



SUMMARY

This report is part of the **California's Energy Future (CEF)** project conducted by the California Council on Science and Technology. The study was funded by the **California Energy Commission** and the **S.D. Bechtel Foundation**, and was completed by a committee of experts from major research institutions in California. The CEF assessed technology requirements for reducing greenhouse gas (GHG) emissions in California to 80% below 1990 levels as required by Executive Order S-3-05 (2005).

Achieving California's emissions goals will require using as little fossil fuel in transportation as possible. This report explores how a combination of electrification and increase in vehicle efficiency could significantly lower emissions from this sector.

Category	2005	2050	% change
Population (millions)	36.6	54.8	50%
Light-duty Miles per capita Total miles (billion)	8,160 298	10,832 593	33% 99%
Heavy-duty truck Total miles (billion)	24	47	97%
Passenger Aircraft Miles per capita Total passenger miles (billion)	5,533 202	6,444 353	16% 75%
Bus Total miles (billion)	19	29	50%
Passenger Rail Total passenger miles (billion)	3.6	5.4	50%
Marine Total miles (billion)	1.6	2.4	50%

Table: Travel demand assumptions in the business as usual (BAU) and median scenarios. (Based upon Caltrans 2008, AEO 2011 but extended to 2050.) From Table 1, page 5.

BACKGROUND

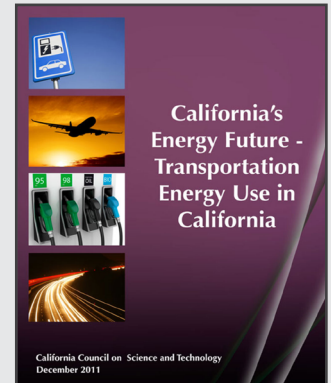
The goal of the CEF project was to help California develop sound and realistic strategies for meeting its GHG emissions reduction goals, by providing an authoritative, non-partisan analysis of the potential of energy efficiency, electrification of transportation and heat, low-carbon electricity generation and fuel. The analysis was designed to identify potential energy systems that would meet both California's requirements for energy and the emission targets specified by executive order.

Transportation generates approximately 40% of GHG emissions in California. Consequently changes in the transportation sector must play

a large role in any comprehensive strategy to reduce GHG emissions.

Options for improving vehicle efficiency range from conventional combustion and hybrid technologies to the use of newer technologies such as biofuels, hydrogen cell vehicles, and increased use of vehicle electrification.

This report examines current and projected fuel use by different transportation sectors and seeks to understand the extent to which each transportation technology could be used to achieve California's emissions goals for 2050.



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For the findings, conclusions and recommendations, see the **FULL REPORT** on our website:
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This report is part of the **California's Energy Future** project.

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