ENERGY INDEPENDENCE NOW

CALIFORNIA RENEWABLE DIESEL STANDARD
Senate Bill 1675 - Kehoe

California can significantly reduce its dependence on petroleum in order to improve its economy, security, and environment by replacing a defined percentage of petroleum-based diesel fuel with renewable diesel. The California Renewable Diesel Standard – Senate Bill 1675 (Kehoe) - will ensure that diesel fuel sold in the state contain 2% biodiesel by the year 2008, and 5% biodiesel by the year 2010. The standard is a cost-effective, technologically ready means to displace the use of over 162 million gallons of petroleum-diesel annually, and will eliminate over 480 tons per year of sulphur oxide, over 665 tons per year of particulate matter, over 4,800 tons per year of carbon monoxide, and over 1 million tons of carbon dioxide.

Background and Need

California consumes more oil for transportation than any other state, and diesel fuel is a large component of that consumption. This use perpetuates our dependency on oil that threatens public health, security, and economic stability. In 2005, California consumed 2.9 billion gallons (or 71 million barrels[i]) of diesel fuel[ii]. Diesel fuel use is the state's largest source of particulate matter (PM) emissions, is responsible for an estimated 3000 premature deaths, 70% of the state's cancer risk, 2700 cases of bronchitis, and 4400 hospital admissions, together creating health costs totaling $21.5 billion[iii]. The price of diesel fuel has been highly volatile: in 2005 alone, prices increased more than $1 per gallon[iv] and few analysts see any relief from this situation. For example, the United States Energy Information Administration wrote in its December 2005, *ShortTerm Energy Outlook*; "(P)rices for crude oil, petroleum products, and natural gas are projected to remain high through 2006 because of continuing tight international supplies…"[v] Furthermore, since much of the crude oil used to produce diesel comes from beyond our nation's borders, our State's use of this finite resource perpetuates our dependence on foreign oil.

Biodiesel

Biodiesel is a fuel that is made from renewable, domestic sources. It can be derived from oils from crops such as soy, canola, or sunflower; distilled from waste vegetable oils and animal fats; or extracted from organic wastes. Biodiesel can be used by itself as a fuel, or blended with petroleum-diesel (expressed as B#, where # represents the percentage of biodiesel in the blend). All ranges of biodiesel blends can be used in modern diesel engines without the need to make modifications to the engine, fuel system, or other vehicle components. The use of biodiesel results in significant reductions of nearly every type of motor vehicle emission, though some blends above B20 may show a slight increase in NOx, which can be controlled with additives, treatment devices, different fuel blends, or clean diesel engines. Biodiesel is non-toxic, biodegradable, and increases engine life by providing greater lubricity for moving parts. With the mandated phase-in of ultra-low sulfur diesel rule, replacing lost lubricity will be critical.

Effectiveness of a Renewable Diesel Standard

A Renewable Diesel Standard implemented in California will result in substantial reductions of emissions and petroleum consumption; is expected to help stabilize diesel fuel prices; create and expand new markets for California farmers, waste grease producers, and fuel producers; and replace the lubricity that is expected to be lost with the introduction of ultra-low sulfur diesel.

Table 1
Estimated Petroleum-Diesel Consumption Reductions From A Renewable Diesel Standard[vi]

B2	61.5 million gallons displaced
B5	162.5 million gallons displaced

714 Bond Avenue Santa Barbara, CA 93103 805.899.3399
www.EINOW.org

Table 2
Annual California Mobile Source Emissions Impacts of Various Biodiesel Blends
(Percentage compared to diesel and tons per year [tpy])[vii]

	CO%	CO tpy	CO_2%	CO_2 tpy	SOx %	SOx tpy	PM %	PM tpy
B2	-1.3%	-1,934 tpy	-1.5%	-427,040 tpy	-2%	-192.5 tpy	-1.2%	-269.5 tpy
B5	-3.2%	-4,805 tpy	-3.9%	-1.06 million tpy	-5%	-481 tpy	-3.1%	-666.3 tpy

Addressing NOx

Because there are various market-viable ways to meet NOx emissions standards, SB 1675 states that the Renewable Diesel Standard must comply with air quality standards, including NOx. No special modifications to NOx standards will be allowed in order to accommodate biodiesel. Several advancements in recent years have been able to neutralize and even reduce biodiesel NOx emissions in a cost-effective manner. Some of these advances include feedstock selection, fuel-borne catalysts (additives)[viii], modifications to engine timing, blending with ultra-low sulfur diesel fuel, use in 2007 certified engines, and post-combustion treatments.

Cost

As the price of petro-diesel climbs, historic cost-gaps between diesel and biodiesel have narrowed and, in some instances, reversed. Since April 27, B2 blends at Los Angeles and San Francisco wholesale terminals have been selling for less than unblended diesel.[ix]

Furthermore, due to the diversity of sources for biodiesel and its ability to be produced from renewable, domestic sources, biodiesel is a historically price stable commodity, whereas petroleum-diesel is highly volatile. For example, over a 6-month period, the price of biodiesel in Los Angeles showed a standard deviation of 2.7%, while petroleum-diesel deviated 11.8%[x]. Because of this, it is believed that the California Renewable Diesel Standard will be an effective tool for stabilizing diesel prices.

Guiding Efforts

California would not be the only state to implement a Renewable Diesel Standard: Minnesota's rule came into effect in 2005, while legislatures in Washington, Iowa, and Louisiana passed renewable fuel standards this year. Similar initiatives have been introduced in Alabama, Idaho, Kansas, and Missouri. The California Renewable Diesel Standard is consistent with the findings of three key state reports recently released. The *California Climate Action Team Report to the Governor and Legislature*[xi] highlights directed use of biodiesel blends as one of its "Strategies Needed to Meet California's [Climate Change Emissions Reduction] Targets." The California Energy Commission's *2005 Integrated Energy Policy Report*[xii] and *Recommendation For A Bioenergy Action Plan For California*[xiii] also recommend the use of biodiesel as part of a strategy to stabilize California's energy sector. This bill is also bolstered by the Governor's recent Executive Order EO S-06-06 calling for defined percentages of California's biofuels to be derived from in-state sources.

References

[i] 1 barrel = 42 gallons

[ii] *Forecasts of California Transportation Energy Demand: 2005-2025*, California Energy Commission, April 2005. http://www.energy.ca.gov/2005publications/CEC-600-2005-008/CEC-600-2005-008.pdf

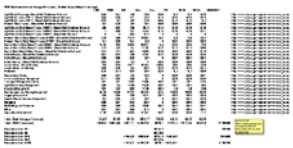
[iii] *Sick of Soot: Reducing the Health Impacts of Diesel Pollution in California*, Union of Concerned Scientists, 6/15/04. http://www.ucsusa.org/clean_vehicles/trucks_and_buses/page.cfm?pageID=1429

[iv] "Diesel price in state zeroes in on $3 mark," Baker, David, San Francisco Chronicle. August 9, 2005. http://sfgate.com/cgi-bin/article.cgi?file=/chronicle/archive/2005/08/09/BUG71E4S741.DTL&type=business

[v] *Short-Term Energy Outlook,* Energy Information Administration. December 6, 2005. http://www.eia.doe.gov/emeu/steo/pub/contents.html

[vi] *Forecasts of California Transportation Energy Demand: 2005-2025*, California Energy Commission, April 2005. http://www.energy.ca.gov/2005publications/CEC-600-2005-008/CEC-600-2005-008.pdf

[vii] The percentage of emissions reduction for the various biodiesel blends is based on data from the National Biodiesel Board: http://www.biodiesel.org/pdf_files/fuelfactsheets/emissions.pdf and *A Comprehensive Analysis of Biodiesel Impacts on Exhaust Emissions,* United States Environmental Protection Agency, EPA420-P-02-001, October 2002. Tonnage impacts are based on aggregate 2004 California mobile source diesel emissions as listed by the California Air Resources Board: http://www.arb.ca.gov/ei/emissiondata.htm. These emissions and the weight of emissions reductions for various biodiesel blends are calculated in the following spreadsheet:



[viii] *NOx Solutions for Biodiesel,* McCormick, R.L., et al., National Renewable Energy Laboratory. February 2003, http://www.nrel.gov/docs/fy03osti/31465.pdf, and *Study Shows NOx Emissions Reduction in Biodiesel Blends with Additive*, press release, National Biodiesel Board. February 4, 2004. http://www.biodiesel.org/resources/pressreleases/gen/20040204_nox_additive.pdf

[ix] Based on OPIS reported prices from the Los Angeles and San Francisco Terminals, 4.27.06-5.23.06. See chart below.

Los Angeles		
CARB No.2	$2.4160	7.93%
B2 - No.2 blended w/2% B100 w/ credit	$2.4141	7.83%
CARB ULS	$2.4906	8.76%
B2 – ULS blended w/2% B100 w/credit	$2.4874	8.64%
San Francisco		
CARB No.2	$2.4003	7.22%
B2 - No.2 blended w/2% B100 w/ credit	$2.3993	7.05%
CARB ULS	$2.4562	7.73%
B2 – ULS blended w/2% B100 w/credit	$2.4541	7.54%

[x] Based on Oil Price Information Service's (OPIS) rack prices at Los Angeles Terminal for CARB ultra-low sulfur diesel w/lubricity and B100 from soy methyl esther. Prices were reported daily from September 28, 2005 to March 29, 2006. See *Relative Diesel & Biodiesel Prices*, Energy Independence Now, April 5, 2006. http://www.energyindependencenow.org/pdf/fs/EIN-RelativeDieselAndBiodieselPrices.pdf

[xi] *California Climate Action Team Report to the Governor and Legislature*, California Environmental Protection Agency, December 8, 2005. http://www.climatechange.ca.gov/climate_action_team/reports/2005-12-08_DRAFT_CAT_REPORT_TO_GOV+LEG.PDF

[xii] *2005 Integrated Energy Policy Report*, California Energy Commission, November 2005. http://www.energy.ca.gov/2005publications/CEC-100-2005-007/CEC-100-2005-007-CMF.PDF

[xiii] *Recommendation For A Bioenergy Action Plan For California*, California Energy Commission (Prepared by Navigant Consulting for the Bioenergy Interagency Working Group). March 2006. http://www.energy.ca.gov/2006publications/CEC-600-2006-004/CEC-600-2006-004-D.PDF