McCullough Research

ROBERT F. MCCULLOUGH, JR.
MANAGING PARTNER

Date: November 15, 2012

To: McCullough Research Clients

From: Robert McCullough
Sean Long
Jil Heimensen

Subject: May and October 2012 Gasoline Price Spikes on the West Coast

In May 2012, West Coast gasoline prices spiked while oil prices fell. In October, California gas prices spiked on rumors of a gasoline shortage. In both cases, the underlying data now available contradicts the industry explanations.

West Coast gasoline prices are primarily determined by the world price of oil. Inventory levels can also be significant, although with a smaller impact. Current production levels for both West Coast and California have no statistically significant impact on the price of gasoline.[1]

The statistical results contradict frequently cited press and industry reports that trace price spikes to poorly documented outage events. Our review of detailed refinery data indicates that the accuracy of these reports may be in question. Specifically, an exhaustive review of California refinery emissions data reveals inconsistencies between when refineries were producing petroleum products and publicly reported maintenance shutdowns.

Gasoline inventory levels in California increased during the May price spike. Data through November 2, 2012 shows a similar pattern in the October price spikes. The argument that the price spikes on the West Coast are caused by supply shortages is contradicted by the increasing gasoline inventories during the period of extraordinary prices. The increasing inventories during periods of apparent shortages are more consistent with withholding supply and market power than the fundamentals of gaso-

[1] Statistically, Brent oil prices are significant both before and after corrections for heteroskedasticity. Gasoline stocks are significant before the correction and not significant after the correction. A simple regression model of retail gasoline prices appears in Attachment A.

6123 REED COLLEGE PLACE • PORTLAND • OREGON • 97202 • 503-777-4616 • ROBERT@MRESEARCH.COM

line production. Given the concentration of the West Coast gasoline market and its isolation, these factors can have a significant impact on prices borne by consumers at the pump.

Overview of the West Coast Gasoline Market

The West Coast is an "island" in the North American gasoline market because there is no gasoline pipeline across the Rockies. Within this island, California is an even smaller island, since California law mandates a specific formulation for gasoline during spring and summer months. Within the West Coast market, nineteen refineries supply a variety of products from asphalt to gasoline. Ownership is concentrated, with major oil companies owning two or three refineries each. The largest group of refineries is in California, five refineries are in Washington, and no refineries are located in Oregon. The following page shows a map of the California refineries.

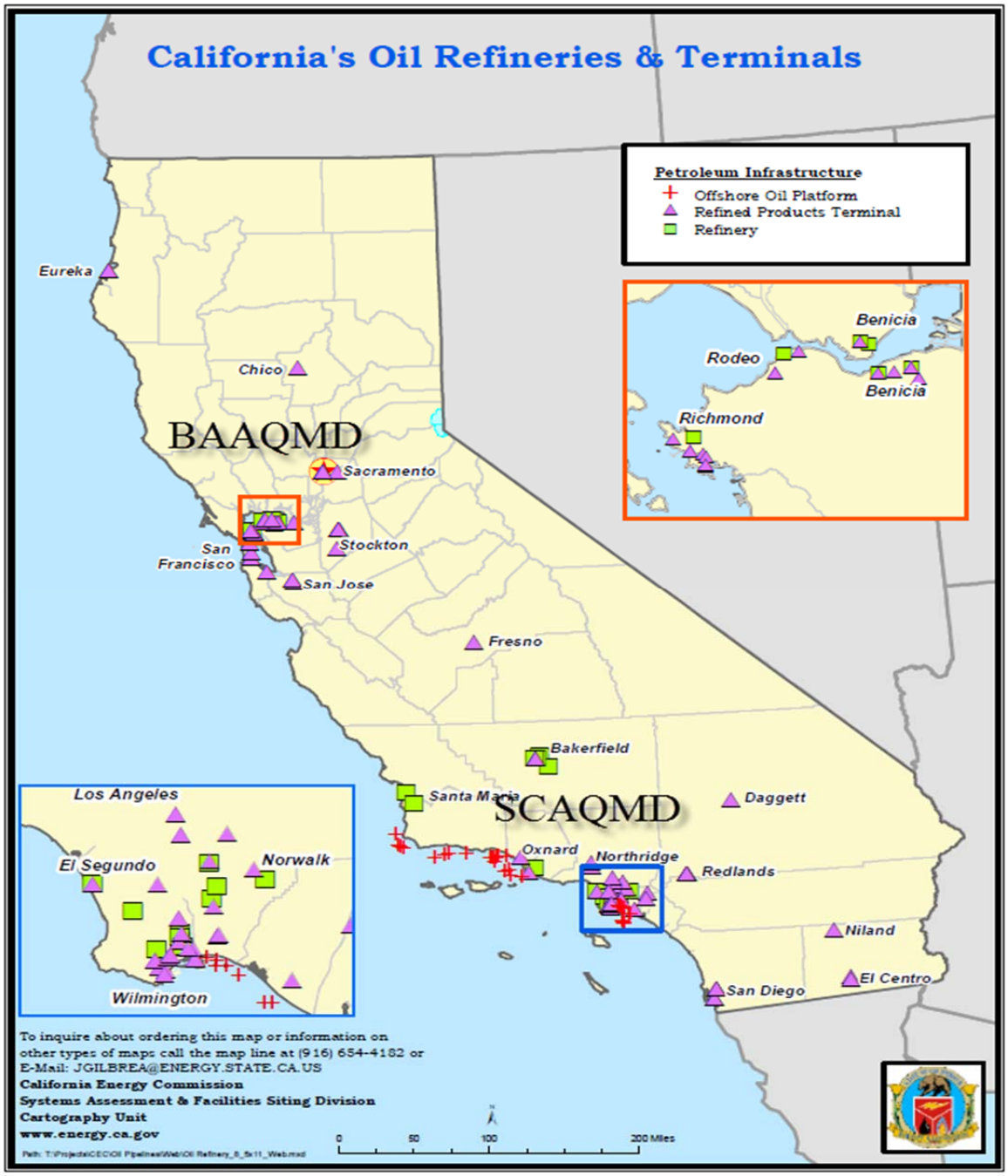
Gasoline sales in California are even more concentrated. In May 2012, seven companies made 94% of all sales. The seven companies are all vertically integrated with both retail sales and refinery operations. Sales data is available from the California State Board of Equalization (BOE).[2]

Production and outage data on the West Coast market is more difficult to access. The primary source is the U.S. Energy Information Administration (EIA).[3] West Coast data is generally aggregated by Petroleum Administration for Defense Districts (PADD). The five western states, Alaska, California, Hawaii, Oregon, and Washington, are referred to as PADD 5 in EIA reports. Somewhat more detailed information is available in the weekly reports on production and inventories from the California Energy Commission (CEC).[4]

More useful refinery-level data is available through California's air quality authorities. The refineries near San Francisco are regulated by the Bay Area Air Quality Management District (BAAQMD) and Los Angeles area refineries are regulated by the South Coast Air Quality Management District (SCAQMD). Refinery emissions data is public, although arduous to access. For example, BAAQMD's data is only available as computer scans of the underlying tabular data, requiring hundreds of man-hours of optical character recognition before it can be used.

[2] http://www.boe.ca.gov/sptaxprog/spftrpts.htm
[3] http://www.eia.gov/petroleum/data.cfm#refining
[4] http://energyalmanac.ca.gov/petroleum/fuels_watch/index.php

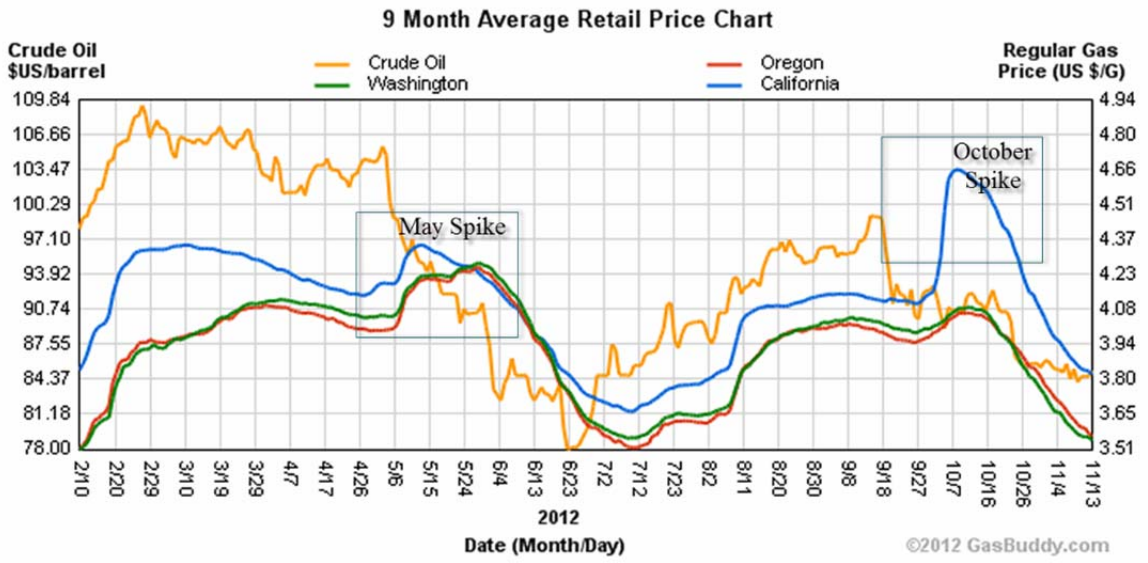
Air quality refinery data allows us to track changes in emissions among the various California refineries, giving insights into the production and output changes among these facilities.



Two additional federal sources are also useful in reviewing outage and maintenance data: the Energy Assurance Daily report from the Department of Energy and the Coast Guard's National Response Center. [5,6] Since anecdotal evidence on production interruptions figures highly in the explanation of the May and October price spikes, these government sources provide a check on the accuracy and relevance of the industry explanations.

Rebutting the Common Explanation: Supply Shortages and Price Spikes

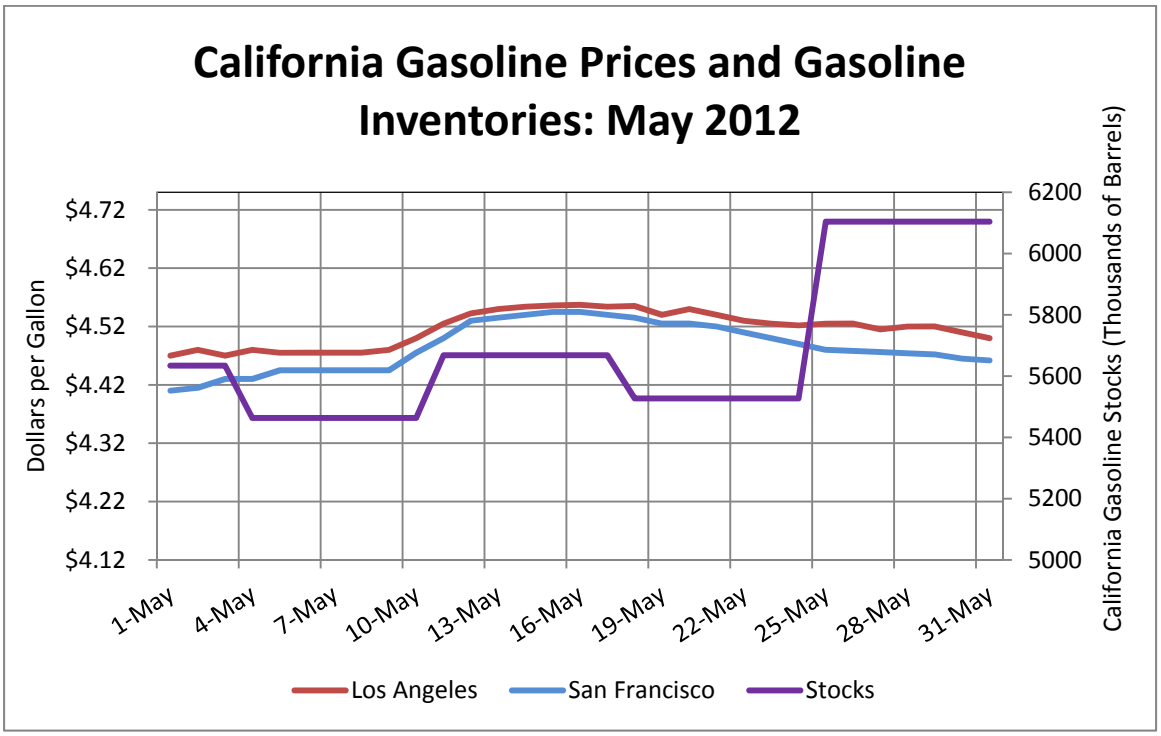
The May price spike affected prices in California, Oregon, and Washington. The October spike primarily affected California.



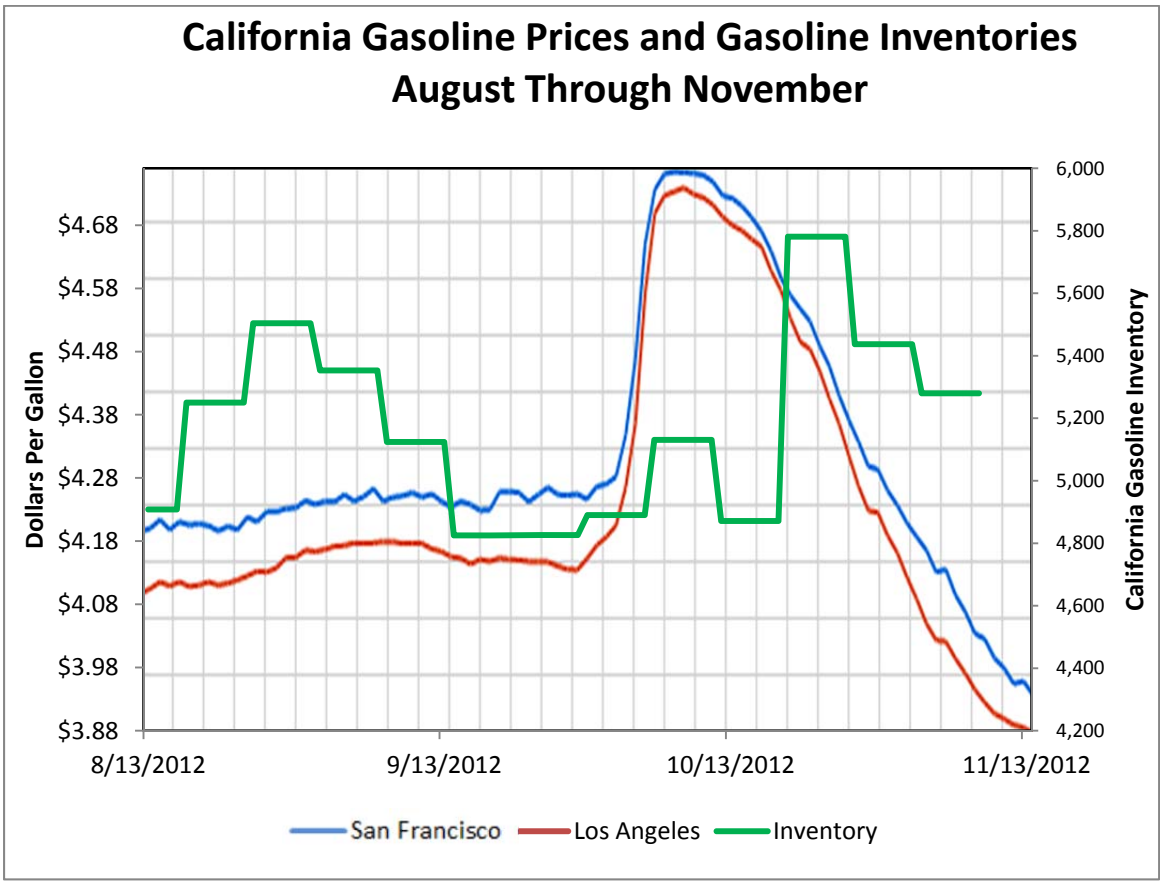
In both cases, the most common explanation was a major outage. The May spike was blamed on the February 18 fire at the Cherry Point refinery and the October spike was blamed on the August 6 fire at the Richmond refinery. The lengthy delay between cause and effect makes these explanations suspect. It is not the refinery outage itself that increases price, but rather the impact of the outage on supply. Moreover, if a decline in production levels causes price increases – a hypothesis at odds with the statistical data – prices should have risen soon after the outages and not two or

[5] http://www.oe.netl.doe.gov/ead.aspx
[6] http://www.nrc.uscg.mil/foia.html

three months later. While the EIA does not provide inventory data in sufficient detail to understand West Coast inventory levels, CEC data shows that during the May price spike, inventory levels actually increased.

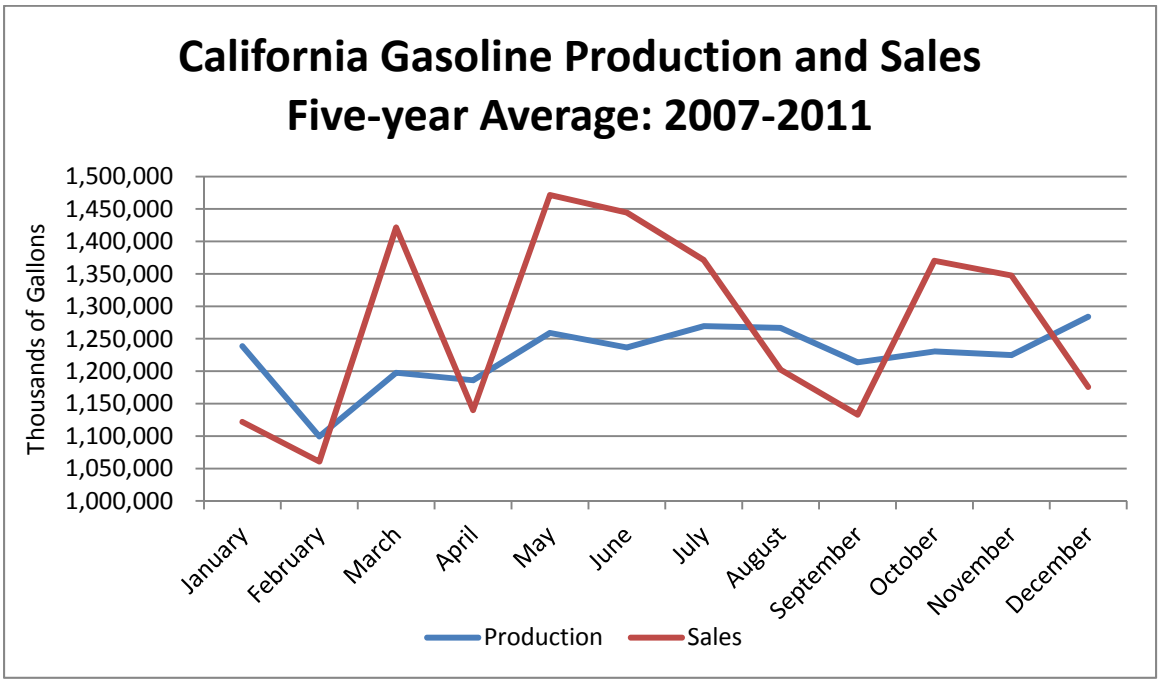


Inventories also increased during the recent run-up in California gas prices. The increase was simultaneous with the $.50 per gallon increase.

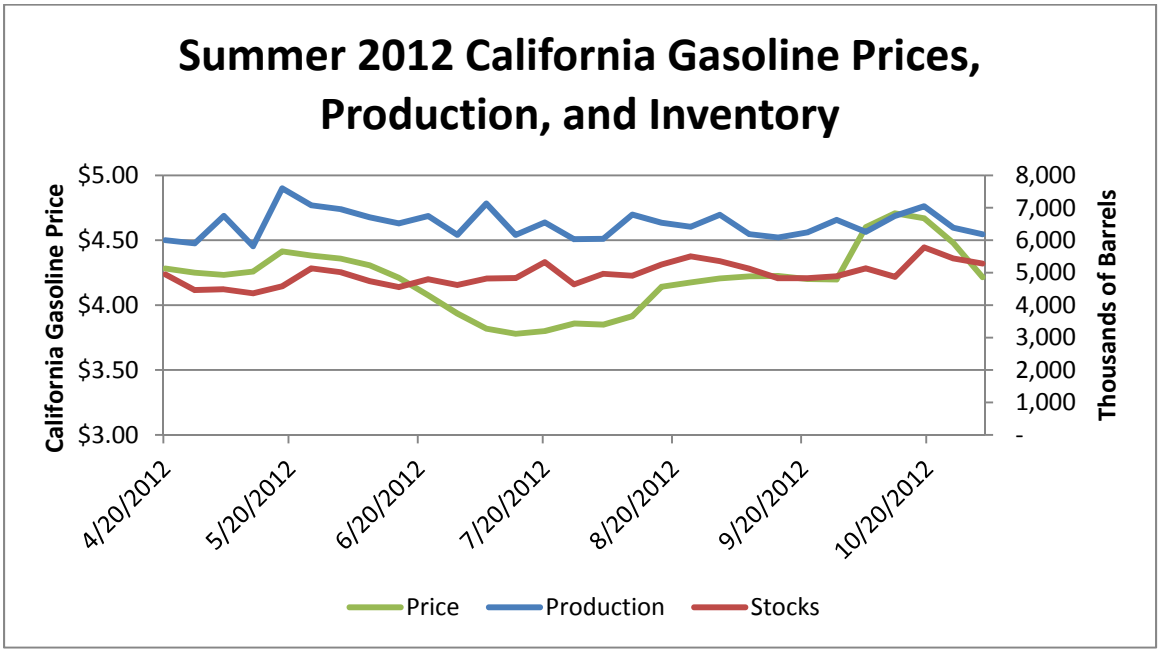


The argument that outages several months before are driving supply shortages is not consistent with the structure of supply and demand. Refineries' production schedules are not perfectly matched to changes in seasonal demand. The next chart compares refinery production levels from the CEC with gasoline sales from the BOE. Gasoline sales peak in the summer months, while gasoline production is relatively flat over the year with a dip in February.

The market has adjusted smoothly to these seasonal factors without price excursions whenever sales exceed production. Our experience this year reflects a different market than those in past years.



The next chart shows a disconnection between California gasoline prices in the summer of 2012 and gasoline inventories and production. Overall, the two price spikes seem highly uncorrelated with inventories and production.



The production and inventory data from the CEC suggests an alternative explanation for the May and October price spikes. As mentioned, the California gasoline market is highly concentrated with a limited number of refineries, no ready access to gasoline supplies outside the West Coast, and very little market data. This is an environment where market power, defined as the ability of a few producers to set prices outside of market forces, is likely to exist. However, the lack of correlation between fundamentals and prices does not necessarily prove market power. It certainly does not prove collusion among the principal suppliers, since specific data by refineries is difficult to procure. However, the data does suggest the need for an investigation on a refinery-by-refinery level.

Continuous Emissions Monitoring Data

On May 22, 2012, the CEC's monthly Petroleum Watch report stated:

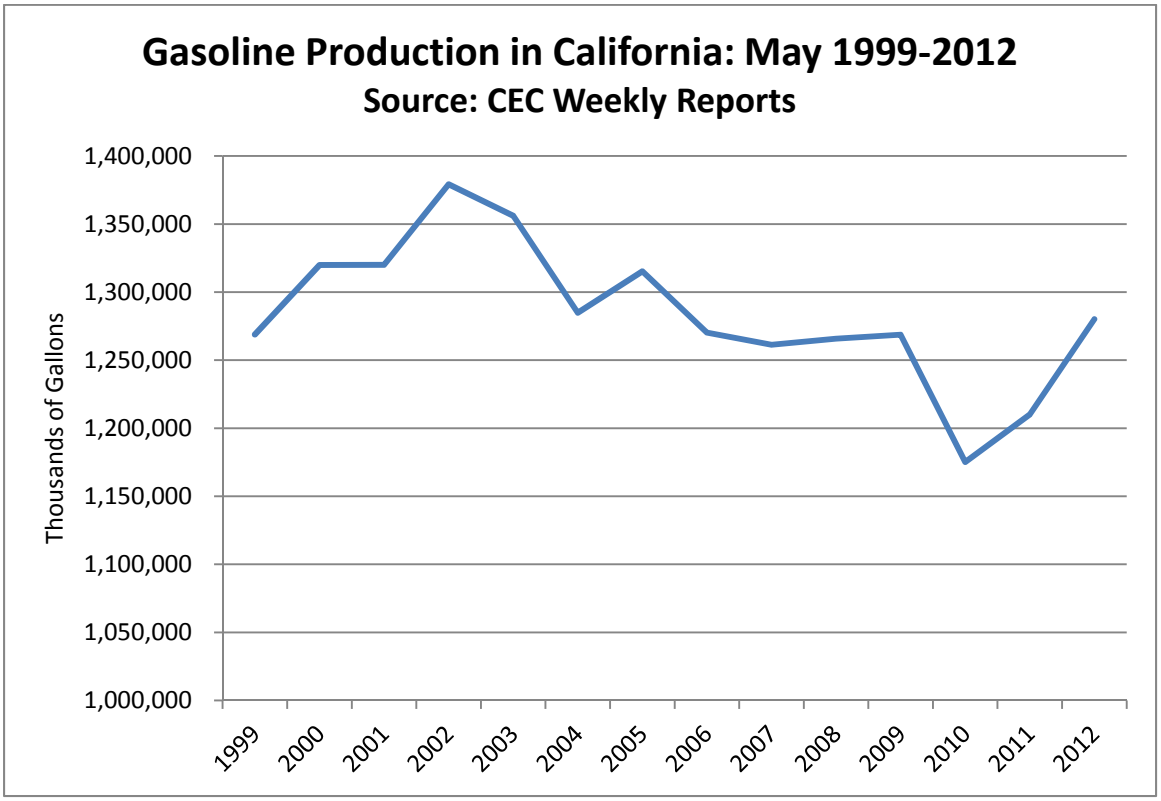
> As of May 21, retail regular-grade gasoline prices in California rose by 10 cents since the previous Petroleum Watch to $4.34 per gallon, while retail diesel prices fell by 12 cents to $4.30 per gallon. California retail gasoline prices are at record seasonal highs. The increase in gasoline prices is due to an unusual number of refinery outages.[7]

This conclusion matches the finding in our June 6, 2012 report on the May price spike, which indicated a number of outage and maintenance reports that might have contributed to the price increases.[8]

Company	Location	Refinery Output bbl/day	Online	Date Shutdown	Date resumed	Reason for Closure
Tesoro	Martinez, CA	166,000	Yes	5/2/2012	5/13/2012	Hydrocracker Broken
Shell	Martinez, CA	156,400	Yes	4/27/2012	5/16/2012	Maintenance
Chevron	Richmond, CA	246,000	No	5/12/2012	Planned for 5/28/12	Seasonal Maintenance
BP	Carson, CA	265,000	Yes	5/15/2012	5/21/2012	Planned Flaring
Alon	Bakersfield, CA	14,500	No	4/20/2012	N/A	Hydrocracker Restared
Tesoro	Anacortes, WA	12,000	Yes			Minor production problem
ConocoPhillips	Rodeo, CA	122,000	Yes	4/25/2012	6/5/2012	Fire
BP	Cherry Point, WA	225,000	Yes	2/17/2012	5/30/2012	Fire
ExxonMobil	Torrance, CA	155,000	Yes	6/4/2012	N/A	Planned Maintenance

There is a problem with this explanation, however. Gasoline production, at least in California, actually increased in May from the previous month and was higher than in recent years.

[7] http://www.energyalmanac.ca.gov/petroleum/petroleum_watch/2012_Petroleum_Watch/2012-05_Petroleum_Watch.pdf
[8] Analysis of West Coast Gasoline Prices, McCullough Research, June 6, 2012, page 2



The explanation that price increases were due to refinery outages is inconsistent with increasing output. This leaves two possibilities:

1. Press coverage on outages and maintenance may have been unreliable.

2. Refinery announcements may be intentionally misleading.

During previous cases of market manipulation in California, announcements of plant outages have been discovered to be intentionally unreliable.[9] Our approach was to repeat our similar audit of reported generator outages in 2000-2001 and verify outage announcements against the environmental reports.

The EPA delegates monitoring of refineries to local air quality control districts. Different states approach the monitoring in different ways. In California, most refineries are self-monitored with a monthly report showing the emissions on a device-by-

[9] For an example, refer to U.S. v. Reliant Energy Services Indictment, page 5, April 8, 2004.

device level submitted to the air quality control district. This data is referred to as CEM data, as it is taken from devices called "Continuous Emission Monitors." It is important to note that the quality of the reporting of emissions varies across the districts. In one case, our request for emissions triggered the district to notice that the refinery had ceased reporting its emissions. (The situation was remedied after our request.) The reporting can also be haphazard, for example, with one district apparently receives its reports on paper which makes evaluation of the huge volume of data difficult.[10] SCAQMD keeps the data in computer format which allows for a more effective review.

The Chevron Richmond plant has been blamed for the October 2012 price spike. It was also cited as a possible cause for the May price spike. In May, press reports indicated that equipment at Richmond would be closed from May 12 through May 26 due to scheduled maintenance. We traced this widespread report through the Energy Availability Daily report to a Reuters article:

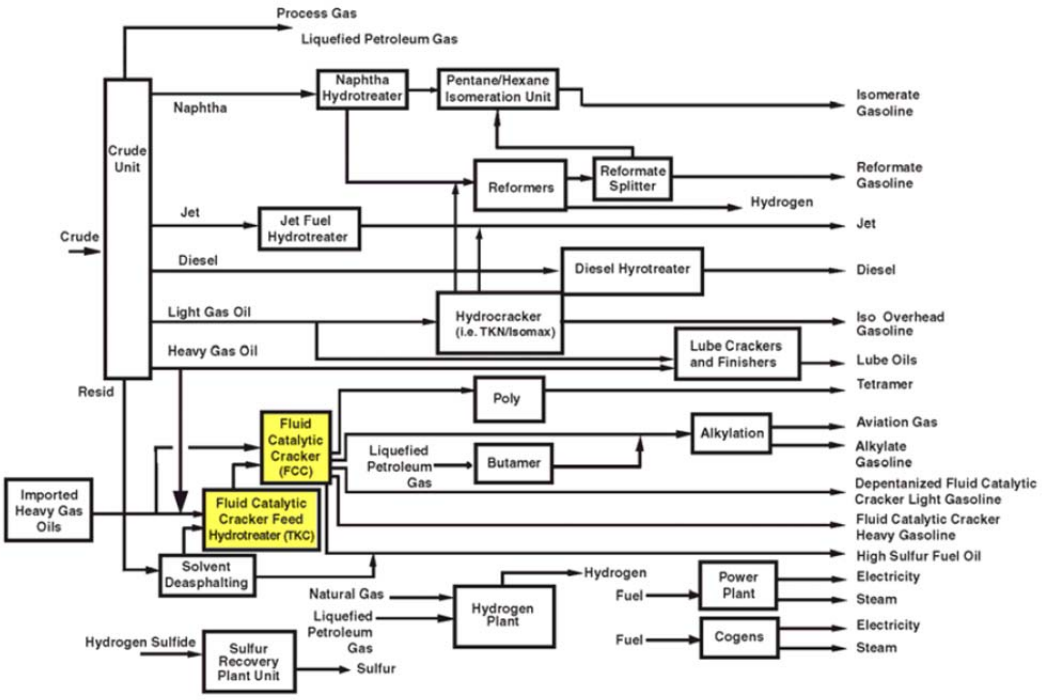
> HOUSTON, May 13 (Reuters) - Chevron Corp's 245,271 barrel per day (bpd) San Francisco Bay-area refinery in Richmond, California, performed the planned shutdown of a unit on Saturday, according to notices the refinery filled that day with federal and California pollution regulators.
>
> The shutdown triggered flaring at the refinery, according to the notice filed with U.S. National Response Center.
>
> Refineries most often carry out planned shutdowns of refinery units to perform seasonal maintenance ahead of the summer driving season.
>
> The Richmond refinery is fourth [sic] San Francisco-area refinery currently performing a planned overhaul.[11]

The *Wall Street Journal,* source unspecified, included the information that "Source on May 14 said units involved in May 12 planned shutdown include FCCU and hydrotreater. Work to last for two weeks."[12]

---

[10] One district apparently receives the printout from the CEM and then scans the printouts, creating a record less accessible and reliable than the original spreadsheets.
[11] Chevron Richmond refinery unit in planned shutdown: filing, Reuters, May 13, 2012.
[12] Refinery Status: Delta Airlines Trainer Refinery to Begin Turnaround on July 4, Dow Jones Business News, June 25, 2012.

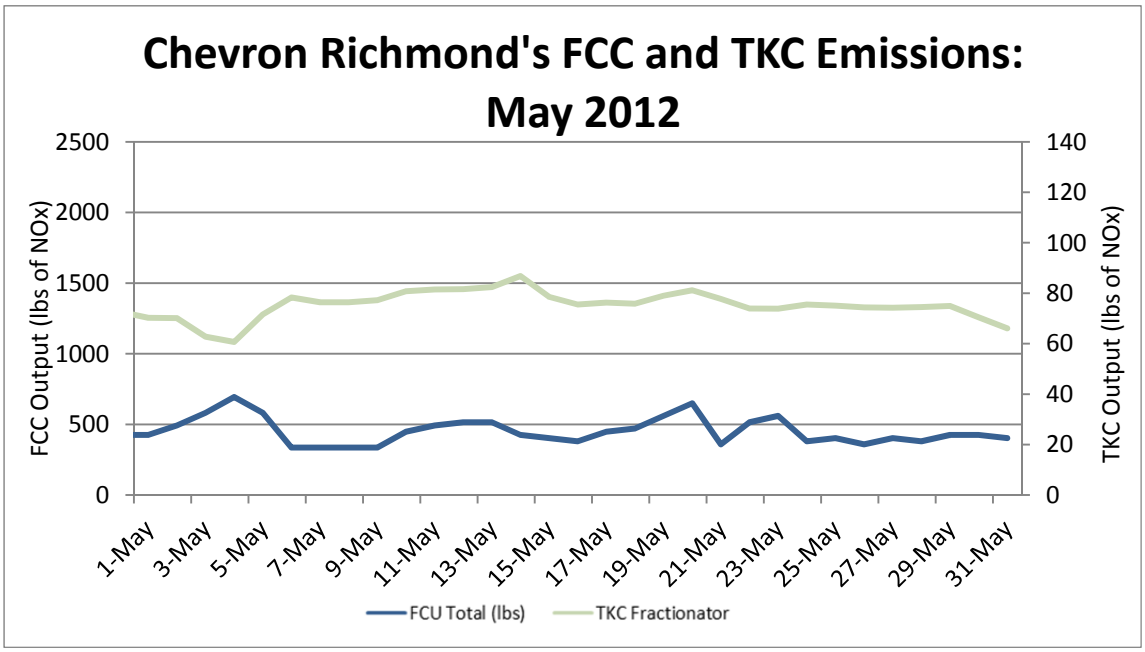
This is significant market information which might well reflect a change in supply. The Richmond refinery is well documented and the equipment cited, the Fluid Catalytic Cracker (FCC) and the Hydrotreater (TKC), are central components of the gasoil processing at the refinery, as shown in this flow chart from the Chevron Energy and Hydrogen Renewal Project Draft Environmental Impact Report (our emphasis in yellow).[13]



Richmond produces gasoline components in two different production sequences. The August fire took place at the other production process, crude unit #4, depicted as the long rectangle at the upper left part of the plant flow chart. The May report indicated a two week interruption in the second production sequence.

Both the FCC and the TKC have CEM reports at the BAAQMD. NOx emissions from the devices are charted below:

[13] Chevron Energy and Hydrogen Renewal Project Draft Environmental Impact Report, Page 3-13, May 2007.



NOx is routinely monitored at refineries. It is a byproduct of the production process. When units are off-line, no chemical reactions are taking place and no emissions result. These units have been taken off-line in previous months and the emissions reports report zero pounds of emissions at these times. This was not the case in May 2012. Attachment B shows Richmond's May 2012 environmental report on the FCU device.

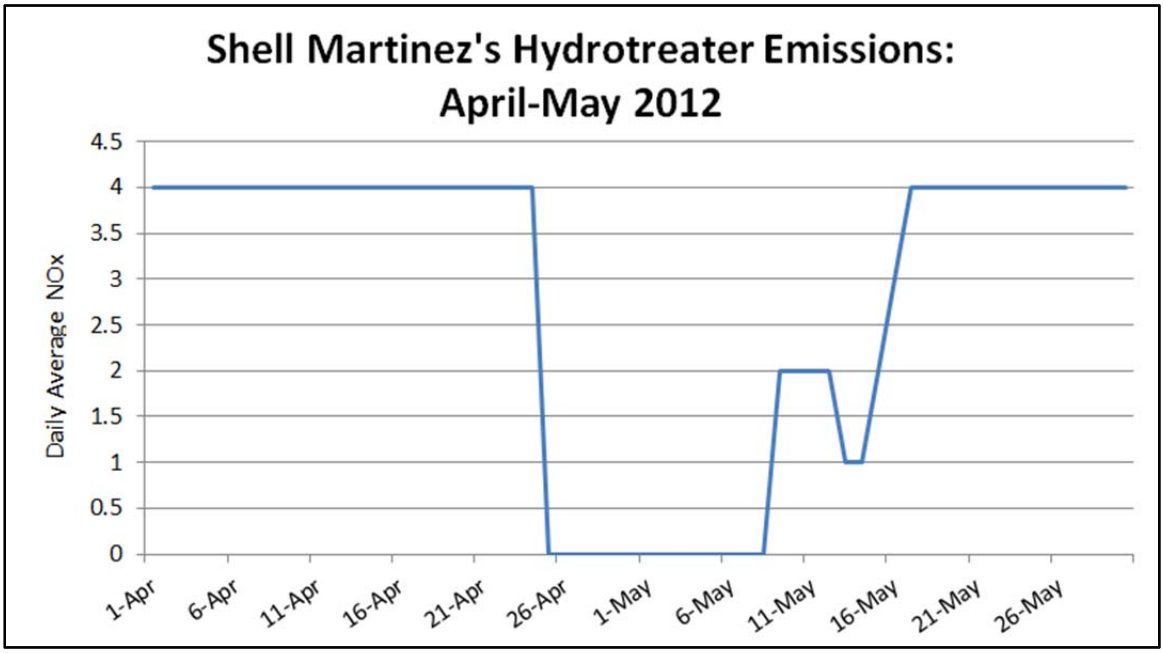
The inconsistency between the press reports and the CEM data can be attributed to any number of reasons, including innocent reporting errors. The inconsistency does bring into doubt the accuracy and importance of California's maintenance and outage reports.

In addition to the Chevron Richmond refinery, a second outage report in May also appears doubtful. Shell Martinez had a shutdown reported from April 27 through May 16:

> Scheduled work (unspecified) is underway, the co. said on Apr 27. Traders said crude and coker unit involved; end date not provided.[14]

[14] Refinery Status: Delta Airlines Trainer Refinery to Begin Turnaround on July 4, Dow Jones Business News, June 25, 2012.

On May 16, the *San Jose Mercury News* reported that the Shell Martinez refinery had completed maintenance.[15] In order to verify this report, we reviewed the CEM emissions from the Shell Martinez HGHT unit.



Shell Martinez has provided its Scheduled Unit Startup and Shutdown reports.[16] These reports are attached to this report as Attachment C. The chart above shows operations at the Heavy Cracked Gasoline Hydrotreater (HGHT). The device in question shows evidence of a shutdown based on its NOx emissions. There is a discrepancy between the San Jose Mercury News' article and Shell's official filings with the BAAQMD. The Mercury News reports that maintenance has been completed on May 16th, while the BAAQMD fillings indicate that the startup occurred on May 3rd. The NOx data, however indicates that the refinery returned to operations sometime between these two dates.

Refinery Maintenance Schedules

[15] Bay Area Biz Buzz, May 16, 2012.
[16] California refineries submit reports on the shutdown and startup of refinery emission sources. Almost all refineries have agreed to the release of this historical data.

A second use of CEM data is to check the frequent assertion the maintenance schedules are set far in advance and cannot be adjusted for market conditions. This was the Western States Petroleum Association's explanation for May's high prices. On June 8, Tupper Hull, Vice President of Strategic Communications, claimed that

"[Maintenance procedures] are scheduled literally years in advance...the idea that there was some quick activity associated with maintenance…is just not consistent with how refineries operate or how their maintenances are conducted and scheduled."[17]

Press coverage does not always agree. For example, in November 2011, Reuters reported:

> Tesoro Corp said on Thursday that it had reduced its 2011 capital budget by $16 million by shifting planned work at its West Coast refineries.[18]

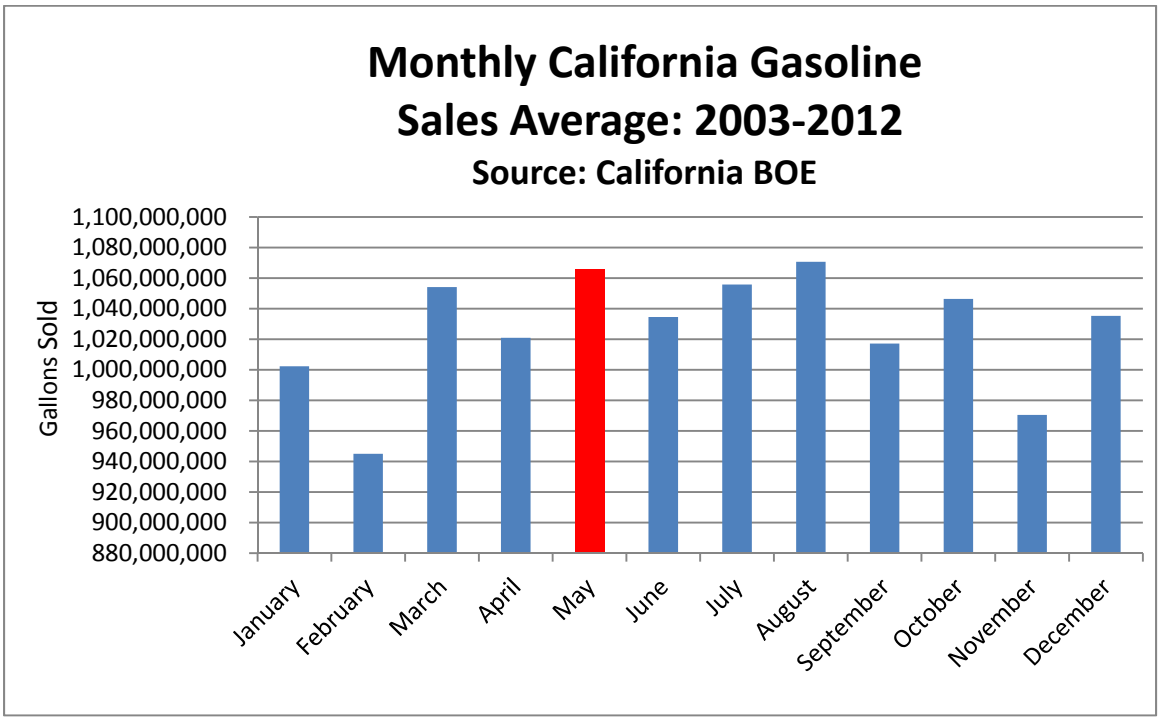
This change in maintenance schedule does not support Mr. Hull's assertion that any such plans must occur years in advance. Tesoro managed to reduce its 2011 capital budget by shifting maintenance from the end of 2011 to 2012. If Mr. Hull was correct, Tesoro must have planned the shift years in advance. It makes more sense that Tesoro chose to delay maintenance based on financial specifics of the current year, rather than some projections years in advance.

Refineries claim to schedule maintenance when they anticipate that it will have little impact on consumers. If this were the case, it is natural to think that if so many refineries scheduled maintenance in May 2012, there is something about May that could have been projected years in advance. Scheduled maintenance work in May is easily estimated by regressing the CEM data against a dummy variable for May. This allows us to determine whether or not refineries tend to shut down in certain months, specifically in May. In most cases there is no statistically reliable relationship between calendar months and emission levels corresponding to fixed maintenance schedules. In a few cases there is a very small level of impact.

[17] KGW Straight Talk, June 8, 2012.
[18] Tesoro says shifts West Coast refinery work to '12, Reuters, November 3, 2011.

Refinery	Maintenance in May
Alon Paramount	N/A
Valero Wilmington	N/A
Tesoro Wilmington	N/A
Exxon Mobil Torrance	N/A
Chevron El Segundo	N/A
BP Carson	3.05%
Conoco Wilmington	N/A
Chevron Richmond	7.21%
Shell Martinez	9.44%
ConocoPhillips Rodeo	N/A
Tesoro Martinez	N/A

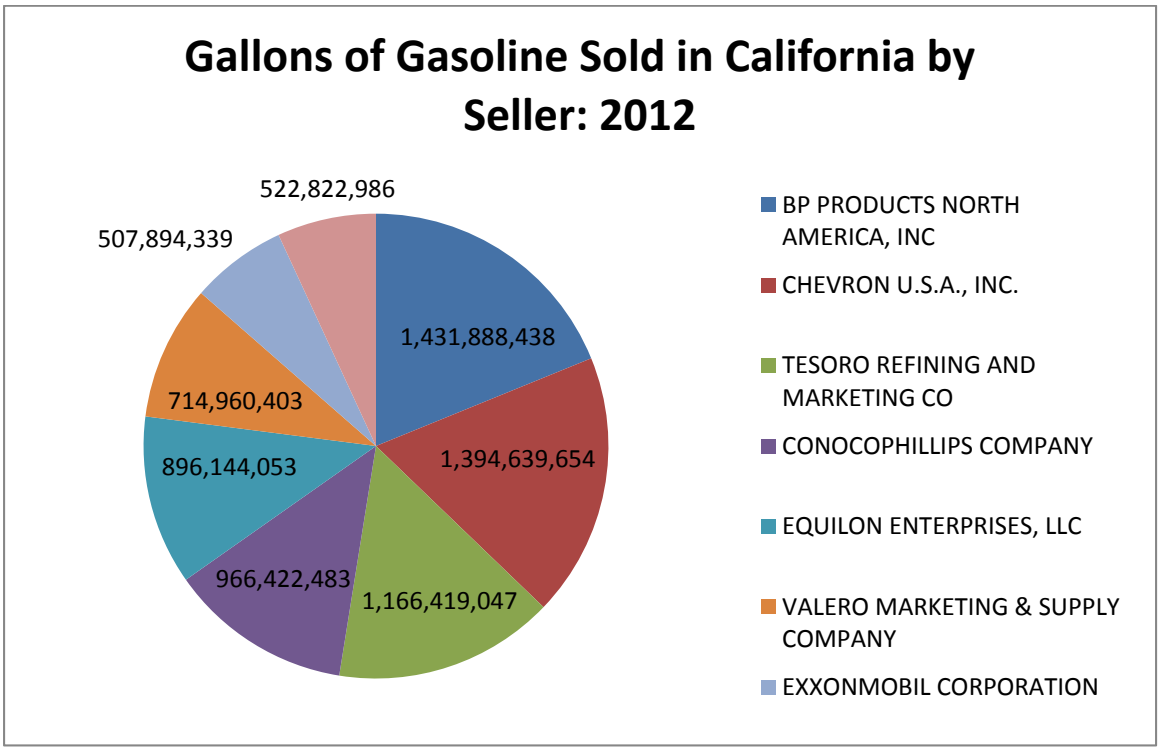
The statistical evidence indicates that May, if it has any planned impact, has a small impact at just a few of the California refineries that we have reviewed. This conclusion is consistent with demand data showing that May has one of the highest demand months and thus is a poor choice for planned maintenance.



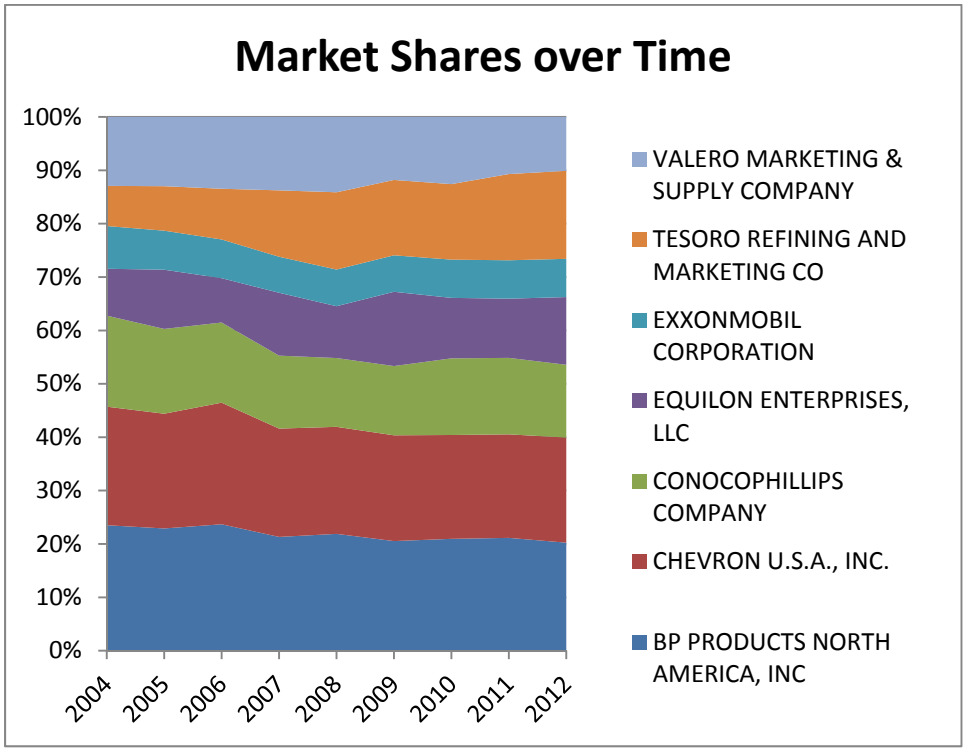
The statistical evidence suggests that there is no traditional relationship between refinery maintenance and the month of May, and that May is in fact a poor month in terms of market demand to schedule maintenance. If maintenance was scheduled years in advance to occur in May 2012, there would have to have been a predictable reason for this to be the case. However, May does not seem to be the best month, historically, to delay maintenance, which suggests that it was not planned years in advance.

Market Power

The existing data gives few insights into the exercise of market power in the California gasoline market, although it does allow us to rule out one option – the decision of a pivotal supplier to sacrifice market share in order to capture windfall profits when a perceived shortage occurs. In isolated markets, a pivotal supplier is one who can create a shortage by not offering its production to consumers. Recall that California is an island within a larger West Coast island. In 2012, the allocation of sales among major producers is:



It is important to note that the year 2012 roughly maintained market shares across the seven major sellers. It is reasonable to conclude that one market leader did not withdraw from the market in order to cause a shortage since there was not a substantive change in market shares in 2012.



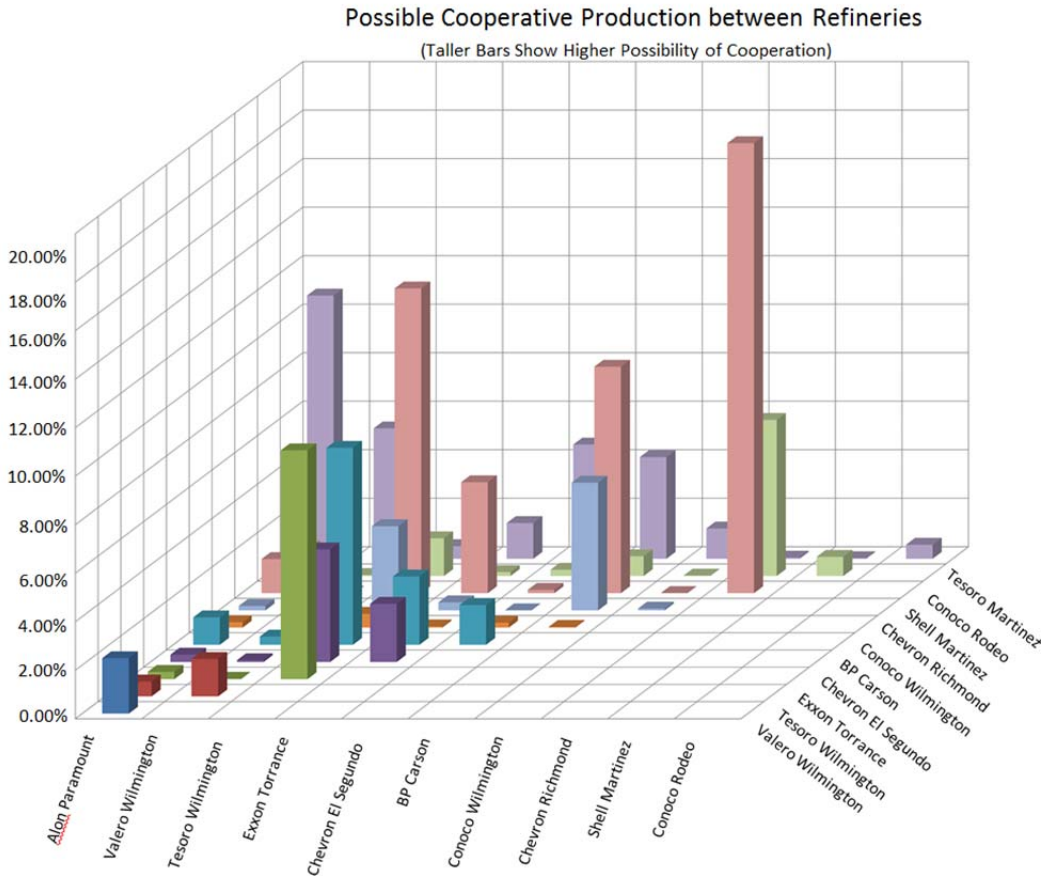
While there is no evidence of a pivotal supplier, there is some evidence for coordination of operation between producers. Again, it is important that the West Coast is an isolated part of the national gasoline market. Within the West Coast the California oil market is additionally isolated due to its unique gasoline formulation. Gasoline suppliers in California consist of seven major firms, each of which is vertically integrated, enhancing the possibility of an exercise of the market power.

The CEM data for NOx that we have assembled can be used to check for production coordination between possible competitors. If the exercise of market power is collusive at the sales level either through withholding or cooperative pricing agreements, this need not affect the individual refinery production decisions. Our review of NOx emissions levels over the past five years indicates that there is some evidence of production coordination among the California refineries. This can be explained in two ways:

1. Refineries have a production relationship. For example, we know that the Richmond refinery uses gasoil from an outside source to produce additional petroleum products.

2. Some refineries may have agreed to allocate production targets in order to maintain higher prices.

The emissions data has to be viewed with significant caveats. This is an inefficient way to approximate production levels, since reporting of the data is doubtful in some cases and not all production of petroleum products is subject to metering. It does suggest the need to compare specific output levels with the best possible data.



This chart reports the R^2 from regressions between NOx emissions over eleven of the California refineries. If production levels were coordinated between some refineries, emission levels might show a similar pattern to the chart above. If there was no

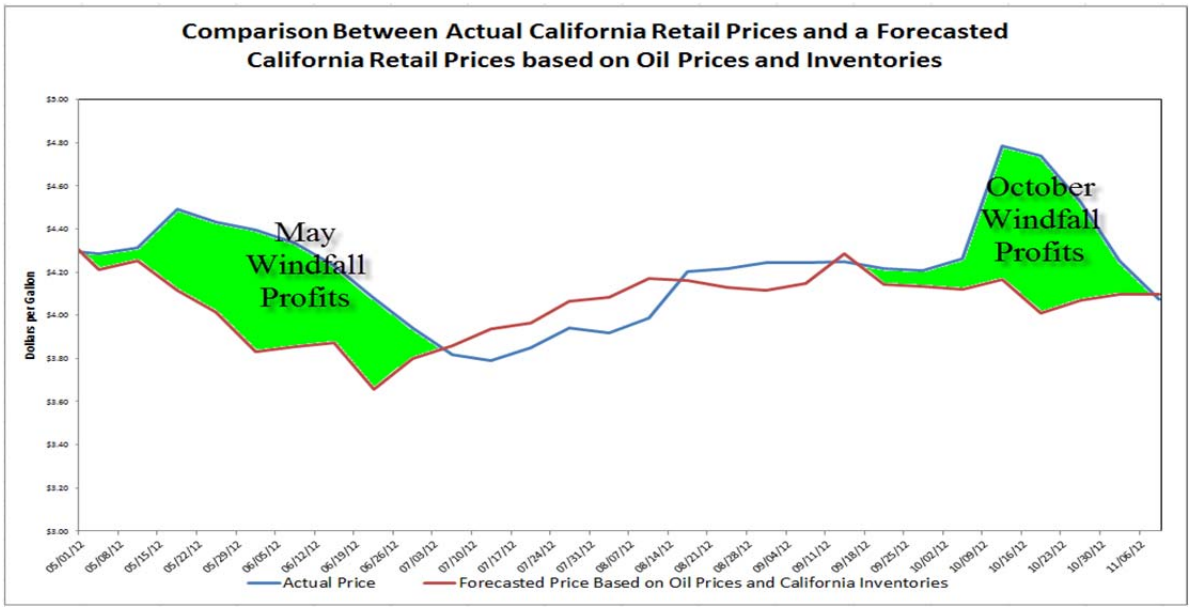
coordination, the data might reflect seasonal patterns present for all refineries – reductions in emissions in February, for example – but this is not present here. Our research does not show identical seasonal correlations among refineries.

In this case some of the refineries do show significant correlations. If the actual production data reflects similar patterns, these patterns would strongly suggest an exercise of market power.

Conclusion: Impact on the Consumer

The primary determinant of gasoline prices over the last decade has been the world price of oil. A secondary determinant has been the level of inventories. As a general rule, adding one dollar to the world price of oil adds a little over two cents to the price of gasoline. Sudden shifts in the price of gasoline provide huge windfall profits to the refiners. The increase of 50 cents in the price of gasoline at the beginning of October has the same impact on the refinery's bottom line as if the world price of oil had fallen by $10 a barrel.

The following chart compares the actual retail prices with those we would expect based on the historical relationship between oil prices and retail gasoline inventories. The green areas, which are the price spikes in May and October, show the scale of windfall profits that have been paid by consumers which lack an adequate explanation.



Our model of California gasoline prices indicates that the October prices were $.66/gallon higher than they would be normally, given the historical patterns of oil prices and gasoline inventories. This translates into an enormous windfall profit in California. Detailed information on gasoline sales in California for October has yet to be released, but in the past sales have averaged more than one billion gallons per month. A reasonable estimate is that refiners are receiving a windfall profit of $25 million dollars a day at October's prices.

Recommendation

When costs fall and prices rise, a likely explanation is that an exercise of market power is present. In highly concentrated industries, the exercise of market power through production reductions or cooperative pricing can require no more than an email or a phone call. No specific agency has regulatory authority over oil and gasoline markets. No specific agency accumulates data on West Coast markets on an ongoing basis in sufficient detail to provide a check to the exercise of market power.

The recent price spikes on the West Coast demand investigation. The market anomalies also require that a federal agency be given the regulatory authority to monitor and prevent the exercise of market power for oil in the same way that FERC and the CFTC have regulatory responsibility over electricity, natural gas, and coal.

Attachment A

Regression Model

It is widely assumed that oil prices, current production, and inventories affect retail prices. This assumption can be easily checked:

Source	SS	df	MS
Model	184.861755	6	30.8102924
Residual	23.4522867	493	.047570561
Total	208.314041	499	.417463009

Number of obs = 500
F(6, 493) = 647.68
Prob > F = 0.0000
R-squared = 0.8874
Adj R-squared = 0.8860
Root MSE = .21811

losangeles~a	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
brent	.0223881	.0009651	23.20	0.000	.020492	.0242843
wti	.0001027	.0010243	0.10	0.920	-.0019098	.0021152
carbstocks	-.0001744	.0000227	-7.68	0.000	-.0002191	-.0001298
carbproduc~n	.0000362	.0000243	1.49	0.137	-.0000116	.0000839
padd5	.0000125	6.44e-06	1.95	0.052	-1.12e-07	.0000252
summer	.0934167	.0220034	4.25	0.000	.0501847	.1366487
_cons	1.842965	.221295	8.33	0.000	1.408168	2.277763

where

brent=	Brent spot oil price in dollars per barrel
wti=	West Texas Intermediate oil price in dollars per barrel
carbstocks=	California formulated gasoline stocks from the CEC
carbproduc~n=	California formulated gasoline production from the CEC
padd5=	Stocks data for Alaska, California, Hawaii, Oregon, and Washington
summer=	Dummy variable for May through October

The confidence intervals for wti, carbproduc~n, and padd5 change sign. This indicates that we cannot reject the hypothesis that the impact of these variables on retail prices in Los Angeles is negligible.

The simple regression without the low significance variables is:

Source	SS	df	MS		
Model	184.611806	3	61.5372686	Number of obs	= 500
Residual	23.7022355	496	.047786765	F(3, 496)	= 1287.75
				Prob > F	= 0.0000
				R-squared	= 0.8862
				Adj R-squared	= 0.8855
Total	208.314041	499	.417463009	Root MSE	= .2186

losangeles~a	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
brent	.0221258	.0003677	60.17	0.000	.0214032	.0228483
carbstocks	-.0001403	.0000163	-8.59	0.000	-.0001724	-.0001082
summer	.1040475	.0210953	4.93	0.000	.0626004	.1454946
_cons	2.289482	.0904626	25.31	0.000	2.111745	2.46722

The standard regression model's assumptions require that the error terms are uncorrelated. This is rarely true for regressions where the dependent and independent variables are time series. This is the case for gasoline prices as well. A standard solution for this problem is to transform the data using the Cochrane-Orcutt correction.

Once corrected, only the Brent spot oil price is significant:

Cochrane-Orcutt AR(1) regression -- iterated estimates

Source	SS	df	MS		
Model	.05305246	3	.017684153	Number of obs	= 499
Residual	3.04159216	495	.006144631	F(3, 495)	= 2.88
				Prob > F	= 0.0356
				R-squared	= 0.0171
				Adj R-squared	= 0.0112
Total	3.09464462	498	.006214146	Root MSE	= .07839

losangeles~a	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
brent	.0026243	.0009646	2.72	0.007	.000729	.0045195
carbstocks	-4.99e-06	.00001	-0.50	0.619	-.0000247	.0000147
summer	.0200938	.0176028	1.14	0.254	-.0144916	.0546793
_cons	4.031676	.8338277	4.84	0.000	2.393398	5.669954
rho	.9957448					

Durbin-Watson statistic (original) 0.286944
Durbin-Watson statistic (transformed) 0.825968

Attachment B

May 2012 Continuous Emission Monitoring Report for Chevron Richmond's FCC

UNIT: F C C
MONTH: May, 2012

	NOX			SO2			CO		
Date	24 Hr. Ave. ppm	Max. 1 Hr. ppm	Mass Emission TPD	24 Hr. Ave. ppm	Max. 1 Hr. ppm	Mass Emission TPD	24 Hr. Ave. ppm	Max. 1 Hr. ppm	Mass Emission TPD
1	12	19	0.19	20	24	0.46	5	6	0.05
2	14	24	0.22	15	20	0.32	4	7	0.05
3	18	24	0.26	13	15	0.26	4	6	0.04
4	23	30	0.31	11	14	0.21	4	6	0.04
5	19	33	0.26	13	25	0.26	6	18	0.06
6	9	15	0.15	22	26	0.54	6	10	0.09
7	8	10	0.15	25	30	0.62	6	7	0.06
8	8	9	0.15	21	23	0.52	6	8	0.06
9	8	9	0.15	22	24	0.55	6	9	0.06
10	11	17	0.20	16	19	0.42	4	8	0.05
11	12	19	0.22	17	22	0.44	4	7	0.06
12	12	19	0.23	17	20	0.43	4	5	0.05
13	13	19	0.23	16	19	0.41	4	6	0.04
14	10	11	0.19	20	22	0.52	4	6	0.04
15	10	16	0.18	22	25	0.57	5	20	0.05
16	9	10	0.17	19	21	0.50	4	4	0.04
17	11	18	0.20	18	20	0.49	4	5	0.05
18	11	18	0.21	17	19	0.46	4	7	0.05
19	13	21	0.25	16	19	0.42	4	7	0.06
20	16	27	0.29	16	23	0.41	4	5	0.05
21	9	16	0.16	22	24	0.57	6	14	0.08
22	14	23	0.23	17	25	0.40	5	9	0.06
23	16	24	0.25	18	24	0.38	5	7	0.06
24	10	17	0.17	20	23	0.45	7	9	0.08
25	11	19	0.18	18	22	0.42	6	10	0.07
26	10	10	0.16	22	23	0.50	7	12	0.07
27	11	12	0.18	19	21	0.44	5	9	0.05
28	10	13	0.17	18	21	0.42	5	8	0.07
29	12	18	0.19	18	19	0.40	6	8	0.06
30	12	17	0.19	16	18	0.37	7	11	0.07
31	11	18	0.18	20	25	0.48	7	12	0.08

Attachment C

April 2012 Continuous Emission Monitoring Reports for Shell Martinez Heavy Cracked Gasoline Hydrotreater (HGHT)

BAY AREA
AIR QUALITY MANAGEMENT DISTRICT
SHELL MARTINEZ REFINING COMPANY
MONTHLY REPORT

COMPANY: SHELL MARTINEZ REFINING CO.
PLANT NO: 11
MONTH: April 2012

SOURCE: HGHT
S-4031, S-4141
CONDITION: 35

DAY OF MONTH	DAILY AVG. NOx @ 3% O2 (PPMV)	MAX 3 HR AVG. NOx @ 3% O2 (PPMV) LIMIT:10
1	4	4
2	4	4
3	4	4
4	4	4
5	4	4
6	4	4
7	4	5
8	4	4
9	4	4
10	4	4
11	4	5
12	4	4
13	4	4
14	4	4
15	4	4
16	4	4
17	4	4
18	4	4
19	4	4
20	4	4
21	4	4
22	4	5
23	4	4
24	4	4
25	S/D	S/D
26	S/D	S/D
27	S/D	S/D
28	S/D	S/D
29	S/D	S/D
30	S/D	S/D

May 2012 Continuous Emission Monitoring Reports for Shell Martinez Heavy Cracked Gasoline Hydrotreater (HGHT)

BAY AREA
AIR QUALITY MANAGEMENT DISTRICT
SHELL MARTINEZ REFINING COMPANY
MONTHLY REPORT

COMPANY: SHELL MARTINEZ REFINING CO.
PLANT NO: 11
MONTH: May 2012

SOURCE: HGHT
S-4031, S-4141
CONDITION: 35

DAY OF MONTH	DAILY AVG. NOx @ 3% O2 (PPMV)	MAX 3 HR AVG. NOx @ 3% O2 (PPMV) LIMIT:10
1	S/D	S/D
2	S/D	S/D
3	S/D	S/D
4	S/D	S/D
5	S/U	S/U
6	S/U	S/U
7	SD/SU	SD/SU
8	S/U	S/U
9	2	4
10	2	5
11	2	4
12	2	6
13	1	6
14	1	3
15	2	5
16	3	4
17	4	4
18	4	4
19	4	4
20	4	4
21	4	4
22	4	4
23	4	4
24	4	4
25	4	4
26	4	4
27	4	4
28	4	4
29	4	4
30	4	4
31	S/D	S/D

April 13, 2012 Scheduled Shutdown Notification

Apr. 13. 2012 1:27PM Shell Oil Products US No. 2396 P. 1

S

Shell Oil Products US

Martinez Refinery
PO Box 711
Martinez, CA 94553-0071

FAX

DATE: APRIL 13, 2012

TO:	BAAQMD	FROM:	Liz Rosales
Co./Dept.	Enforcement & Compliance	Dept.	Environmental
Phone:	415-749-4979	Phone:	(925) 313 - 3857
Fax Phone:	415-928-0338	Fax Phone:	(925) 313 - 3065
CC:		No. of pages, including cover sheet:	1

REMARKS Urgent [ ] For your review [X] Reply ASAP [ ] Please Comment [ ]

Scheduled Shutdown

To satisfy the requirements of the Shell Martinez Refinery's Major Facility Permit, Condition 18618, Number 11, and due to the uncertainty in the permit, Shell provides the following notification of the scheduled shutdown of the following sources on or about Saturday April 21, 2012 06:00:

Source: #1426 CP- Catalytic Cracking Unit (CCU)

Source: #4001 DCD - Delayed Coking Unit (DCU)

Source: #1431 CP- Sulfur Recovery Unit #1 (SRU #1)

Source: #1424 DH - Naphtha Straightrun Hydrotreater (NHT)

Source: #1764 OPCEN - Dimersol Plant (DIMER)

Source: #4140 DCD - Heavy Cracked Gasoline Hydrotreater (HGHT)

Source: #1774 OPCEN - Hydrogen Plant 2 (HP2)

Source: # 1507 COB #1 & 1512 COB #3

APR-13-2012 14:22 925 313 3065 96% P.01

May 3, 2012 Scheduled Startup Notification

May. 3. 2012 2:33PM Shell Oil Products US No. 2427 P. *

I-831

Shell Oil Products US

Martinez Refinery
PO Box 711
Martinez, CA 94553-0071

FAX

DATE: MAY 3, 2012

TO:	BAAQMD	FROM:	Liz Rosales
Co./Dept.	Enforcement	Dept.	EA
Phone:	415-749-4979	Phone:	(925) 313 - 3857
Fax Phone:	415-928-0338	Fax Phone:	(925) 313 - 3065
CC:		No. of pages, including cover sheet:	1

REMARKS: Urgent [ ] For your review [X] Reply ASAP [ ] Please Comment [ ]

Scheduled Unit Startup

To satisfy the requirements of the Shell Martinez Refinery's Major Facility Permit, Condition 18618, Number 11 Shell provides the following notification of startup of the following sources on or about May 3, 2012:

Source: #1426 CP- Catalytic Cracking Unit (CCU)

Source: #1431 CP- Sulfur Recovery Unit #1 (SRU #2)

Source: #4001 DCD - Delayed Coking Unit (DCU)

Source: #4140 DCD - Heavy Cracked Gasoline Hydrotreater (HGHT)

Source: #1424 DH - Naphtha Straightrun Hydrotreater (NHT)

Source: #1764 OPCEN - Dimersol Plant (DIMER)

Source: #1774 OPCEN - Hydrogen Plant 2 (HP2)

Source: # 1507 UTIL - COB #1

MAY-03-2012 14:29 925 313 3065 96% P.01