

Ethanol in California

A Feasibility Framework: Report Summary

The report guidelines provide potential California ethanol producers and investors with an understanding of California ethanol demand, current domestic ethanol supply, and key issues regarding potential local ethanol supply. The full report is available at www.greatvalley.org.

The ethanol market in California is currently driven by a Federal mandate that an oxygenate be used to meet the Clean Air Act. Since the gubernatorially mandated phase-out of MTBE (Methyl Tertiary Butyl Ether) as an oxygenate as of December 2003, ethanol has become the choice oxygenate. Currently, 80% of California's fuel markets require an oxygenate. California will require between 760 and 900 million gallons of ethanol in 2004 to meet its oxygenate requirement and fuel demand.

California is a unique ethanol market in that it consumes 11% of the gasoline in the United States, could consume 29% of the ethanol capacity under the current reformulated gasoline standard, and produces 12% of domestic agricultural value. Currently, California has only 0.28% of the U.S. ethanol capacity. This capacity is based on food processing waste, rather than on traditional corn feedstocks.

While feedstock, permitting and energy costs are higher in California than Midwestern states, producers' proximity to fuel distribution terminals, where ethanol is splash-blended, could give California producers a \$0.02-\$0.05/gallon advantage over Midwest producers who must train ethanol into the state and then transfer it to trucks to reach terminal locations.

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California's livestock, poultry and dairy industries make potential consumers for the distillers grains produced in conjunction with ethanol from a corn feedstock. Co-products may contribute an additional 18% to project value.

However, of the twelve California produced agricultural commodities considered in the report, only Sorghum could be economically feasible at the current \$1.32 price for ethanol (twelve month average). Sorghum is not currently produced in sufficient quantities to provide feedstock materials for a 40 million gallon facility.

While current production costs do not appear feasible given ethanol prices, potential changes in ethanol policy due to the Energy Bill, alternative production technologies, lucrative marketing arrangements, and innovative uses of feedstocks and waste streams could still hold potential for California ethanol investors. Currently, ethanol plants are under consideration in Northern California, the San Joaquin Valley, and in the Imperial Valley. Each of these proposed facilities has a unique business plan.

It is difficult to answer the question of whether an ethanol industry is feasible in California. Four types of feasibility must be addressed. Political feasibility refers to the potential and ability of the various political institutions to support ethanol production. Energy-balance feasibility addresses whether more energy is used to produce ethanol than energy that the ethanol yields. Economic feasibility assesses whether the resources used to produce ethanol are going to their highest valued uses. And financial feasibility addresses the balance sheet aspect of production, and incorporates the fixed and variable costs of production, the market value of ethanol, and relevant taxes and subsidies into its evaluation.

Feasibility is a plant location, feedstock, policy, energy cost, Midwest production, international production, and time of decision dependant consideration. These elements interact dynamically. Each of these issues is presented within this document, with references, and sources for additional information provided at the end of the report.

California Ethanol Overview

Supply and Demand

California will require 760 to 900 million gallons of ethanol in 2004 to meet current regulatory requirements and fuel demand conditions. It currently produces 9 million gallons of ethanol per year from food processing wastes. One-third of California's current ethanol arrives via tanker ships. This supply is primarily from non-domestic sources. The rest of the supply arrives via train. The United States currently has 3.2 billion gallons of ethanol production capacity, with an additional 600 million gallons of capacity under construction. Current construction plans suggest that U.S. production could reach 6 billion gallons of ethanol per year by 2006.

Plant Size, Feedstock, and Prices

The average ethanol plant has a 44 million gallon annual capacity. Nationally, ethanol plants range in size from 1.5 million gallons per year (beverage waste) to 100 million gallons per year (corn). Corn is the dominant feedstock, accounting for almost 97% of the U.S. ethanol production. In 2003, the average ethanol price (\$1.30 per gallon) was \$0.21 greater than the average price in 2002 (\$1.09 per gallon).

California Feedstocks

Under current production technologies, and California feedstock options, no California produced feedstock appears economically feasible. California feedstocks will be more expensive than those grown in the Midwest since most inputs are more costly in California, and California agriculture is, on average, a higher valued specialty crop mix than the commodity products grown in the Midwest. For example, the average U.S. farmer earns \$636 per harvested acre, while the average California farmer earns \$2,700 per harvested acre.

Transportation, Plant Location, and Co-Product Marketing

Transportation savings via plant location near feedstock, fuel terminals, and animal production could provide California producers with an advantage over out-of-state ethanol producers. Transportation savings could be as large as \$0.05 per gallon. The ability to distribute distillers grain, a co-product formed when distilling ethanol, in its wet form to livestock saves energy costs for drying and transportation costs.

Public Policy and Ethanol's Future in California

Currently, ethanol's success is largely determined by policy mandate. Uncertainty regarding the future policy environment of oxygenate requirements and/or a renewable fuel standard injects some risk into the ethanol facility investment decision. However, the California fuel industry's costs of adopting ethanol into its blending and fuel supply strategy suggest that ethanol will continue to be used for some time. Furthermore, consumer preferences and state policy seem to be supporting a reduction in fossil fuel consumption. Currently, ethanol is a technologically feasible alternative, with strong opportunities for market penetration. Current regulations and automobile technology support ethanol blends of up to 10% in gasoline. Additionally, a 'flexible fuel' fleet is growing in California. These vehicles are able to run on fuel blends of up to 85% ethanol.

For more information, please contact:

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The full report is available at www.greatvalley.org.