

Focus on Fuels

In This Issue

TM&C Services

California Refineries- Still Standing, but Standing Still

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California has a long refining history that dates back to the 1800s. California refineries, as a group, are the most complex and flexible refineries in the world. The refineries were designed to process very heavy, high sulfur, hydrogen deficient crudes, and to produce products in an environment with the most stringent environmental and fuels regulations in the world. California consumes more gasoline than any other state due to its large population and long distances from place to place. The California refiners, along with the refiners in the Pacific Northwest, have successfully met the growing and changing demand for petroleum fuels. However, they are currently facing a challenge much more daunting than commercial reality - environmental activism. The California Environmental Quality Act (CEQA, pronounced See-Qua) has proved to be an effective tool for challenging investment in the energy sector.

California Refineries - Still Standing, but Standing Still

by Tom Hogan

TM&C Services in Fuel Regulations

TM&C provides a full range of services in its fuels regulatory practice. Some of these services are listed below.

- Preparing, reviewing and submitting fuels reports, including CDX submissions.
- Facility audits for compliance with fuels programs.
- Interaction with EPA to pose fuels-related questions.
- Industry specialist assistance for required gasoline attestations.
- Industry specialist

California had close to 30 refineries in 1916. This was typical of the period when refineries were built near crude oil production fields. These refineries would have been very simple compared to today's complex refineries. It is likely that through the years there were many more refineries built. However, like the rest of the US refining industry, as the refineries became more sophisticated in order to meet environmental regulations and more restrictive fuel qualities, the number of refineries shrank. California currently has 14 fuels refineries. Refineries are frequently rated based on a "complexity" index. The complexity index is generally a comparison of the units in the refinery versus the refinery crude capacity. Therefore, a refinery with just a crude unit would have a complexity of 1. Selected refinery complexities are listed below.

- assistance for in-line blending audits.
- Assistance in setting up a fuels compliance group/program.
- Personnel reviews of compliance-related groups.
- Compliance status reviews and recommendations.
- Negotiations/consultation during EPA enforcement actions.
- 3rd-Party Engineering reviews.
- Due diligence reviews of facilities and companies in RFS RINs Program.

Complexity for Selected Refinery Groups ¹			
State	Number of refineries	Crude Capacity, MBPD	Complexity
California	17	1,983	14.9
PADD I	9	1,332	9.2
PADD II	26	4,080	10.3
PADD III	56	9,700	11.8

¹Based on 2014 EIA, Number and Capacity of Petroleum Refineries table plus O&GJ data for selected data

The high complexity of the California refineries has allowed them to process crudes with very different qualities like San Ardo crude (~10 API, ~3-4% Sulfur) to Bakken crude (40 API, <0.5% Sulfur). The refineries generally include cokers to upgrade the heavier fraction of crude oil and frequently include hydrocrackers to upgrade the high percentage of gas oil in the crude and gas oil produced from the cokers. Gas oil that is processed in the fluid catalytic crackers is generally pretreated which consumes hydrogen to increase yields and improve product qualities. Essentially, all of the refineries include hydrogen manufacturing for the hydrotreating and hydrocracking units.

These capabilities were built up over the years in a never-ending series of capital investment to stay competitive in a very competitive business. Refineries are not a static asset. Much like the hammer that was originally bought in 1950, but has since had five handles replaced and two heads, today's refinery has few parts that date back to the original investment. That is why the current use of CEQA to delay or restrict additional investment in the oil industry could be so significant.

CEQA is a California statute that is setting legal precedent in California and will probably be cited in other states in the future. An indication of the complexity and precedent-setting nature of the regulation is that the first sentence on the first page of the California Natural Resources Agency is under the heading "Contact the Legal Department" and is a disclaimer that the Agency does not enforce the Act and cannot advise anyone on compliance with the Act. It sounds like California may have taken the federal perspective of, "pass it and you'll find out what's in it." Many, many legal personnel are now engaged in determining how to apply CEQA. The regulations include 425 pages. The regulations begin with a section on legislative intent followed up with a second section on additional legislative intent. The stated intent is to provide a "high-quality environment that at all times is healthful and pleasing to the senses and intellect of man."

Since disclaimers seem to be in order, let me point out that this article will not describe all the ins and outs of CEQA, but will include observations by a third party involved in an environmental impact report preparation.

The CEQA requirement for an environmental impact report for projects has been successfully used to delay or modify several projects. Most recently, CEQA was used to first stop a city approved project for the Chevron refinery in Richmond. This resulted in a re-proposed project and ultimately led to further restrictions on the re-proposed project.

In 2005, Chevron proposed and in 2008, the City of Richmond approved the Hydrogen and Energy Renewal Project at the Richmond refinery, which included a replacement of the catalytic reformer, power

plant replacement, a new hydrogen plant, hydrogen purity improvements and various other new or replacement facilities. Upon the City's approval, Chevron began the project. The project was halted by court order in 2009 because the court declared the original EIR inadequate. Chevron was encouraged by the City to resubmit the project with an updated EIR.

Chevron proposed a revised modernization project, which included completion of the hydrogen plant as well as sulfur removal upgrades. The reformer replacement and power plant replacement features of the original project were not included in the revised project. Chevron prepared a new EIR for the revised project. Work on the EIR began in 2011 and was not completed until 2014. The project was approved by the City in mid-2014. However, even though the project was approved, the greenhouse gas emissions were limited to baseline levels which essentially limited the hydrogen plant to less than the new plant capacity.

The brief summary of the Chevron Modernization Project is that it took nine years to get a significantly reduced project to build a replacement hydrogen plant. This same CEQA hurdle is now being used to delay approval for truck or rail movements of crudes from outside of California. Based on the Chevron precedent, it is difficult to see how any refinery will be able to significantly upgrade refinery operations. This is a particularly onerous problem for California because it is generally isolated energy wise from the states east of the Rocky Mountains. East Coast or Midwest markets can be supplied with petroleum products or crude oil from the U.S. Gulf Coast refining centers by pipeline. California generally is limited to supplies from the U.S. Gulf Coast by marine movements through the Panama Canal. This is expensive for several reasons, including the requirement to use higher priced U.S. flagged Jones Act vessels. CEQA appears to be a very powerful tool for limiting growth of the petroleum refinery business and is very likely to result in relatively high-priced petroleum products in California.

No significant fuels refinery in the U.S. is still operating with all of its original equipment and no upgrades. California refineries that cannot improve through investment will likely become less and less relevant, in spite of the California refineries' complexity, with the California consumer paying a higher and higher price.

TM&C advises clients in many of these fuel regulatory areas. Give us a call if you need assistance in any of these areas.

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