California’s Transportation Fuels Outlook

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Gordon Schremp
Fuels and Transportation Division
California Energy Commission
Presentation Topics

- Background
- California gasoline price volatility
- Regional transportation fuel market
- 2007 price increases
- Linkage to financial markets
- Market factors contributing to the price spike
- Proactive actions to limit additional potential price increases
- Gasoline price outlook
- Ethanol availability
- Summary
Background

• California’s transportation fuel market is isolated by time and distance from the next alternative source of resupply
  – Additional sources of incremental supply are weeks away
  – Identify available barrels
  – Locate a ship
  – Transit time
• As a consequence, unplanned refinery outages and unexpected extension of maintenance can result in wholesale price spikes that are normally greater in magnitude and longer in duration than other regions of the United States
California Gasoline Volatility
January 1995 to April 9, 2007

- MTBE Use Year-Round
  17.5 Average, 9.0 Std Dev

- MTBE Use - Winter Months
  10.1 Average, 4.1 Std Dev

- Ethanol Use Period
  25.1 Average, 10.3 Std Dev

- MTBE Phaseout Period
  27.0 Average, 10.5 Std Dev

- Calif Retail Price Higher Than U.S.
- Calif Retail Price Lower Than U.S.

Peak 54.4
• Differential between California and U.S. retail gasoline prices has averaged 19.6 cents per gallon (cpg) since January 1995
• Differential has been growing over time
  – 10.1 cpg winter oxy season 1995-1996
  – 17.5 cpg year round use of MTBE 1996-2002
  – 27.0 cpg partial transition to ethanol 2003
  – 25.1 cpg year round use of ethanol 2004 to present
• Volatility has been increasing
West Coast Petroleum Flows

1. Foreign Imports into Northern California
2. Foreign Imports into Southern California
3. US Gulf Coast Imports into Northern California
4. US Gulf Coast Imports into Southern California
5. Ship/Barge - San Francisco to Los Angeles
6. Ship/Barge - San Francisco to Portland
7. Ship/Barge - Washington to Los Angeles
8. Kinder Morgan - San Francisco to Chico
9. Truck - Chico into Southern Oregon
10. Kinder Morgan - San Francisco to Reno
11. Kinder Morgan - San Francisco to Fresno
12. Kinder Morgan - Bakersfield to Fresno
13. Truck - Imperial into Western Arizona
14. Kinder Morgan - Los Angeles to Las Vegas
15. Kinder Morgan - Los Angeles to San Diego
16. Kinder Morgan - Los Angeles to Imperial
17. Kinder Morgan - Los Angeles to Phoenix
18. Kinder Morgan - Los Angeles to Tucson
19. Kinder Morgan - Tucson to Phoenix
20. Kinder Morgan - El Paso to Tucson
21. Longhorn Pipeline - Houston to El Paso
22. Ship/Barge - San Francisco to Eureka
Regional Transportation Fuel Market

- California is primary source of supply to neighboring states
  - Nearly 100% to Nevada
  - About 60% to Arizona
- Washington is also a source of supply for California
- Unplanned refinery outages or pipeline distribution problems can have a regional price impact due to the interconnected relationship of this regional market
California Retail Prices - Gasoline and Diesel Fuel versus Alaska North Slope (ANS) Crude Oil
January 2005 through April 9, 2007

Sources: Energy Information Administration (EIA) – California retail prices
Alaska crude oil prices – Wall Street Journal

Difference per Gallon (Dollars)

- 2005
- 2006
- 2007
2007 Price Increases

- California retail gasoline prices increased 51 cents per gallon (cpg) between January 3 and March 21, 2007
- Crude oil prices actually **decreased** by 3 cpg over this same time period
- Retail prices, less crude oil, have increased 54 cpg over the same time period, a 44% increase
- Wholesale prices have experienced similar increases driven by rising NYMEX values and higher premiums for pipeline barrels
Nymex Price and CARBOB Differential
January 3 - April 10, 2007

Cents Per Gallon

L.A. CARBOB differential
Nymex gasoline price
Linkage to Financial Markets

• Wholesale prices for purchases of large quantities, referred to as spot pipeline transactions, increased by 78 cents per gallon (cpg) between January 3 and March 28, 2007
• Represents a 43% increase
• Refiners and other market participants will turn to pipeline transactions to obtain additional supplies of gasoline following unplanned outages or unanticipated extensions of routine maintenance
• These spot pipeline purchases are quoted as a differential to a benchmark, the month ahead gasoline contract on the New York Mercantile Exchange (NYMEX)
Linkage to Financial Markets

• One of the consequences of this pricing mechanism is that factors external to the California petroleum market - such as geopolitical instability or a severe hurricane in the U.S. Gulf Coast – can increase the value of NYMEX gasoline contracts

• This in turn can increase Calif. wholesale gasoline prices

• Local supply imbalances can also tighten gasoline supplies in the region and are reflected in the form of higher differentials that are paid by market participants for spot pipeline transactions

• These differentials went from a low of 4.5 cpg on January 19 to a high of 60 cpg on March 8, 2007 – an indication of scarcer gasoline supplies
Market Factors that Contributed to the First Quarter 2007 Price Spike

- Seasonal demand growth
- Unplanned refinery outages and planned maintenance
- Refinery production of gasoline
- Inventory levels for gasoline and blendstocks
- Pipeline exports to Arizona
- Distribution infrastructure constraints
California Gasoline Monthly Demand
Seasonal Increases
2003-2006 Average

Millions of Gallons per Day

January  February  March  April  May

Source: Analysis of California State Board of Equalization taxable gasoline sales figures.
Seasonal Demand Increases

• California gasoline demand normally increases from winter to the outset of spring
  – Demand jumped an average of 4.8 percent from January to March over the last 4 years

• Over the same time period, gasoline production capability at California refineries declines due to the transition from winter to summer gasoline formulations
  – Lower volatility limit begins in mid-February for Southern California and mid-March for the rest of the state
  – Certain blending components such as butane are temporarily excluded from the gasoline pool
California Refinery Events - Number of Days (January-March of 2005, 2006, and 2007)

- California Refinery Events - Number of Days (January-March of 2005, 2006, and 2007)

- 224
- 158
- 263
- 8
- 79
- 79

- Total Planned Maintenance Days
- Total Unplanned Outage Days

- Source: CEC Petroleum Industry Information Reporting Act (PIIRA) database.
Average Number of Days per Refinery Event (January-March of 2005, 2006, and 2007)

<table>
<thead>
<tr>
<th>Year</th>
<th>Planned Maintenance</th>
<th>Unplanned Outages</th>
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<tbody>
<tr>
<td>Jan-Mar 2005</td>
<td>24.9</td>
<td>4.0</td>
</tr>
<tr>
<td>Jan-Mar 2006</td>
<td>22.6</td>
<td>15.8</td>
</tr>
<tr>
<td>Jan-Mar 2007</td>
<td>26.3</td>
<td>11.3</td>
</tr>
</tbody>
</table>

Source: CEC Petroleum Industry Information Reporting Act (PIIRA) database.
Refinery Outages & Maintenance

- Planned maintenance at California refineries during the first quarter of 2007 was 66 percent greater (number of maintenance days) than the same period in 2006
- Although refiners usually build inventories of gasoline in advance of such work, supplies are normally adequate to meet contractual obligations, rather than normal levels of refinery output
- Unbranded supplies become constrained and wholesale prices normally rise for the entire petroleum market
- Unplanned outages were similar to 2006, but shorter in average duration per refinery event
Refinery Production & Inventory

- California refinery production of gasoline declined by 20 percent from the week ending January 5 through the week ending March 30, 2007 – reaching a severely low level of 816 thousand barrels per day (TBD) by the end of March.
- This 200 TBD decline in output came at a time when gasoline demand normally increases by nearly 50 TBD.
- As a consequence, inventory levels were drawn down by 3.6 million barrels or 25%.
- Declining production and scarcer gasoline inventories normally result in upward pressure on wholesale prices.
Gasoline Movements by Pipeline to Phoenix
January 2005 - March 2007

Barrels per Week

EAST
WEST
Diesel Movements by Pipeline to Phoenix
January 2005 - March 2007

Barrels per Week
Pipeline Exports Increase

- Propane fire at Valero refinery in McKee, Texas decreases shipments of gasoline and diesel fuel to Arizona
- California exports increase to compensate
  - 22 TBD gasoline
  - Only 5 TBD for diesel
- Blendstocks used to make AZ gasoline are also main ingredients for California reformulated gasoline

Matt Slocum / AP
Potential Distribution Constraints

• Another potential factor contributing to the recent price spike is pipeline constraints that limit the ability of gasoline and blendstocks in third-party storage from reaching distribution terminals.

• Northern California intra-state pipeline segments at capacity have previously been identified as bottlenecks that could temporarily constrain transportation fuel supplies.

• An assessment is planned to determine if such constraints may have developed and exacerbated the rapid increase in wholesale prices.
Factors that Contributed to Price Spike

• Refinery operations & impact on Production
  – Gasoline production was lower due to
    • Unplanned refinery outages
    • Heavier-than-normal maintenance

• Gasoline inventories rapidly declined
  – Lowest levels over the last 5 years

• Pipeline exports to neighboring states
  – Increased in response to West Texas refinery fire

• Possible pipeline distribution capacity limitations
  – Assessment to be conducted
Proactive Steps to Avoid Additional Price Increases

- The California Energy Commission routinely monitors refinery production, distribution operations, and petroleum product price trends to determine whether or not transportation fuel supplies could become temporarily constrained.
- This activity includes assessments of upcoming projects or events that may exacerbate an already tight market.
- One recent example involved the Energy Commission learning that a discretionary refinery project had preliminarily been rescheduled to mid-April.
Proactive Steps to Avoid Additional Price Increases

- A recent spate of refinery problems, inside and outside of California, in conjunction with a heavier-than-normal first quarter of maintenance raised the possibility of significant impact of gasoline supplies
- In response, the Energy Commission requested that Valero reschedule the date to commence modifications to one of their process units, if such a changer were feasible
- After careful consideration, Valero decided to defer the start date to later in the year
- Energy Commission believes that this action eliminated “a large, unnecessary financial hardship to consumers and businesses within our state.”
Price Outlook

- Is $4 gasoline on the horizon for California consumers?
- Unlikely - as refiners complete repairs and resume normal operations following extended maintenance cycles additional supplies of gasoline should place downward pressure on wholesale prices
- Absent large crude oil price increases, at least two significant refinery outages would be necessary to send retail gasoline prices over the $4 mark
U.S. Ethanol Plant Nameplate Capacity Growth
July 2005 - Feb 2008

Capacity Additions (MGPY)

Cumulative Nameplate Capacity (BGPY)

- New Capacity and Existing Plant Expansions
- Cumulative Capacity

Jul-2005
Aug-2005
Sep-2005
Oct-2005
Nov-2005
Dec-2005
Jan-2006
Feb-2006
Mar-2006
Apr-2006
May-2006
Jun-2006
Jul-2006
Aug-2006
Sep-2006
Oct-2006
Nov-2006
Dec-2006
Jan-2007
Feb-2007
Mar-2007
Apr-2007
May-2007
Jun-2007
Jul-2007
Aug-2007
Sep-2007
Oct-2007
Nov-2007
Dec-2007
Jan-2008
Feb-2008
Ethanol Supply Outlook

• Supplies of ethanol to meet the needs of California, federal reformulated gasoline areas, and discretionary blend markets should be more than adequate to meet anticipated demand during the 2007 driving season

• Ethanol nameplate production capacity is estimated at nearly 6 billion gallons per year and could reach the 2012 RFS goal of 7.5 billion gallons some time this summer – assuming no additional construction delays or deferrals

• Ethanol values are anticipated to be significantly lower compared to the summer of 2006 due to the rapid increase in domestic production capacity
Closing Remarks

• California’s price spike during the first quarter of 2007 yielded a record differential of 54 cents per gallon for retail gasoline prices when compared to the U.S. average

• A heavier-than-normal refinery maintenance schedule, a number of unplanned outages, and a refinery fire in West Texas were all factors that contributed to a temporary tightness of gasoline supplies

• Proactive action by the Energy Commission and a commendable decision by a refiner to reschedule completion of a discretionary project averted further price increases for consumers & businesses
Contact Information

Gordon Schremp                gschremp@energy.state.ca.us