas cap formula to 15-17 cpg for zones 1, 3 and 7, and 12 cpg for zones 2 and 8. The Midgrade increase was in zones 1,3 and 7, and averaged about a 2-3 cpg increase. Zones 2 and 8 were flat to a slight decline.

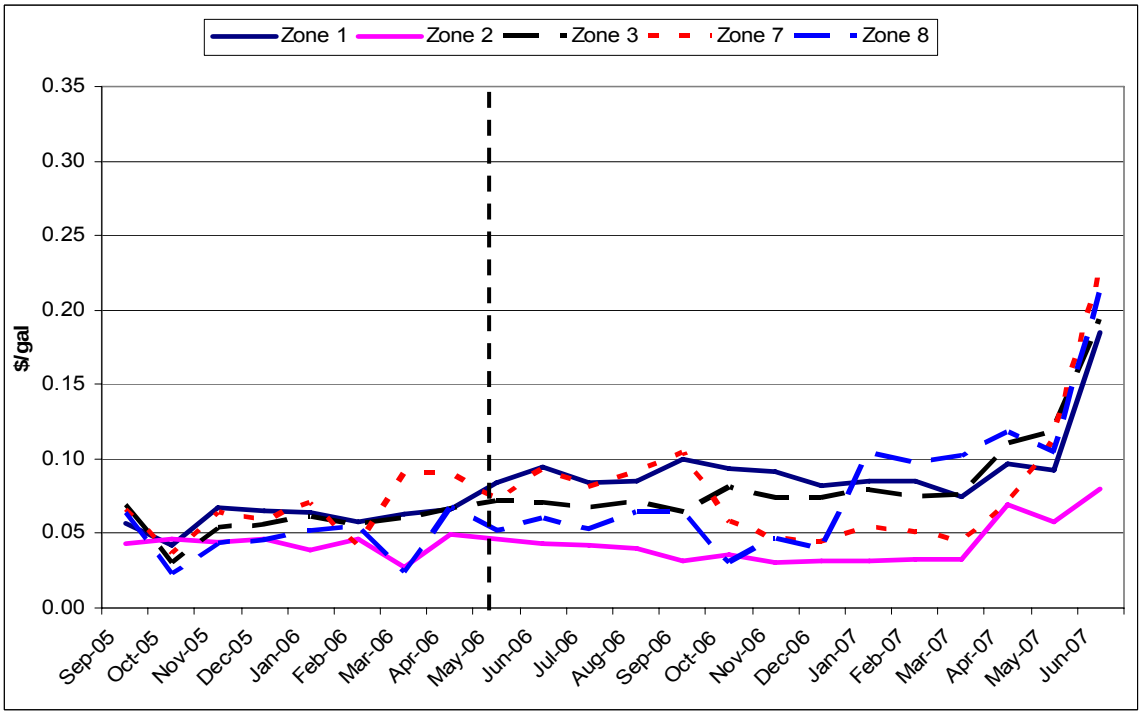
Recently (late Spring 2007), the premium and mid-grade spreads have increased even further, to spreads 10 cpg and higher above the spreads during the gas cap period. It is unclear what is driving the spreads even higher in recent months.

Exhibit 3.12 Hawaii DTW Service Station Price Spread, Premium Gasoline vs. Regular



Source: PUC Transaction Database

Exhibit 3.13 Hawaii DTW Service Station Price Spread, Mid-Grade Gasoline vs. Regular



Source: PUC Transaction Database

One rationale for prices being higher is that the bulk price to suppliers may have changed based on the commercial terms for bulk transactions. Exhibit 3.14 shows how the bulk price for premium grade sales to suppliers changed over the study period (note that there are no mid-grade bulk sales; mid-grade is normally a blend of premium and regular grade components at the terminal).

This exhibit shows that the actual cost that suppliers paid refiners for premium gasoline was above the actual premium that suppliers could recover in the market while the Gas Caps were in effect. This was particularly true in the first six months of operation under the gas cap. This would appear to indicate that the commercial terms for bulk transactions for premium gasoline did not match the premium gasoline zone adjustment of 9 cpg in the Gas Cap legislation, and suppliers could not recover their costs. Following suspension of the Gas Caps, costs to suppliers increased again, and in this period the suppliers were free to raise their prices for premium vs. regular and recover costs. Subsequently, costs to suppliers for bulk premium vs. regular began to decline, and suppliers kept the DTW price spread for premium to regular constant, increasing their margin on premium sales. The more recent increases in DTW spreads for premium and mid-grade do not appear to be a reaction to higher bulk price spreads (in fact, the bulk spreads were declining).

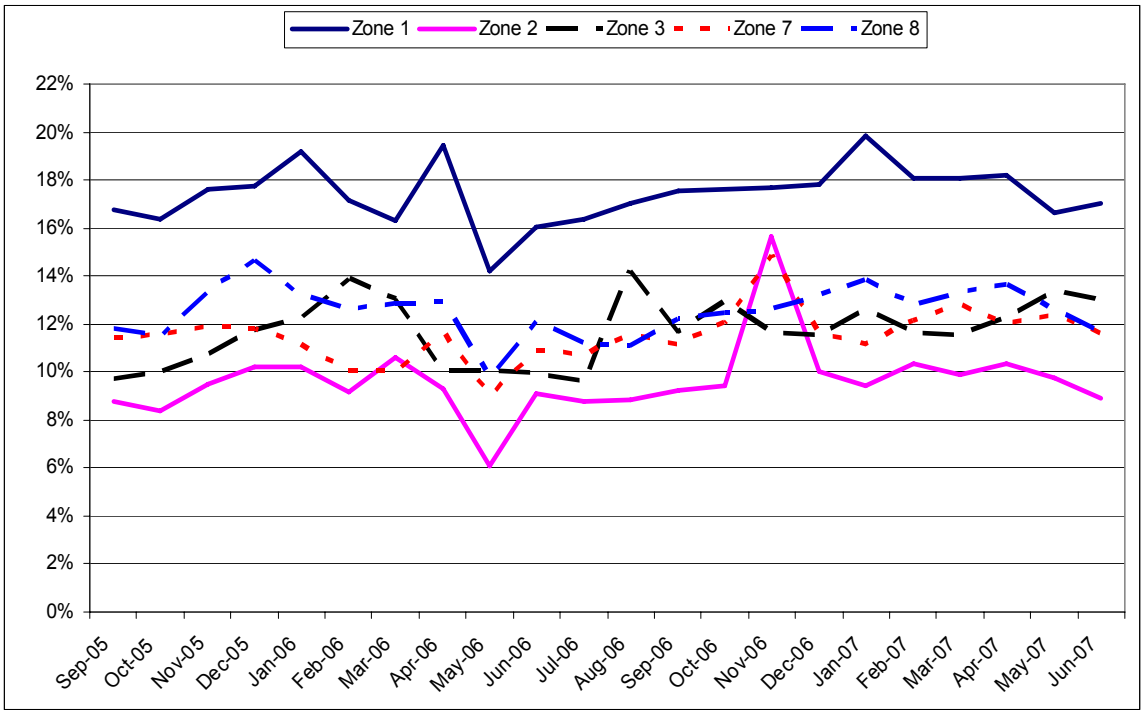
Exhibit 3.14 Hawaii Zone 1 DTW and Bulk Premium/Regular Spreads

Source: PUC Transaction database; July 2006 data not available

One other possible rationale for the higher prices is shown in Exhibit 3.15 and Exhibit 3.16 below. These exhibits show that the percentage of premium and mid-grade sales in zones 1, 2, 3, 7 and 8 did not decrease despite the increase in premium and mid-grade price versus regular gasoline after the gas caps were suspended. The fact that consumers did not reduce purchases

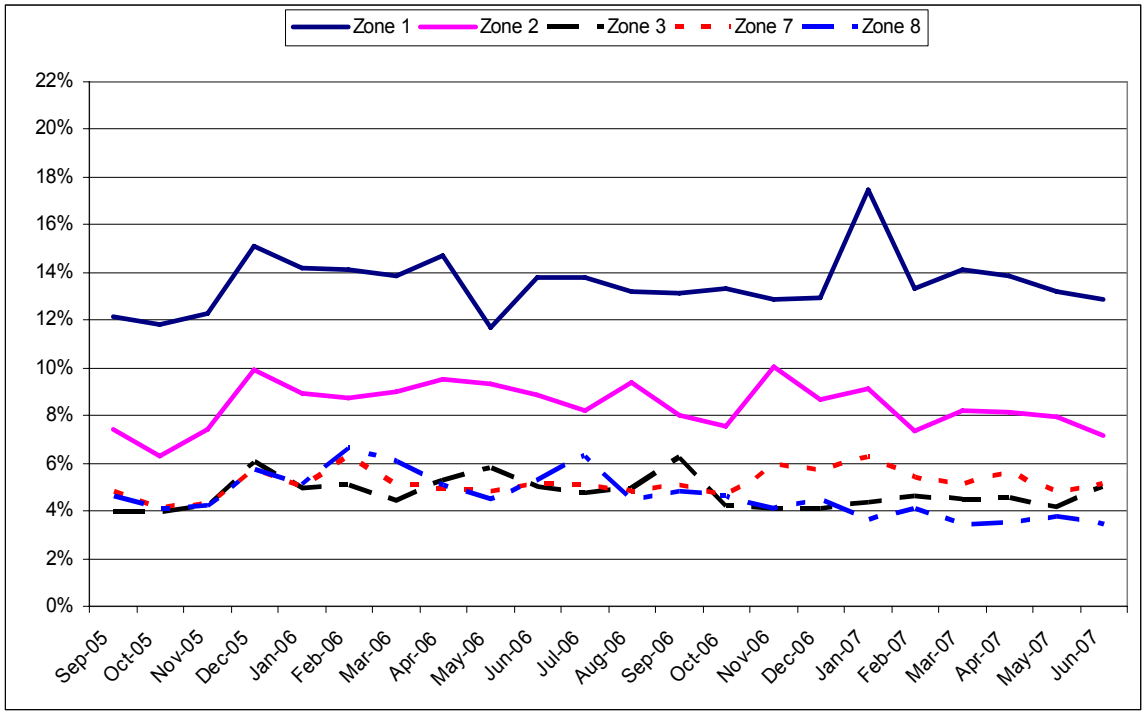
of higher octane grades as DTW spreads increased may have prompted suppliers to push the margin higher.

Exhibit 3.15 Percentage of Premium Gasoline Sales by Zone



Source: PUC Transaction Database

Exhibit 3.16 Percentage of Mid-grade Gasoline Sales by Zone

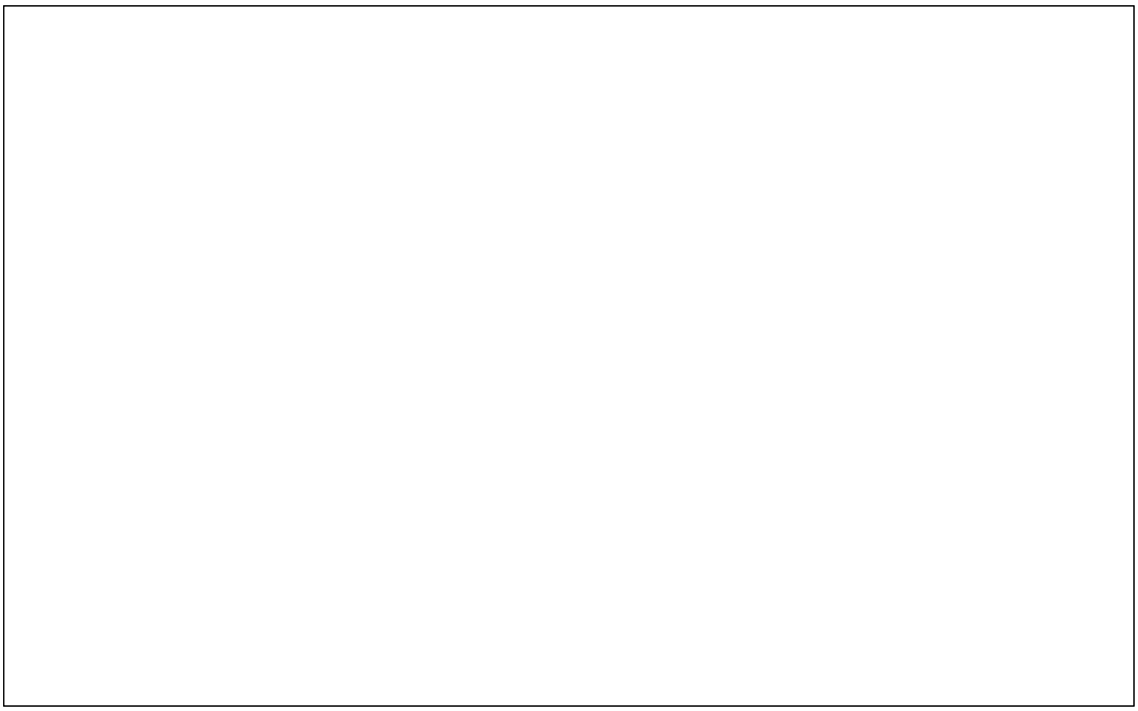


Source: PUC Transaction Database

Finally, a comparison of the Hawaii premium to regular Zone 1 bulk spread was made to the Singapore and U.S. Gulf Coast spot market spreads (See Exhibit 3.17). The Singapore and Gulf Coast gasolines do not contain ethanol, and the U.S. Gulf Coast premium is a 93 octane (versus Hawaii 92 octane), but the relative trends should reflect the changes in the value of higher octane grades versus regular in the global market. The exhibit shows that Singapore spreads are relatively flat over the entire period, and that Gulf Coast spreads are higher than the Hawaii spreads, but generally follow the same pattern. The average bulk price spreads for premium gasoline from Hawaii refiners to suppliers therefore appears based on some combination of Gulf Coast and Singapore market prices. These prices reflect a considerable amount of volatility which seems almost exclusively related to the U.S. based pricing component. The actual bulk prices paid by suppliers over the entire appear are clearly higher than the 9 cpg adjustment allowed in the original Gas Cap formula.

Note that the aforementioned significant increase in DTW premiums over regular in May and June 2007 do not appear consistent with the Zone 1 Bulk spread's decline in the Exhibit below, nor with any change in Singapore spreads. This may be due a possible error in the reported bulk pricing data in the PUC transaction database. However there is substantial data confirming the increase in the premium gasoline DTW prices versus regular to service stations in this period.

Exhibit 3.17 Comparison of Bulk Price Spreads for Premium vs. Regular



Source: PUC Transaction Database and Platts

Hawaii Prices vs. the Gas Cap

The next exhibit examines the specific trends in gasoline price in Zone 1 over the study period. Exhibit 3.18 tracks average retail price based on data provided by OPIS, the gas cap (actual gas cap through May 5, 2006, and calculated gas cap based on PUC Decision Order 22451 thereafter), and weighted average bulk, rack and DTW (service station) prices based on transaction data. It is important to note that the gas cap as determined by PUC Decision Order 22451 was to allow the refiner/suppliers to pass on the cost of the ethanol conversion, but was never formally implemented. It is shown here as a mechanism to see how the oil industry priced in comparison to how they may have been forced to price had the cap been sustained). The key takeaways from this exhibit are as follows:

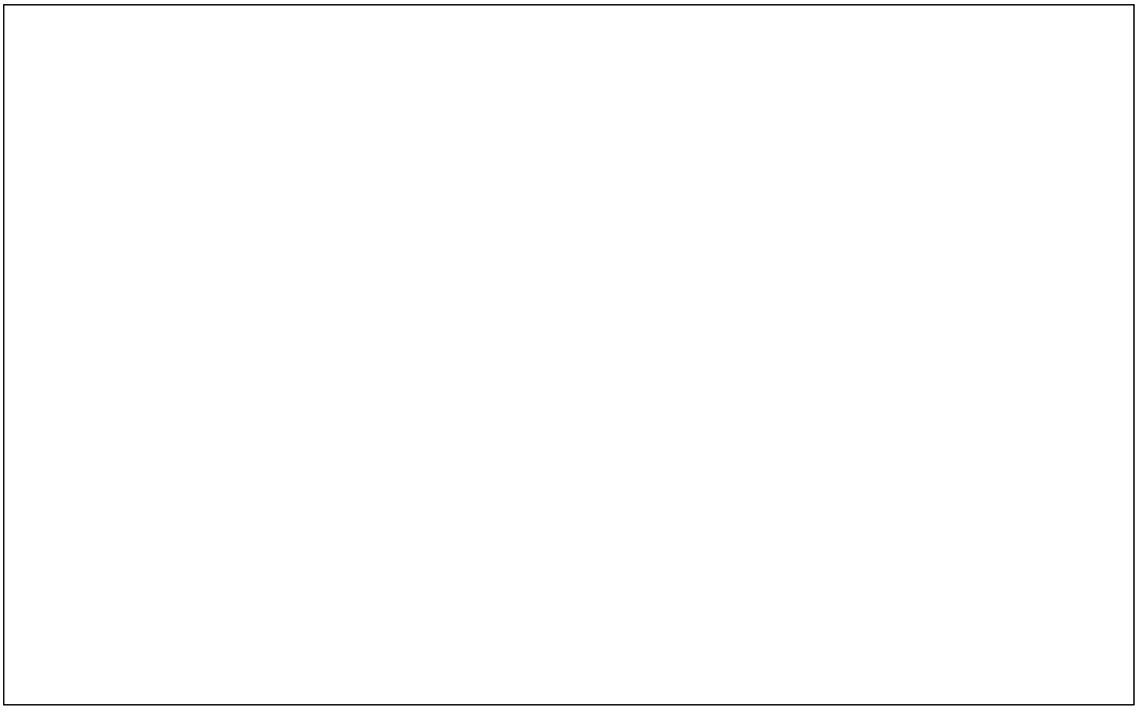
- The gas cap was initially very volatile due to the hurricane impacts on the price formula
- DTW and rack prices march in lockstep with the cap over the Gas Cap period and begin diverging from the revised gas cap calculation immediately following the suspension of the Cap. The divergence is minimal above and below the calculated gas cap for several months, and then begins to exceed the cap in October 2006 as the calculated gas cap declines sharply with lower U.S. gasoline prices. The trend thereafter is that DTW and rack prices approximate the gas cap calculation and then lag the gas cap as the gas cap increases in spring 2007, resulting in DTW and rack prices well under the gas cap calculation.

- Bulk prices do not mirror the gas cap trend. The bulk price transactions are based on price mechanisms that are different than the Gas Cap formula determined by the Hawaii Legislature and adopted by the PUC. These commercial terms may change over time, but have been based on a mix of U.S. prices as well as gasoline prices in the Far East markets, as well as including location adjustments based on actual freight markets. At times, the bulk prices move in opposite directions to the changing gas cap, or do not change as the gas cap changes. This results in some volatility in the margins for suppliers who buy bulk and sell at rack or DTW prices. With the high prices in the U.S. during and after the Gas Cap period, it appears the suppliers' commercial terms enabled them to receive product at prices less than what the Gas Cap formula assumed, providing stronger margins[20].

- The spreads between the prices represent the margins for various transactions. These will be discussed in more detail in the margin section.

- Retail prices include federal, state and county taxes, as well as the GET tax.

Exhibit 3.18 Overview of Different Price Channels in Zone 1 over the Study Period



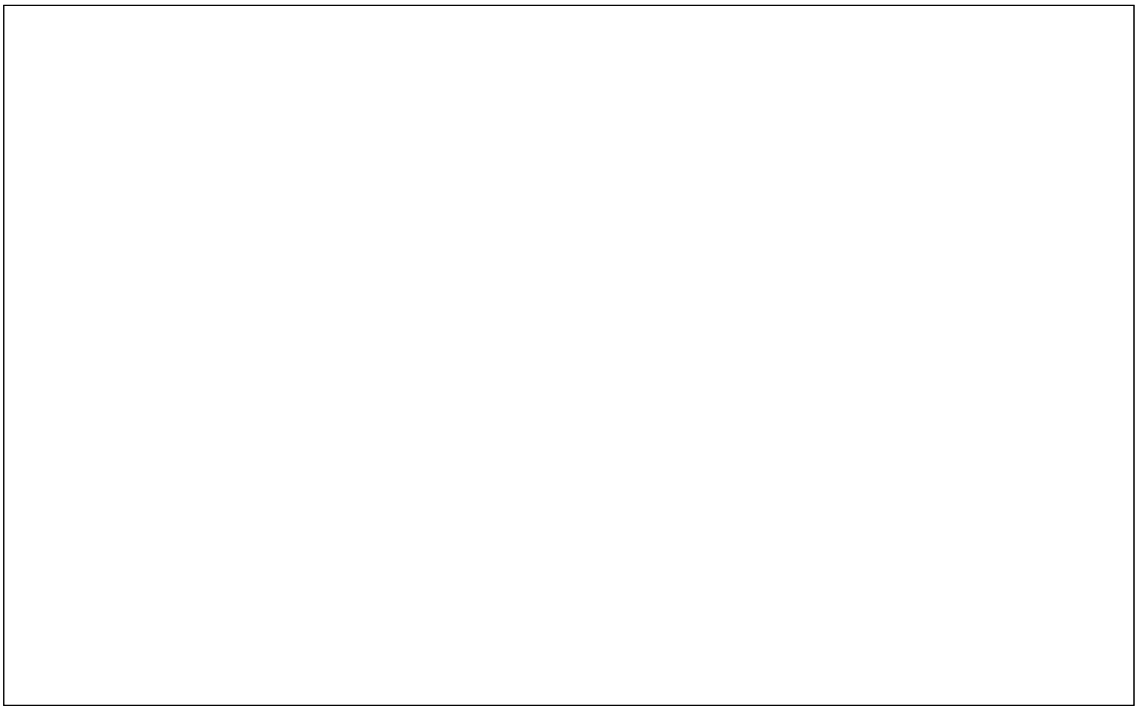
Sources: Gas Cap, Bulk, Rack & DTW- PUC Transaction Database; Retail- OPIS

[20] Basically, this means that the Gas Cap "import parity" formula recommended by the Legislation (OPIS New York, Houston and Los Angeles prices plus a 4 cpg location differential) resulted in higher prices than the actual commercial terms between refiners and suppliers (which may have been based on Far East or other domestic markets). This essentially "gave" the suppliers higher margins if they priced at the gas cap since the Gas Cap formula was not in alignment with commercial terms. If Far East markets had been disrupted rather than the U.S., the supplier margins would have been drastically lower.

Sales to Service Stations

Exhibit 3.19 shows the gas cap and the DTW price to independently operated service stations in Zone 1 for all major suppliers. The exhibit indicates that all suppliers priced gasoline to service stations in Zone 1 during the Gas Cap period at or near the gas cap limit, [redacted]. Following suspension of the Cap, all companies followed the same DTW pricing pattern, with DTW prices exceeding the calculated gas cap limit during the market price decline, and then falling below the gas cap limit during the rising gasoline market in the spring. [redacted] The pricing variations could be related to the location of particular stations, a company's cost structure, or a marketing strategy.

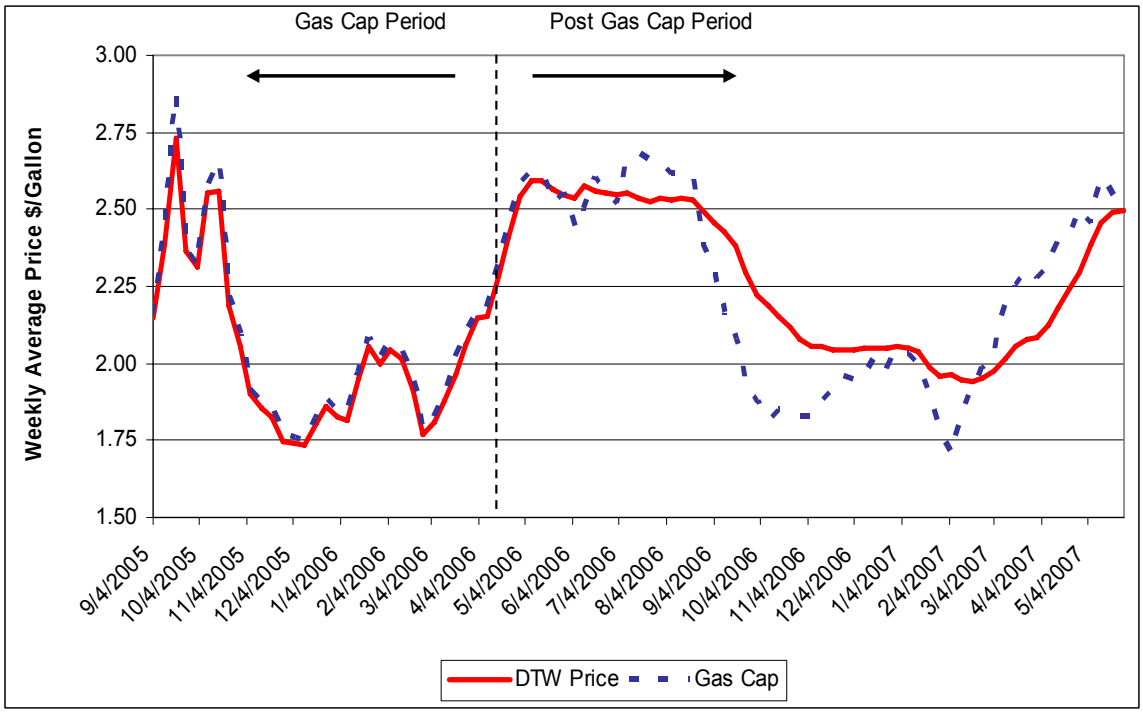
Exhibit 3.19 Zone 1: Prices for DTW Service Stations and Gas Cap for Zone 1 by Supplier



Source: PUC Transaction Database

Exhibit 3.20 is similar to Exhibit 3.19 but shows all the DTW sales in Zone 1 to service stations on a weight-averaged basis. The trend is identical to Exhibit 3.19, and depicts a market where DTW prices tracked the gas cap very closely during the Gas Cap period, and then varied following the Gas Cap suspension. The lag effect exists only after the Gas Cap was suspended, although it is important to note that the DTW prices were technically not lagging the gas cap (which was not published), but were lagging the global prices in the U.S. and Far East markets. It also is clear that the DTW prices lag on the way up as well as the way down.

Exhibit 3.20 Average DTW Prices to Service stations and Gas Cap in Zone 1



Source: PUC Transaction Database

Exhibit 3.21 shows in tabular format the specifics of the DTW service station price versus the gas cap in each zone on an average basis during and after the Gas Cap period. All grades of gasoline are shown. On average, the parties selling gasoline during the Gas Cap period kept DTW prices under the cap by several cents per gallon (cpg). Following the Gas Cap period, prices tended to increase above the revised gas cap calculation, primarily due to the extended decline in gasoline prices in the fall of 2006, where the revised gas cap declined faster than the DTW prices. This resulted in several months where DTW price exceeded the revised gas cap and affected the average in all zones over the period.

In general, this table indicates that all zones had prices controlled below the respective gas caps to about the same level during the Gas Cap period, and all zones saw average prices over the revised gas cap following the Gas Cap suspension.

It is also noteworthy that there was a significantly larger increase in premium and mid-grade prices from before to after the Gas Cap suspension.

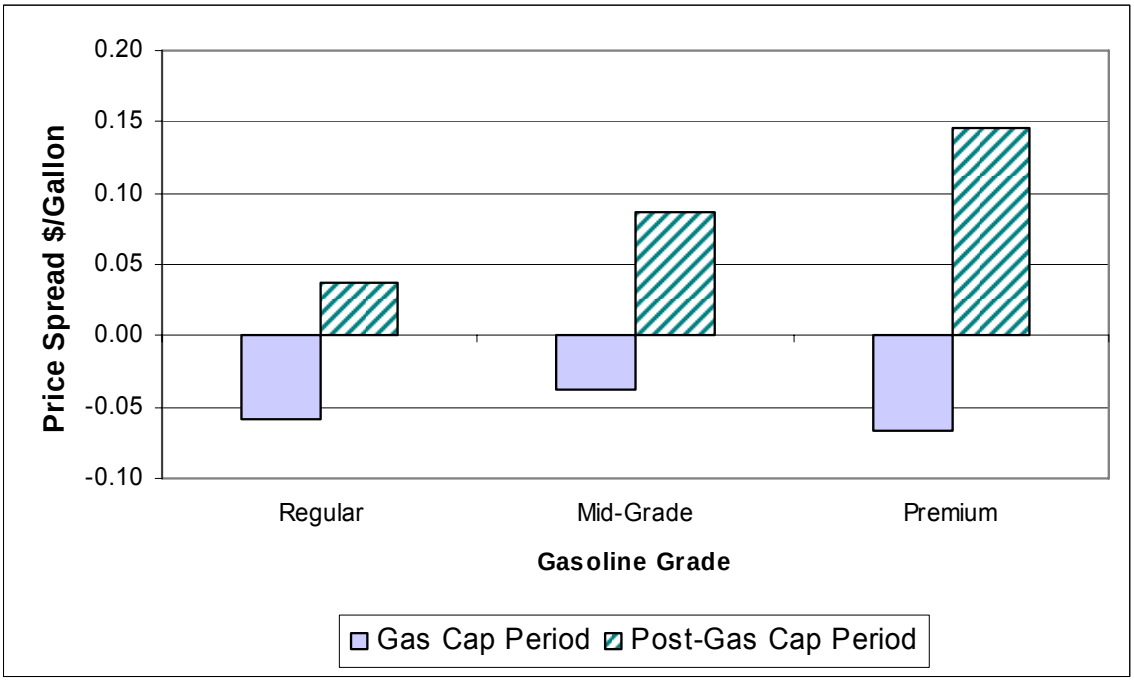
Exhibit 3.21 Average Price Spread Between DTW Price to Service Station and Price Cap for Different Grades of Gasoline in Each Zone

Gasoline Grade	Period	Oahu	Kauai	Maui excluding Hana	Hana	Molokai	Lanai	Puna, South & North Hilo, and Hamakua	South & North Kohala, South & North Kona and Kau
		Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8
Regular	Gas Cap	-0.07	-0.04	-0.05				-0.06	-0.07
	Post- Gas Cap	0.02	0.08	0.05				0.04	0.01
	Change in Spread	**0.09**	**0.11**	**0.10**				**0.11**	**0.07**
Mid-grade	Gas Cap	-0.04	0.00	-0.03				-0.02	-0.05
	Post- Gas Cap	0.08	0.09	0.12				0.14	0.11
	Change in Spread	**0.12**	**0.10**	**0.14**				**0.17**	**0.16**
Premium	Gas Cap	-0.07	-0.02	-0.06				-0.07	-0.07
	Post- Gas Cap	0.11	0.23	0.21				0.17	0.11
	Change in Spread	**0.19**	**0.25**	**0.27**				**0.24**	**0.18**

Source: PUC Transaction Database

Exhibit 3.22 shows this effect more clearly. This indicates that wholesale suppliers and jobbers selling on a DTW basis appeared to position premium grade products (Premium and Mid-Grade) at higher price spreads above regular gasoline when price controls were removed. The data from during the Gas Cap period shows that marketers had the ability to increase premium product prices somewhat and still stay below the premium or mid-grade gas cap, but that action was not taken until after the Gas Cap was suspended.

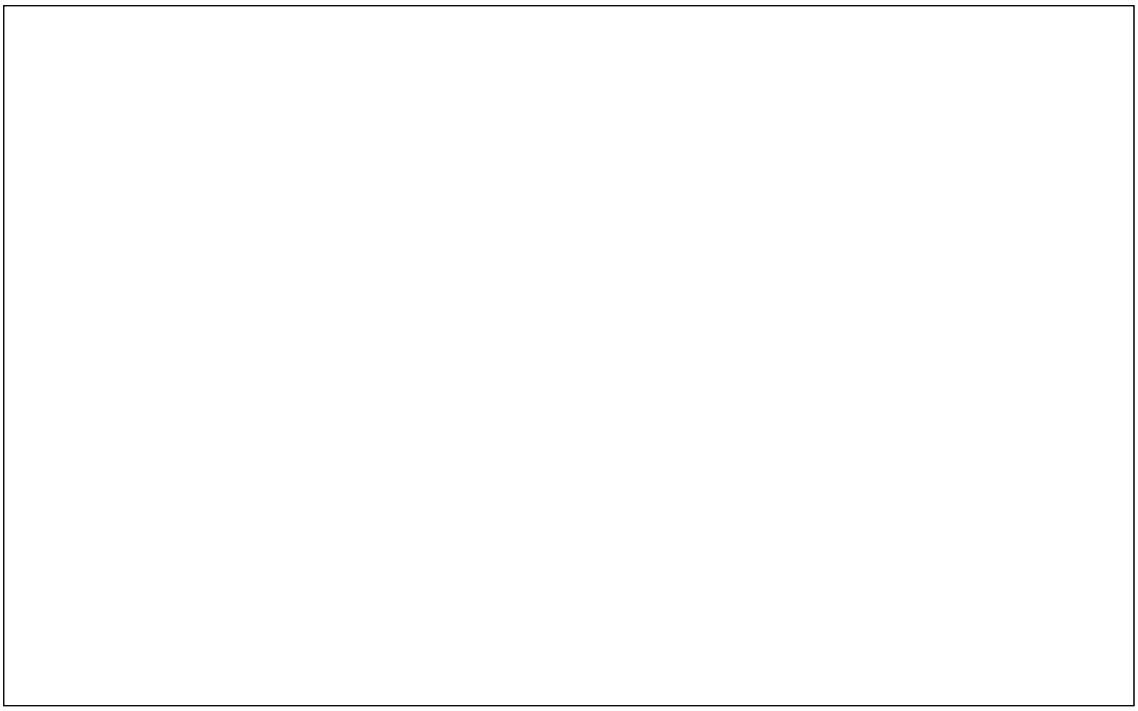
Exhibit 3.22 Average Price Spread Across all Zones Between DTW Sales Price to Retail Gas Stations and the Gas Cap for Different Grades of Gasoline



Source: PUC Transaction Database

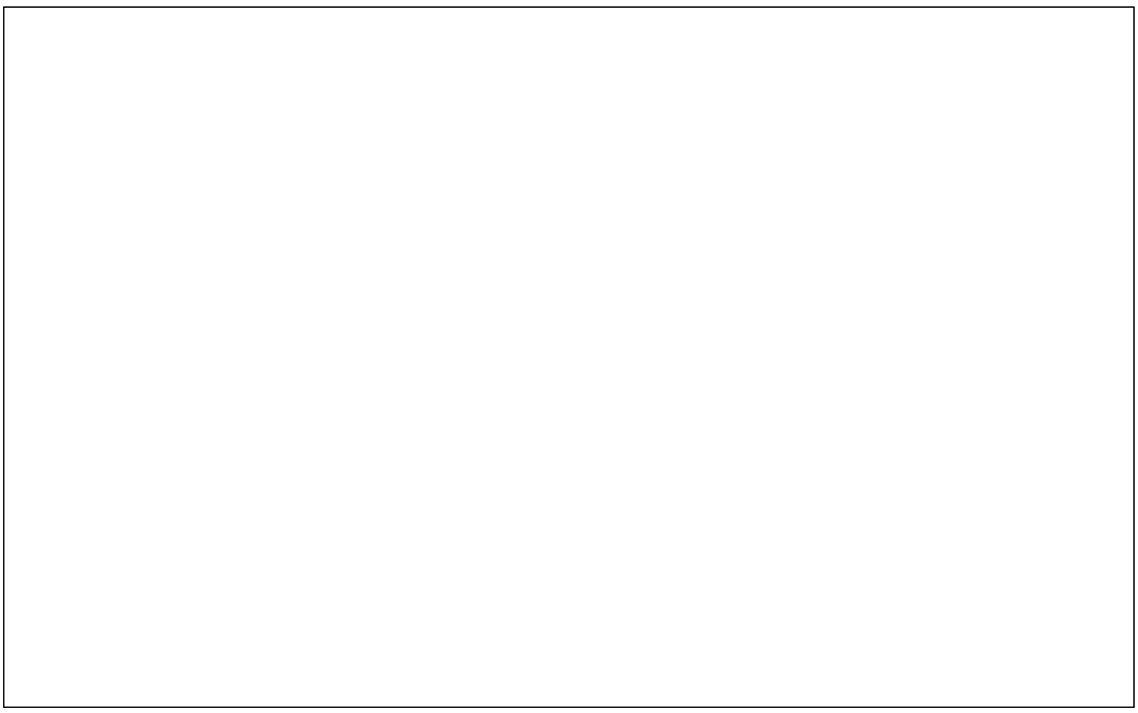
Exhibit 3.23 and Exhibit 3.24 show the average DTW prices to service stations in Zones 5 and 6 for regular gasoline. These are shown separately since they are selling conventional gasoline, and also demonstrate a somewhat different pattern than other zones. The difference is primarily due to the step-wise movements in the DTW price following the Gas Cap suspension. During Gas Cap period, prices were set at or near the cap limit; following the suspension of the Cap, the DTW prices appear to mirror the acquisition price of the conventional gasoline on a barge basis. These purchases are less frequent and appear to indicate that the sellers are adjusting price when their acquisition price changes.

Exhibit 3.23 Average DTW Prices to Service stations and Gas Cap in Zone 6



Source: PUC Transaction Database

Exhibit 3.24 DTW Prices to Service stations by different Suppliers and Gas Cap in Zone 5

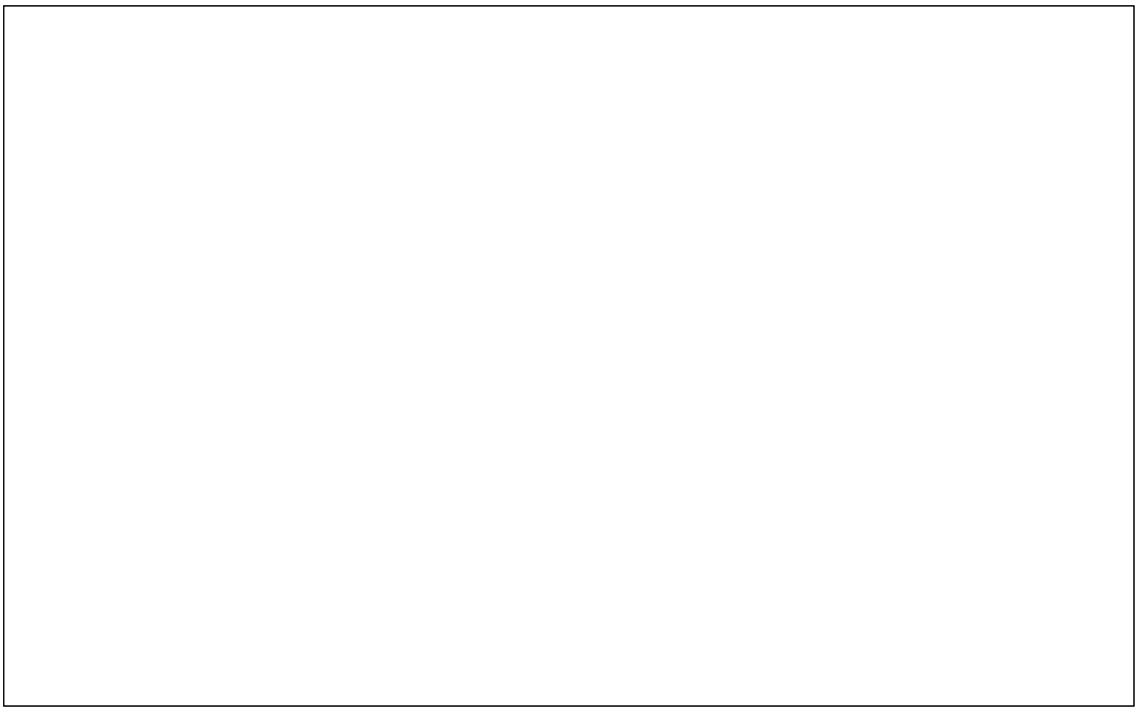


Source: PUC Transaction Database

Sales to Other DTW Customers

[redacted] Costco is able to purchase the gasoline at a discount to the normal service station DTW prices because they are normally receiving gasoline deliveries in large truck loads and because [redacted] does not have any costs associated with the operation, maintenance, property, etc after the gasoline is delivered to Costco. [redacted]

Exhibit 3.25 Average DTW Price to Costco in Zone 1 versus the Gas Cap

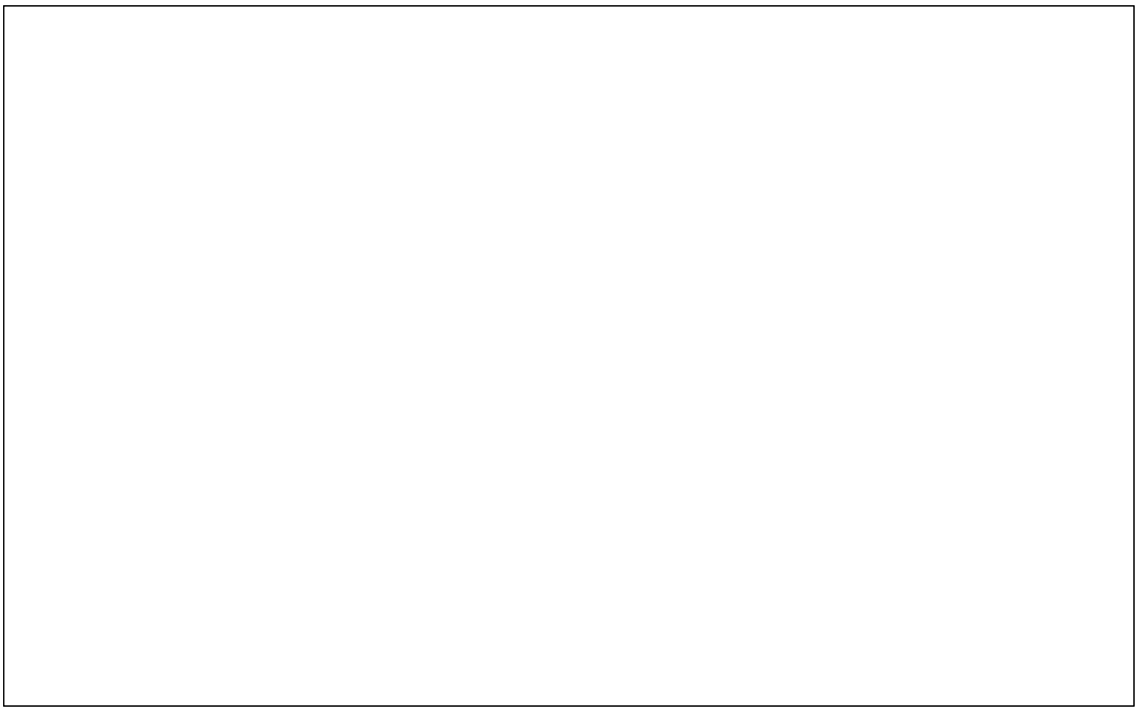


Source: PUC Transaction Database

[redacted] The basis for the discount is similar to Costco's. [redacted]

The contract with the military appears to have a relatively consistent discount to the gas cap when the Gas Cap was in force, and that discount appears to be sustained after the Gas Cap calculation was revised.

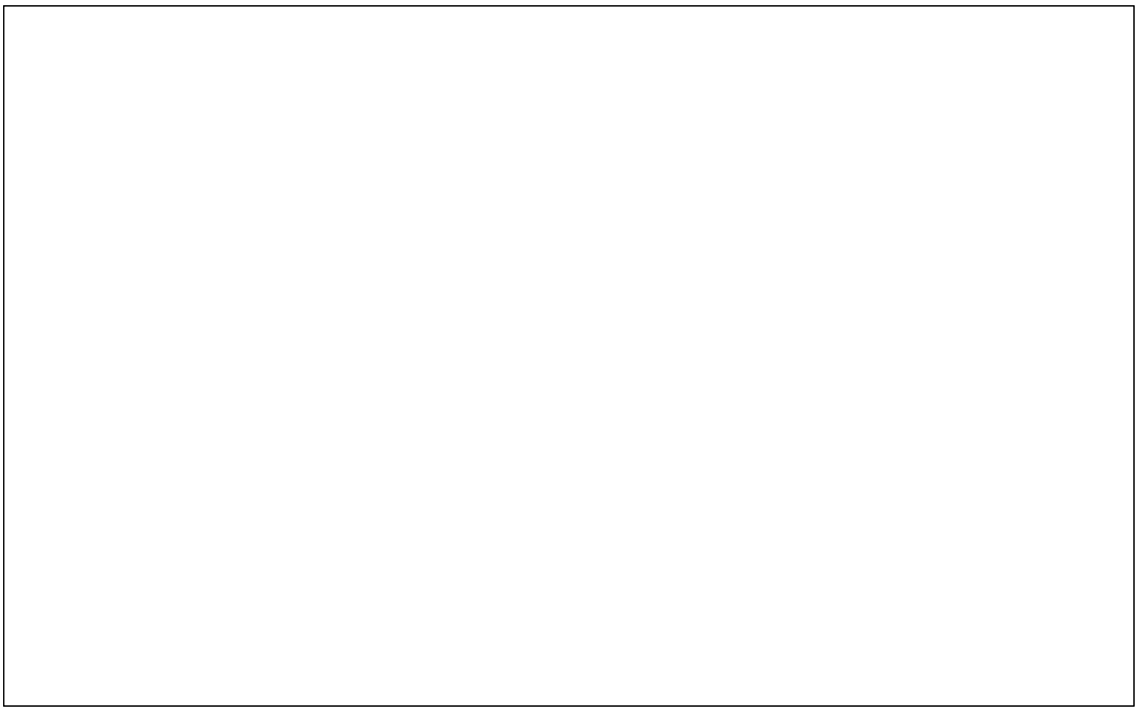
Exhibit 3.26 Average DTW Price to the Military in Zone 1



Source: PUC Transaction Database

Exhibit 3.27 shows the price trend in Zone 1 for DTW sales to car rental agencies. These volumes are significantly lower than those in the military or Costco channels, [redacted]. Average transactions during the Gas Cap period are 13 cpg below the gas cap in Zone 1. [redacted] In this case, average volumes are a key factor. Following the Gas Cap suspension, the rental car channel tended to price above the revised gas cap calculation for the period of time that markets were falling, and lagged the increase in the cap limit in early 2007.

Exhibit 3.27 Average DTW Price to Car Rental Agencies in Zone 1



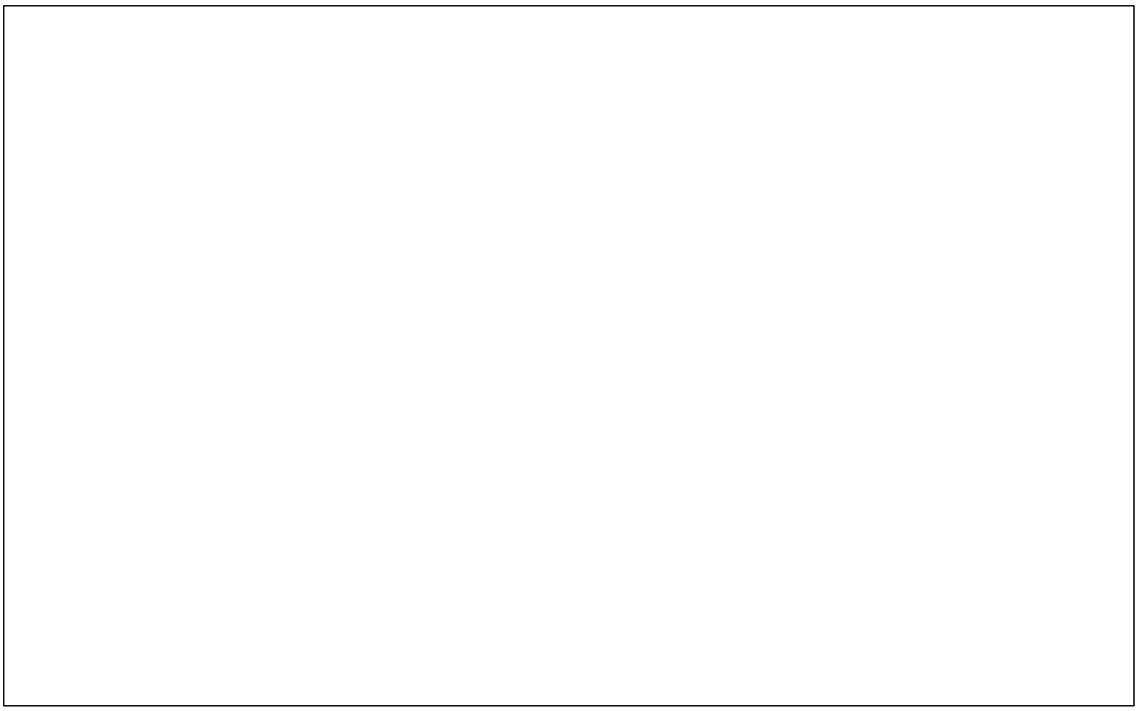
Source: PUC Transaction Database

Exhibit 3.28 shows the overall view of wholesale prices versus the Gas Cap both before and after Gas Cap was suspended. The analysis is for regular gasoline in all zones to all channels of sales, including rack and bulk. The data show the magnitude of the discounts to Costco and the military, as well as the discounts to car rental companies. [redacted]

On average, this exhibit indicates that DTW sales to service stations were slightly under the Gas Cap while it was in force. It is clear that the suspension of the Gas Cap has caused prices to service stations to increase to a level above the revised Gas Cap calculation, but interesting that the overall increase seemed to stem from the lag as gasoline prices declined more than an immediate move to increase price after the Cap was suspended.

Price levels for bulk and rack transactions were well below the actual and revised Gas Cap in both periods.

Exhibit 3.28 Average Price Spread across all Zones for different channels of sales and the Gas Cap



Source: PUC Transaction Database

Summary Conclusions: Comparison of Gasoline Prices to Gas Caps

The primary conclusions are as follows:

- Wholesale gasoline prices during the Gas Cap period (September 2005 to May 5, 2006) were maintained below the required ceiling for all channels of sales. DTW sales to retail service stations averaged about 6 cpg *below* the Gas Cap (state-wide), with many stations pricing within 3 cpg of the Gas Cap at all times.

- Wholesale prices to retail service stations during the Gas Cap period tended to directly track changes in the Gas Cap limit. In other words, DTW prices to service stations were being set by the allowable Gas Cap, not the competitive market.

- In the study period following the suspension of the Gas Cap (May 8, 2006 through June 30, 2007), DTW prices to service stations were priced about 4 cpg *above* the revised Gas Cap maximum price (PUC Decision Order 22451 formula to adjust for ethanol blending). The DTW pricing tended to lag changes in overall market conditions after the Gas Cap was suspended (in both up and down markets).

- Changes in bulk prices to suppliers did not appear to influence the DTW prices charged to service stations. This may be because suppliers have minimal incentive to lower price when

their cost changes, because a more competitive (lower) price versus competitors could increase sales, and the suppliers' access to product is limited from the refiner contracts.

- Suppliers and refiners increased DTW prices for mid-grade and premium gasoline versus regular gasoline after the Gas Cap was suspended. The average DTW price over the revised Gas Cap was about 4 cpg for regular gasoline, but was 9 cpg over the revised Mid-Grade Cap and 14 cpg over the revised Premium Gas Cap. This appeared to be related to higher bulk costs for suppliers due to global market changes. The allowable premium adjustment factor under the Gas Cap formula (9 cpg) appeared to often be below the actual market cost paid by suppliers under commercial terms.

Refiner Gasoline Margins

Exhibit 3.29 identifies the margin between crude oil cost and gasoline sales at the refinery level for both Hawaii and the U.S. Gulf Coast. In the Gulf Coast, spot market gasoline margins averaged about $0.46/gallon above crude cost[21]. [redacted] This indicates that the bulk gasoline prices from Hawaii refiners are providing less of an overall profit contribution to the Hawaii refiners than Gulf Coast refiners enjoy.

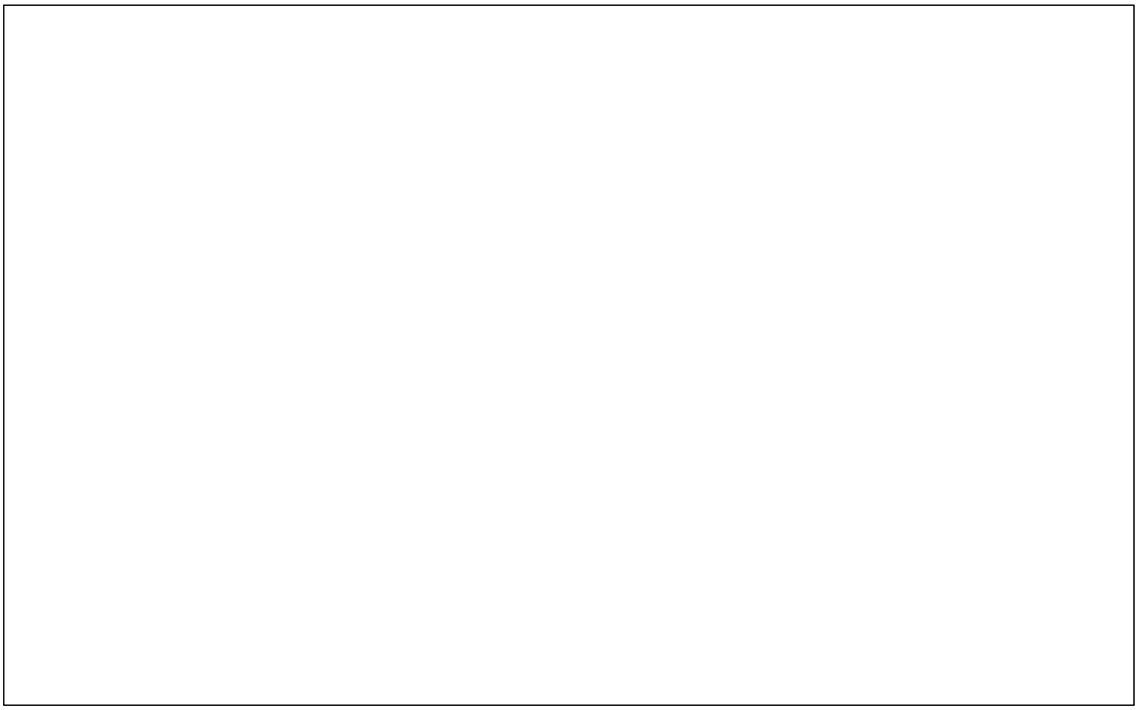
Exhibit 3.29 Gasoline Refining Margins for US Gulf Coast and Hawaii

Sources: Hawaii- IPIR & PUC Transaction Database; USGC- EIA

[21] Note: U.S. refining Margin is calculated by subtracting US RAC Crude price from USGC 87 Reg Unl Price. Hawaii Refining Margin is calculated by subtracting Hawaii landed crude price from Hawaii bulk gasoline price for Zone 1.

[redacted]

Exhibit 3.30 Refining Margin Comparison by Gas Cap Period: U.S. Gulf Coast and Hawaii



Sources: Hawaii- IPIR & PUC Transaction Database; USGC- EIA

Supplier & Jobber Margins

The transaction data provided to the PUC by suppliers and jobbers beginning in September 2005 and continuing through the new PIMAR reporting process enable a determination to be made of both supplier and jobber gross margins[22]. These margins are simply the average price for product sold less the cost of product acquired. Suppliers have costs which are not reflected in the gross margin. The costs would vary depending on a supplier's assets. Suppliers who have terminals, marine equipment, truck fleets, own service stations or lease branded stations, etc., may have more costs than a supplier or jobber who simply owns trucks and loads and delivers product to customers.

[22] Suppliers are defined as non-refiners who purchase gasoline in bulk or large volume quantities from refiners, and who re-sell the product to jobbers or DTW channels. Jobbers are smaller companies who buy product from refiners or suppliers usually at rack prices, and resell to primarily independent service stations or commercial accounts on a DTW basis.

The Gas Cap legislation provided a maximum gasoline price which included an 18 cpg marketing margin as well as a zone adjustment factor. The zone adjustment factor reflects the cost of moving product to each zone, and for truck delivery costs as reported by the supplier or jobber with the highest delivery cost. This allowed jobbers servicing remote independent dealers to recoup the high trucking cost to deliver to those locations. An example gas cap buildup is shown in Exhibit 3.31 for Zone 1 for the Gas Cap period (pre-ethanol period): This therefore assumed a supplier or jobber could have a gross margin of about 24.5 cpg in Zone 1 to cover their marketing and distribution costs as supplier, if they priced their gasoline at the gas cap. It is also contingent on the supplier's actual bulk acquisition price being consistent with the PUC's import calculation.

Exhibit 3.31 Determination of Allowable Gross Margins during the Gas Cap Period, $/gallon

	Zone 1
Avg. OPIS Prices, NY, LA, GC	2.20
Location Diff	0.04
Import Parity	2.24
Marketing margin	0.18
Zone Adjustment	0.065
"Allowable Gross Margin"	0.245
Calculated Gas Cap	2.485

Source: PUC Gas Cap Calculation file

Supplier Margins

The exhibits shown in this presentation and discussion of supplier margins often indicate either spikes in margin, or extended periods of margins greater than the 24.5 cpg that was in the structured Gas Cap calculation. It is essential for the reader to recognize that under all periods when the gas caps were in place, the actual DTW prices that were charged to service stations or other channels were, with rare exceptions, always at or under the gas cap limit. The higher margins were almost always the result of actual commercial transaction terms between suppliers and the refiners which resulted in supplier prices that were under the calculated Gas Cap import parity.

The supplier margins are presented individually at first, and then aggregated. Please note that during the period with E-10 in the market (after April 2006) the supplier margins are often directly comparing the DTW price of E-10 to purchased E-10 under bulk price terms. In some cases the supplier is purchasing HIBOB gasoline blendstock and ethanol under bulk terms, and then blending the product themselves. Since the price data collected for ethanol did not begin until the PIMAR forms were initiated in 2007, it was necessary to assume that the ethanol price paid by the supplier was the price computed for the Gas Cap calculation process. The net

ethanol price (ethanol price less 51 cpg ethanol tax credit for blenders) was used to determine the supplier's gasoline price for margin calculations.[23]

[redacted]

Exhibit 3.32 Aloha Supplier Margins by Channel of Sales

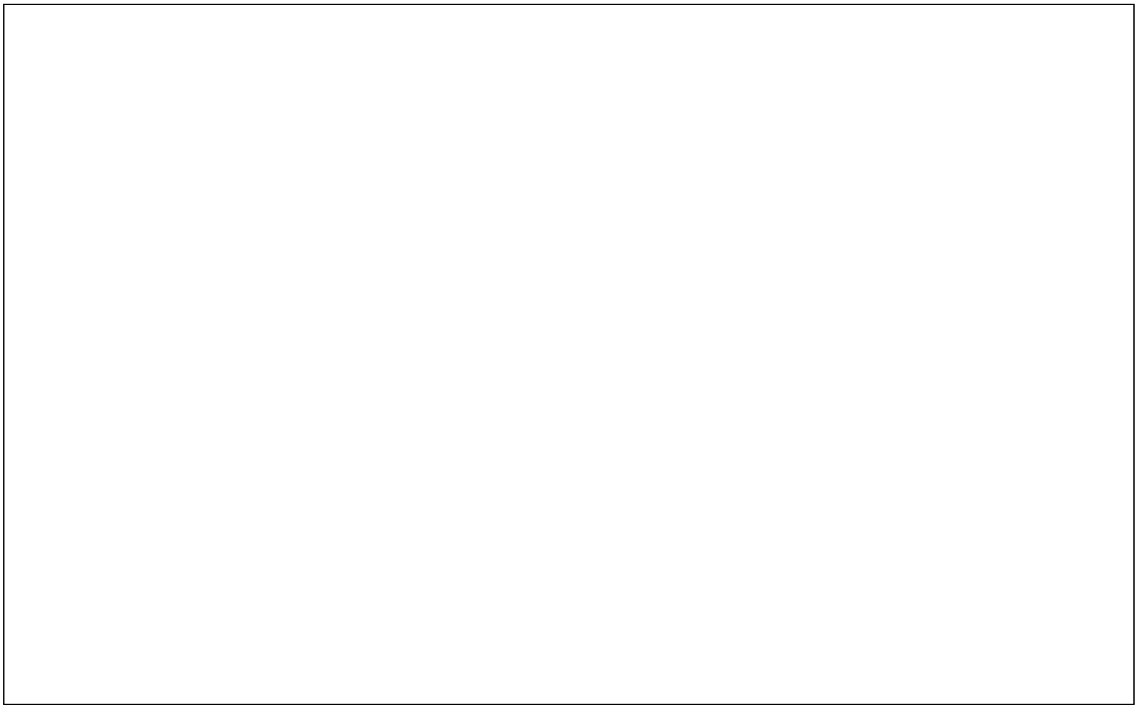
Source: PUC Transaction Database

[redacted]

[23] Purchase price equals HIBOB acquisition price times 90% plus (PUC calculated ethanol price (basis U.S. East Coast, Chicago, and Los Angeles ethanol average) minus 51 cpg blending credit) times 10%

[redacted]

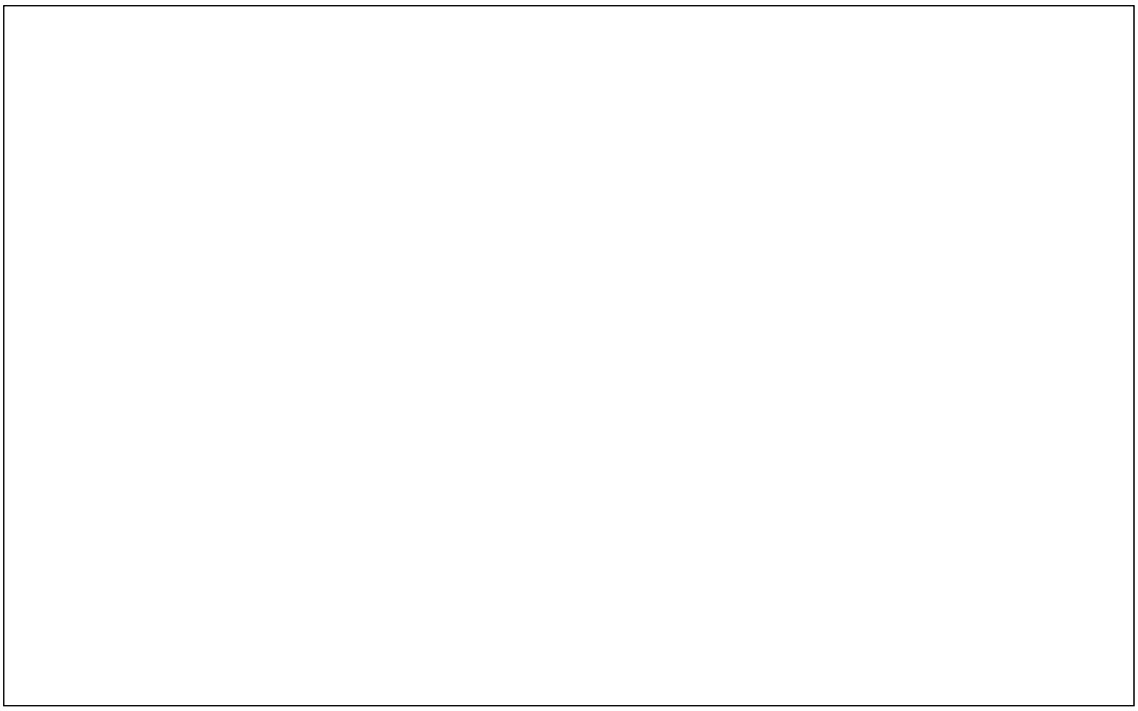
Exhibit 3.33 Aloha Supplier Margins on a Weekly Basis



Source: PUC Transaction Database

[redacted]

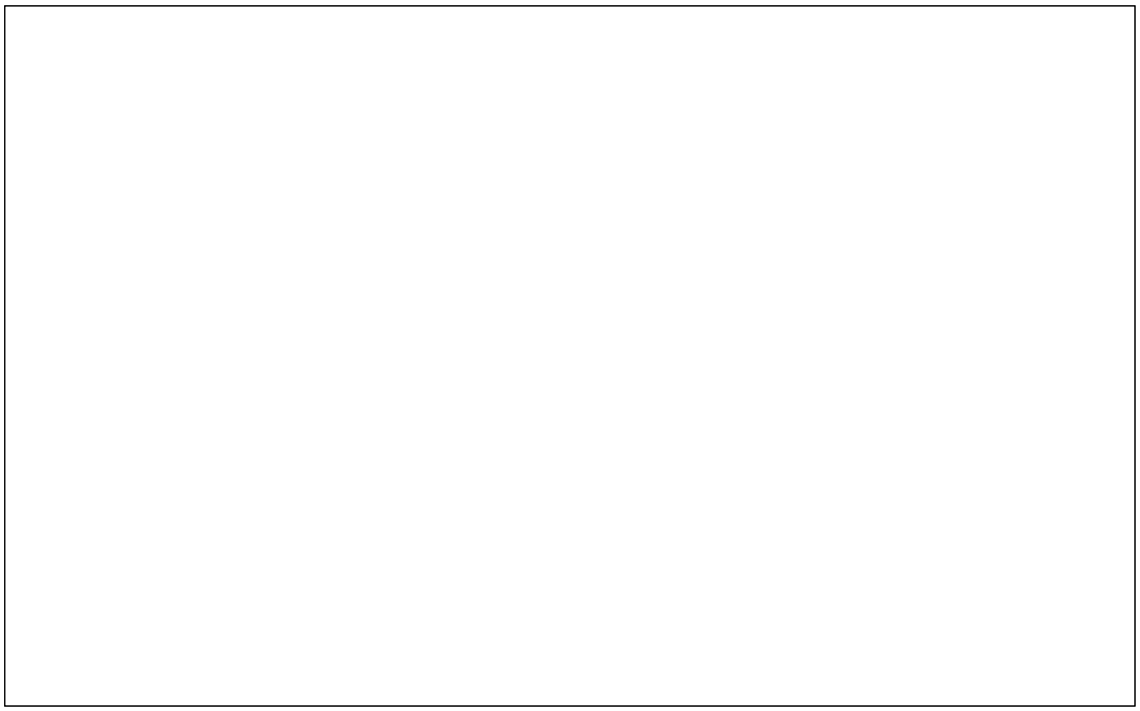
Exhibit 3.34 Aloha Supplier Margins Zones 7 & 8



Source: PUC Transaction Database

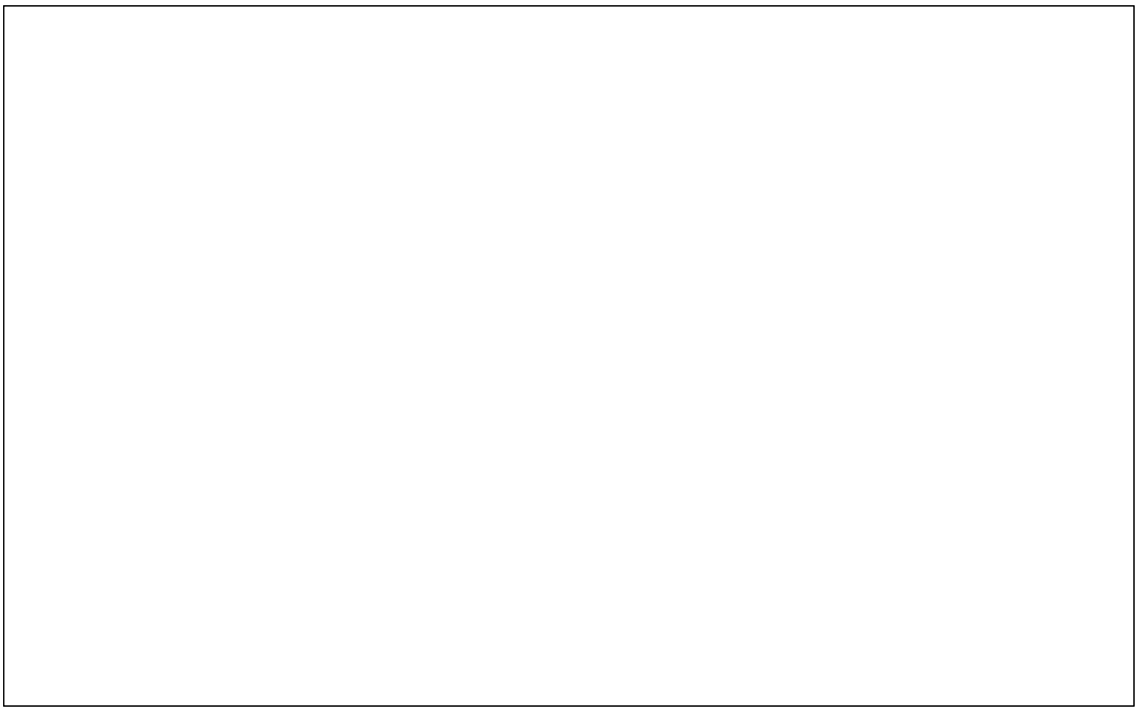
[redacted]

Exhibit 3.35 Mid-Pac Supplier Margins by Channel of Sales



Source: PUC Transaction Database

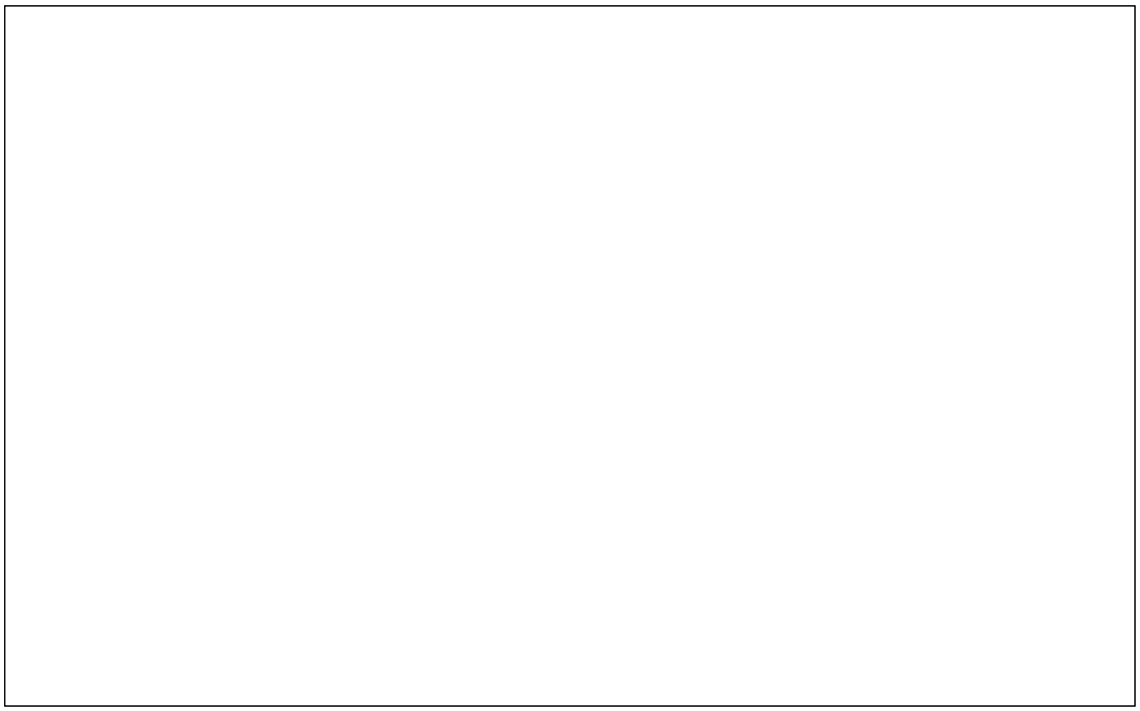
Exhibit 3.36 Mid-Pac Supplier Margins on a Weekly Basis



Source: PUC Transaction Database

[redacted]

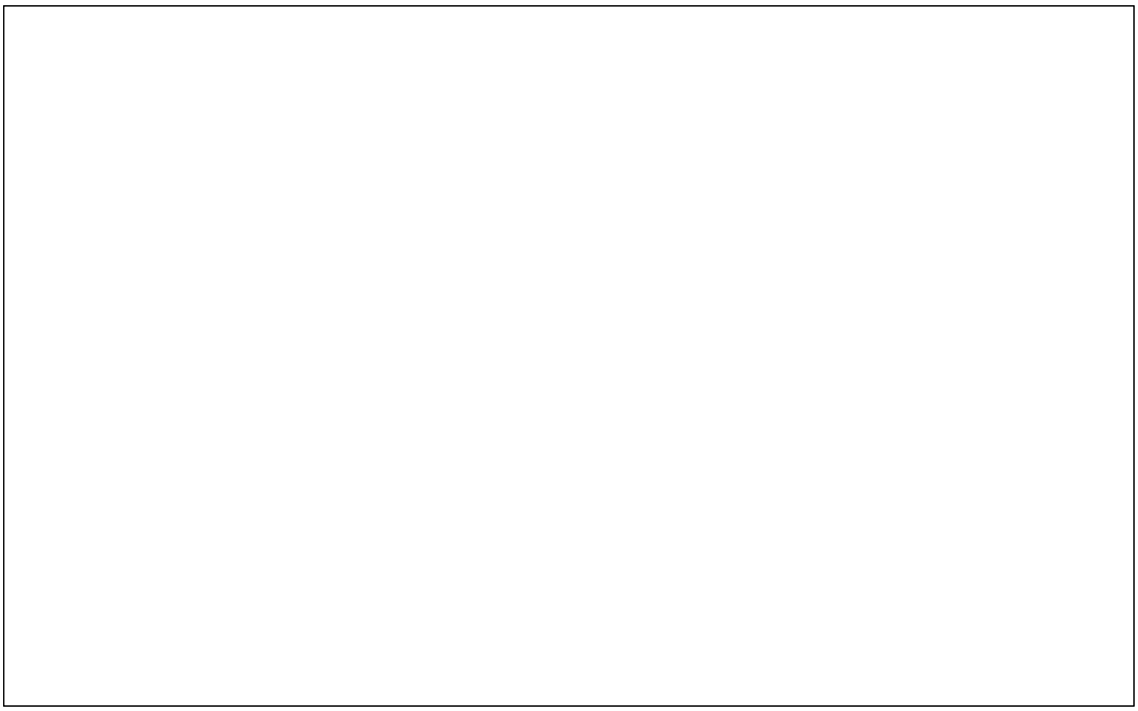
Exhibit 3.37 Shell Supplier Margins by Zone, $/gallon Gross Margin



Source: PUC Transaction Database

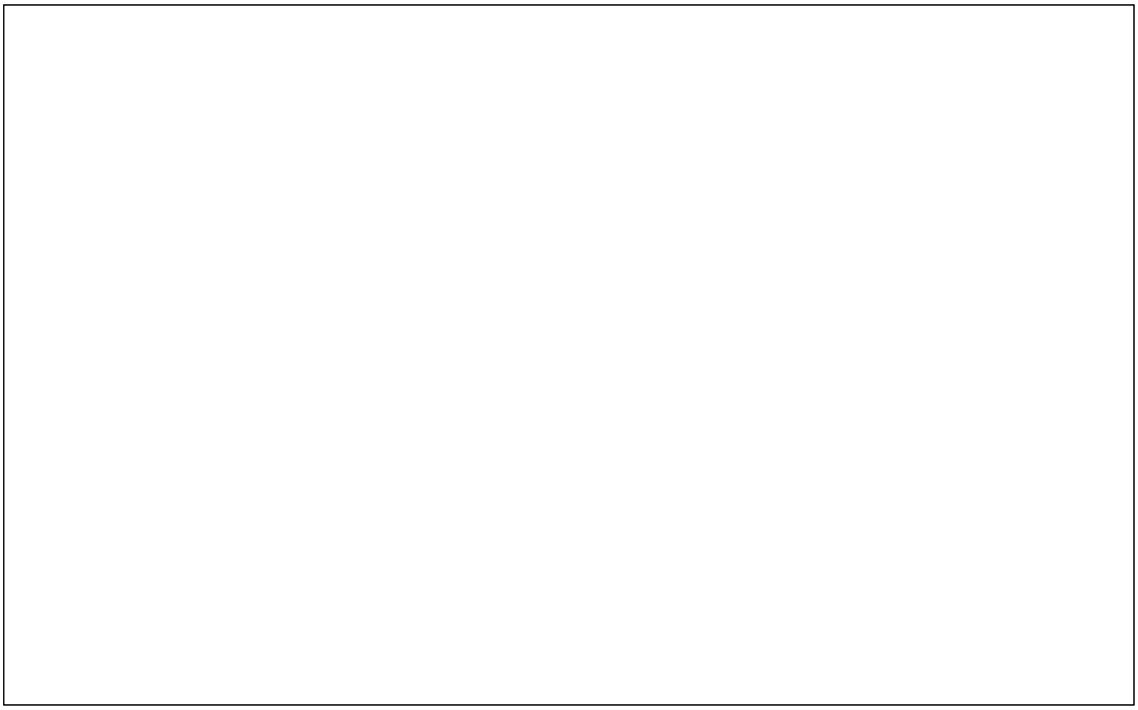
[redacted]

Exhibit 3.38 Comparison of Supplier Acquisition Costs of Gasoline on Bulk Basis in Zone 1



Source: PUC Transaction Database

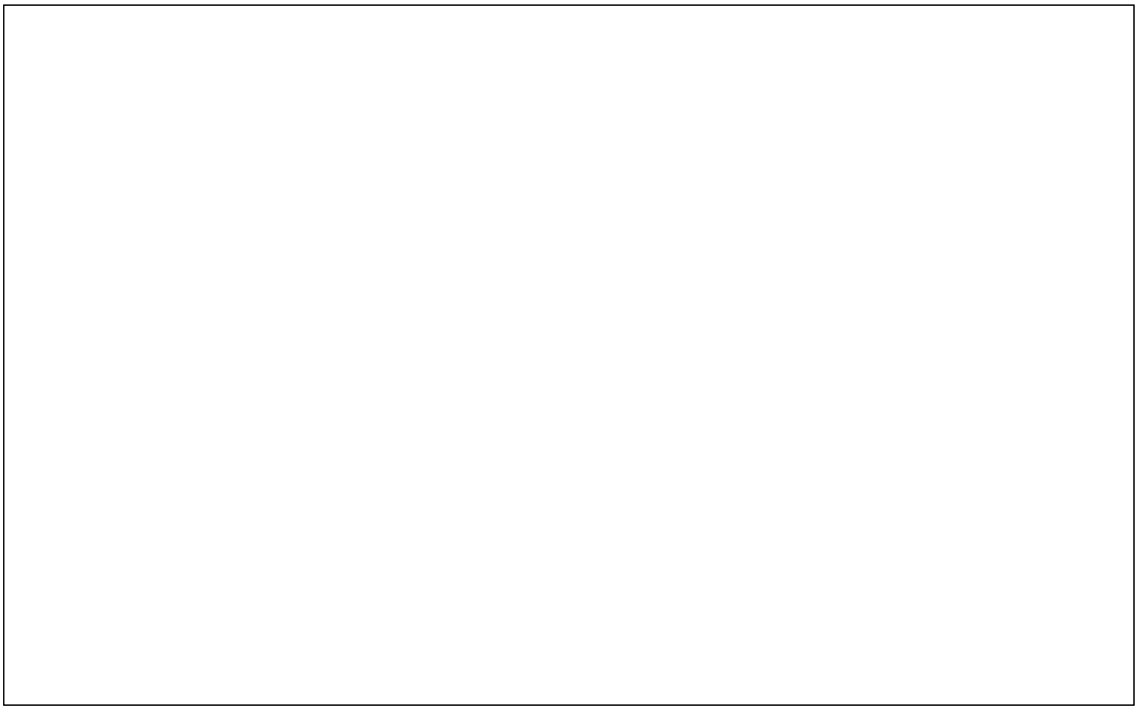
Exhibit 3.39 Comparison of Supplier DTW Sales Prices to Service Stations in Zone 1



Source: PUC Transaction Database

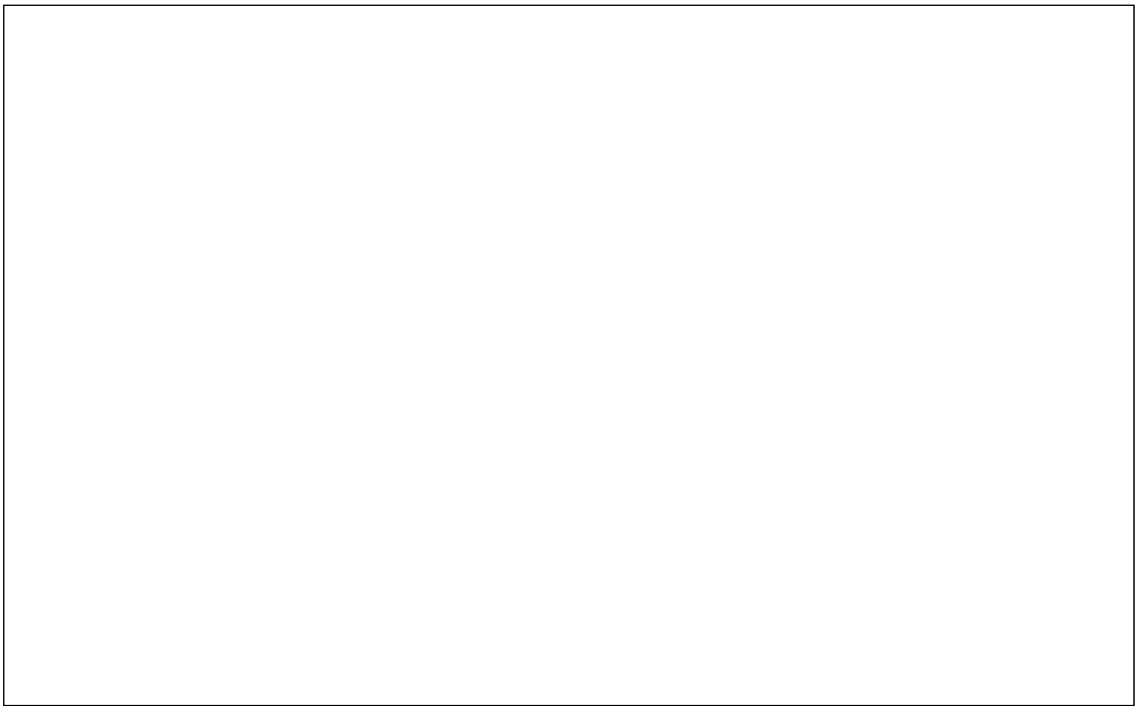
[redacted]

Exhibit 3.40 Shell Margins on a Weekly Basis Zones 3 and 7



Source: PUC Transaction Database

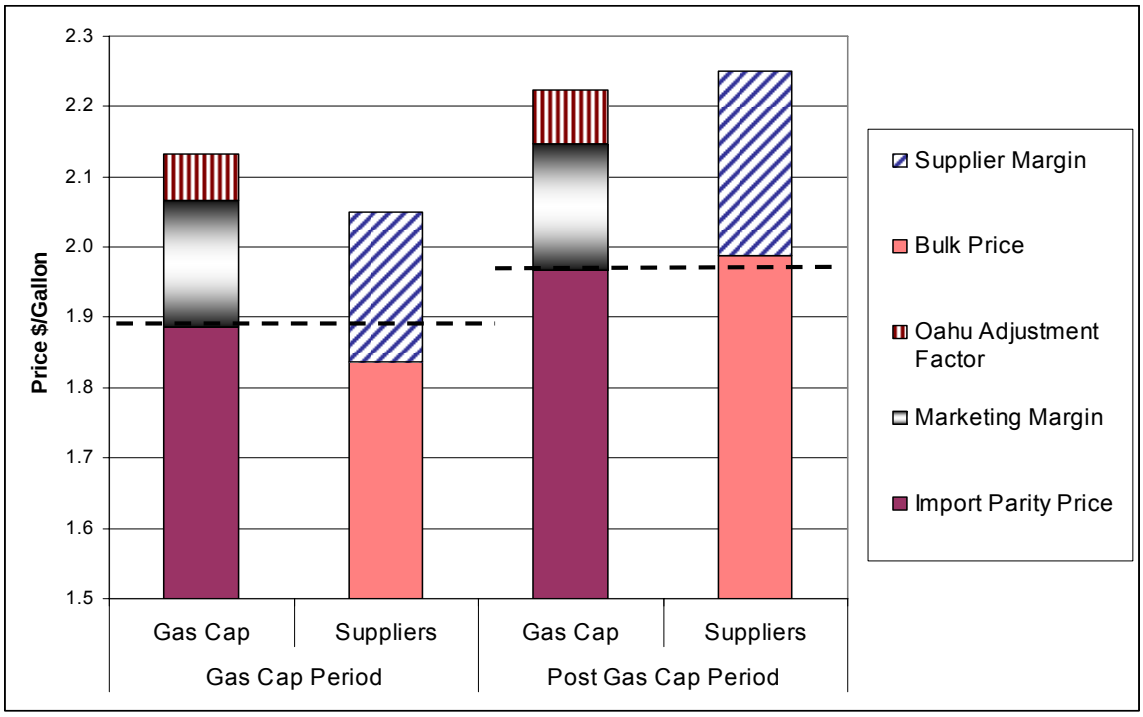
Exhibit 3.41 Shell Margins on a Weekly Basis Zones 1 and 2



Source: PUC Transaction Database

Exhibit 3.42 compares supplier margins to retail service stations with the Gas Cap formula in both the Gas Cap and post Gas Cap period (post Gas Cap period uses the revised Gas Cap formula for E-10). Margins are presented by weight averaging the three suppliers during the period. Margins are presented for Zone 1 only since not all suppliers are in the other zones and the zone adjustment factor includes costs such as barging and terminal costs which are incorporated in the suppliers' acquisition price in many cases.

Exhibit 3.42 Supplier Margins Compared to Gas Cap



Source: PUC Transaction Database and PUC Gas Cap Calculation file

The exhibit shows that during the Gas Cap period, the average supplier's acquisition cost was about 5 cpg below the Gas Cap import parity price ($1.84/gal cost vs. $1.89/gal Gas Cap import parity price). Overall, suppliers priced their gasoline to service stations at DTW prices averaging about 6 cpg lower than the Gas Cap. This meant that (on average) suppliers earned about 1 cpg below the margin ceiling provided in the legislation[24]. There are two other key points that need to be made:

1. The Oahu zone adjustment (6.5 cpg) includes a trucking cost which represents the highest reported trucking cost in Oahu (as noted earlier, this was to insure jobbers serving remote areas would be able to recover costs). Most of the larger suppliers and refiners have trucking costs significantly lower than the "high" cost reported, hence these suppliers benefited during the Gas Cap period if they priced at the Gas Cap.
2. Exhibit 3.19 indicates that some suppliers in Zone 1 priced at different levels than others. Consequently, the actual margins earned in Zone 1 for individual companies varied from under to above the intended margin ceiling. The margins that were above the intended ceiling benefited from the bulk price being under the import parity value in the Gas Cap formula.

In the post Gas Cap period, the average bulk acquisition price was about $0.01/gallon higher on average than the revised Gas Cap import parity calculated price. Actual DTW prices from the suppliers averaged about $2.25/gallon over the period versus the revised Gas Cap of $2.22/gallon, and again some suppliers were higher and lower in price and margin than others. This indicates that had the Gas Cap still been in effect under revised calculation procedures

[24] The Oahu or Zone 1 ceiling was the 18 cpg Marketing Margin in the Gas Cap formula plus a 6.5 cpg adjustment for trucking and terminal costs, or a 24.5 cpg total "Gross Margin" limit for a Supplier

from PUC Decision order 22451, average DTW prices to service stations in Zone 1 would have been lower by about $0.03/gallon. Supplier margins on average would have been reduced accordingly.

Jobber Margins

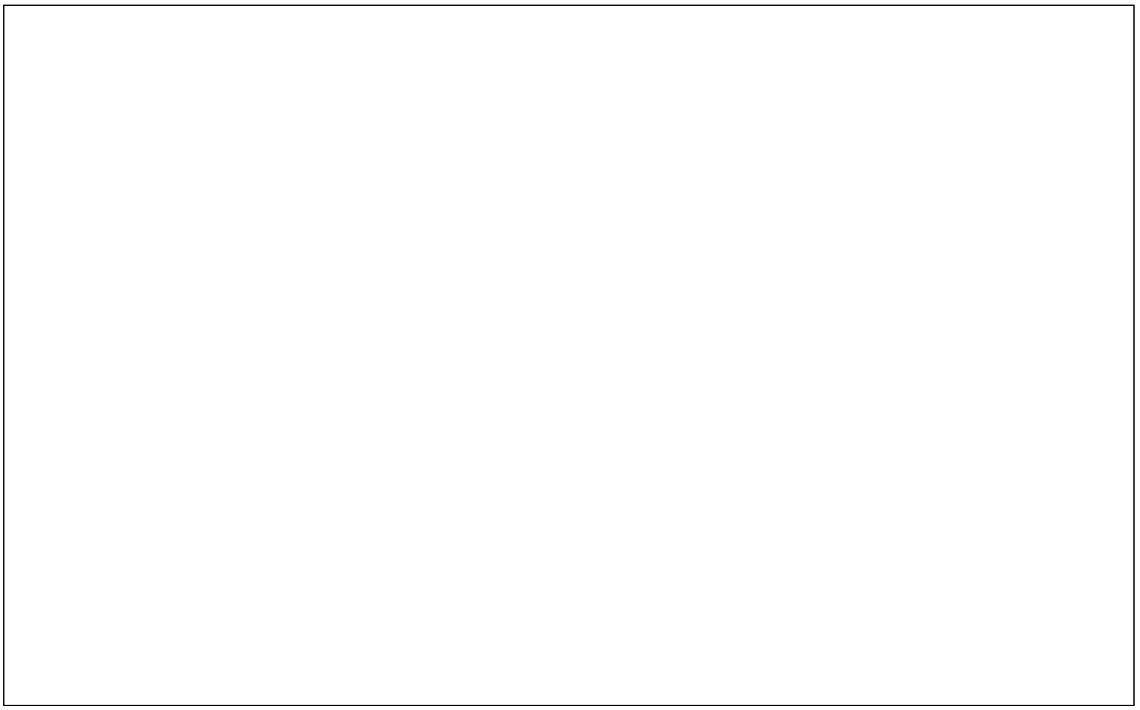
Jobbers' margins are determined from their product revenue (selling at a DTW price typically) less acquisition price from their suppliers, which is typically a rack price delivered into the jobber's truck at a terminal. The jobbers' primary business costs involve transportation of product to their customers, maintenance and business expenses, labor, insurance, and so on.

Exhibit 3.43 shows the calculated jobber margins by individual jobber and zone for regular gasoline. Jobber margins range from a low of $0.05/gallon to a high of $0.15/gallon during the Gas Cap period. In most cases, after the Gas Cap was suspended the jobbers increased their margins by raising prices to their customers relative to their cost of supply.

Exhibit 3.43 Jobber Margins by Company and Zone

Source: PUC Transaction Database

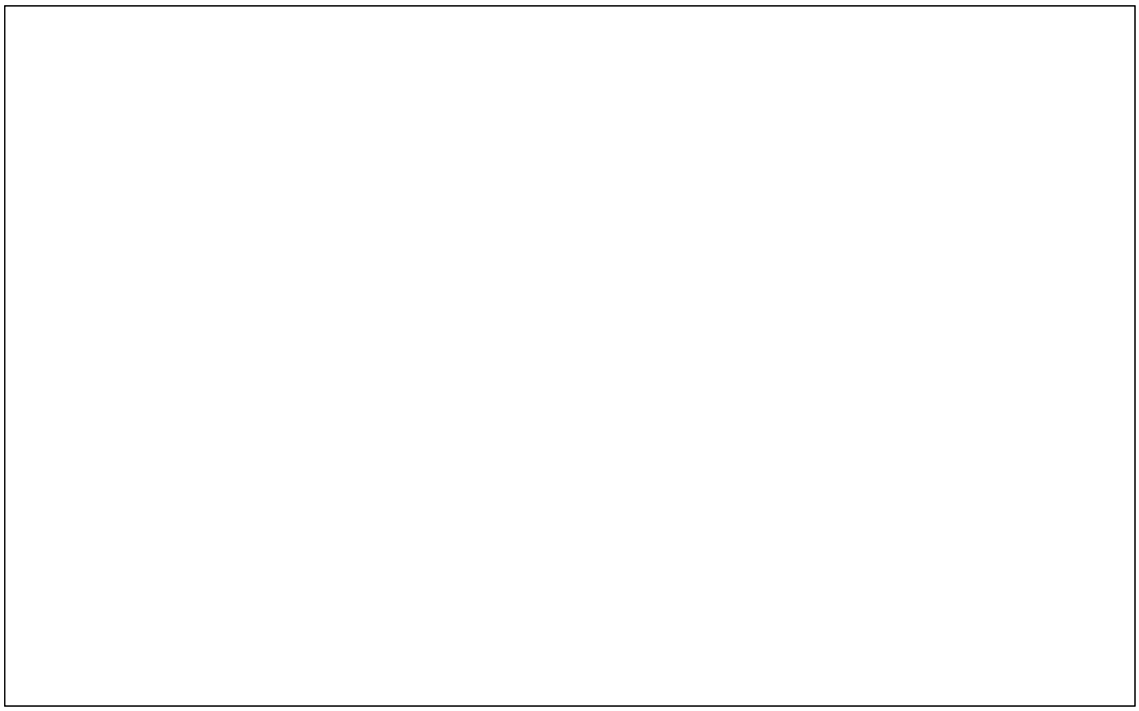
Exhibit 3.44 Jobber Margins, Island Petroleum and Lanai Oil



Source: PUC Transaction Database

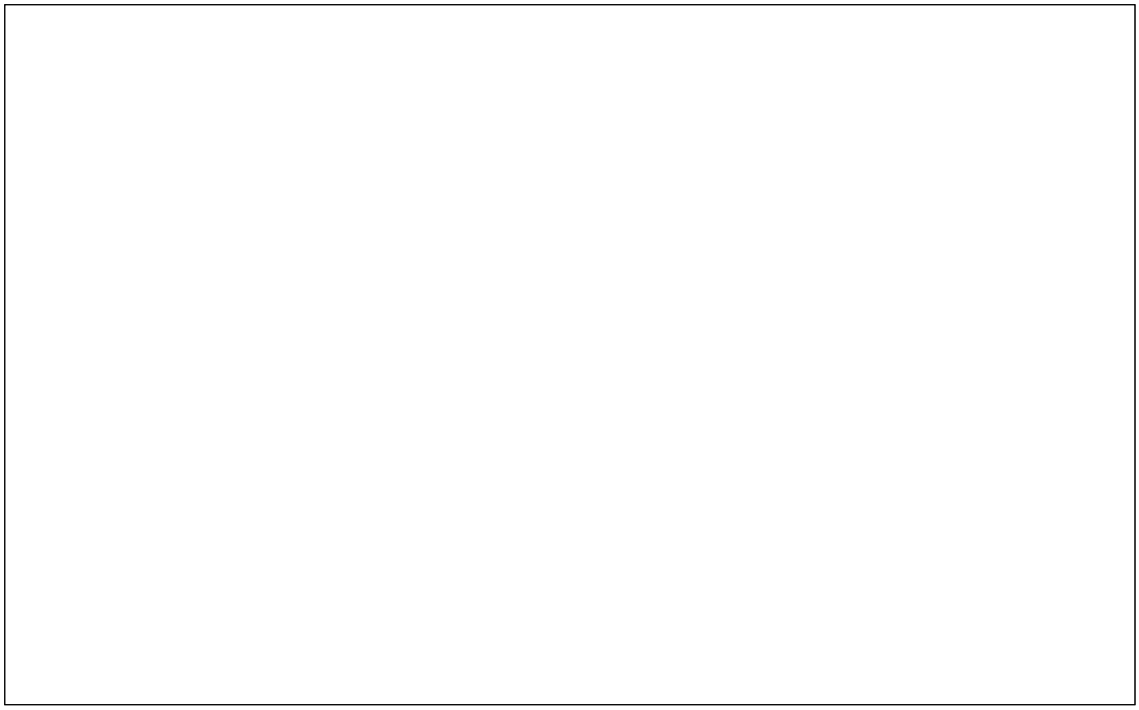
The following three exhibits (Exhibit 3.45, Exhibit 3.46 and Exhibit 3.47) show the calculated jobber margins in different zones on a weekly trend. Generally, jobbers had minimal flexibility on margins when the gas caps were in place and most jobbers' margins were relatively flat. Suspension of the Gas Cap revealed some significant increases in margins and likely higher costs to the jobbers' customers, particularly by several suppliers [redacted]

Exhibit 3.45 Jobber Margins, Zones 1 & 2



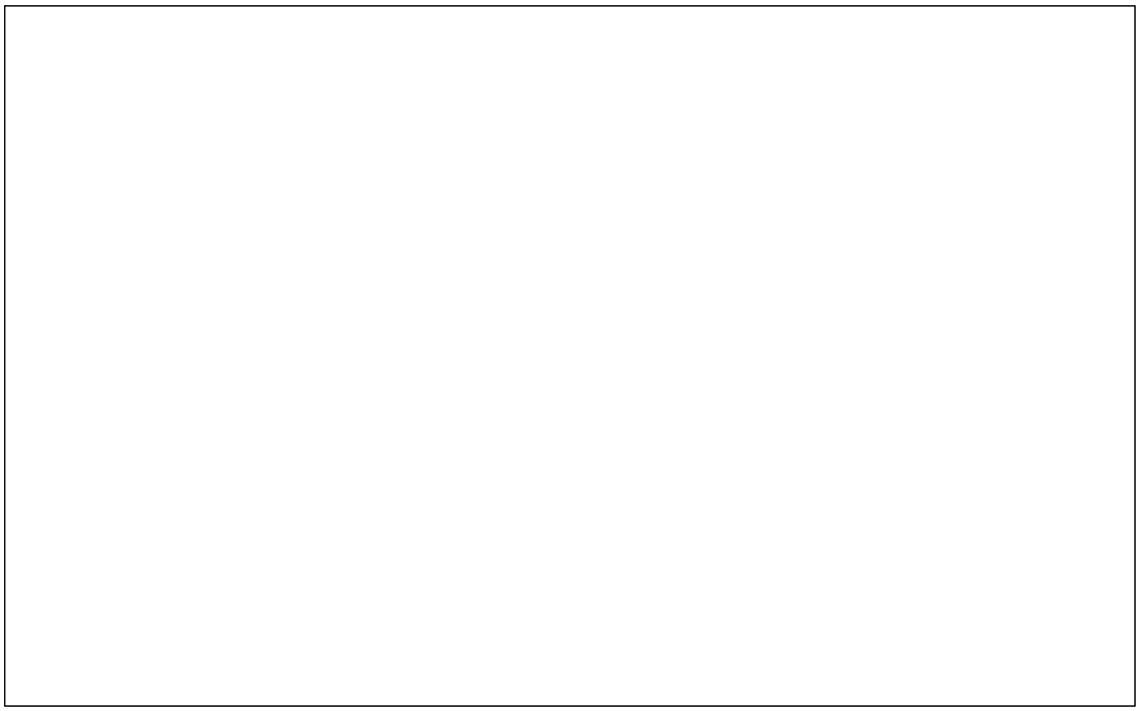
Source: PUC Transaction Database

Exhibit 3.46 Jobber Margins, Zone 3



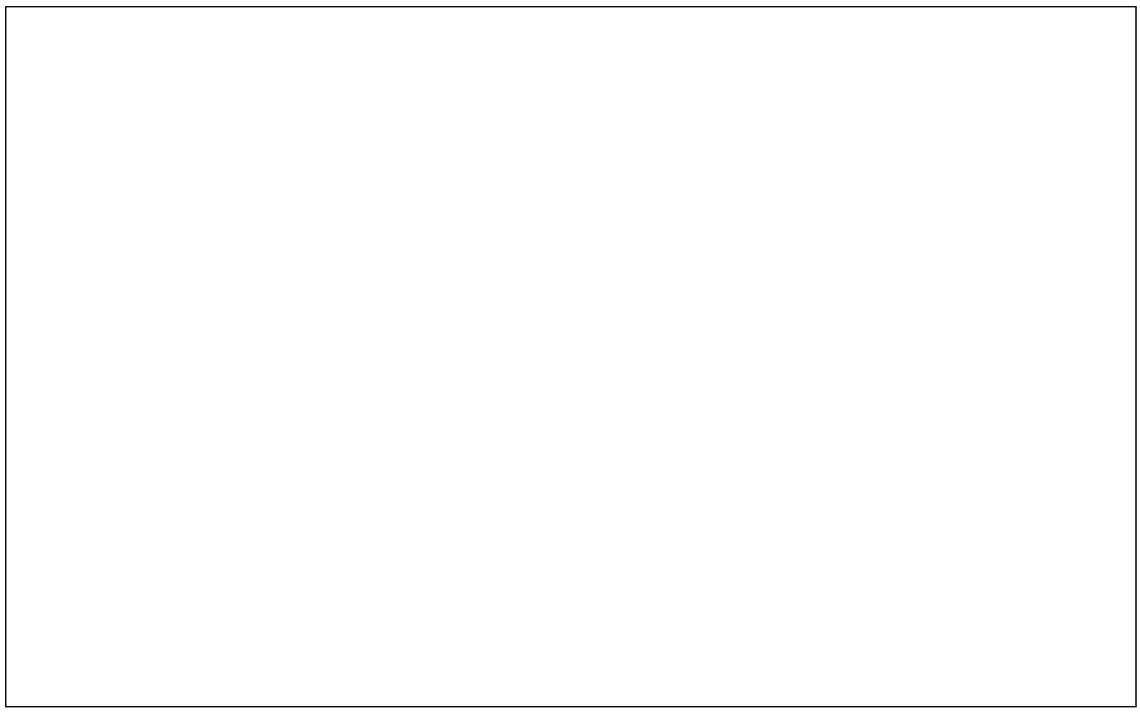
Source: PUC Transaction Database

Exhibit 3.47 Jobber Margins, Zones 7 and 8



Source: PUC Transaction Database

Exhibit 3.48 Jobber Margins, Midgrade and Premium



Source: PUC Transaction Database

Supplier and Jobber Margin Summary

Overall, supplier and jobber DTW prices during the Gas Cap period were controlled as intended in the Legislation. Margins earned by suppliers benefited from lower acquisition costs from refiners based on purchase terms on a different basis than the Gas Cap calculation. Both suppliers and jobbers changed their prices as the Gas Cap changed.

Following the suspension of the Gas Cap in May 2006, margins improved for most (but not all) jobbers. [redacted]

The analysis of margins for suppliers and jobbers in this report represents the best understanding of the data as reported to the PUC in the transaction database and the PIMAR reports filed by the parties. Each party's individual business may require more or less cost than others to achieve the gross margins presented in this report, and hence the reader must use discretion in extrapolating absolute gross margin numbers into conclusions on absolute profits. The value of the Monitoring Program is to initiate a tracking process to identify the margins and follow over time to provide a greater transparency to the overall level and trends of the margins.

Retail Service Station Margins

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 methods. The determination must adjust the retail prices in each zone for the applicable taxes. Exhibit 3.49 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.

Exhibit 3.49 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						
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 Jul 1, 2006	$0.165	$0.18	$0.088	$0.13
		Beginning Jul 1, 2006		$0.16		
Percentage sales taxes						
State-level	General Excise Tax	Before Apr 1, 2006	4%			
		Apr 1-Dec 31, 2006	0%*			
		Beginning Jan 1, 2007	4%			
County-level	County Surcharge Tax	Beginning Jan 1, 2007	0.5%			

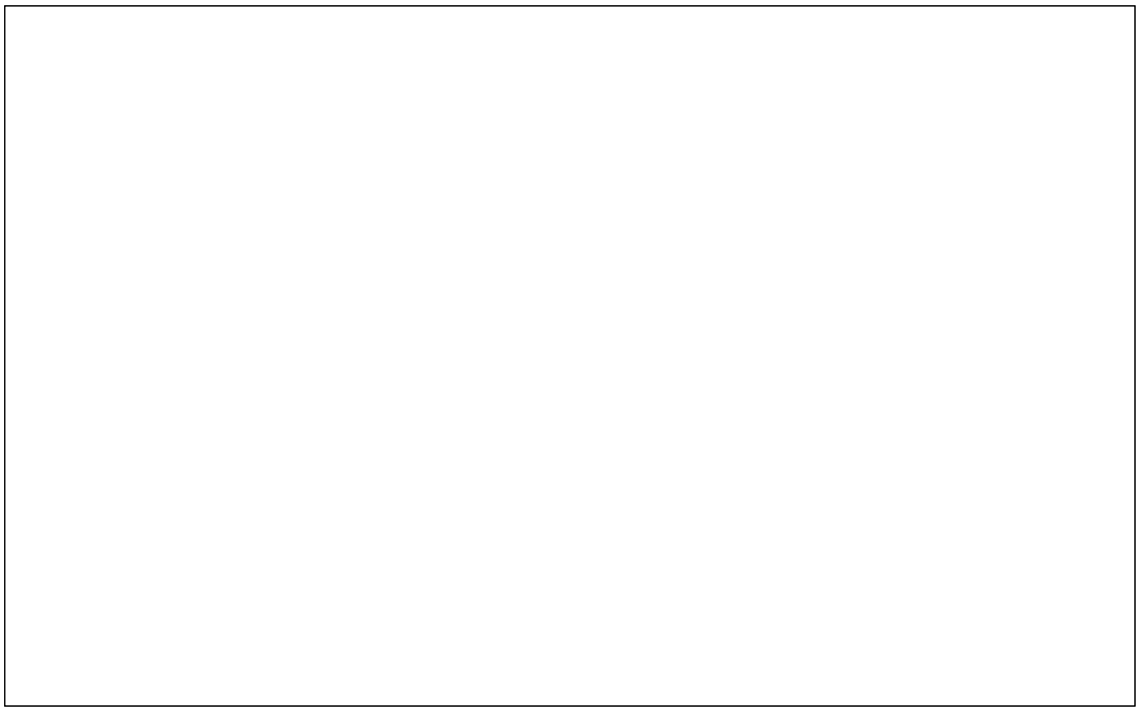
* Except Zones 5 and 6, where GET remained in place at 4%; E-10 gasoline was not adopted in Molokai and Lanai

Example:
Total taxes on a gallon of gasoline that retailed for $3.509 on the island of Maui on Apr 19, 2007 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 restored as of July 1, 2007.

With the determination of the net retail price, the first retail margin calculation method 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 3.50 below. The exhibit is very busy and contains data for all zones except Zones 4 and 6. 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 appears to vary from about $0.15/gallon, or 15 cpg up to $0.50/gallon, or 50 cpg. 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.

Exhibit 3.50 Service Station Net Margin by Zone

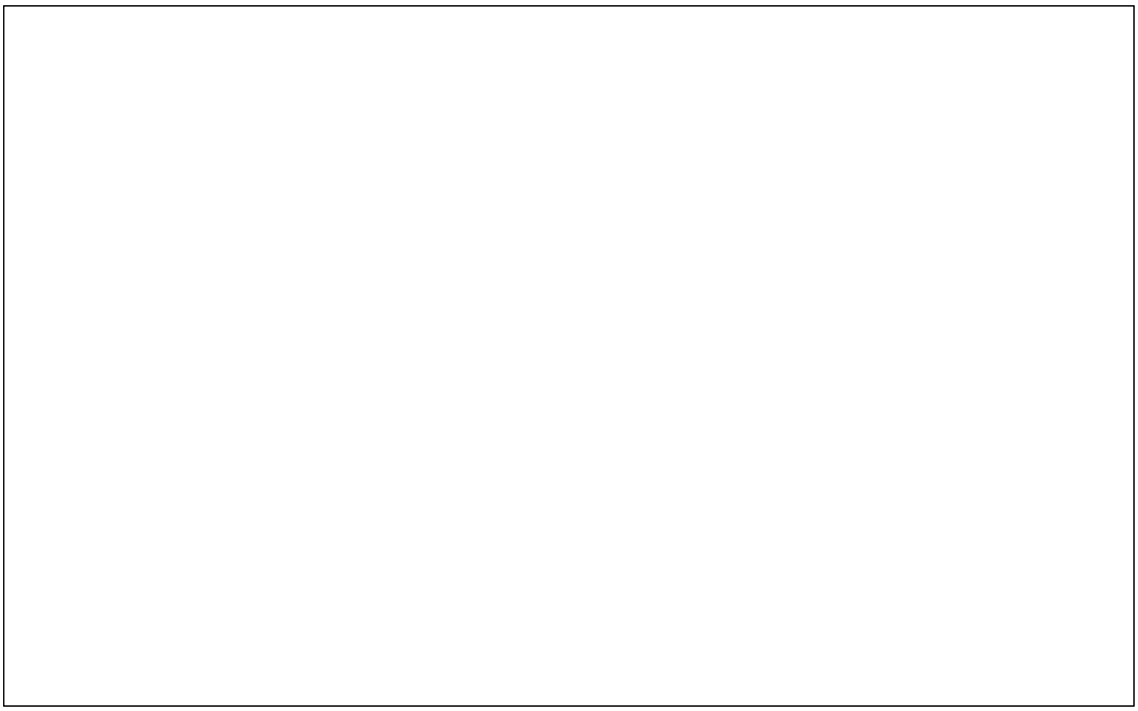


Source: PUC Transaction Database

Exhibit 3.51 shows the same data on an overall average basis during and after the Gas Cap period by zone. The data indicate that margins did, on average increase after the Gas Cap was suspended, even though the retail margins were never impacted by the Gas Cap legislation. As the trend in the prior exhibit shows, the post Gas Cap net retail margins have been declining in most zones since late 2006.

In addition, the retail margins in Zone 1 (Oahu) averaged about $0.20/gallon and were not materially different during and after the Gas Cap period. Margins in other zones, however, were significantly higher than margins in Oahu during both periods. As shown in Exhibit 2.4, Zone 1 has the highest number of gas stations to serve the highest gasoline consumption among all zones. Service stations in Zones 1, 2, 3 and 7 have average gasoline sales that are close to, or higher than the U.S. average throughput. The stations in Zones 4, 5, 6 and 8 have much lower throughputs and therefore need higher margins to cover their fixed costs.

Exhibit 3.51 Service Station Net Margins over the Study Period



Source: PUC Transaction Database

The second method to identify Hawaii retail margins is to determine the specific margins of the 35 service stations which have data reported specifically by both OPIS and in the PUC transaction database. These margins are direct "back-to-back" purchase and sale data and should represent an accurate margin comparison. While the margins are only for 35 stations in Hawaii (about 10% of the Hawaii retail outlets), the results are very comparable to the data presented in Exhibit 3.51.

Exhibit 3.52 shows the specific results by individual station in each zone, and the average for the zone ("Station Average"). The first line in each zone is the "Zone-wide average". The data indicate that the individual station margins corroborate the zone average numbers extremely well, and show that the overall data presented in Exhibit 3.51 are a reasonably accurate depiction of retail service station margins in Hawaii over the study period.

Exhibit 3.52 Individual Service Station Retail Margins and Comparison with Zone Average

Net Retail Margin Summary	Capped Period	Cap-free Period	Overall
Zone 1 Zone-wide Average	0.211	0.205	0.207
Zone 1 Station Average	0.191	0.178	0.183
Service Station 1	0.149	0.086	0.113
Service Station 2	0.214	0.256	0.242
Service Station 3	0.168	0.168	0.168
Service Station 4	0.179	0.159	0.167
Service Station 5	0.177	0.166	0.171
Service Station 6	0.333	0.376	0.358
Service Station 7	0.320	0.336	0.331
Service Station 8	0.210	No data	0.210
Service Station 9	0.218	0.215	0.217
Service Station 10	0.223	0.161	0.185
Zone 2 Zone-wide Average	0.260	0.295	0.281
Zone 2 Station Average	0.257	0.249	0.253
Service Station 11	0.257	0.287	0.274
Service Station 12	0.273	No data	0.273
Service Station 13	0.286	No data	0.286
Service Station 14	0.217	0.211	0.212
Service Station 15	0.236	0.235	0.235
Service Station 16	0.270	0.282	0.277
Zone 3 Zone-wide Average	0.343	0.379	0.365
Zone 3 Station Average	0.341	0.373	0.355
Service Station 17	0.344	0.332	0.336
Service Station 18	0.329	0.345	0.339
Service Station 19	0.345	0.349	0.348
Service Station 20	0.339	0.423	0.393
Zone 5 Zone-wide Average			
Zone 5 Station Average			
Service Station 21			
Service Station 22			
Zone 7 Zone-wide Average	0.228	0.277	0.258
Zone 7 Station Average	0.291	0.316	0.311
Service Station 23	No data	0.302	0.302
Service Station 24	0.338	0.338	0.338
Service Station 25	No data	0.279	0.279
Service Station 26	0.260	0.335	0.296
Service Station 27	0.328	0.382	0.365
Service Station 28	0.267	0.294	0.293
Zone 8 Zone-wide Average	0.353	0.380	0.369
Zone 8 Station Average	0.374	0.410	0.396
Service Station 29	0.423	0.412	0.416
Service Station 30	0.354	0.338	0.343
Service Station 31	0.273	0.306	0.291
Service Station 32	0.390	0.408	0.401
Service Station 33	0.349	No data	0.349
Service Station 34	0.284	0.451	0.365
Service Station 35	0.607	0.837	0.736

Source: PUC Transaction Database

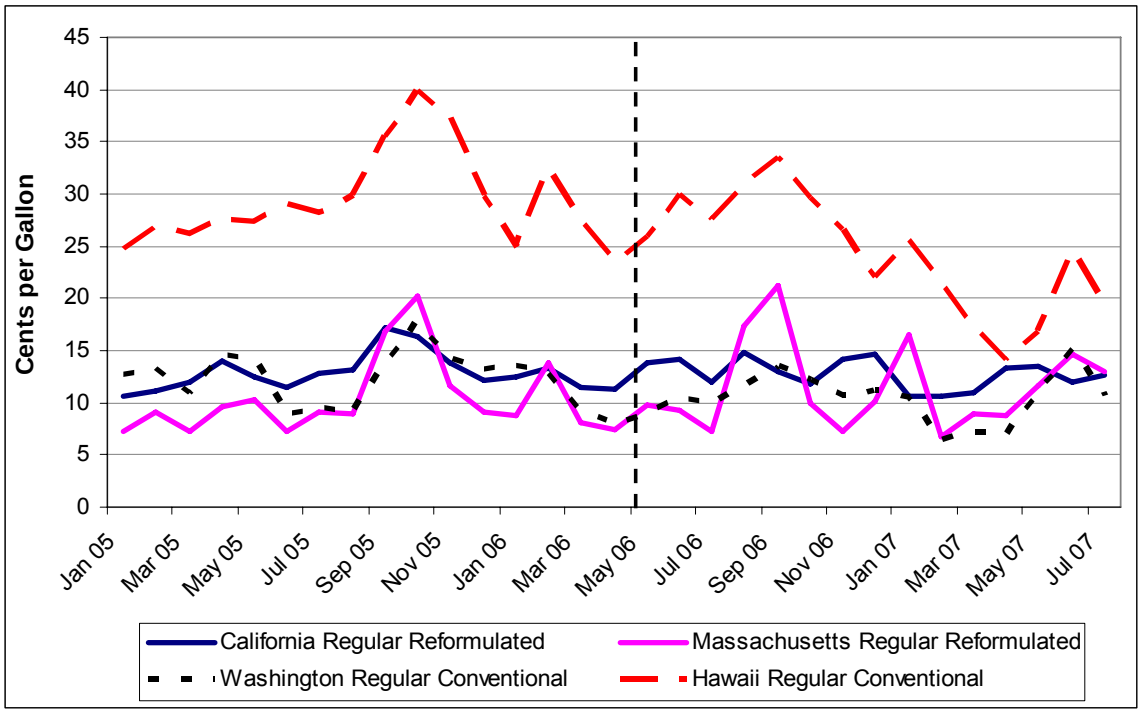
The retail service station margins in Hawaii vary considerably from zone to zone, with neighbor island zones generally much higher than Zone 1 (Oahu). In order to determine the overall level of Hawaii retail margins compared to other regions in the United States, an analysis was done using Energy Information Administration (EIA) data reported by oil companies over the period from January 2005 through July 2007. The states chosen for comparison have a significant

DTW volume sold in the state to insure that there is a reasonable "cost" base of data. The sales basis for the data is the Retail Sales to Company Operated Outlets. This margin compares retail prices from the Company Operated Outlets to DTW purchases from dealer or distributor operated outlets and is not, in fact, "back to back." However, Company Operated Outlets price on the street competitively with other service stations in their marketing region, and this was judged to be a reasonable estimation of retail margins in the states presented.

Exhibit 3.53 shows the calculated EIA margins for Hawaii, California, Massachusetts and Washington for the identified gasoline formulations. The Hawaii margins are shown to demonstrate that the EIA calculation process provides a reasonable estimation of the actual retail margins seen in Exhibit 3.50 and Exhibit 3.51. This exhibit clearly shows that Hawaii average retail margins reported to the EIA are above the margins in the three comparison states. Margins in several of the zones outside Oahu, in particular Maui and Hawaii Zone 8 are significantly above these averages.

There is insufficient data to determine the relative costs of operating a retail outlet in Hawaii versus the states in questions. All three comparison states have major population centers with very high real estate values compared to the U.S. average, although Hawaii values are likely higher. Other factors such as service station throughputs would also be a consideration.

Exhibit 3.53 Comparison of Statewide Hawaii Retail Margins to Other States



Note: Sale price is monthly company-owned retail outlet prices ("Through Retail Outlets"):
Acquisition price is monthly DTW prices ("DTW"):
California and Massachusetts "Total" numbers are the same as "Reformulated" numbers (verified 2000 onward);Hawaii "Total" numbers are the same as "Conventional" numbers (verified 2000 onward).
Source: EIA Petroleum Price Data

Retail Margin Summary

Retail service station margins in Hawaii have ranged from $0.15/gallon to $0.50/gallon depending on the zone. The higher margins are in the zones outside of Oahu, with Maui, Hawaii Zone 8, and Lanai being significantly higher than Oahu. Retail margins were not part of the Gas Cap process, and there is minimal data available through the PIMAR process for identifying retail service station costs.

Comparison of retail margins with specific station data in Hawaii corroborates the overall findings. Comparison with several states data as reported to EIA indicate that Hawaii retail margins may be, on average, $0.10/gallon or more above service stations in those states.

Gasoline Market Observations and Issues

The PIMAR process has provided access to a significant amount of information on the petroleum market in Hawaii, and in particular the gasoline market. While there are issues with some of the data used, the analysis presented in the prior sections reflects a far better glimpse at the gross margins and pricing of the gasoline market than any prior report. High level observations from the gasoline analysis, as well as a discussion of issues on the competitive market in Hawaii are summarized below:

Observations

1. The price of gasoline from the refiners to suppliers in Hawaii is reasonably competitive with other markets. The actual commercial terms between the refiners and three primary suppliers (Aloha, Mid-Pac and Shell) are competitive with sourcing product in the Far East or U.S. with freight adjustments. The three suppliers have negotiating leverage with the two refiners since all three have capability to physically import product if the refiners will not provide mutually agreed import parity access to gasoline.[25]

   The analysis indicated that Hawaii refiner margins for gasoline bulk price are competitive with other markets, and also provided bulk gasoline margins reasonably consistent with U. S. mainland refiners

2. The period when the Gas Caps were in place created a situation where refiners, suppliers and jobbers tended to price close to the Gas Caps. The actual average DTW price versus the gas cap maximum was 7 cpg under the gas cap in zone 1 (6 cpg sate-wide). However, this reflected a mix of some marketers pricing right at the gas cap and others pricing lower. The marketers who priced further below the gas cap also tended to price strategically lower than the higher price marketers even when no caps were in place.

3. During the Gas Cap period, changes in gasoline DTW price took place completely in sync with the changes in the gas cap weekly calculation. In other words, the gas cap was driving gasoline prices in Hawaii. This may seem an obvious observation. However,

[25] See Federal trade Commission vs. Aloha Petroleum and Trustreet Properties, July 27, 2005, requiring that Aloha divest import storage at Barber's Point to Mid-Pac to protect competition in the wholesale market.

it is important to recognize that while the gas cap was driving DTW prices from refiners, suppliers and jobbers, there was a dichotomy occurring between the gas cap as calculated by the formula and the actual cost of gasoline to the suppliers.

The legislated gas cap calculation used OPIS gasoline prices in New York, the Gulf Coast and Los Angeles as a baseline, plus a $0.04/gallon freight adjustment to determine the "import parity" into Hawaii. The commercial terms between refiners and suppliers were not on the same basis. This created a situation where suppliers could either "make money" or "lose money" depending on whether or not their cost of product from refiners increased or decreased as the legislated import parity calculation changed.

4. Supplier gross margins for regular gasoline over the gas cap period often exceeded $0.20/gallon in Zone 1, and were often significantly higher in other zones. The prices were all within the allowable gas cap, and the margins tended to be inflated because the supplier's actual cost for gasoline had a different basis than the gas cap formula. The supplier margins tended to increase after the gas caps were suspended, although they decreased slightly for some suppliers (the reasons stem from different acquisition contracts from the refiners).

5. The price difference for premium and mid-grade gasoline versus regular at the DTW level were controlled during the gas cap period, and increased following suspension of the gas caps. These prices initially increased to offset higher bulk prices from refiners (which increased due to higher spot prices for premium grades in the U.S. market). The higher spreads for premium and mid-grade versus regular have been sustained despite subsequent declines in refiner bulk premiums versus mid-grade.

6. Jobber margins tended to range between $0.05/gallon and $0.15/gallon during the gas cap period, with some jobbers increasing their margin by an additional $0.10/gallon or more in the period following gas cap suspension.

7. Retail service station margins in Hawaii have ranged from $0.15/gallon to $0.50/gallon depending on the zone. The higher margins are in the zones outside of Oahu, with Maui, Hawaii Zone 8, and Lanai being significantly higher than Oahu. Retail margins were not part of the Gas Cap process, and information on retail station costs are not accessible in PIMAR. However, comparison with estimated retail margins in other states would appear to indicate that Hawaii retail margins are about $0.10-15/gallon above mainland states such as California, Washington and Massachusetts.

In summary, the bulk gasoline prices from refiners to suppliers appear market competitive. Supplier margins overall, and in particular for premium grades, appear high. Jobber margins are lower, with a couple exceptions that have had higher margins following gas cap suspension. Retail margins are higher than relatively comparable states on the mainland, with some zones much higher.

Net conclusion is that Hawaii's pre-tax higher gasoline price profile appears to be driven more by higher wholesale and retail marketing margins than by refiner bulk sales margins. (Obviously, the Hawaii refiner companies also market product on a DTW basis as well as through company operated stations, so they also gain a significant marketing uplift on the gasoline they sell to their customers)

The Impact of the Gas Caps

The use of gas caps to control the wholesale price of gasoline resulted in a significant amount of turmoil in the gasoline market in Hawaii for consumers, refiners, suppliers, jobbers and service stations.

Did the gas caps achieve the goal?

The goal was to provide a market based wholesale price cap that would modify Hawaii gasoline prices based on a mainland benchmark plus freight adjustment, with a fixed marketing and zone margin. The gas cap process controlled prices, and the oil industry complied, however it did not necessarily provide true market based pricing.

Was it worth it?

The start of the gas caps coincidental with the U.S. market's roiling from hurricanes created extreme volatility in Hawaii prices. Many consumers and market participants tried to "time" gasoline purchases or sales based on the PUC's weekly publication of the following week's gas caps. This upset the supply chain and created some outage issues. The fact that the gas cap calculation was based on mainland prices, and refiner/supplier commercial agreements were on a different basis created some significant fluctuation in supplier margins (higher) solely due to the gas cap formula. The use of "high trucking costs" in the gas cap zone adjustment calculations allowed most suppliers and jobbers to price higher in each zone than their actual cost of trucking[26].

Based on the fact that gas cap proponents and critics mutually agreed to a gas cap suspension with a PIMAR process put in place to monitor gasoline prices indicates that the general view was that the gas caps may not have been the best solution.

What happened after gas caps were suspended?

Market prices decline in the summer of 2006 and through the fall. In this period, prices for regular gasoline from suppliers and jobbers also declined, but lagged the overall global market. In this period, continuation of gas caps (as modified by PUC Decision Order 22451) would have resulted in lower prices to consumers. In the spring of 2007, as global market prices increased significantly, prices from suppliers and jobbers also increased, but also lagged the global market. In this period, the continuation of the gas caps would have resulted in higher prices to consumers. Overall, wholesale prices to retail stations may have been lower by $0.05-$.10/ gallon had gas caps been continued. The savings would have been passed on to the retail consumer only if retail margins had stayed at the levels actually seen.

As noted earlier, prices for premium and mid-grade gasoline have increased more than regular gasoline when gas caps were suspended. Data indicate that Hawaii consumers have not reduced their purchases of higher octane grades through mid-2007.

[26] This was necessary to allow some jobbers who supplied outlying locations to remain profitable. Exclusion of these jobbers from the Gas Cap law was not in the PUC's authority.

Gasoline Market Issues

A significant portion of the Hawaii refinery gasoline supply is marketed through the three major suppliers and the jobbers. This arrangement is not unlike other regions in the U.S. where several refineries may supply a region, and large scale suppliers may receive product from those refineries on purchase or exchange terms. However, the Hawaii market does have some significant differences beyond that similarity:

1. The number of participants in each zone in Hawaii is relatively small. This situation stems from the overall low level of gasoline demand in Hawaii and its geography, since it is difficult for jobbers to be competitive with markets spread over islands (jobbers in mainland markets can operate in multiple counties much more easily). Even the major suppliers do not have operations in all zones.

2. If a supplier (non-refiner) wanted to increase market share in most mainland markets, they could buy additional product on the spot market to supply into their system and find multiple refiners interested in selling to them. In Hawaii, the suppliers, and also the jobbers, appear to have no options, or incentives, to increase market share. If, for example, Shell wanted to increase revenue by selling more gasoline during periods where their margins are high, reducing their price versus other companies would result in a situation where they would exceed their contracted volume commitment from the refinery supplying them. There is no viable option to get more product from the refiner, and importing gasoline into Shell tankage in Hawaii to support higher sales may create conflict with a refiner who is supplying them contract product in Hawaii. (On the mainland, Shell could simply purchase spot gasoline to support the additional demand need). This issue essentially restricts competitive supply at the wholesale level in Hawaii.

3. While there is capability for Aloha, Mid-Pac and Shell to import gasoline into Hawaii, there are several obstacles.

    a. One is that the party importing gasoline could jeopardize their supply contract with a refiner by attempting to increase market share. In Hawaii's closed market, incremental gasoline imported into Hawaii means either reducing crude runs or exporting surplus gasoline, which clearly impacts refiners.
    b. Two is that following the ethanol mandate, the importer would be required to arrange the import of a HIBOB type product suitable for ethanol blending. It may be possible to arrange this, but it does make it more difficult than the prior alternative of simply buying spot market gasoline for Hawaii.
    c. The suppliers may not really have any incentive to import, as long as they feel they are buying product from the refiners at competitive market prices. Attempting to increase market share by importing will tend to drive prices down, jeopardize supply contracts, and likely not net more income.

    As the gasoline analysis indicates, it appears that the suppliers are getting competitive market prices from the refiners for their supply. Supplier margins are well above mainland markets, as are retail service station margins. The situation as it is appears favorable to all parties.

4. Jobbers in Hawaii are also much more limited in finding competitive suppliers of gasoline than mainland markets. A jobber in, for example, Atlanta, may have as many as 15 different potential refiner/suppliers to negotiate with for supply of product, either as an unbranded buyer or as a branded distributor for the refiner/supplier. In Hawaii the choices are much more limited. If a jobber wanted to consider switching from (for example) Chevron to Mid-Pac as a supplier, Mid-Pac may have to go to Chevron (or Tesoro) to secure the additional gasoline supply for the jobber.

5. The existing infrastructure in Hawaii makes it virtually impossible for an outside party to enter the market, short of an acquisition such as Mid-Pac's purchase of ConocoPhillips assets. The market cannot realistically support additional refineries or additional suppliers or jobbers without reducing volumes even further for the existing parties. This would decrease scale, adversely affect margins for all parties and create inefficiencies.

Recognizing these factors in the Hawaii market, there remain some basic questions that merit discussion. These are as follows:

1. How can competition in the gasoline wholesale market in the State of Hawaii be increased?
2. How can the pre-tax wholesale price of gasoline in the State of Hawaii be decreased?
3. How can the market or the efficiency of the market for gasoline in the State of Hawaii be improved?

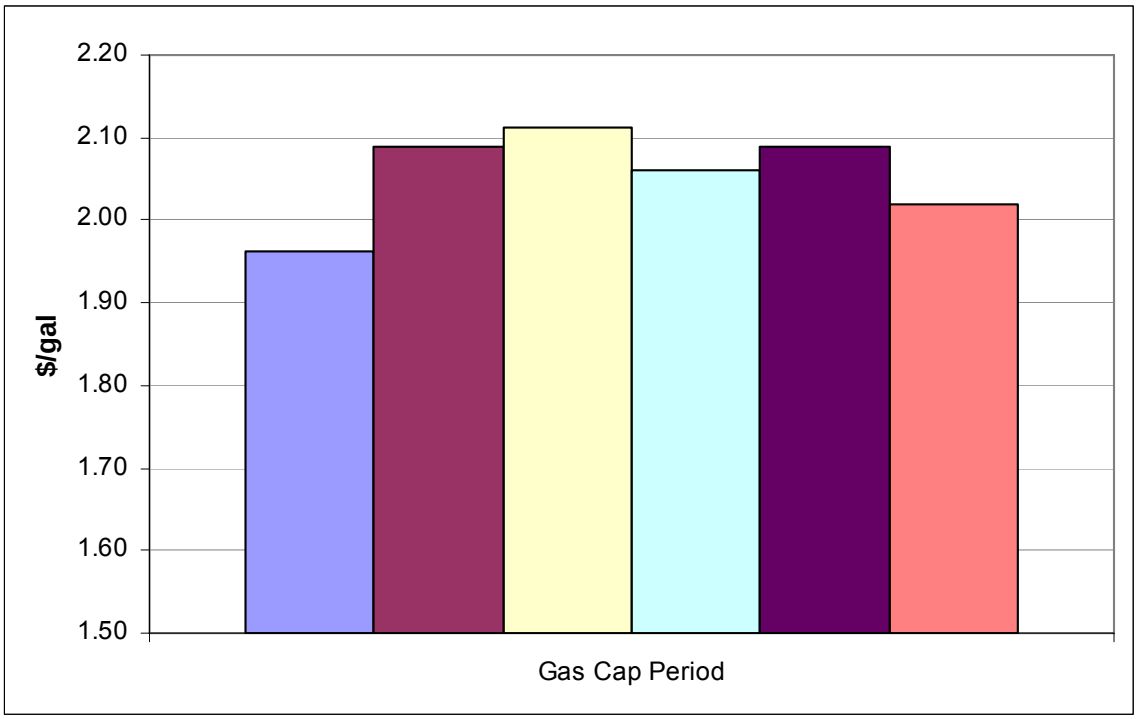
Competition in the wholesale market is constrained by Hawaii's small market size, disconnection from other markets, and lack of incentive for any existing market participants to alter their profile as discussed above. With access to HIBOB controlled by the refiners, and potentially less ability to import HIBOB-compatible blendstock than conventional gasoline, it is difficult to see how competition can be increased, and therefore wholesale prices reduced.

That being said, there is clearly a spread between wholesale prices to service stations, as shown by

Exhibit 3.54 below charting average DTW prices in Zone 1 during the gas cap period. Even with gas caps in place, some suppliers' average wholesale prices were as much as $0.15/gallon below others.[27] This indicates that there is some competition in wholesale markets in Hawaii. However, the fact remains that overall supplier gross margins appear high, and it is not clear at this point how much of the suppliers' gross margins are profits versus costs[28].

[27] These prices do not include any sales to the military, hypermarketers or commercial accounts.
[28] Information on costs and profit numbers are being provided by suppliers to the PUC in November, 2007 for years 2005 and 2006.

Exhibit 3.54 Average DTW Prices in Zone 1, Gas Cap Period



Source: PUC Transaction Database

ICF also examined the gasoline transaction data following the gas cap suspension to assess how gasoline prices are changed in Hawaii. The questions that were critical were: 1) Is one party the first to move DTW price, then the others follow? 2) Do all parties change price together? 3) Do prices go up or down immediately after U.S. spot prices, or NYMEX prices, or Singapore prices change? We looked at average DTW prices in Zone 1 for the suppliers in the Exhibit above, as well as focusing on several individual service stations, looking at day to day discreet changes over two or three several month periods.

This analysis showed that is no conclusive pattern that answers any of those critical questions. No one supplier leads price changes; there is no "collective" moves on prices – some parties update DTW prices weekly or randomly; others more frequently; prices sometimes change following changes in the market centers (Gulf Coast, Singapore, etc) but almost never on the same day or following day, and it is different for each supplier.

The analysis result, while not revealing a pattern, does in fact support a contention that the Hawaii market is different than the mainland. On the mainland, it would be extremely unusual to have futures prices or spot market prices change by several cents per gallon and not expect a commensurate change in all suppliers' prices at racks and for DTW accounts. That does not happen in Hawaii. In Hawaii, suppliers buy from their "refiner", and sell to their DTW accounts and jobbers. There is no fear that a jobber may buy product from a different account if the supplier doesn't "keep pace" with the market price changes. Over time, the data show that

Hawaii DTW prices ebb and flow with the mainland (and Singapore) commodity prices, but it is not a pricing pattern where the entire market changes every day a similar amount.

One of the reasons for this is that each of the refiners and suppliers has different cost structures for their gasoline. Refiners' cost changes as the crude market changes; suppliers' cost change as their contract terms with refiners change. The contract terms may change suppliers' acquisition prices on a daily, weekly or monthly basis in Hawaii whereas it is typically on a daily basis on the mainland.

Decreasing the pre-tax wholesale price of gasoline in Hawaii is largely dependent upon increasing competition. Based on the above discussion, that will be difficult to achieve by any entrant of new market participants. There are, however several recommendations that ICF has for the PUC to consider which may influence gasoline prices in Hawaii, as noted below:

1. The primary recommendation is to continue the development of the PIMAR program with a number of modifications as identified in the last section of this report. The transparency that this program can provide will provide significant value over time. Market participants will understand that their actions are being monitored, and will be visible. The report and its process need to be less burdensome to market participants, as well as the PUC.

2. Continue to have the Gas Cap legislation suspended. Consider recommendations to the legislature for modifications to the Gas Cap factors which will better align gas cap baseline price and location differential to commercial terms. It may be necessary to keep the Gas Cap legislation in a suspended mode (rather than repealing the legislation) as a possible control mechanism if the PIMAR process does not achieve desired results.

3. Emphasize to Hawaii consumers, potentially with support from DBEDT, that use of premium and mid-grade gasoline may not be a requirement as per the car manufacturer's driver instructions. Using regular gasoline may save many consumers unnecessary expense.

4. Achieve a better understanding of the costs of the wholesale supply business in Hawaii. The supplier margins are high, and as noted, there is minimal incentive for any supplier to push prices lower to improver market share. Gross margins appear even higher in most zones outside Zone 1, but costs are also greater in most cases.

5. Retail service station margins in Hawaii in all zones appear to be quite a bit higher than several mainland states, with many zones outside Zone 1 again having much higher margins. While analyzing retail margins was not an object of the PIMAR process, a better understanding of the need for higher retail margins should be explored.

Any actions to reduce the wholesale price of gasoline can potentially undermine refinery profitability. This may not be a significant concern if the refiner-supplier commercial terms continue to insure that the refinery gasoline produced achieves import parity price. Refinery profitability would be more impacted by higher and higher global costs for sweet crude, lower and lower sulfur requirements in diesel and potentially other products, and legislation to reduce carbon emissions.

Improving the efficiency of the market for gasoline in the State of Hawaii implies that there are options that would allow gasoline to be provided more efficiently to Hawaii consumers, and presumably at lower cost.

The existing supply chain in Hawaii must overcome significant challenges in a small market with a high dependence on waterborne supply to all zones outside Zone 1. The delivery of product through the terminal system and to a number of service stations in remote locations appears to work as well as could be under those conditions. The integration of ethanol required a complete parallel supply chain to be developed and integrated into the petroleum supply chain, and this process also has been implemented by the oil industry in a timely and efficient manner despite the requirement to import ethanol when planned in-state supply did not develop.

While all these activities are performed effectively to deliver product to consumers, the fact that the Hawaii market is small and "dislocated" necessitates higher costs. This starts with Hawaii's higher crude costs, due to smaller crude cargo volumes than most other U.S. refiners, which increases freight cost. Smaller refineries have higher fixed costs per gallon of product. Movement of product by barge is expensive and will get more expensive as all barges must be double hulled in coming years, and barges used in Hawaii tend to be smaller than many mainland markets. Terminals must be operated and maintained despite lower throughputs than mainland terminals and therefore costs are higher per gallon. Changes with ethanol as well as lower diesel fuel sulfur levels trigger imports of ethanol and ULSD in small cargoes and exports of unfinished products to balance, again in small parcels.

This report has some data to delineate some of these costs that get built into the Hawaii market, but not all. Completion of all the required PIMAR data for profit analysis may provide some numbers that translate the impact of the small market on costs. The ability to streamline the system, lower cost and improve efficiency is limited.

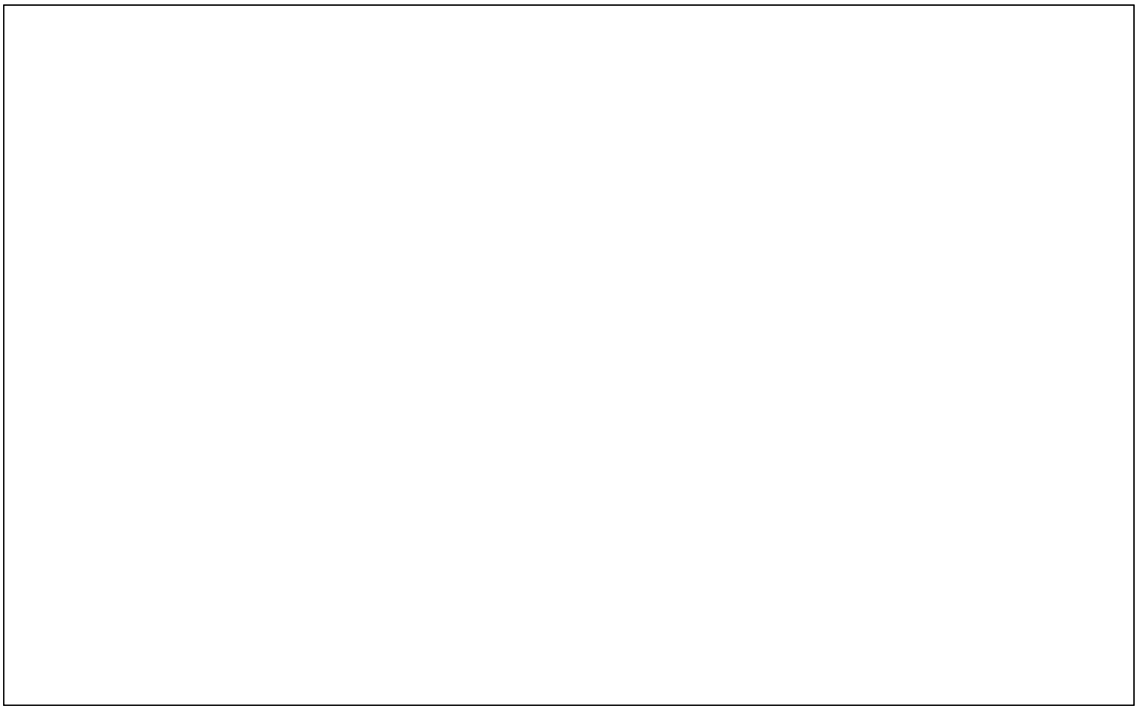
4 Assessment of Prices & Margins in Hawaii for Other Products

Jet Fuel Price Analysis

This section will use the IPIR data to identify jet fuel price trends in Hawaii over the study period. Jet fuel is a key refinery product, and the objective of the price analysis is to identify trends in jet fuel prices in Hawaii, and whether the prices for jet fuel in Hawaii are market competitive.

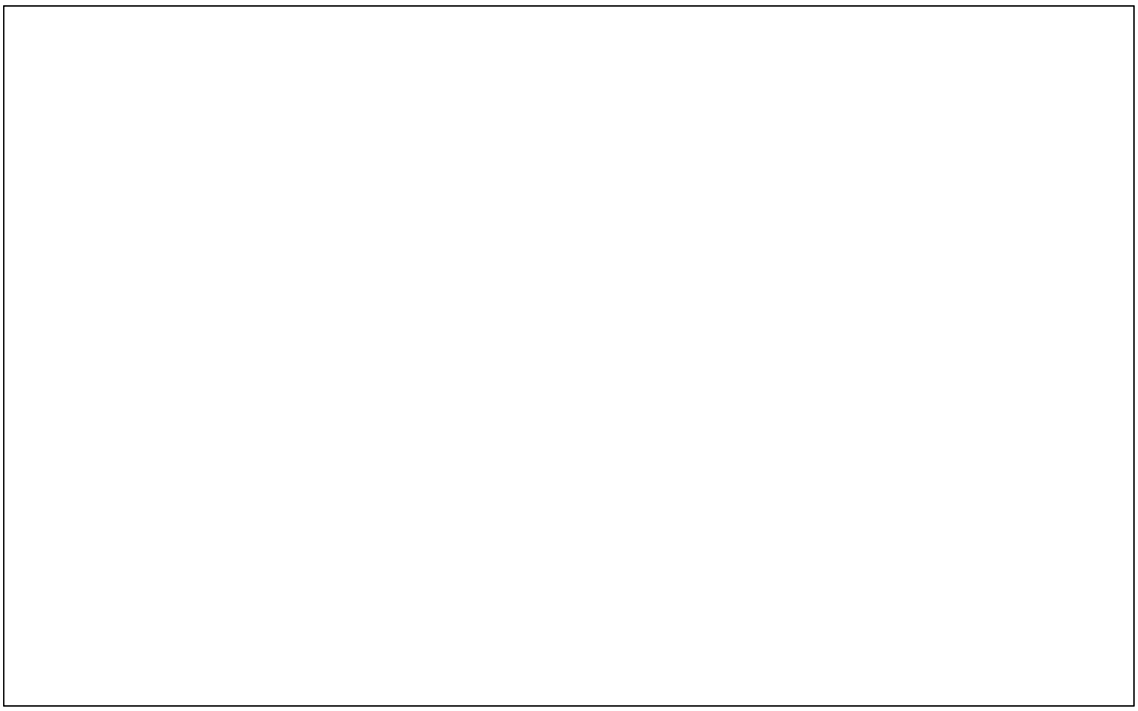
Exhibit 4.1 shows Hawaii Zone 1 average jet fuel wholesale prices compared with landed crude costs. Zone 1 prices are shown because they represent the largest portion of jet fuel sales in Hawaii. The jet fuel price over the study period appears to track the crude oil price reasonably well. [redacted]

Exhibit 4.1 Hawaii Jet Fuel Wholesale Price vs. Landed Crude



Source: IPIR

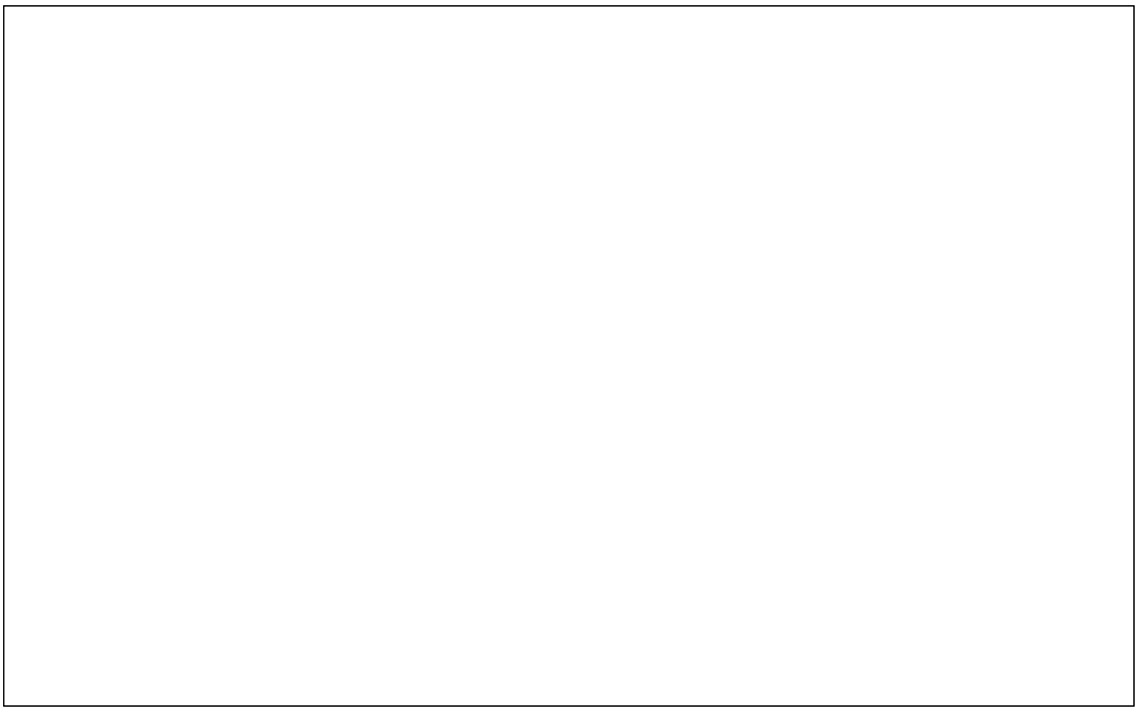
Exhibit 4.2 Hawaii Jet Fuel Wholesale Price and Landed Crude Cost Spread



Source: IPIR

Exhibit 4.3 shows Hawaii Jet fuel average wholesale prices tracked against crude prices for selected Indonesian and Far East crudes which are typically run in Hawaii or are regional benchmarks. A similar pattern exists to the trend versus Hawaii landed crude costs.

Exhibit 4.3 Hawaii Jet Fuel Wholesale Price Spread vs. Far East Market Crudes



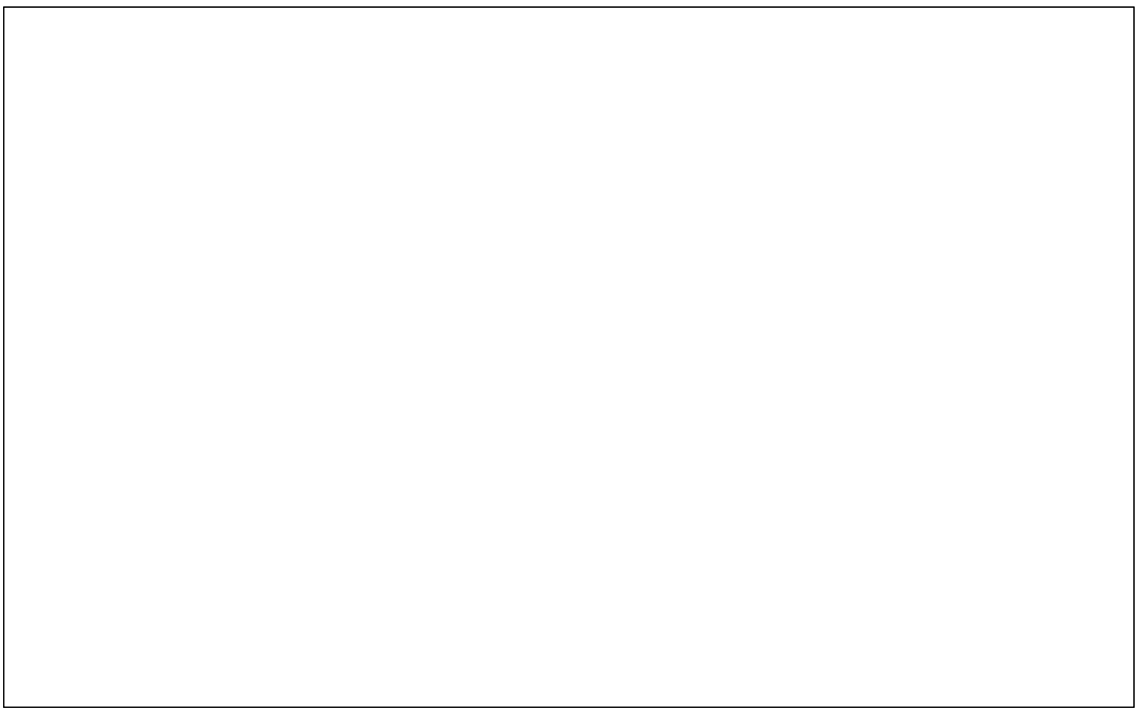
Source: IPIR

The above exhibits show that there is a strong correlation between jet fuel prices and crude costs. However, the correlation does not necessarily mean that the jet fuel price in Hawaii is competitive with other markets. In order to evaluate that, it is necessary to compare Hawaii jet fuel prices to possible import sources for jet fuel into Hawaii.

Exhibit 4.4 shows the Hawaii jet fuel wholesale prices (shown as 'Jet Fuel' in the exhibit) compared to jet fuel spot market prices in Singapore, Korea and the USWC (U.S. West Coast) cargo market. The exhibit shows that the Hawaii wholesale jet fuel price has a strong relationship to the West Coast Cargo market price. The Hawaii price averages [redacted] above the West Coast prices, indicating that wholesale jet prices in Hawaii are market competitive with the West Coast (normal freight would be [redacted][29].

[29] [redacted]

Exhibit 4.4 Hawaii Jet Fuel Wholesale Price vs. Other Markets

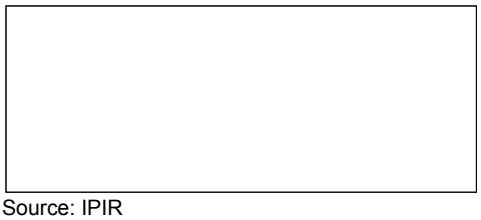


Source: IPIR and Platts

The Hawaii price also correlates well with the Singapore and Korea market. While the Singapore absolute price is significantly lower than Hawaii [redacted], the relationship is stable, particularly after January of 2006. Virtually all the jet fuel imported into Hawaii comes from the Korea and Singapore, and the price basis is very liquid. Transportation costs to Hawaii from that region are well under [redacted], which enables to jet to flow economically to meet Hawaii demand.

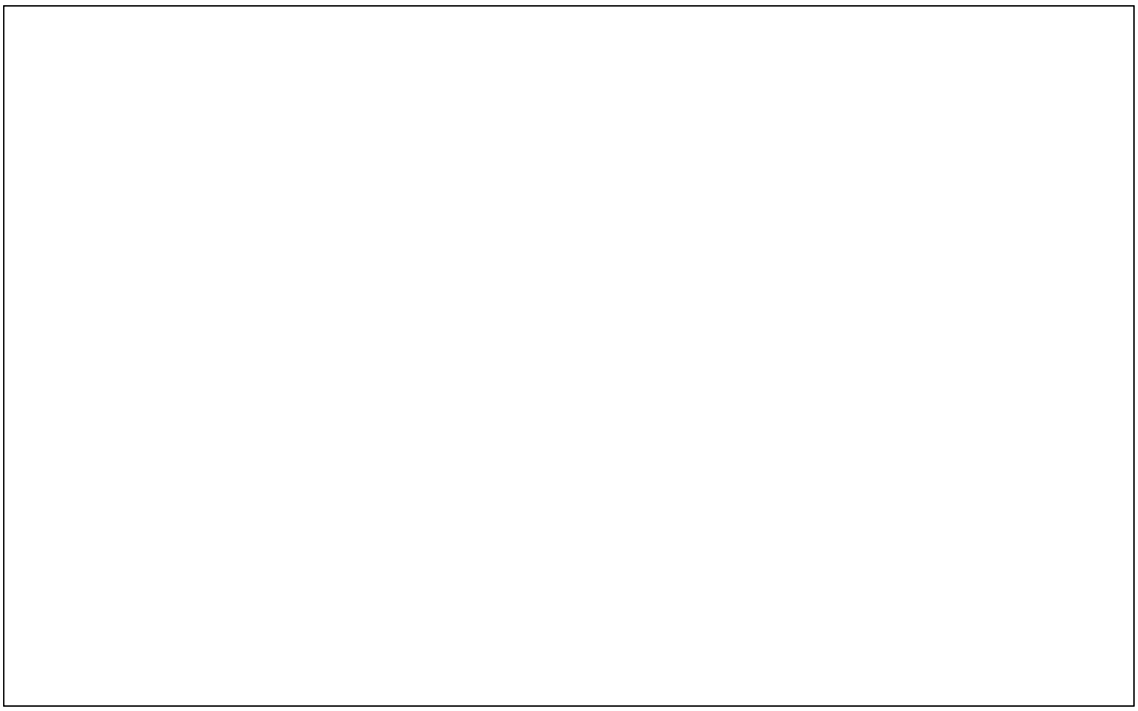
While the majority of jet fuel consumption is on Oahu, the jet fuel demand in the other zones is not insignificant due to the critical nature of airline traffic to the states' commerce. Exhibit 4.5 and Exhibit 4.6 compare the prices in other zones to Oahu. The jet prices in the zones are shown below from January 2006 forward (data prior to January 2006 appear to have inconsistencies). Prices between the zones vary month to month, but on an average basis are as follows:

Exhibit 4.5 Hawaii Jet Fuel Wholesale Price Spread vs. Other Zones



Source: IPIR

Exhibit 4.6 Hawaii Jet Fuel Wholesale Price Spread Trend vs. Zone 1



Source: IPIR

[redacted]

The higher prices in the other zones are not unreasonable given transportation costs by barge as well as terminal handling costs and trucking into airport storage facilities. Zone 2 prices are higher than the other zones, and may be related to lower demands versus the other zones as well as possibly smaller barge deliveries (smaller barge deliveries will be more expensive on a per gallon basis)

The final area to examine would be the comparison between jet fuel import landed prices and the jet fuel wholesale price in Hawaii. There is minimal data on jet fuel import costs to make this comparison since HFFC, the primary importer, was not required to report imported prices in the IPIR database. This information will be tracked in future reports. The fact that jet fuel flows routinely into Hawaii from Korea and the Far East markets indicates that prices in Hawaii are strong enough to attract demand. Prices in Hawaii are not, however, out of line with competitive market prices on the U.S. West Coast.

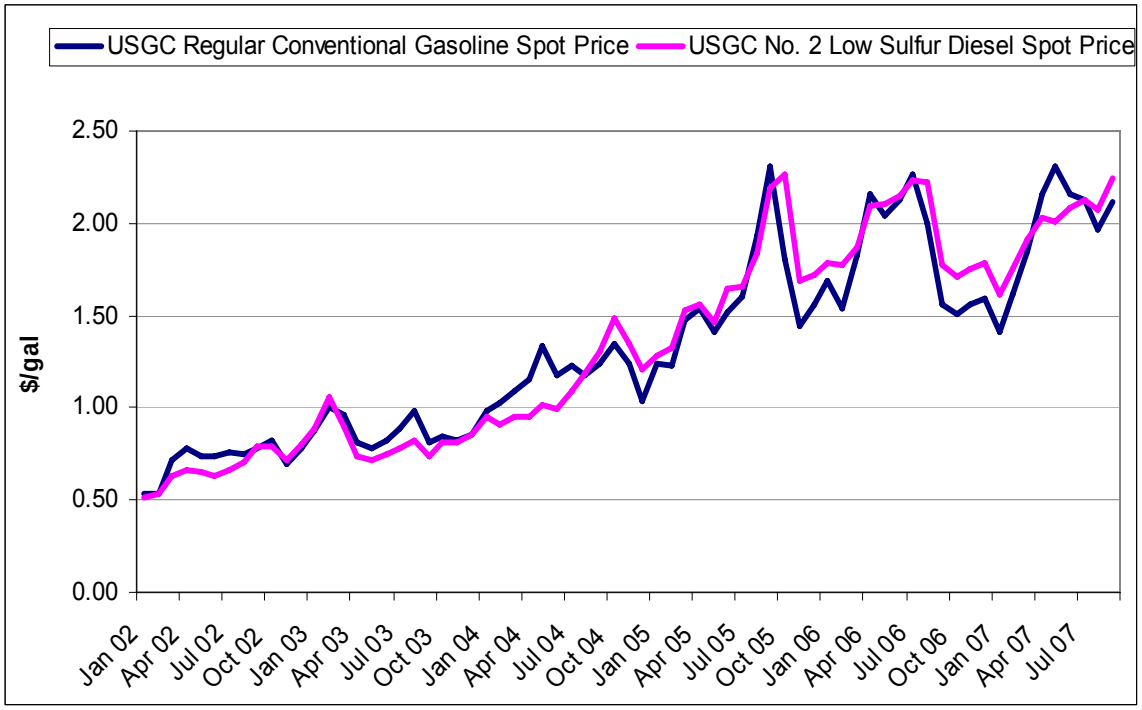
Our conclusion therefore is that the jet fuel market prices in Hawaii represent market competitive prices and are reasonable values for refiners on that basis.

Diesel Fuel Price Analysis

The Diesel fuel analysis requires an explanation of the two primary categories of diesel sales as reported on the forms: Diesel under 0.05% sulfur and diesel over 0.05% sulfur. In addition, introduction of ULSD (Ultra low sulfur diesel) in 2007 requires parties to market diesel with sulfur levels under 0.0015% sulfur for all on-road sales. The DBEDT forms segregate sales at 0.05% and under, and over 0.05%.

As a result of strong global growth in diesel fuel demand as well as increasing efforts to reduce the sulfur content in diesel fuel, wholesale prices for diesel fuel have exceeded gasoline price over the past three years (See Exhibit 4.7). Beginning in June, 2006, the allowable sulfur content in all diesel fuel used in the U.S. for on-road consumption was reduced from 0.05% sulfur content (500 ppm) to 0.0015% sulfur, or 15 ppm. On June 1, 2007, the sulfur specification for all off-road diesel[30] was reduced from 5,000 ppm to 500 ppm. These changes impacted the refiners in Hawaii by causing them to be required to lower the sulfur content of the diesel fuel produced in Hawaii.

Exhibit 4.7 U.S. Diesel Fuel Prices vs. Gasoline



Source: EIA

In addition to increased price levels, low sulfur diesel fuel prices, particularly the ULSD grade (under 15 ppm sulfur) can exhibit significant price volatility as these specifications changes are being integrated in the marketplace. Production and shipment of ULSD, in particular is difficult due to the extremely low sulfur content and high potential for contamination in the shipping process.

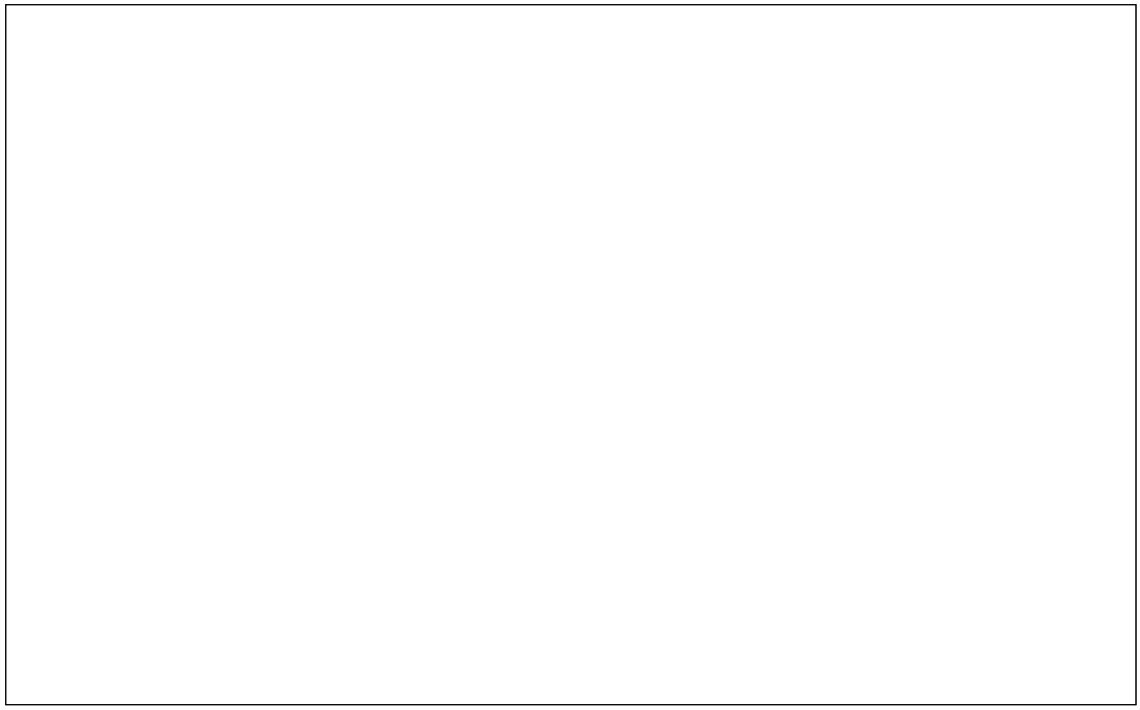
[30] Off-road diesel is used for agriculture, commercial usages, locomotives, etc

Diesel fuel data in IPIR was collected by lumping diesel fuel as either under or over 500 ppm sulfur, consistent with U.S. EIA practices prior to ULSD introduction[31]. This allowed delineation of on and off road diesel.

The IPIR data does provide pricing information which can be used for analysis. However, there are a number of categories of diesel fuel sales in Hawaii. There are wholesale diesel sales, which are resold in the Hawaii market, and there are multiple categories of sales to end users, including Commercial sales, Industrial sales, Sales via retail service stations, residential, and other. The wholesale sales are smaller in volume than the other categories of sales, but are the closest price that would represent a refiner's margin and will therefore be used to compare with crude costs and diesel prices in other markets.

Exhibit 4.8 shows the Zone 1 wholesale diesel prices versus landed crude costs for both diesel less than 500 ppm (LSD) and diesel over 500 ppm (HSD). This spread represents a "gross margin" for diesel fuel sales versus crude oil cost. The diesel exhibit generally follows crude price, however not with the same correlation as jet fuel prices.

Exhibit 4.8 Hawaii Diesel Fuel Wholesale Prices vs. Landed Crude



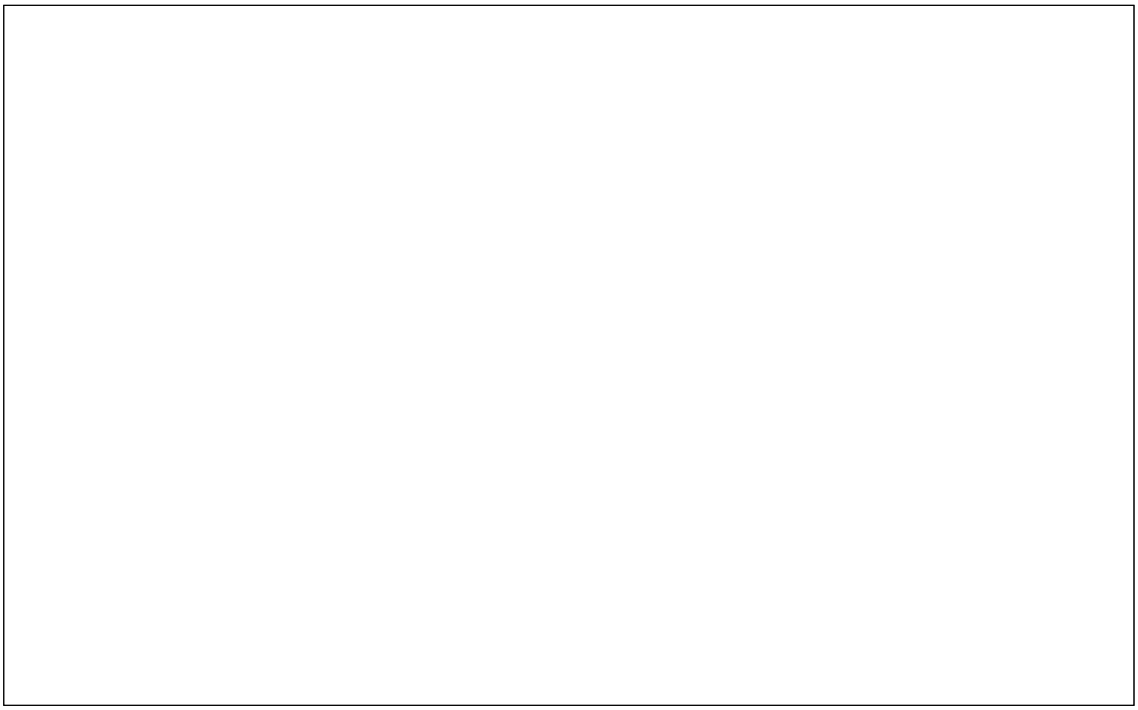
Source: IPIR

The price spread in Exhibit 4.8 between LSD and HSD widens considerably after June 2006, when the specifications for sulfur level in on-road diesel were reduced to 15 ppm. The premium for LSD widened from an average spread of 7 cpg before June to an average of 22 cpg from June through the end of the study period.

31 Note that the changeover to ULSD requires that the PIMAR database be modified to gather diesel fuel in three categories, under 15 ppm, 15-500 ppm, and over 500 ppm. This change will better assist analysis in the future.

Exhibit 4.9 tracks the diesel prices against the same three Indonesian marker crudes shown in other exhibits. As with the comparison to Hawaii landed crude cost, there is some similar trending.

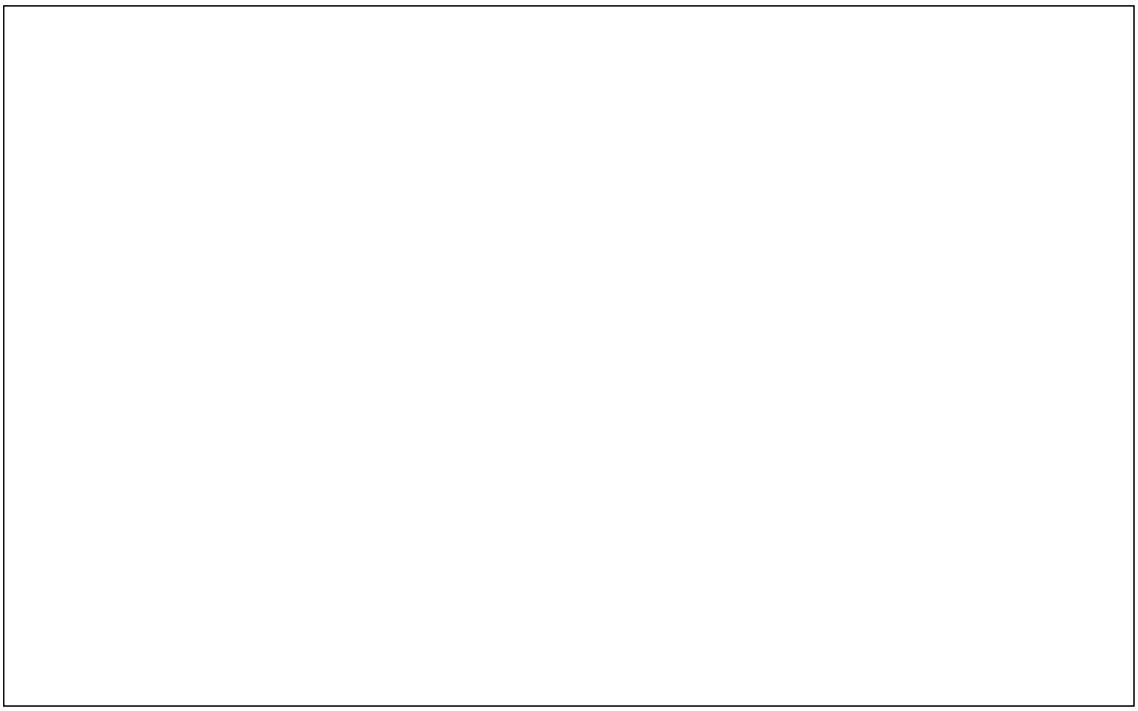
Exhibit 4.9 Hawaii Diesel Fuel Wholesale Prices vs. Far East Marker Crudes



Source: IPIR

The next exhibit (Exhibit 4.10) shows Hawaii LSD price against similar market diesel prices in other areas. The intent is to determine if Hawaii LSD prices are priced competitively with potential markets which could be import sources into Hawaii. Note that since the Hawaii LSD data is for all diesel under 500 ppm (some on-road at 15 ppm after June, 2006 and some off-road at higher sulfur levels), comparisons with other markets may not be on an apples-to-apples basis. The exhibit indicates that the wholesale prices prior to the summer of 2006 tended to be close to U.S. West Coast prices, and then subsequently were at a premium most of the time through the balance of the study, in some cases $0.20/gallon to as much as $0.40/gallon. Prices versus Singapore were at a premium the entire time, with the premium widening to average $0.43/gallon after the summer of 2006. The wide spreads after the summer of 2006 versus both the West Coast and Singapore are much higher than the cost of freight.

Exhibit 4.10 Hawaii Zone 1 LSD Fuel Wholesale Prices vs. Other Diesel Spot Market Prices

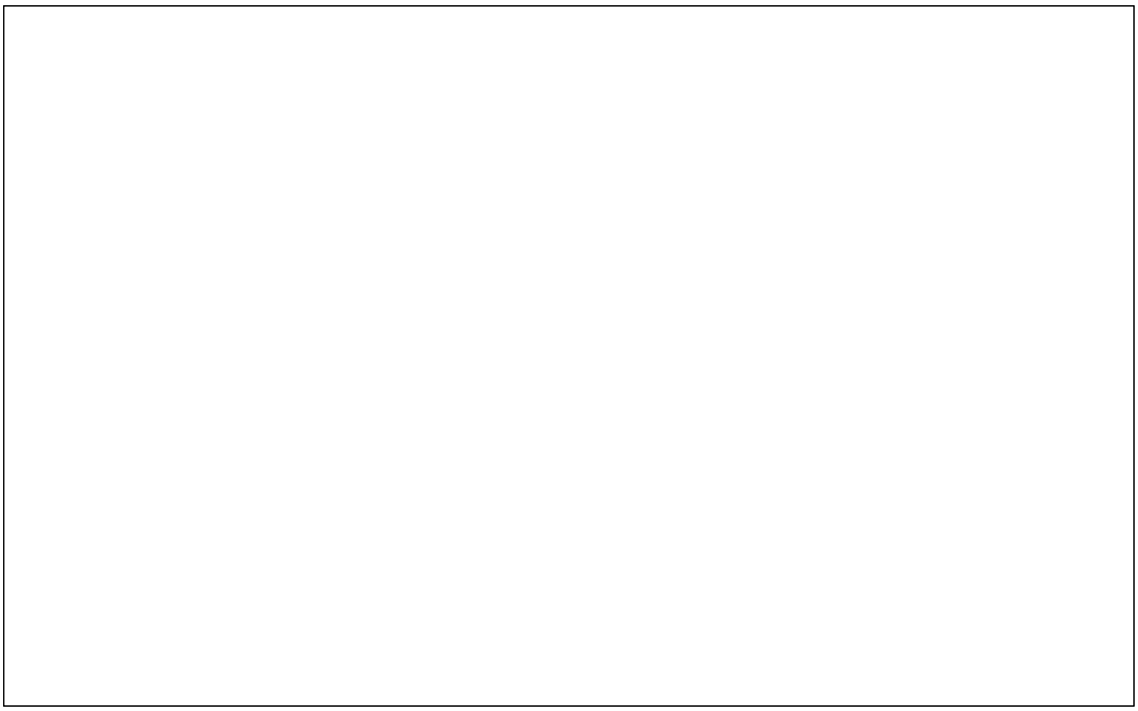


Source: IPIR and Platts

Exhibit 4.11 below compares the landed cost of several Diesel fuel imports into Hawaii with the prevailing wholesale price at the time of delivery. The cargo imports show several periods of deliveries at well under the prevailing average LSD wholesale price, and others at or above the wholesale price .According to U.S. EIA records, virtually all of these imported cargoes (primarily from the Far East) were in fact ULSD, or under 15 ppm sulfur. The implication is that Hawaii refiners or suppliers were having difficulty producing or buying ULSD and periodically required imports to meet sales requirements for on-road diesel.

Given that these cargoes are ULSD, then the price comparison is not exactly apples to apples since the Hawaii Zone 1 wholesale average LSD price is likely lower than the ULSD prices which are included in the LSD price. [redacted]

Exhibit 4.11 Hawaii Zone 1 LSD Landed Import Prices vs. Wholesale Price

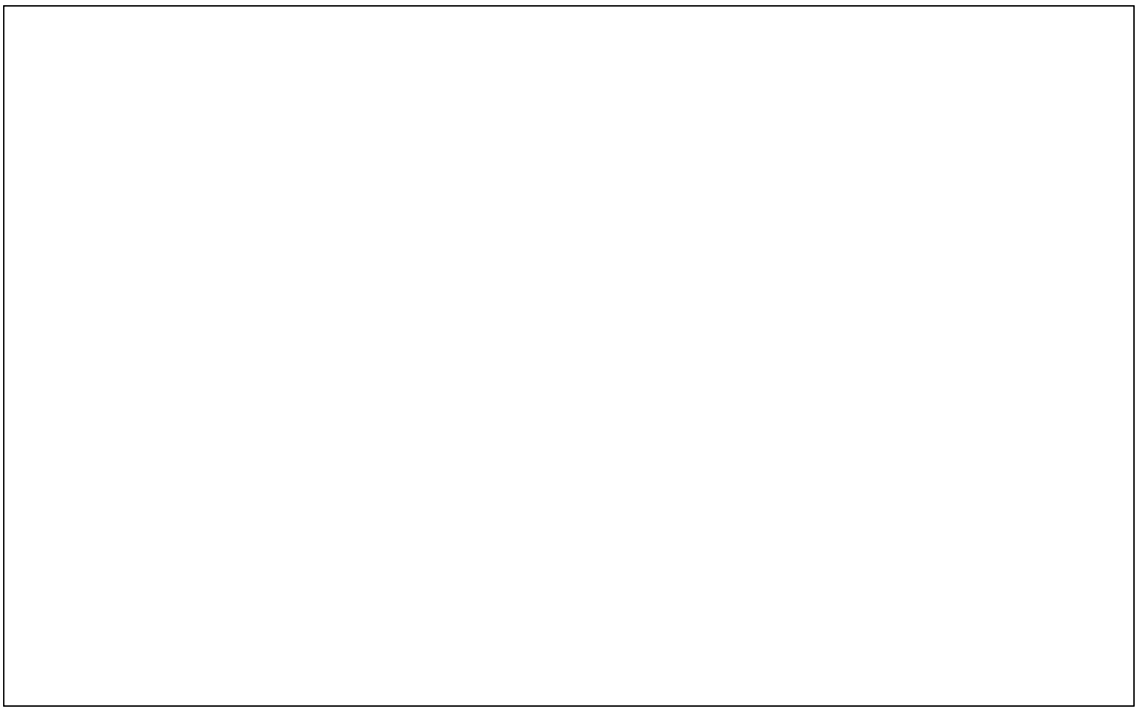


Source: IPIR

Exhibit 4.12 and Exhibit 4.13 show the wholesale diesel prices for other zones versus Zone 1 for both LSD and Diesel over 500 ppm. The data is somewhat erratic which is most likely related to varying month to month volume sales levels in the zones. Several zones were excluded due to limited data. The other factor is that after June of 2006, some portion of sales were required to be ULSD, which may have impacted Zone 1 more than others (note that in some cases price of LSD in other zones is actually under Zone 1).

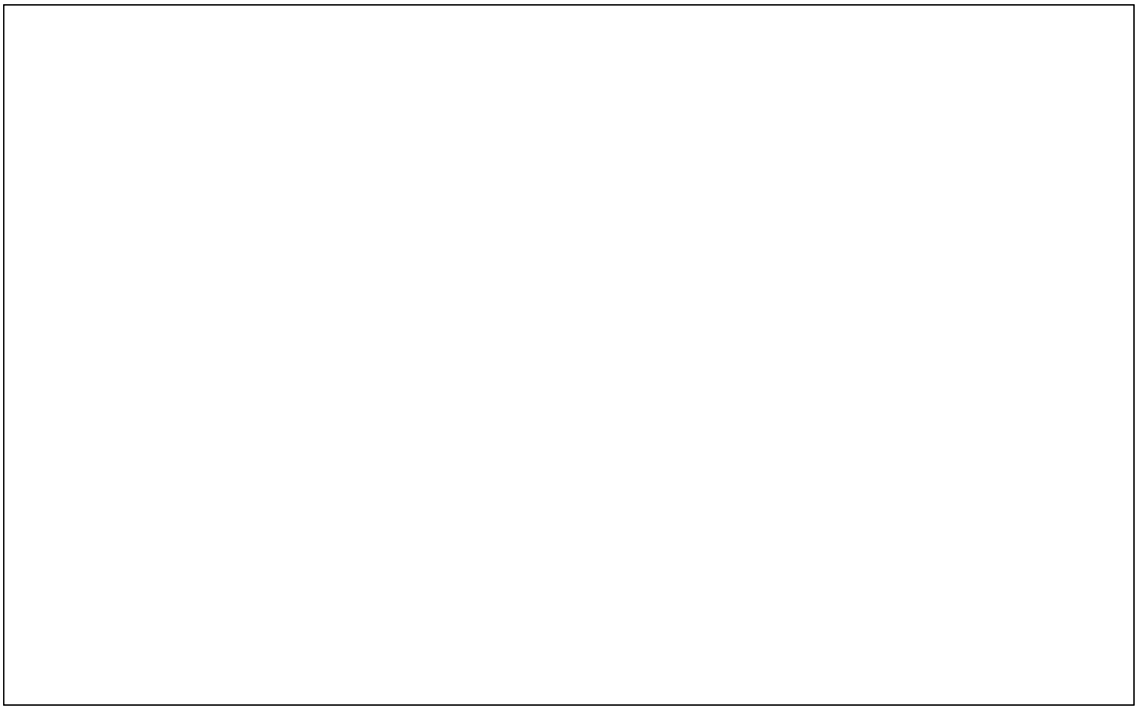
These data would be more meaningful in the future when the PIMAR system can differentiate diesel fuels as ULSD, LSD and HSD, which is not done with the IPIR data used in these exhibits.

Exhibit 4.12 Comparison of LSD Price in Zone 1 vs. Other Zones



Source: IPIR

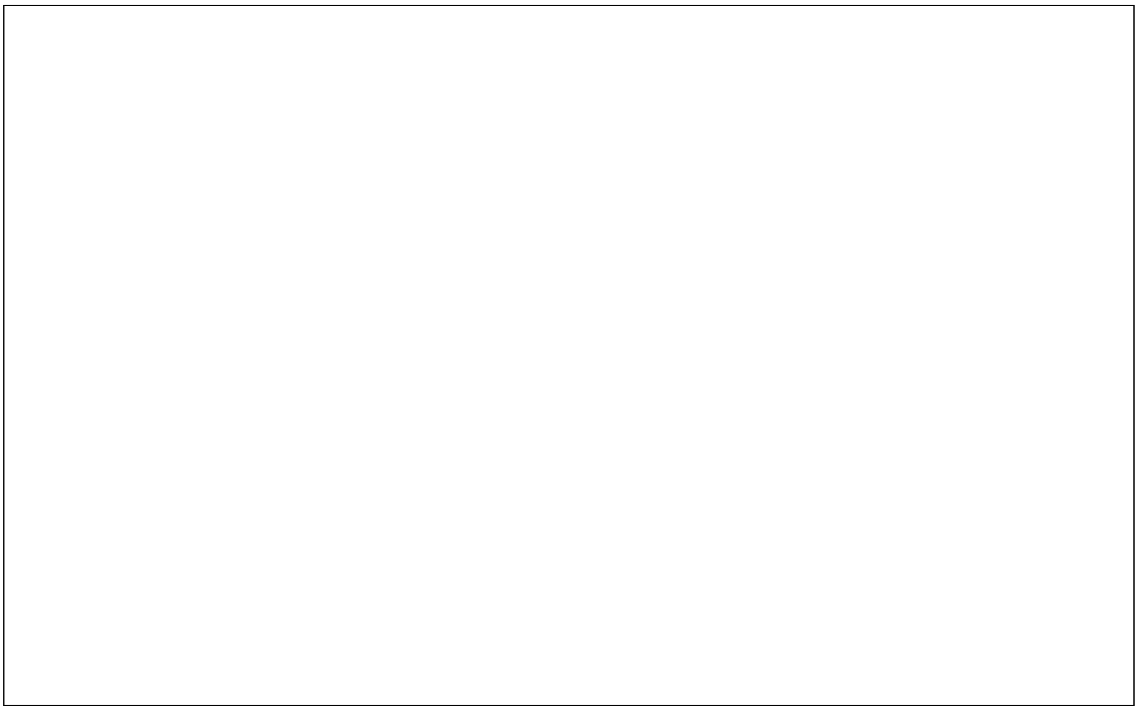
Exhibit 4.13 Comparison of HSD Price in Zone 1 vs. Other Zones



Source: IPIR

Diesel fuel sales to end users (similar to retail sales) in Hawaii are a larger volume than the wholesale sales. The practical meaning of this is that refiners are selling to commercial or industrial customers directly, as well as sales through retail service stations. These sales would generally be expected to be at a higher price since they are being sold on a delivered basis. Exhibit 4.14 and Exhibit 4.15 show the trend in End User sales versus wholesale sales price over the study period for both LSD and HSD in Zone 1. [redacted] This is a significant margin for the diesel end user sales. While sales to retail service stations incur some costs to suppliers, sales to commercial or industrial accounts are generally simply delivery costs and account management.

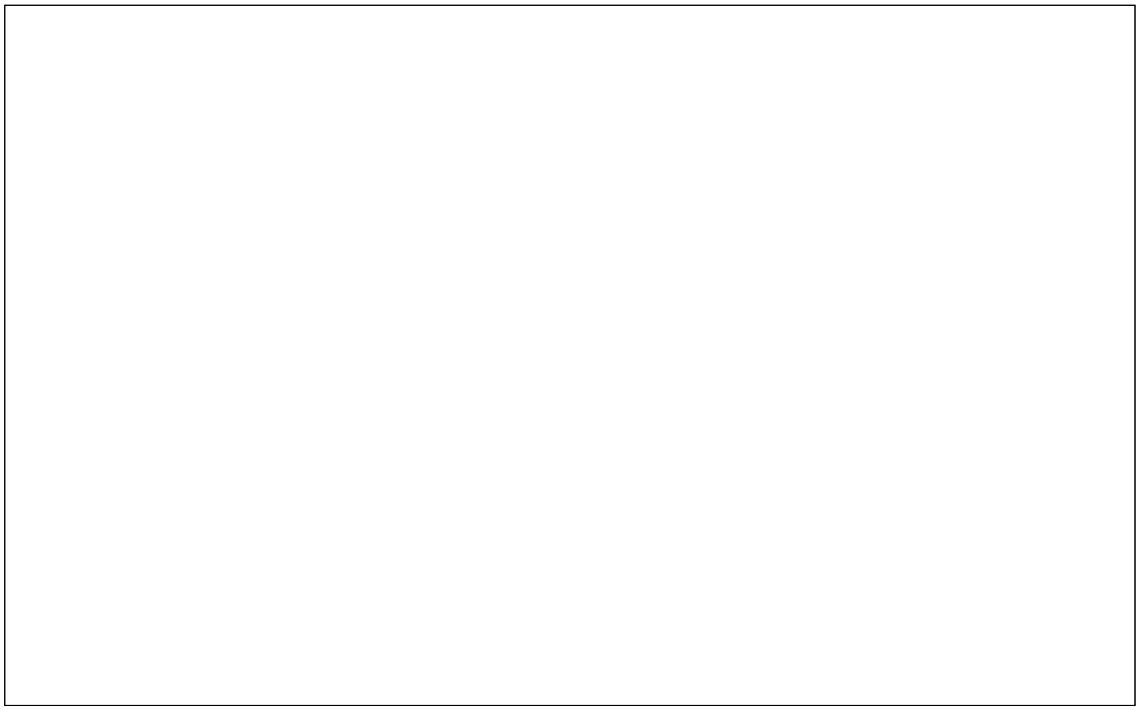
Exhibit 4.14 Comparison of End-User vs. Wholesale LSD Price in Zone 1



Source: IPIR

Exhibit 4.15 shows a similar graph for HSD. [redacted]

Exhibit 4.15 Comparison of End-User vs. Wholesale HSD Price in Zone 1



Source: IPIR

Diesel Pricing Conclusions

Diesel pricing analysis is inhibited by the fragmentation of sales to many different accounts in both wholesale and end user sale categories. The fact that the diesel fuel IPIR database does not mirror the actual current makeup of diesel sales quality (ULSD/LSD/HSD) makes clear analysis more subjective than necessary. However, it can be determined that wholesale diesel fuel prices for LSD appear to be significantly higher than other markets, even with consideration of freight costs. Margins for LSD to End-Users above the wholesale market also appear high, but there is insufficient data to indicate if they are unreasonably high.

LSD wholesale prices also appear to have a significant price premium versus HSD in Zone 1.

The need for fairly steady imports of ULSD is likely to continue unless refiners add equipment to produce ULSD in greater quantities. The exports of unfinished product increased also after June of 2006, which may indicate that refiners are exporting higher sulfur stocks to manage inventory and sulfur handling ability.

Diesel fuel sales are a complicated market to track, and the changing specifications and IPIR reporting methodology (categorization of products) may need clarifications to produce better analysis. Use of a well-designed diesel fuel transaction database may be a consideration.

Residual Fuel Price Analysis

Residual fuel is a major product of Hawaii's refineries. It is the heaviest portion of the crude oil processed in the refineries, and, unlike gasoline, jet fuel and diesel is always valued at a discount to crude oil in the commodity markets. Residual fuel is used in Hawaii and other regions of the world primarily for power generation by utilities and for bunker fuel requirements for ships. Residual fuel is also used in some commercial buildings for heating/boiler needs, and is also consumed internally in refineries for process heat requirements.

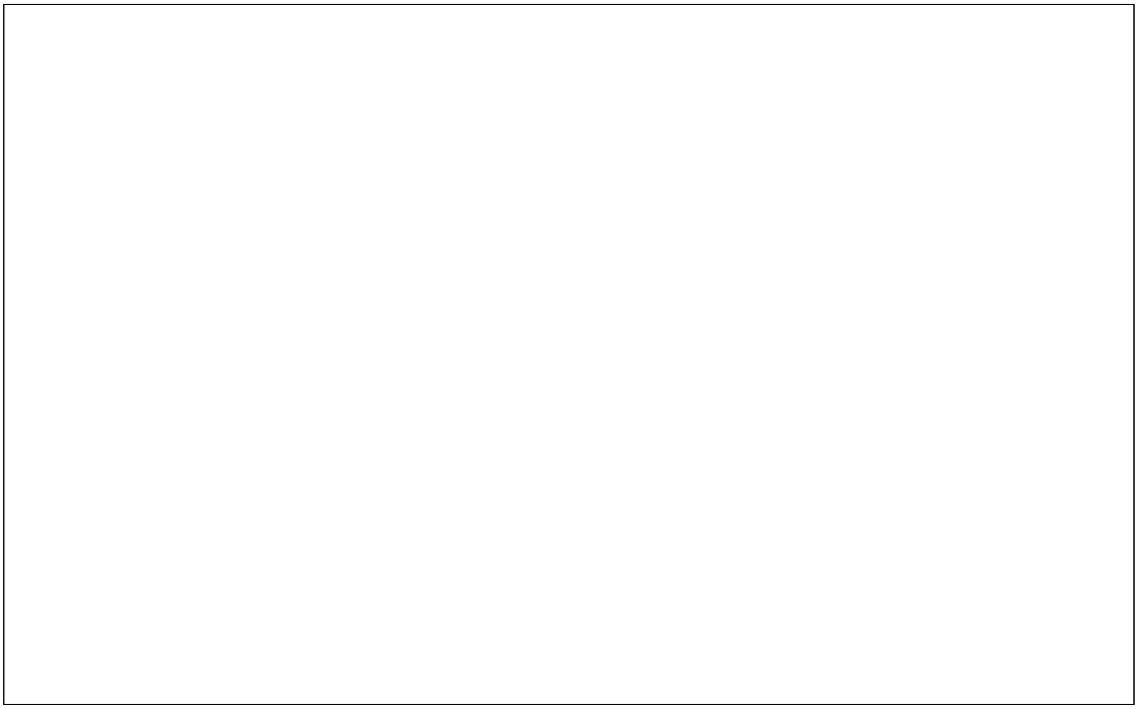
Demand for residual fuel in the U.S. is low compared to the transportation fuels, and most U.S. refineries are configured to produce minimal residual fuel. Hawaii refineries produce a much higher yield of residual fuel, and the higher production levels are required to meet Hawaii demands. Hawaii's power generation does not have access to coal or natural gas, and is much more dependent on refinery supply. Demand for bunker fuels in Hawaii is also high given the critical nature of the shipping business to the state's economy.

The IPIR data forms categorize residual fuel as either under or over 1% sulfur. As seen earlier, most of Hawaii's residual fuel production is under 1% sulfur. As with most products, residual fuel which has a lower sulfur level commands a premium in the market over higher sulfur residual fuels. The IPIR data shows that most of the residual fuel sold in Hawaii is categorized as "retail", which may reflect direct sales from refiners to utilities and other end users. There is also a significant wholesale volume, which is likely resold as "retail". IPIR price data show very minimal differences between wholesale and retail prices, and for analysis purposes ICF will use retail price data as representing the majority of residual sales from refiners. A very high percentage of sales are in Zone 1, which will be the sole focus for residual fuel analysis.

Exhibit 4.16 compares Zone 1 retail prices for both low and high sulfur residual fuel versus landed crude costs in the study period. This spread represents a "gross margin" for residual fuel sales versus crude oil cost. In this case the gross margin is actually a negative, as the Exhibit shows both residual fuel grades are sold at discounts from crude oil cost. Residual prices generally follow crude price patterns, with the degree of discount varying over the period.

Residual prices average about [redacted]. The relative price of low sulfur versus higher sulfur residual fuel can change based on global residual fuel markets. As an example, [redacted]

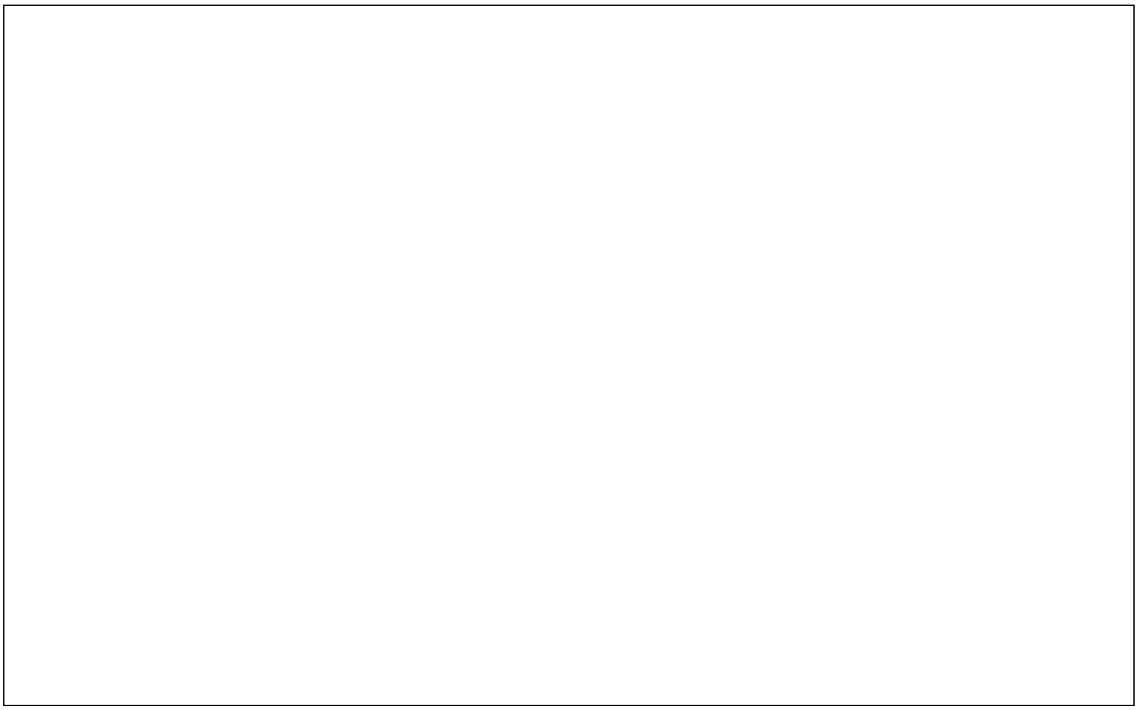
Exhibit 4.16 Hawaii Residual Fuel Prices vs. Landed Crude Cost



Source: IPIR

Exhibit 4.17 shows how several key residual fuel markets valued low sulfur versus higher sulfur residual fuel over the study period. The chart shows that the New York Harbor market for very low sulfur residual fuel can vary from a $5/barrel premium versus 1% residual fuel to a $13/barrel premium. Similar trends occur in the Gulf Coast market. The Hawaii sulfur spread trend appears to more closely match the Gulf Coast spread, particularly since fall of 2006. Hawaii residual fuel IPIR data does not report the actual residual fuel sulfur levels, therefore it is not clear how large the disparity is between Hawaii residual fuel categories. Given Hawaii's low sulfur crude slate, it is unlikely that Hawaii's "higher" sulfur residual fuel is significantly above 1% sulfur.

Exhibit 4.17 Hawaii Residual Fuel Sulfur Quality Spreads vs. Other Markets



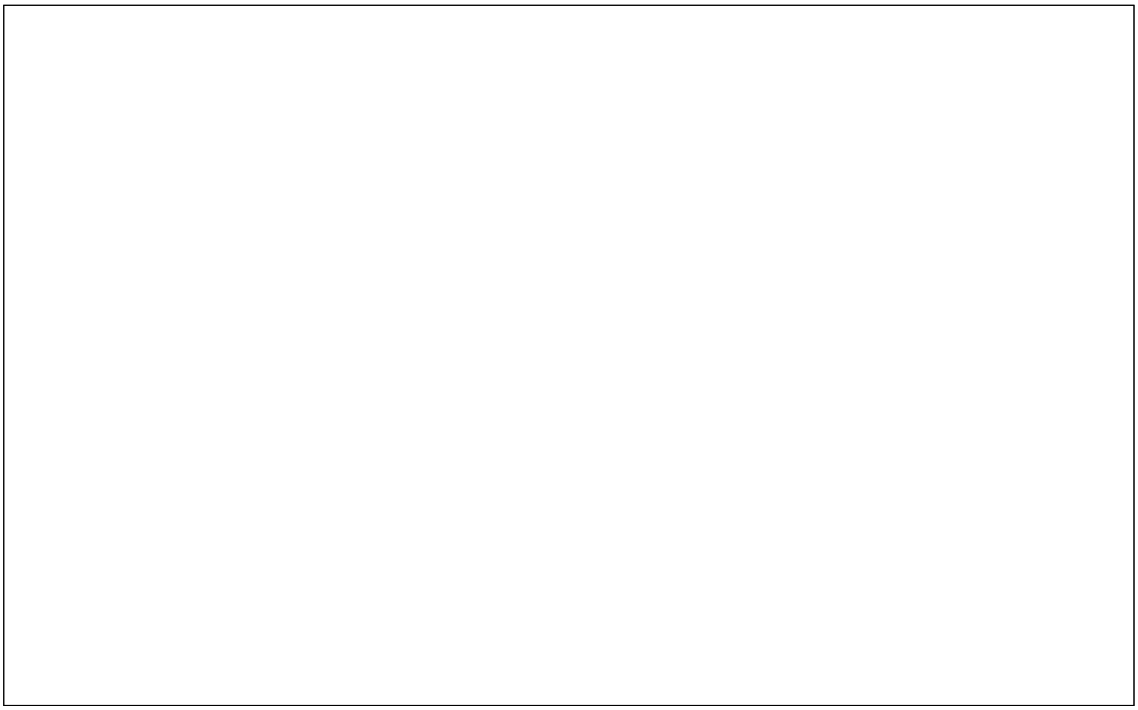
Source: IPIR

The next exhibit (see Exhibit 4.18) compare Zone 1 retail residual prices to spot market prices for residual on the West Coast, Singapore, and the Gulf Coast. The intent is to assess whether Hawaii residual fuel sales prices are linked to a particular market price in other regions, and if the Hawaii prices are market competitive with those sources. [redacted]

Prices for Hawaii higher sulfur residual fuel have been competitive with the West Coast and Singapore markers over the entire period. The prices of Hawaii's higher sulfur residual fuel versus the other markets are actually lower than expected since the Hawaii refiners do not appear to be gaining a location differential above West Coast or Singapore markets.

[redacted]

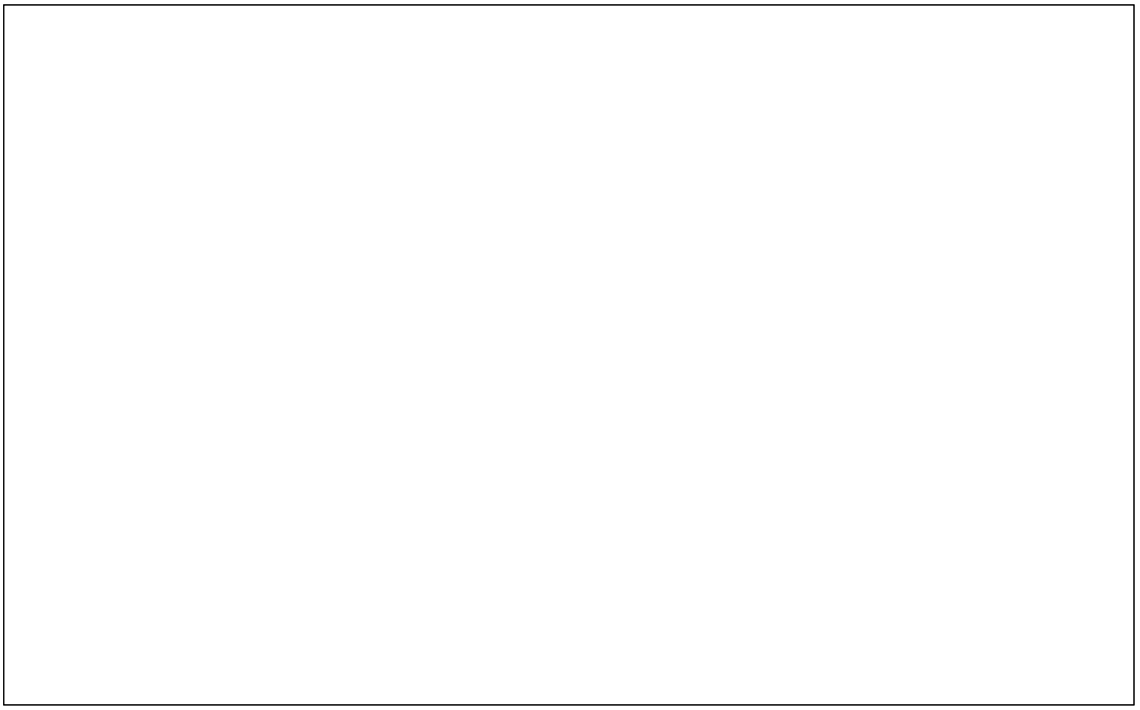
Exhibit 4.18 Hawaii Residual Fuel Prices vs. Other Residual Fuel Markets



Source: IPIR

Exhibit 4.19 and Exhibit 4.20 compare the landed cost of residual fuel imports into Hawaii (from IPIR data) with residual fuel retail prices. The charts indicate that most of the residual fuel imports were early in the study period. Price analysis shows that the relative price of landed residual fuel imports in Hawaii versus prevailing retail prices in Hawaii were reasonably competitive with the imported cargo's price. One higher sulfur imported cargo in early 2007 appears to be significantly lower than the prevailing price, but the other imports are somewhat below or just above the retail market.

Exhibit 4.19 Residual Fuel (< 1% sulfur): Comparison of Zone 1 Retail Costs vs. Landed Costs



Source: IPIR

Exhibit 4.20 Residual Fuel (> 1% sulfur): Comparison of Zone 1 Retail Costs vs. Landed Costs

Source: IPIR

Summary conclusions on residual fuel prices

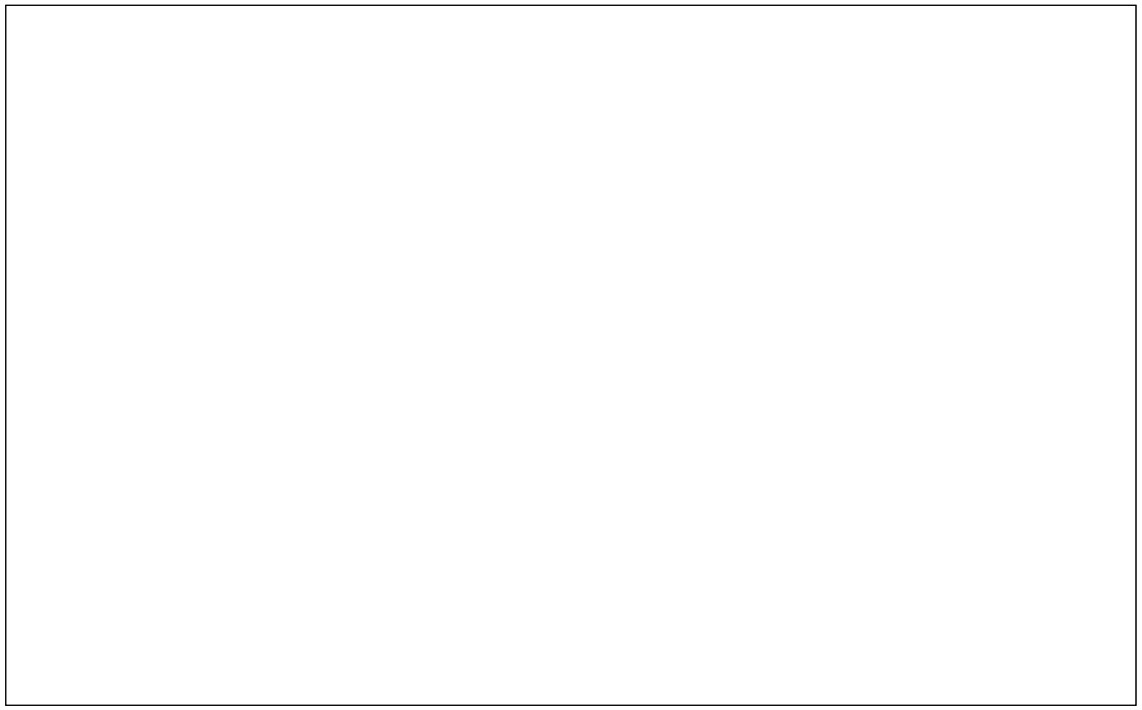
Residual fuel prices in Hawaii appear competitive with other global markets for residual fuel. Periods where residual fuel has been imported indicate that Hawaii prices are high enough to attract economic imports, but not excessively high.

Refinery Gross Margin Estimation Over the Study Period

The availability of an estimate of the refinery gross margin over the period gives a general indication of the refinery profitability over time. Gross margin as reported on PIMAR forms may not be available; ICF is recommending that a gross margin be estimated from landed crude costs and wholesale market prices. In a mainland U.S. refinery, the refinery margin is estimated by a 3-2-1 crack spread, which measures the margin from 3 barrels of crude being upgraded to one barrel of diesel and two barrels of gasoline. In Hawaii, ICF has developed a gross margin estimate based on average Hawaii yields of gasoline, jet, diesel and residual fuel. The estimate calculates the margin based on bulk gasoline prices, wholesale jet and diesel prices, and retail residual fuel prices. Tracking this margin can provide a consistent measure of refinery profitability. Prices for mainland margins are estimated based on US Gulf Coast spot market prices for crude and products.

Exhibit 4.21 below shows the Hawaii gross margin calculation over the study period compared to the US Gulf Coast 3-2-1 margin. Hawaii's margins average [redacted] under the US Gulf Coast margins over the period [redacted]

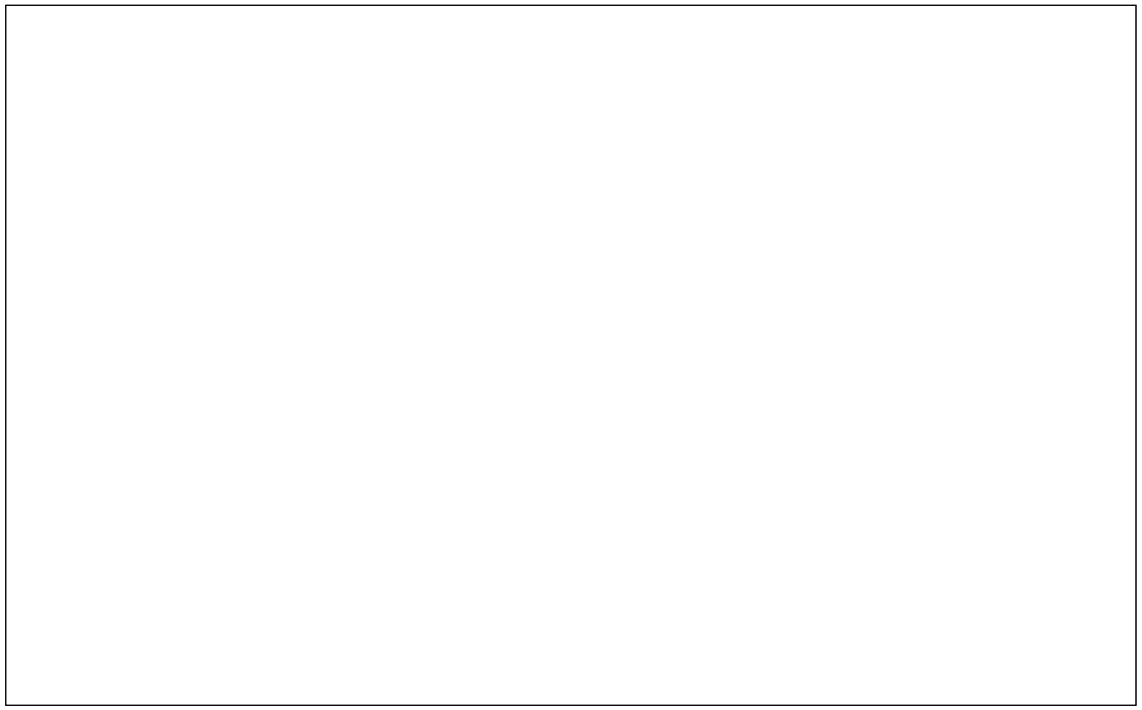
Exhibit 4.21 Comparison of U.S. and Hawaii Refinery Crack Spreads



Source: IPIR and EIA

In addition, we examined the relative product spreads versus landed crude costs for both Hawaii and the US Gulf Coast. This was to again attempt to rationalize whether or not Hawaii's product gross margins versus crude are aligned with other US markets. Exhibit 4.22 shown below,

Exhibit 4.22 Hawaii and USGC Wholesale Product Prices vs. Crude Prices



Source: IPIR and EIA

[This page intentionally left blank]

5 Comparison of Hawaii Profit Estimates with U.S. Downstream Refiner/Marketers

This section of the report is intended to report on the profit levels of the two Hawaii refiner/marketers (Chevron & Tesoro), as well as the three major suppliers (Aloha, Mid-Pac and Shell), and also to compare the Hawaii profit levels with reported profits of a number of large U.S. major refiner/.marketers. The profit analysis included in this report is not complete as intended, since the required data from Hawaii refiners & suppliers has not been fully provided. This delay was due to changes in the format of the requested data by the Commission, as well as requests by the parties for added time to complete the data gathering.

The profit comparison, even with complete data from the parties, contains several areas which will make a rigorous analysis difficult. However, the regular reporting of the profits as part of the PIMAR process will establish a history of profits available for the Commission to track over time and identify trends and anomalies. This is one reason why it is important to insure that the initial profit data gathering and reporting process is correct.

Analysis of U.S. Refiner/Marketer Profits

Profit estimates for U.S. Downstream refiner/marketers[32] will be determined from their annual reports and 10-K's. This information was studied from 2002 to 2006 to provide a history of profit trends. The U.S. companies who are being analyzed include the following: ExxonMobil, Chevron, ConocoPhillips, Valero, Tesoro and Sunoco. Including Chevron and Tesoro is very appropriate since both companies have large systems outside their Hawaii business.

Profits for the comparison companies will be evaluated on a before tax basis with absolute profits reported, as well as profits per barrel of reported input. The trend of these data will be analyzed over the period, with general explanations for the trend based on market information over the period.

Exhibit 5.1 shows a typical, simplified business model for a refiner/marketer. The party purchases and refines crude oil and other feedstocks, produces mainline fuel products, and sells the products in a terminal & distribution system. The sales can take place on a bulk basis FOB the refinery, or through a network of owned service stations, franchise dealers, or distributors. The refiner/marketer will often buy and sell product in the spot market to manage system inventories and optimize logistics and distribution costs. Expenses are incurred throughout the system to operate refineries, terminals, etc as well as to manage the business.

[32] "Downstream" means petroleum operations from the refinery to the service station; "Upstream" means petroleum operations from the oil or gas well to the refinery. Most company report their income in total, and also broken down by upstream or downstream segments.

Exhibit 5.1 U.S. Downstream Refiner/Marketer Supply Chain

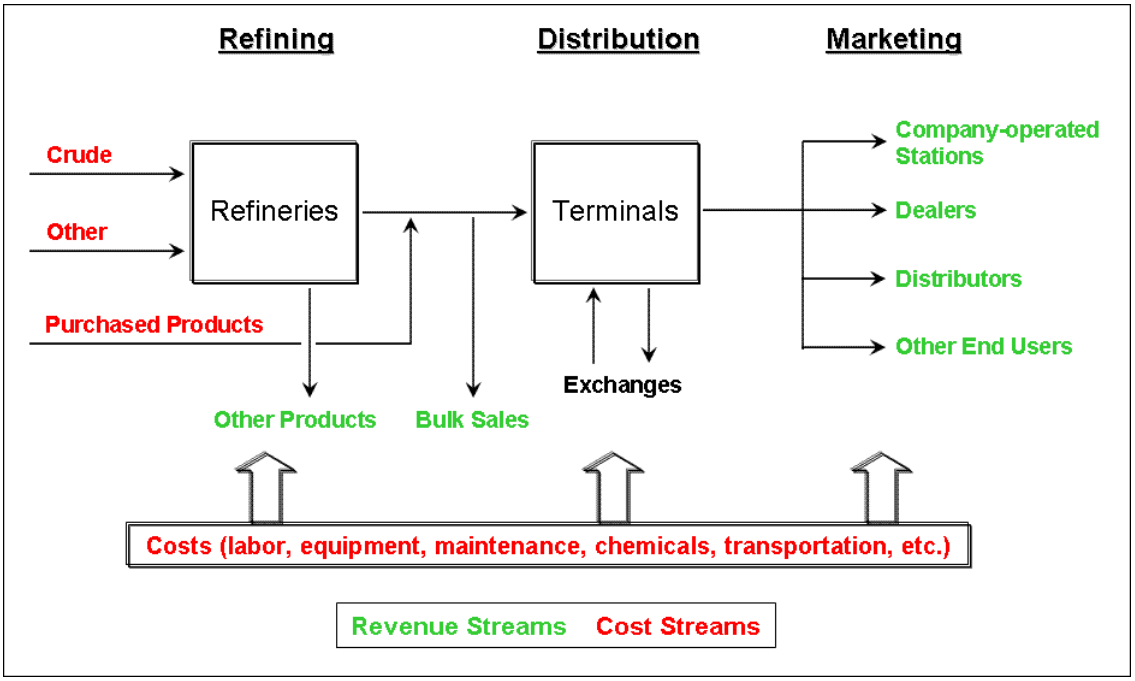
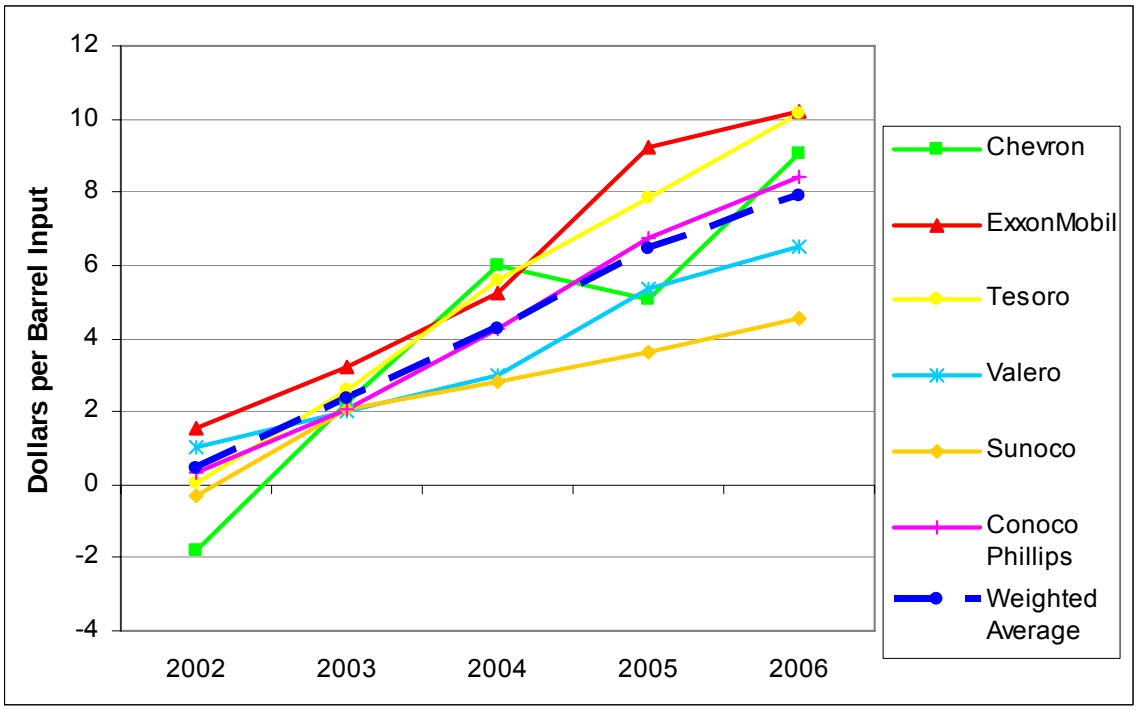


Exhibit 5.2 shows the profile of data for each of the six refiner/marketers in this study from 2002 to 2006. The data show that the profit levels for each company increased dramatically over the period. The relative difference in profits between these companies in any year can be significant. The difference stems from a number of factors, including throughput and sales, average refinery size, Marketing assets, location (West Coast refiner/marketers enjoyed better margins than others), and cost control practices.

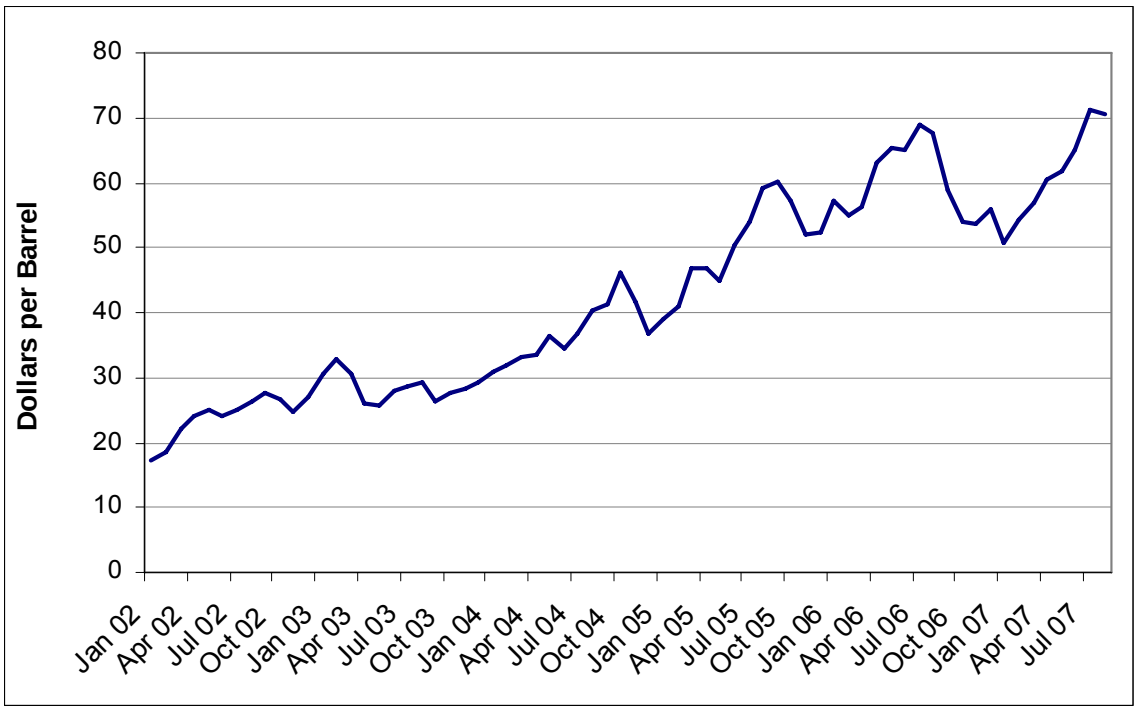
Exhibit 5.2 U.S. Refiner/Marketer Before-tax Income per Barrel Input



Sources: SEC 10-K Reports

Although crude oil prices increased significantly over this period (See Exhibit 5.3), this was in fact a higher cost into the refineries.

Exhibit 5.3 U.S. Crude Oil Composite Acquisition Cost by Refiners



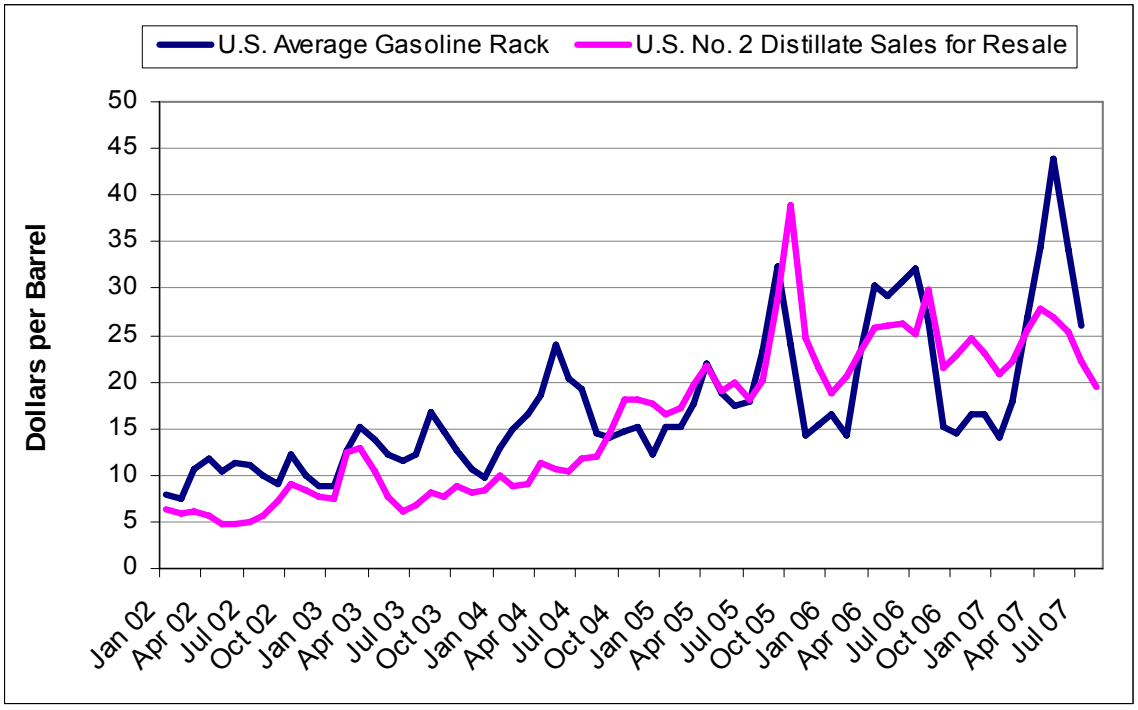
Sources: EIA

The reason the downstream profits increased was because the price of refined products increased substantially more than crude oil. This was due to tight global refining capacity coupled with higher demand for all refined products. The margins peaked in 2005 and 2006 due to sustained demands and the impact of Gulf Coast hurricanes and a period of multiple refinery outages due to planned and unplanned shutdowns. Conversion to lower sulfur levels in gasoline and diesel fuel also required planned shutdown for tie-in of capital investments.

Exhibit 5.4 shows the monthly trend in the spread between U.S. average rack gasoline sales price (all grades & formulations) and average resale prices for all distillates compared to the U.S. RAC[33] (Refiner's Average Crude) cost. This trend clearly shows the higher margin that refiner/marketers enjoyed over the period, which would directly impact profits.

[33] This is the actual crude costs into refineries reported to the EIA for all crude processing.

Exhibit 5.4 U.S. Gasoline Rack and Distillate Prices vs. U.S. Crude Oil Composite RAC



Sources: EIA; all gasoline grades & formulations; all distillate sales

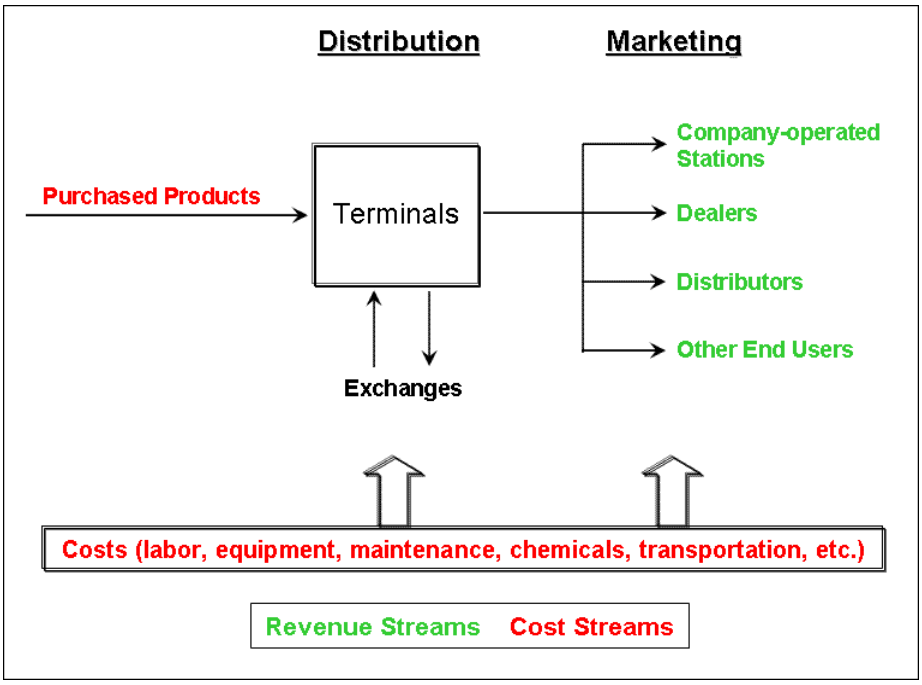
The implication of this on Hawaii is that it is likely that the profits of Hawaii refiner/marketers also were high in the 2005 and 2006 periods. The Hawaii refiners pay more for crude, but tend to get higher product prices than average mainland refineries. Data has shown that prices in Hawaii for most products tend to follow global market prices.

Analysis of U.S. Supplier/Marketer Margins

In Hawaii, Aloha, Mid-Pac and Shell have a different business model than the refiner/marketers. These companies do not have refineries, and their business is driven solely by purchasing product from the refineries or importing and reselling it primarily to service stations and a small portion to jobbers. Their purchases are negotiated with the refiners on a term basis, and the price that is paid is an agreed price that represents an approximation of import parity. In other words, Chevron and Tesoro negotiate with the suppliers to provide them a price for product which is market competitive with imported gasoline, thereby insuring that the suppliers will not import gasoline to meet their needs.

There are only a few companies on the mainland who have a similar business model to Aloha, Mid-Pac and Shell. Companies such as Quiktrip, Wawa, Pilot, and Gulf Oil will buy product on a bulk basis and ship (typically via pipeline) to terminals for delivering on a DTW basis to their service stations and dealers (See Exhibit 5.5). Each of these companies are not public, therefore their financial and volume data are not visible. However, they are making money similar to the Hawaii suppliers. The key difference between Hawaii and Mainland business models is that the suppliers on the mainland are not restricted in buying product from a single refinery.

Exhibit 5.5 U.S. Downstream Supplier/Marketer Supply Chain



Suppliers on the mainland have options to buy bulk pipeline barrels from multiple refiners or traders, and also can buy product at multiple terminals on a rack basis, and then resell the product. Hawaii suppliers are limited to purchasing product from either Chevron or Tesoro, and the option of "switching" suppliers to get a better purchase arrangement is virtually impossible since the "other" refiner would have to get out of term contracts with one or both other buyers at the same time to have volume to sell.

This fact and the lack of a "readily available" spot market means that the Hawaii suppliers have no incentive to lower their price to gain market share, or to add new service stations to earn more income, because they cannot secure more product. This is not the case in the competitive mainland market. Hawaii supplier margins therefore are essentially "set" by their purchase price (dictated by negotiations, and determined by market prices in other regions (Far East, U.S. etc), and the DTW prices in their sales channels. The service station DTW channel is set by the competitive market in Hawaii, and the suppliers' price consistent with their individual marketing strategies versus the other DTW sellers (including Chevron and Tesoro). They have no incentive to change their pricing profile, or lower price unless it is simply to follow the "leaders" price down.

There is minimal public information on the margins of similar supplier businesses on the mainland. Data collected by FTC after Hurricane Katrina[34] indicated that in the year prior to Katrina, a group of suppliers with a similar business model earned, on average (not weighted) about 0.27% "operating margin". Assuming a nominal wholesale price of gasoline of $2.00/gallon over this period, the margin amounted to under a penny a gallon. The margin

[34] http://www.ftc.gov/reports/060518PublicGasolinePricesInvestigationReportFinal.pdf; page 141.

reported by FTC is believed to be a profit number (including expenses)[35], not a gross margin. The data showed some wide variation among individual suppliers, but indicates that profit levels were thin.

The Hawaii data, when received, will be analyzed and put into a similar context for the 2006 period requested. Ideally, sufficient revenue and expense data will be received to develop a profit margin per barrel of input for the refiners, and profit margin per barrel of sales for the suppliers. Maintaining the flow of these data on an annual basis will provide a longer term basis for understanding the trends of these margins in Hawaii.

[35] The FTC report also shows refiner "operating margins" to be about 4.14% in the period a year before Katrina (page 158). This is only about 8 cpg, which is well below gross margins of gasoline vs. U.S. refiner crude costs during that period, leading ICF to believe the FTC margins are net of cost

[This page intentionally left blank]

6 Potential Impacts of Federal and State Policies upon Supply and Pricing of Petroleum Products

The petroleum market in the State of Hawaii has been impacted by existing state and federal policies in many areas. Several recent policy impacts have included:

State:

a. The implementation of gasoline price caps in 2005, and suspension of the price caps in 2006

b. The implementation of a 10% ethanol requirement in 85% of gasoline sold in Hawaii

c. The implementation of the Petroleum Industry Monitoring and Reporting program (PIMAR) in 2007

Federal

a. The phased reduction in sulfur level in gasoline, from 300 ppm in 2005 to 80 ppm in 2006. The regulation requires refiners to produce gasoline at a maximum of 30 ppm sulfur in 2007.

b. The reduction in on-road diesel sales to 15 ppm beginning in 2006

These changes have resulted in material impacts to the petroleum market in Hawaii. In order to meet the State legislation's requirements, refiners and other suppliers have been required to comply with controls on gasoline prices, and been required to modify their terminal, transportation, and service station equipment due to the ethanol legislation. Ethanol imports and purchase contracts have been necessary to acquire the ethanol for usage in Hawaii.

Federal policies on lower sulfur levels in gasoline and diesel have required refiners to invest capital in the refineries, or to purchase lower sulfur ('sweet') crude oils in the global market to control the sulfur level in products. Both of these options increase the cost of manufacturing products. The purchase of additional sweet crude oil directionally increases the refiners cost of supply, since these are premium crudes on the world market. Capital investment to extract additional sulfur in the refining process is very expensive, and particularly so for smaller refineries due to the smaller scale of their business.[36] Based on discussions with the Commission, ICF will limit the analysis of state and federal policies (etc) to future known and proposed policies, rules and regulations, with the existing legislative structure as a "base" industry market. Due to its pertinence to Hawaii, ICF will also review the apparent impact of the ethanol mandate in Hawaii, and discuss the potential impact of the new PIMAR process on the market in Hawaii.

[36] Building a larger hydrotreater is less expensive per barrel of throughput capacity than building a smaller one. Small refineries would in most cases only be able to utilize a smaller hydrotreater, and therefore would have a more difficult time justifying an investment.

With this assumption, ICF has identified the following policies, rules and regulations which could impact Hawaii petroleum supply and pricing:

1. Hawaii Ethanol mandate implementation (April, 2006)

The implementation of the ethanol mandate in April 2006 required both of Hawaii's refineries to modify their process operations to be able to produce a suitable gasoline blendstock (called HIBOB: Hawaii Blendstock for Oxygenate Blending). The blendstock is required to be shipped to terminals separately from ethanol due to ethanol's water affinity. HIBOB and ethanol are blended at the terminals directly into service station or consumer delivery trucks.

The need to manufacture HIBOB and keep ethanol separate required refiners as well as suppliers and jobbers in Hawaii to invest in the distribution infrastructure to modify tankage, piping, valves, barges, and other equipment to prepare for the implementation of gasoline sales with 10% ethanol. These costs were estimated by the Parties to be about [redacted]. Since Hawaii has no in-state ethanol production, refiners and suppliers have had to purchase ethanol and import the ethanol into Hawaii, often from the Caribbean at a significant cost.

The ethanol mandate has allowed Hawaii to participate in the movement to increase alternatives to traditional petroleum-based supply, however it is unclear at this point if consumers have benefited. The added supply from ethanol into Hawaii increases gasoline supply (which directionally should reduce prices); however the refiners may be compensating by exporting more gasoline, or gasoline components to balance supply and demand. With refiners and others heavily invested in the ethanol infrastructure, they will attempt to recoup their higher costs of business and investment (which the revised gas cap formula in Act 78 would have allowed them to do).

In summary, the implementation of the ethanol mandate by all impacted parties appears to have been a technical success; however the original goal of the ethanol mandate to stimulate in-state ethanol production has not as yet been achieved. Moreover, the process to produce and distribute gasoline in Hawaii has now become a dual supply chain, one for gasoline blendstock (HIBOB) and one for ethanol, and has fragmented the existing terminal storage capacity to some extent since ethanol tanks need to be maintained for dedicated usage.

2. Implementation of the Petroleum Industry Monitoring, Analysis and Reporting (PIMAR) Act.

The implementation of the PIMAR act is currently underway through this report and the ongoing development of a data reporting process from the parties involved in the oil business in Hawaii. The goal of the PIMAR process is to provide Hawaii consumers and legislators with a perspective on petroleum product prices and supply in the state of Hawaii, and to provide vigilance on the oil industry so that any aberrant behavior involving pricing or supply actions can be identified.

The current development of the PIMAR process is still evolving. There is a significant amount of information required to monitor the oil industry and insure that all data being reviewed (prices as well as volumes) are being consistently reported by all impacted parties. It is anticipated that the overall quality of the monitoring will improve with time as parties become familiar with the

process, databases are developed, procedures are further refined, and report content is stabilized.

The advantages of the PIMAR program are that:

a. Consumers and Legislators will better understand price trends in Hawaii, and the rationale for price increases or decreases.

b. Margin levels of refiners, suppliers and jobbers can be evaluated over time to identify periods of high and low margin performance.

c. Refiners, suppliers and jobbers will understand that their prices and actions (imports, exports, inventory, refinery runs, etc) are being monitored, and that any aberrant actions in the marketplace will be visible.

These advantages will promote a healthier understanding between business and consumers, although the reporting process and procedures may take several years to iron out data issues as well as to rationalize and explain industry actions to the public. It is unlikely that the PIMAR process will affect petroleum product supply in Hawaii; however it could have an impact on prices if the future visibility of price actions and market comparisons impacts price decisions by refiners, suppliers or marketers.

There is a risk that the PIMAR process may inhibit some industry participants from attempting to enter the Hawaii market and increase competition due to the reporting requirement and potential threat of additional regulation.

3. Reduce the sulfur level in diesel fuel sold for off-road use to 15 ppm (parts per million) by 2010-2012.

Beginning June 1, 2007 the sulfur content of off road diesel, marine diesel and locomotive diesel will be reduced to 500 ppm. 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. (Law is in place)

In 2006 (June), the Federal law for on-road diesel fuel changed from 500 to 15 ppm. The law for off-road diesel is currently 5000 ppm. This change in off-road sulfur levels will ultimately require all diesel sales in Hawaii to be at the 15 ppm level. The impact of this change will be that refiners will need to determine the most economic means to comply with the new law. The economics of the various options they have will depend on several factors, including a) their base sales of off-road diesel; b) costs to install hydrotreating capacity to reduce the sulfur level of off-road diesel produced; c) costs to alter the crude slate to process even sweeter (lower sulfur) crude oils and d) costs to export higher sulfur diesel fuel and import diesel fuel with 15 ppm sulfur or lower.

The change in 2006 for on-road diesel required Chevron to stop producing on-road diesel in Hawaii since their refinery does not have the processing capability to reduce sulfur levels sufficiently to meet the on-road sulfur requirements. As the Federal policy moves to lower sulfur for off-road sales in 2010, it may require further refinery operational changes and/or possible investment to meet the new requirements. This change will make the costs of supplying product that meets sulfur requirements higher for Hawaii refiners and, ultimately, consumers.

4. Increase the mandated levels of bio-based fuels in U.S. transportation fuels (gasoline and diesel).

There are multiple bills in Congress which would increase the Renewable Fuel Standard (RFS) requirement from 7.5 billion gallons per year in 2012 to higher levels. The proposal by President Bush is to create an Alternative Fuels Standard, raising biofuel usage to 35 billion gallons per year by 2017. On June 21st, the Senate passed the Renewable Fuels, Consumer Protection and Energy Efficiency Act of 2007, mandating that ethanol production grow to at least 36 billion gallons a year by 2022. Also known as the CLEAN Energy bill, it was introduced by Senate Majority Leader Harry Reid and Sen. Jeff Bingaman, D-N.M., chairman of the Energy and Natural Resources Committee.

The outcome of this legislative session is uncertain at this time. However, it is very likely that the existing RFS will be significantly raised. More uncertain will be the manner of implementation, i.e. it will be unlikely that the legislation will mandate an increase in ethanol in every state or nationwide.

The existing use of ethanol in most of Hawaii's gasoline will mitigate any future costs with terminal conversions if there is a mandate, or an economic decision to increase ethanol blending. However, there could be substantial added costs in two areas: 1) increased importing of ethanol (acquisition price may or may not be a higher cost due to ethanol market prices, and added tankage conversion may be required) and 2) additional refinery modifications and costs to modify the production quality of HIBOB to maintain finished blended gasoline quality with higher than 10% ethanol content.

5. Reduce Greenhouse Gas Emissions:

The US Congress has been subjected to increasing pressure over the past 5 years to deal with the problem of Greenhouse Gas emissions (GHG). Currently there are six bills in Congress dealing with the problem. Generally speaking they are economy wide and range in severity. Two illustrative bills are the Lieberman/McCain, probably the most stringent, and the Bingaman, the one that has the most support from industry.

The Lieberman/McCain is economy wide with the exception of agriculture. Entities that emit less than 10,000 tonnes of CO_2e (t/yCO_2e) per year are exempt. Refineries, since they emit CO_2, N_2O, and CH_4 in quantities generally greater than 10,000 t/y, are subject to allowance requirements. Also under the Lieberman/McCain are all transportation fuels whether produced in the United States or imported are subject to the allowance costs. The carbon allowance values are estimated to range from $\$36.38/tCO_2e$ in 2012 when the law goes into effect to $\$73.70/tCO_2e$ in 2030. The dollar amounts are 2005 dollars.

The Bingaman bill does not have the 10,000 tonnes exemption and applies to all petroleum products. However, the Bingaman bill has a safety valve allowance cost. In other words the allowance values may not exceed the safety valve. The latter begins at $\$12.00/tCO_2e$ in 2012 and escalates at 4% annually thereafter.

In addition to the Federal bills, California has passed A.B. 32, which directs a significant reduction in GHG emissions by 2020 and 2050. More significantly, the Hawaii House passed H.B.226, which directs that Hawaii study and implement reductions in GHG emissions to 1990 levels by 2020.

Unless the refineries in Hawaii can develop mitigation tactics (further energy efficiency, carbon sequestration, etc), they are likely to be severely impacted by these bills. In particular the Lieberman/McCain bill targets transportation fuels which would substantially raise the cost of refinery produced fuels and thereby cost of travel in the islands. Initial modeling has shown that the impact of the more severe bills may result in the closure of the weaker refineries in the country and an increase in product imports from those parts of the world not subject to carbon caps.

6. Institute SO_2 Emission Control Areas (SECA's), reducing the sulfur level in vessel bunkering fuel:

On May 29th, 2005 Annex VI of the International Convention for the Prevention of Pollution from Ships (MARPOL) regulations went into effect. [37] These requirements by the International Maritime Organization (IMO) came into effect in May of 2006. The thrust of Annex VI is to control SO_2, NOx, and VOCs in marine fuels. Also under the Annex certain areas are established as SECAs in which all main fuels (both diesel and bunkers) must have a sulfur content of no higher than 1.5%.

SECA's have already been established for the Baltic Sea and the North Sea. The US EPA, Environment Canada and the Instituo Nacional de Ecologia of Mexico have begun developing the technical data for application to the IMO in 2008 for a North American SECA. The SECA process takes approximately 5 years so a SECA is expected to be implemented in North American waters sometime in the 2012-2013 period.

Apart from the SECA process there is also a bill in Congress called the Marine Pollution Prevention Act of 2007. It was introduced into the House in February and passed in March. It is now scheduled to be voted on in the Senate. Essentially this would bring the US into compliance with Annex VI independently of the North American SECA. Under this bill all marine fuels used in the territorial waters of the United States would have a maximum sulfur content of 1.5%.

The existing SECAs have resulted in shortages of low sulfur marine fuels in Europe and also problems with the lubricants used in marine engines. The SECA regulations do give ship owners the option of either using low sulfur fuels or installing salt water scrubbers that are currently being tested on ferries plying the English Channel. Which way ship owners will opt is not yet clear. Cost and availability of the new fuels is a problem but the scrubbers are expensive and the ships also lose cargo space and tanks have to be designated for the sludge from the scrubbers.

The IMO is also moving to reduce the sulfur content of bunkers everywhere and there is also a proposal to abandon bunkers and use only marine diesel in ships.

As part of the territorial waters of the United States, Hawaii would be impacted by both the current bill in Congress and the future SECA. The two refineries in Hawaii would have to either process the residual fuel further (a very expensive proposition) or rely exclusively on even lower sulfur crude oils, just at the time that other countries are also following this option.

7. Increase CAFÉ standards for Fuel Economy:

[37] Annex VI was ratified by the Senate in April of 2006

There are several bills in the Federal legislature recommending significant increases in U.S. vehicle CAFÉ standards. CAFÉ standards (Corporate Average Fuel Economy) require automakers to produce and sell vehicles with a specified level of gas mileage. Increasing standards from current levels will reduce gasoline demand based on a fixed set of miles driven.

Bills are pending that were introduced this year include: 1) Improved Passenger Automotive Fuel Economy Act of 2007, introduced by Sen. Stevens, proposing an increase in CAFÉ standards to 40 miles per gallon (mpg) by 2017 and 2) the above noted Clean Energy Bill includes provisions to increase CAFÉ standards to 35 mpg by 2020. The current CAFÉ standard for passenger vehicles is 27.5 mpg.

Increasing CAFÉ standards will, over time, lower gasoline consumption per mile driven as the vehicle fleet turns over. It is not clear whether either of these bills, or a compromise, will be passed, signed and enacted in 2007, but legislators are very focused on this issue. The potential impact on Hawaii will be in the future, dependent upon the ultimate legislative ruling and vehicle fleet turnover timing. Higher CAFÉ standards would mean lower gasoline sales and demand over time, assuming the population base is stable, and miles driven per person is stable.

Analyzing any new law would involve assessing historical vehicle fleet turnover and population growth forecasts to project ultimate gasoline demands in the future. The impact on refiners may be a lower demand for refinery gasoline; however the tradeoff between population growth (more drivers) and higher CAFÉ standards may make this legislation less of a concern to refinery profitability than the other items that are suggested for study.

Summary

These are the primary legislative areas which could impact Hawaii gasoline supply and price. Other than the Federal off-road diesel issue, the Hawaii ethanol mandate, and the PIMAR process, each of these potential laws are not sufficiently defined or finalized to permit efficient analysis of the potential impact. However, several generalizations can be made:

e. Most of these laws or potential laws will increase the cost of refining petroleum crude oil into products everywhere, including Hawaii. It will also adversely affect the profitability and the profit potential of Hawaii's refineries if retail prices of products do not increase. Supply security is an issue in the event one or both refineries close.

f. The changes prior to 2007 (lower sulfur levels in gasoline and diesel; the ethanol mandate) appear to have resulted in the refineries' processing lighter (more expensive) crude oils, and exporting some unfinished products and blendstocks to manage compliance.

g. The impact of the laws may mean more imports of ethanol and low sulfur diesel, and increased exports of higher sulfur distillate components and gasoline blendstocks or naphtha. This generally would lower a refiner's margin and also result in increased marine traffic at a busy port.

h. The need to process more expensive crudes, and the operational costs to meet many of the new laws will erode the profit margin of these refineries.

i. The most significant areas which are threats to supply security in Hawaii are the issues of Greenhouse Gas controls, and, to a lesser degree, the potential SECA based reductions in residual fuel sulfur level. These areas could have a dramatic impact on the viability of the refinery operation and profitability, or potentially require a level of investment which could be economically justified.

j. In order to thoroughly assess the ramifications of the laws (once defined), it would be prudent to develop the analysis in concert with the refiners and other key stakeholders. The refiners have the modeling tools to allow a thorough analysis of alternative options and costs based on the physical equipment they have on site. Other stakeholders (DBEDT, the Utility, airlines, etc) may be required to assess the “knock-on” effect on their businesses or Hawaii consumers.

k. The impact of the PIMAR process will be to provide a needed visibility to refiner and supplier decisions that impact Hawaii consumers.

[This page intentionally left blank]

7 Future Report Enhancements

This segment of the report will discuss the overall quality of this initial report based on the data reviewed and ICF's observation of the process. It will identify areas which should be improved in future reports with the completion of the PIMAR data gathering process, and recommend other potential enhancements which the Commission may wish to suggest to the legislature and other State entities.

Report Quality Overview

The quality of analysis presented in a report such as this one is a direct reflection of the quality of data collected and the methodologies adopted to aggregate and analyze that data. ICF considers the overall quality of the data used to prepare this report to be quite good. Most of the data used for this report were reported directly by the Parties to the State under IPIR and now to the PUC under the PIMAR program. All the external sources of data used come from reputable sources such as the Oil Price Information Service (OPIS), Platt's and the Energy Information Administration (EIA).

The weekly and monthly data reports submitted by the parties are crucial to meet the objectives of PIMAR, as it provides accurate information at a level of detail greater than available from any public source. During this initial reporting period of 2005 through 2007, the reporting process has gone through improvements that standardize the process and its interpretation and make the data more comprehensive. For example, while analyzing the data for this report, ICF realized that under IPIR many Parties did not report HIBOB transactions since their interpretation of the IPIR required only to gasoline transactions to be reported. The instructions issued under PIMAR have been revised with a specific directive to include HIBOB transactions. As the PIMAR process moves forward, such data gaps will be resolved, further improving the completeness and accuracy of the data.

The OPIS data, used to track retail gasoline prices, are considered standard in the petroleum industry. OPIS reports petroleum product prices for all the market in the U.S. at retail as well as wholesale level such as Rack and Bulk. The spot market prices reported by OPIS in the United States are used by many marketers as benchmarks to set their own contract prices. This is also true for data from Platt's, which has a complete global pricing database. The data from EIA is well respected by the industry and analysts alike.

ICF adopted the use of weighted average price to compare prices between different points of sale in the marketing chain and across different periods within the study period. Price comparisons across different zones, subject to different price caps, were done by comparing the spreads between the actual price and the respective price cap or other reference price such as the bulk price. These techniques are best suited for an in-depth analysis of a market such as Hawaii as it helps to normalize data across different locations and periods.

The aggregate trends derived from analysis of the data under IPIR, PIMAR and from OPIS were compared, where possible, to those obtained from Energy Information Administration (EIA) for the State of Hawaii, and were found to be similar. Such comparisons reinforce our belief that the overall quality of the data, analysis and the report is good.

However, data available with the EIA does not provide details for different islands and zones within the State of Hawaii, nor it can provide company level information (due to confidentiality reasons) which is crucial to conduct analysis that meet PIMAR requirements.

Areas of Improvement for Future Reports

The PIMAR reporting process, initiated in May 2007, has already made improvements in the process as compared to the IPIR. The PIMAR reporting forms require the Parties to report data at a greater level of detail, to conform with requirements in HRS Ch. 486H and Ch. 486J, and in a more consistent format across the various forms.

As the PIMAR program matures, efforts should be made to spend less time on data collection and integrity issues, so that reports can be developed quickly and efficiently. This will also allow PUC resources to focus more on data analysis and monitoring of the petroleum business in Hawaii. ICF has the following recommendations to further streamline the process of developing regular PIMAR reports based on the data submitted:

1. The Parties submitted their first reports under PIMAR in August 2007, with the data reported retroactively from January 1, 2007. Spot-checking of the PIMAR data revealed that certain parties had not submitted their reports by the respective due date. Processes need to be put in place that make it easy to screen incoming PIMAR data and identify Parties that are falling behind in the reporting process. The delay noticed in Fall 2007 could also stem from the fact the PIMAR process is new.

2. The PIMAR data was used to cross-check certain details during the period from January 1, 2007 till May 27, 2007 when it overlapped with data submitted under IPIR. However, the PIMAR data has not been completely vetted since all PIMAR reports were not submitted by all Parties in time to be included for the analysis presented in this report. ICF recommends that the Commission undertake a detailed evaluation of the submitted PIMAR reports to determine that the Parties are reporting details as per instructions. Checks should be made that the volumes and prices reported for bulk and rack transactions in the M100 and M101 databases should match for a given day since the Parties are reporting data from the opposite sides of the same set of transactions.

3. Currently, the PUC only requires the M100 and M101 data to be submitted in either MS Excel or MS Access format. Several of the reports submitted under IPIR and PIMAR have been submitted in a document format (PDF). Data submitted in such a format adds causes delay since the data needs to first transcribed into the MS Excel format for analysis. ICF recommends that data in all forms should be reported in a consistent electronic format, MS Excel or MS Access format, that are conducive to analysis.

4. PIMAR requires the submission of semi-annual and annual reports that cover the operating cost information, transportation capacity, and storage capacity and inventory information. These forms have not been finalized yet. The PUC has sent an IR to the refiners and suppliers to provide details of operating revenue and expenses to estimate profitability. These forms should be finalized once the Parties submit data in response to the IRs and the initial profitability analysis is completed.

5. The M100 and M101 database that require Parties to report individual transactions for gasoline and its components is a very efficient format for analysis. ICF recommends that the PUC evaluate the prospect that requires the Parties to submit all PIMAR reports in a similar format. This will allow quicker analysis of the submitted data.

6. It will be significantly more efficient for the Commission to establish a secure data reporting site that will enable parties to upload data directly into the data reporting database rather than submit individual reports by mail on paper and CD format. An online and interactive system will require Parties to upload data in a consistent format and data anomalies will be more easily identified requiring less re-work by the Parties to provide corrected data to the PUC. The use of an online reporting site will ease requirements for the companies to prepare reports in MS Excel or MS Access separately.

7. Currently, the PUC needs to send out a formal Information Request (IR) to individual Parties to request any clarifications or corrections in data. The process of issuing IRs and receiving replies can take several weeks if not months. This process needs to be streamlined. ICF recommends that each reporting party designate an individual as point of contact for data submission whom the PUC can contact for any clarifications. Further, the PUC should be allowed to request clarifications via an e-mail rather than request a formal IR. The use of email will reduce the burden and time involved in issuing an IR, receiving replies and maintain a written record at the same time. Alternatively, this process can be included as a feature in the online system as recommended above to make the process even faster and more secure.

8. Developing a monthly “Petroleum Market Watch” report that provides current information on prices and oil markets to consumers (this may benefit from more timely submission of the W-120 and W-140 forms in particular). The monthly report should evaluate developments in the Hawaii petroleum markets including changes in prices, inventory levels, and estimate gross refining and supplier margins to determine if they are in line with normal trends and determine reasons for any abnormal movements.

9. The PIMAR program should modify the collection of data for diesel fuel to identify production, sales, inventory, imports & exports, and prices of diesel fuel into three categories: ULSD (under 15 ppm), LSD (15-500 ppm) and HSD (over 500 ppm). This change will greatly improve monitoring of diesel fuel trends in Hawaii.

10. The current set of data requested by the PUC under PIMAR provides sufficient data to track the gasoline markets in all respects. The PUC should consider extending the M100 and M101 format for reporting individual transactions to all products including distillates, jet fuel and residual fuel oil. This will allow effective monitoring of the entire petroleum business in Hawaii at the wholesale level.

11. It would generally be logical for the formal PIMAR report to follow as soon as possible after the completion of a calendar year. This initial report covers a very critical period for Hawaii given the Gas Cap legislation and ethanol implementation. In the future, it would be ideal to analyze full calendar year data, which may mean a report is complied in the first quarter and presented to the legislature and public by May 1 of the following year.

12. There will doubtless be feedback from numerous parties on the content, scope and quality of this report. There are likely to be numerous suggestions on areas for improvement.

Moreover, it may become apparent that some of the detail required from the parties is not essential. ICF recommends that the Commission carefully review this feedback. It is essential that this report evolve over time to a more consistent format that provides an enduring legacy of trends and information to Hawaii consumers and with a reduced burden on the parties in the industry.