

AB 118- Nunez
Alternative and Renewable Fuel
and Vehicle Technology Program

Clean Cities PEER Review Meeting
Presented by the
Southern California Clean Cities Coalition

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California Energy Commission



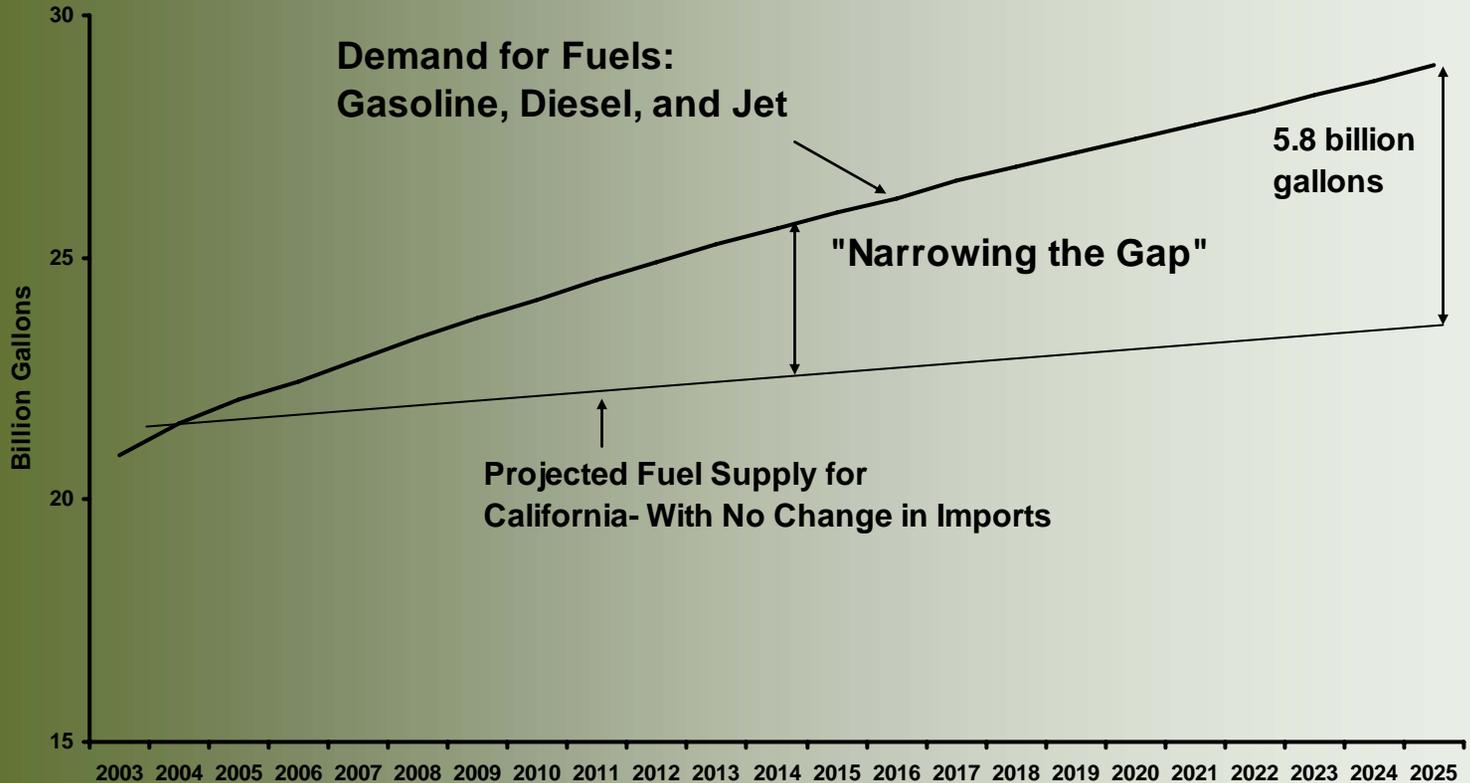
California- An Island?



The Nation State Of California

- **8th largest economy in the world**
- **Population growth:1980-2000: 1.9%, 2000-2020: 1.4% projected**
- **Population – expected to grow from 36 million now to 45 million by 2025**
- **Vehicle Miles Traveled: 1980-2000 increased 3.3% per year**
- **5th largest consumer of energy in the world**
- **3rd largest consumer of gasoline and diesel in the world – only China and the US consume more**
- **Approximately 26 million registered vehicles**
- **Over \$150 million for gasoline and diesel daily**

The Heart of the Problem



California's Imperative

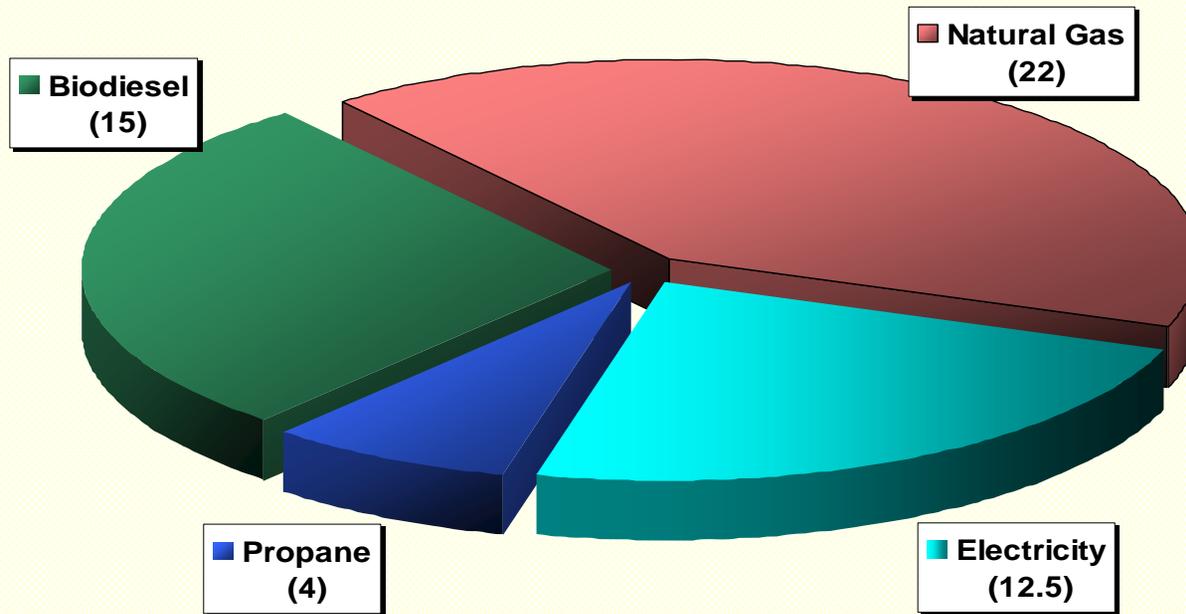
- **Bring *Fuel Source* Competition to the Transportation Fuel Market**
- **California Must Develop Additional Supplies from ALL Non-Petroleum, Non-Conventional Sources**
- **Increased Incentives for “Enhanced Attribute” Alternative Fuels**

California's Imperative

- **A New Plateau - Need Contributions from all Fuels and Vehicle Technologies**
 - **Poly Fuels Future: Non-Petroleum and Non-Conventional Fuels**
- **Planning Necessary for Near-, Mid- and Long-Term Fuel Production, Distribution, and Utilization Strategies**
- **Invigorate a Business Development/Market Creation Effort**

California Alternative Fuels Demand - 2005

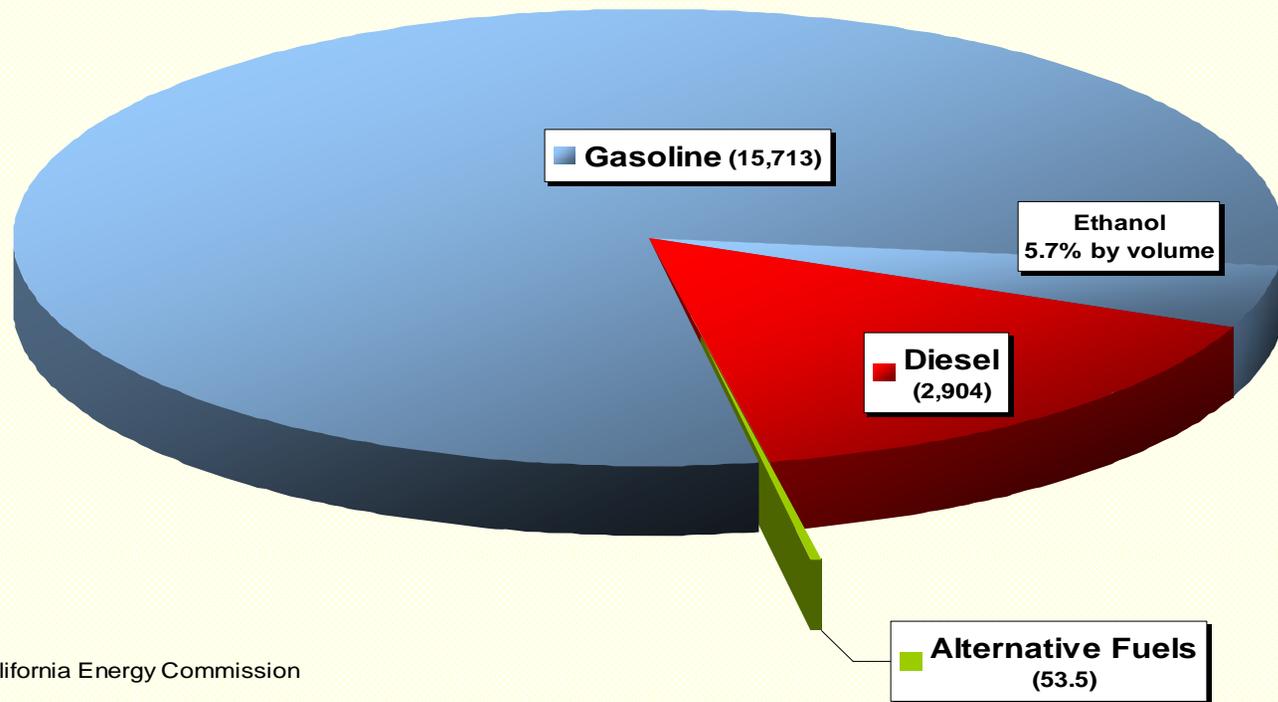
(millions of gallons of petroleum displaced)



Source: California Energy Commission

California's Petroleum and Alternative Fuels Demand

(millions of gallons)



Source: California Energy Commission

Alternative Fuel Goals

- **20% Alternative Fuels Use By 2020 is:**
 - 24.2 Billion gallon demand in 2020; 4.84 Billion gallons of Alternative Fuels
 - Equates to an additional 400 million gallons production/use of Alternative Fuels, annually, for the next 12 years
- **Enables 15% Petroleum Fuel Reduction by 2020**
 - Improved Vehicle Efficiency
 - Reduced Vehicle Miles Traveled (VMT)

The AB 1007 Alternative Fuels Plan

- **Asked for by Legislature and Governor**
- **A Plan to Achieve 20% Alternative Fuels Usage by 2020; 30% by 2030**
- **Maintain or Improve Air Quality**
- **Reduce Climate Change Emissions**
- **Estimate Costs for Transition from Petroleum**

Elements of the 'Plan'

- **Identify Requirements, Incentives and Policy Mechanisms Needed**
- **Evaluate all Potential Non-Petroleum AFs**
- **Assess the Market for the Fuels and Vehicles**
- **Perform Full Fuel-Cycle Analysis for all**
- **Evaluate for BAU, Moderate and Aggressive Cases**

Multiple Policy Goals

- **Under the Moderate Development Case, it is possible to:**
 - **Reduce Petroleum Consumption, Increase Supply and Use of Alternative Fuels;**
 - **Achieve Bio-energy goals for transportation;**
 - **Reduce Criteria Emissions with no ‘backsliding’;**
 - **Reduce GHG emissions, earlier and as surplus to regulations;**
 - **Provide economic development; Jobs/job-training, businesses, and an efficient and competitive transportation fuels market**

State Policy Priorities

- **Heavy reliance on petroleum-based fuels in the transportation sector remains a concern**
- **Multiple state policy drivers: petroleum reduction, fuel diversity, environmental improvement, waste reduction, air quality, and global climate change**
- **State commitment to transform the state's fuels market by developing and expanding the use of alternative transportation fuels, particularly, low-carbon and ultra low-carbon fuels**
- **Surplus biomass resources from agriculture, forestry and urban waste streams presents both a challenge and opportunity for fuel developers and suppliers.**

State Policy Initiatives

- Reducing California's Petroleum Dependence: first recommended state alternative fuels goals in 2003.
- Bioenergy Action Plan: sets aggressive goals for instate biofuels production.
- Global Warming Solutions Act (AB 32): reduce GHG emissions to 1990 levels by 2020.
- Low Carbon Fuels Standard: reduce carbon intensity by 10 percent by 2010.
- State Alternative Fuels Plan (AB 1007): a “blue print” for advancing new fuels and vehicle technologies.
- Alternative and Renewable Fuels and Vehicle Technology Program (AB 118): transform the California's fuel and vehicle market

Reducing California's Petroleum Dependence

- **August 2003 Joint Report by the Energy Commission and Air Resources Board in response to state legislation**
- **Recommended state petroleum reduction goals.**
 - **Reduce demand for gasoline and diesel to 15 percent below 2003 levels by 2020**
 - **Increase use of alternative fuels by 20 percent**
- **Urged a doubling of vehicle fuel economy through Federal Corporate Average Fuel Economy standards (found to be cost-effective with current vehicle technology)**

State Bioenergy Goals

- **Governor's Executive Order S-06-06 (April 2006) sets instate production and use targets.**
- **Established targets to increase the in-state production of bioenergy and biofuels**
- **Governor released the Bioenergy Action Plan in July 2006, committing state agencies to take a series of specific actions.**
- **The Bioenergy Interagency Working Group meets regularly to address and seek to remove barriers to sustainable bioenergy development.**

Global Warming Solutions Act of 2006

- **On September 27, 2006, Governor Schwarzenegger signed legislation, Assembly Bill 32, the Global Warming Solutions Act of 2006.**
- **California's initiative is intended to limit greenhouse gas emissions from the state's largest emitting sources.**
- **This legislation gives the California Air Resources Board significant, new responsibilities.**

California's Low Carbon Fuel Standard

- On January 9, 2007, the Governor issued Executive Order S-1-07, establishing the world's first Low Carbon Fuel Standard for transportation fuels.
- Petroleum refiners, gasoline sellers and fuel suppliers must reduce the carbon content of their fuels by 10 percent by 2020.
- By regulating carbon fuel content, this standard will support the state's greenhouse gas reduction targets, while promoting the use of alternative fuels.
- Adding ethanol or other biofuels into gasoline is one option for meeting the Standard; advanced biofuels show promise.
- The California Air Resources Board expects to complete its rulemaking in late 2008.

State Alternative Fuels Plan

- **December 2007 the Energy Commission and Air Resources Board adopted a joint plan to expand the use of alternative fuels in California (AB 1007).**
- **Low Carbon Fuel Standard alone cannot achieve all of the needed GHG reductions.**
- **A combination of regulations or standards, financial incentives, and advanced technology is needed to achieve policy goals.**
- **Substantial public and private investment is needed for vehicles, fueling infrastructure and advanced technology.**
- **A three-part strategy---advanced technology, alternative fuels, and travel reduction---is recommended.**

Alternative Fuels Use and GHG Reduction

Mile Stone Year	2012		2017		2022	
	Fuel Use	GHG	Fuel Use	GHG	Fuel Use	GHG
Propane	47.7	<0.1	173	0.1	282	0.2
Natural Gas	306.1	1.5	518	2.5	885	4.4
E10 gge (MW Corn)	1394	3.8	1354	3.8	1327	3.6
E85 gge (CA Poplar)	83	0.7	434	3.9	738	6.6
Hydrogen	40	0.3	80	0.6	440	4.4
Electricity	86	2.1	187	5.1	376	6.7
XTLs	320	0	530	0	630	0
Renewable Diesel	130	1	310	2.4	530	4.2
Dimethyl Ether	13	0	62	0	101	0
Total	2360	10	3565	18	5220	30

Fuel use measured in million gasoline gallon equivalent.

GHG measured in million metric tons per year.

SAFP Conclusions

- **Sizable Investment is Needed for Alt Fuels Commercialization- \$100-200 Million per/year,**
- **Under the Moderate Development Case, we can Meet 2020 and 2030 Alternative Fuels Goals,**
- ***Nearly All Alternative Fuels are 10% Lower Carbon, and Lower in Criteria Emissions, Now.***

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Is Now the Time?

- **Crude Oil over \$130/ Barrel;**
- **State Refineries at Capacity;**
- **Growing World Demand and Supply Projections;**
- **Fostering Competitive Alternatives and Improved Vehicle Technologies Won't be Easy;**
- **California Legislature and Governor have provided the resources**
- **Will there be a better time?**

Alternative and Renewable Fuel and Vehicle Technology Program

- The Governor signed landmark legislation, (Assembly Bill 118, Nunez, 2007) to address state alternative fuel use and petroleum reduction goals.**
- Up to \$120 million per year for 7.5 years is appropriated to the Energy Commission for state incentives.**
- Energy Commission will co-fund the development and deployment of alternative fuels production, fuel distribution, and advanced vehicle and fuels technology.**
- Up to \$80 million per year to the ARB for vehicle retirement and air quality improvement.**

Purpose of the Program

- **Transition California's transportation market from petroleum fuels to a diverse portfolio of alternative fuels**
- **Consistent with climate change policy and low-carbon fuel standard**
- **Achieve the petroleum reduction and alternative fuel goals established in the State Alternative Fuels Plan (AB 1007 report)**
- **No silver bullet**

Fundamental Requirements

- **Establish sustainability goals**
- **Projects required to be undertaken pursuant to state or federal law or district rules or regulations**
- **Ensure that results can be measured and quantified**
- **Implement “anti-backsliding” guidelines**
- **Grants, revolving loans, loan guarantees, loans, or other appropriate measures**

Eligible Projects

- **Develop and improve alternative and renewable low-carbon fuels**
- **Optimize alternative and renewable fuels for existing and developing engine technologies**
- **Produce alternative and renewable low-carbon fuels in California**
- **Decrease the overall impact of an alternative and renewable fuel's life-cycle carbon footprint and increase sustainability**

Funding Preferences

- **On a life-cycle basis, decrease air and water pollutants and reduce or avoid multimedia environmental impacts**
- **On a life-cycle basis, decrease greenhouse gas emissions by at least 10 percent**
- **Use of alternative fuel blends of at least 20 percent**
- **Use existing or proposed fueling infrastructure**
- **Provide non-state matching funds**
- **Provide economic benefits**

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Dockets

- **08-OIR-1 for the rulemaking only**
- **08-ALT-1 for the program implementation**

