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The TSRC mission is to develop knowledge that can be used to foster the introduction and adoption of more sustainable transportation fuels, technologies, and systems. A particular area of emphasis for TSRC is to assist in developing and implementing major California and federal regulations and initiatives related to sustainable transportation. These include the AB 32 Global Warming Solutions Act, the Low Emission Vehicle Program and Zero Emission Vehicle Mandate, the Pavley Law, Low Carbon Fuel Standards policies, SB 375 (anti-sprawl legislation), and the federal Energy Independence and Security Act of 2007.

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Transportation
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RESEARCH
CENTER

The TSRC research encompasses the following four major areas:

TRANSPORTATION PROPULSION, FUELS, AND EMISSIONS

Alternative fuels will play an increasingly large role in reducing harmful pollutants created by vehicle exhaust emissions, as well as reducing dependence on imported fossil fuels. TRSC research includes lifecycle analysis of biofuels, tar sands and other non-traditional sources, hydrogen, electric and hybrid (including plug-in) vehicles, reduction of greenhouse gases and other transportation-related emissions, and establishment of low-carbon fuel standards.

ADVANCED VEHICLE AND INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

The term "Intelligent Transportation Systems (ITS)" refers to the application of advanced technologies, such as electronics, communications, and information processing, to vehicles and transportation infrastructure. TSRC research involves the use of ITS for carsharing and bike-sharing, automated speed enforcement, smart parking for trucks, and goods movement.

POLICY AND PLANNING

This area of research encompasses climate change, zero emission vehicle policy, feebates, smart growth, public transit, carsharing and bikesharing, and car-free housing. TSRC researchers examine the intersection of science and public policy and the development of effective approaches to regulation, monitoring, and compliance of transportation-related environmental goals.

MOBILITY FOR SPECIAL POPULATIONS

By 2029, there will be some 77 million Americans over the age of 65. As the population ages it will be imperative to find new ways to meet the transportation needs of these citizens who will eventually become unable to drive.



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ONGOING RESEARCH PROJECTS AT THE TSRC INCLUDE:

- The California Clean Mobility Partnership, a major advanced technology vehicle "real world" research project for the Air Resources Board, in partnership with UC Irvine and Toyota, with funding authorized under AB 1811.
- Examining the potential behavioral response to fuel cell vehicle technology and refueling infrastructure for public/private fleet, carsharing, and other early fuel cell vehicle market niches.
- Collaboration with Toyota to assess infrastructure needs of fuel cell vehicles and to analyze and test hydrogen vehicles and refueling stations.
- Analyzing technical and economic aspects of "hydrogen energy stations" that would co-produce electricity for local buildings as well as hydrogen for refueling hydrogen-powered vehicles
- Developing lectures and larger curriculum modules, lab course protocols, and other educational materials on sustainable transportation and hydrogen and fuel cells for use in engineering and science courses.
- Examining the implications of greenhouse gas policies on material flows in the automotive industry.
- Studying the lifecycle impacts of potential biofuels on humans and the environment as part of a major research program established between UC Berkeley, the University of Illinois at Chicago, and British Petroleum.
- A study of "California Electric Fuel Implementation Strategies" project to identify key options for more rapidly commercializing electric vehicles in California.
- Employing ITS to help truck drivers "park smart" instead of idling on exit ramps, road shoulders, or neighborhood streets while waiting to load or unload cargo. Reducing idling activity cuts toxic diesel emissions and alleviates driver fatigue.
- Collaboration with UC Davis on research that helped guide development of California's low carbon fuel standards.
- Modeling a variety of biofuel pathways, including Brazilian sugarcane ethanol, "advanced" corn, and an array of bio-refinery alternatives.
- Policy support for Assembly Bill 32, the Global Warming Solutions Act, scoping plan including assessments of the evidence on public transit, land use, and auto pricing strategies as well as regional workshops and interviews exploring strategies, approaches, and mechanisms to achieve transportation-related goals.
- Simulating and evaluating the travel, economic, equity, and air quality effects of ITS technologies, high occupancy vehicle and toll lanes, transit improvements, road pricing, and smart growth using a range of land use, travel, and vehicle emissions models.
- Applying methods of uncertainty analysis to assess errors and biases in land use, travel, and emission models in the context of the requirements of the Clean Air Act Amendments, the National Environmental Policy Act, as well as California's Assembly Bill 32 and Senate Bill 375 (anti-sprawl legislation).
- Evaluation of the Blueprint Planning process in California as it relates to climate change and land use policy related to AB 32 and SB 375.
- Examining transit barriers for the rapidly growing number of older adults to prevent them from becoming isolated and to prevent traffic accidents that might occur due to declining driving abilities.
- Studying the travel behavior of immigrants and other racial or ethnic groups to better understand their demographics and travel patterns for future transportation planning.
- Carsharing research on market developments (e.g., government fleets, college/university), environmental and social impacts, policy considerations (e.g., parking), and older adults.
- Smart parking for transit to make it easier for individuals to park at transit stations.
- Bikesharing research to facilitate transit linkages and short-trips throughout the day.