California State Assembly

TRANSPORTATION COMMITTEE

JIM FRAZIER
CHAIR

Chief Consultant
Janet Dawson

Principal Consultant
Victoria Alvarez

Senior Consultant
Melissa White

Consultant
Justin Behrens

Committee Secretary
Toni Zupan

1020 N Street, Room 112
(916) 319-2093
FAX: (916) 319-2193

INFORMATIONAL HEARING

Transportation Technology Research in California

Monday, March 14, 2016
Upon adjournment of the bill hearing ♦ State Capitol, Room 4202

Background

Introduction

California has historically been on the cutting edge of transportation technology research and development. Particularly in the mid-20th century, innovations that were conceived of, explored, and implemented first in California often went on to become the national standard. Today's hearing will focus on the ability of California to continue its legacy of transportation innovation in the present. With the buildout of the state's transportation system largely completed, new transportation technologies will be needed to optimize the performance of that system, ensure its continued and future sustainability, and energize the performance of the state's economy. The demand for scarce transportation resources has never been higher, but the key to achieving these goals lies in ensuring that the state's research agenda is positioned to respond to emerging transportation issues, to inform California's policymakers, and to generate research products that are easily accessible and transferrable to practitioners at all levels of government.

Today's hearing will examine first the research capacity of the California Department of Transportation (Caltrans) and the University of California. The Committee will then hear from local agencies on their experiences in researching, developing, and implementing new technologies, as well as what the state can do to best use its resources to remain at the cutting edge of transportation innovation. A more robust state-supported research program should be nimble and responsive to new transportation needs, while providing outputs that are useful and applicable beyond the initial parameters of an initial grant proposal. Research conducted with state resources should result in technologies and knowledge that are widely beneficial to all Californians. Today's hearing will give the Committee the chance to hear from parties involved in all stages of technology research, development, and implementation on how California can achieve that strategic vision.

Caltrans' Research Capacity

Caltrans' Division of Research Innovation and System Information (DRISI) acts as the Department's primary research arm and advances California's overall transportation research agenda. As stated by the department, the purpose of DRISI is to "provide solutions and knowledge that improve California's transportation system." To this end, DRISI conducts nearly 100 research projects per year on behalf of Caltrans and provides substantial matching funds to research institutes throughout California.

In Fiscal Year 2013-14, DRISI received $12 million (approximately 49% of its research program budget) from the federal State Planning and Research program and $12.3 million (51%) from the State Highway Account. DRISI research funds are allocated between six categories: Caltrans Functional Research; University Transportation Centers; the National Research Program; State Research Support Partnerships; Technology Transfer and Implementation; and the Roadside Safety Research Group. Across these funding categories, DRISI and Caltrans seek to develop comprehensive solutions to transportation issues and to act as a repository for California's collective transportation knowledge.

University of California Institute of Transportation Studies

The Institute of Transportation Studies (ITS) at the University of California conducts research on a wide array of transportation topics, from transportation system operations to artificial intelligence to traffic safety to environmental vehicle technologies. Established by the Legislature in 1947 at UC Berkeley as the Institute of Transportation and Traffic Engineering, ITS has since grown to four UC campuses: UC Berkeley, UC Irvine, UC Davis, and UCLA. The specific focus of each ITS branch varies from site to site.

ITS-Berkeley integrates eight research centers that cover a range of topics including Partners for Advanced Transportation Technology, the National Center of Excellence for Aviation Operations Research, the Traffic Safety Center, the Transportation Sustainability Research Center, the Smart Cities Center (joint with the Lawrence Berkeley National Laboratory), the University of California Transportation Center (UCTC), the Pavement Research Center (joint with UC Davis), and the Hyundai Center of Excellence. Berkeley also hosts the Harmer E. Davis Transportation library, one of the preeminent transportation collections in the country, and the Tech Transfer Program, focused on serving California's transportation community with professional training, expert assistance, and information resources. Examples of research conducted at ITS-Berkeley in the fields of intelligent transportation systems include the development of the Connected Corridors program, truck platooning in Southern California ports, and the display of travel times on Changeable Message Signs. Berkeley has over 100 faculty and staff working directly with ITS, and nearly every academic transportation program in the United States has at least one ITS-Berkeley alum on the faculty.

ITS-Irvine was established in 1974 to foster interdisciplinary research on contemporary transportation issues involving the planning, design, administration, and operation of transportation facilities. ITS-Irvine is also part of the UCTC and served as headquarters of the Multicampus Research Program and Initiative (MRPI) on Sustainable Transport: Technology, Mobility and Infrastructure. The program at Irvine conducts research in the

fields of freight transportation planning and modeling, urban design and land use planning, and transportation pricing and finance. Irvine developed the California Statewide Freight Forecasting Model for Caltrans and has also been heavily involved in the development of California's hydrogen vehicle infrastructure. The research conducted by the ITS program involves two dozen faculty and approximately 100 graduate students from various schools at UC Irvine.

Founded in 1991, ITS-Davis has grown to more than 60 affiliated faculty and researchers and over 100 graduate students. ITS-Davis is renowned for its research in the fields of alternative fuel vehicles and energy, sustainable land use, environmental impacts, travel behavior and transport systems modeling, pavements, new mobility, and sustainable freight. ITS-Davis hosts five specialized research centers: the National Center for Sustainable Transportation, Plug-in Hybrid & Electric Vehicle Research Center, Sustainable Transportation Energy Pathways, China Center for Energy and Transportation, and Urban Land Use and Transportation Center. Some of ITS-Davis' notable research accomplishments include the production of the original design of California's Low Carbon Fuel Standard and assessment of the models and protocols being used to implement the Sustainable Communities and Climate Protection Act of 2008 [SB 375 (Steinberg), Chapter 728, Statutes of 2008].

Although it is the most recently-formed branch of ITS, UCLA-ITS has examined a wide range of issues. UCLA-ITS research on parking policy and management has helped local practitioners properly price parking, while avoiding the problems and expense associated with excessive minimum parking regulations. UCLA-ITS has also conducted research on crime on public transit systems, showing that the location and design of public transit stops and stations importantly affect risks to passengers. In partnership with the UCLA Luskin School of Public Affairs, UCLA-ITS is also at the forefront of research on livable and complete streets. The program at UCLA cultivates partnerships with a variety of external partners, including the Southern California Association of Governments and the Los Angeles Metropolitan Transportation Authority.

Core funding for the entire UC-ITS program is provided by the Legislature in an annual appropriation of $980,000 from the Public Transportation Account, an appropriation that has remained largely unchanged since the 1940s. ITS currently leverages this money at nearly a 30-to-1 ratio, pulling in approximately $30 million per year from other government sources at the federal, state, and local levels, as well as from private industry and foundations. Through this grant funding, ITS partners extensively with state departments including Caltrans, the California Energy Commission, the California Air Resources Board, and the Office of Traffic Safety. In addition to these state government partners, ITS also works closely with other research entities in the UC System, including the Center for Information Technology Research in the Interest of Society at UC Berkeley, UC Davis, UC Merced, and UC Santa Cruz, the NASA Ames University Affiliated Research Center at UC Santa Cruz, and the MRPI on Sustainable Transport: Technology, Mobility and Infrastructure at UCLA, UC Riverside, and UC Santa Barbara on various projects.