Panel Topic: Sustainable Mobility and Cities: Marrying Technology and Policy Conference

Date: February 23, 2012 at the David Brower Center in Berkeley, CA

Panel Description: The urban transport sector's environmental footprint is huge and growing—around a third of energy consumption and CO2 emissions in U.S. cities is in the transport sector. The debate on how to shrink the sector's footprint has splintered into two camps: those arguing for technological solutions (e.g., clean-fuel vehicles; smart cars) and those contending that policies (e.g., congestion pricing) and land-use management (e.g., TOD) that reduce the demand for car travel offer considerable, if not more, promise. The debate and rhetoric has become fractious and at times divisive. But is it possible that the two might effectively work together in tandem, promoting cross-purposes? Might there be synergies/win-win outcomes associated with aggressively pursuing the two strategies in tandem?

Organized by the University of California Transportation Center (UCTC). Sponsored by the Ted and Doris Lee Fund at the College of Environmental Design and the UC Berkeley School of Law, managed by the Institute of Urban & Regional Development.

Moderator & Panelists:

Session #1: Mobility Applications
Moderator: Raja Sengupta, UC Berkeley
Discussant: Jose Luis-Moscovich, San Francisco County Transportation Authority (SFCTA)
Panelists: Di-Ann Eisner, Waze; Scott Kolber, Roadify; Chris Harrelson, Google Transit
Professor Alexandre Bayen, UC Berkeley

Session #2: Transportation Pricing
Moderator: Karen Frick, Associate Director, UCTC and UC Berkeley
Discussant: Robert Arnold, Federal Highway Administration (FHA)
Panelists: James Whitty, Oregon Department of Transportation; Axel Reissnecker, Siemens Industry, Inc.; Dan Chatman, UC Berkeley

Session #3: Alternative Fuels, Vehicle Technologies & Urban Logistics
Moderator: Timothy Lipman, UC Berkeley
Discussant: Damian Breen, Bay Area Air Quality Management District
Panelists: Ken Laberteaux, Toyota Research Institute—North America; Tom Durbin, UC Riverside; Scott F. Belcher, ITS America; Susan Shaheen, UC Berkeley

Session #4: Dynamic Ridesharing, Feeders, and the "Last Mile Problem"
Moderator: Alexander Skabardonis, UC Berkeley
Discussant: Elizabeth Deakin, UC Berkeley
Panelists: Sean O'Sullivan, Avego; Christopher Cherry, University of Tennessee; Steven Raney, Ultra Global PRT

Closing Remarks: Observations & Connecting the Dots
Speakers: Martin Wachs, RAND Corporation, UC Berkeley and UCLA; Tilly Chang, SFCTA;

Robert Cerver, UCTC, IURD and UC Berkeley

Design, Methodology, Approach: Each session began with general questions posed by the moderators, allowing panelists to broadly present their work and case studies. Following this, the discussants posed more specific questions to the panelists.

Main Panel Discussion Points:

With the "mobile millennium" now upon us, the four mobility app panelists spoke about their respective companies as potential saviors for the problems of road congestion and the time-cost conundrum for public transit riders. While some panelists, in particular Chris Harrelson, the founder of Google transit, remained quite humble and acknowledged there isn't a "one-size-fits-all" application to solve all traffic management issues, most remained confident in the power of their technology to guide transportation management into the future. The app "Waze," as touted by Di-Ann Esner, actively re-routes the user's vehicle path through congested cities, creating real-time videogame-like incentives, while other applications like Roadify seek to integrate real-time information for the various local and regional transit systems, including crowdsourced information and comments from Twitter. One critique, as noted by discussant Jose Luis-Moscovich from the San Francisco County Transportation Authority (SFCTA), is that advanced applications that require smartphone technology are not readily accessible in the Global South. Scott Kolber rebutted that while this is true, many still have texting capabilities on their phones, and can still give and receive crowdsourced data on transit systems through this avenue. Another key point of scrutiny brought forward by Luis-Moscovich is that some of these applications may simply be "enablers," in that they enable drivers to feel more comfortable in their cars, rather than encourage a switch to more sustainable modes.

The session on pricing addressed how to change human behavior by attaching a cost to transportation, and how price influences the three 'E's: Economy, Environment and Equity. One challenge highlighted by James Whitty, Oregon Department of Transportation, is how to implement a pricing system for vehicle miles traveled (VMT) which relies on personal electronic reporting systems in an era when the state remains fiscally constrained and residents are increasingly concerned with their personal privacy with regard to electronic tracking devices. Both Alex Reissnecker and Bob Arnold spoke to the issue of congestion pricing from both private and public perspectives. They noted its utility as a tool depends on its ability to be holistically combined with other supportive programs. In order to be successful, congestion pricing relies upon active management and other non-tolling strategies, such as parking pricing, dynamic ride-sharing, and peer-to-peer car sharing. Dan Chatman presented his mid-study results from parking pricing in San Francisco (SFPark), with findings showing that pricing is not the only important mechanism in regulating parking behavior. Chatman found that the use of disabled placards significantly increased; block occupancy on average is about 75 percent by vehicles containing disabled placards.

In Session Three, Ken Laberteaux from Toyota spoke about efforts to create a sustainable vehicle strategy. Laberteaux noted that the success of sustainable vehicles depends on multiple factors mostly outside of Toyota's control: how fast the power grid "goes green," gas prices, the battery improvement rate, and future government policies/regulations. Interestingly, Laberteaux

noted that batteries still have a long way to go in order for the electric vehicle to be efficient. Tom Durbin introduced the work he is doing on alternative fuels at the College of Engineering—Center for Environmental Research and Technology at UC Riverside, including results from biodiesel mitigation studies. His findings showed that in terms of technology development, biodiesel is the most prominent alternative fuel in the U.S., but it has severe supply limitations (if all U.S. agricultural production was converted to corn, it would still amount to only 24 percent volume of the gasoline pool) and utilization limitations (use is limited to 10 to 15 percent in conventional gasoline vehicles, and Midwest corn use provides no GHG benefits in California). With regard to vehicle technologies, Scott Belcher presented his work from Intelligent Transportation Systems (ITS), noting increased job opportunities for Americans within this burgeoning area. Belcher stated such key opportunities for growth and improvement lie in the areas of "pay as you drive" insurance programs, mileage-based user fees, electronic tolling, new payment technologies, smart parking, integrated corridors, smart cities, and in general, new technology-enabled connections with the grid. In a different area of urban logistics, Susan Shaheen spoke about innovations in bike-sharing and car-sharing, and the increase in popularity such programs have seen recently in both the international and North American context. Car-sharing is now becoming multi-nationalized and mainstream, with bike-sharing also on the rise in the globe's major cities. Shaheen noted that cultural priorities may be changing—46 percent of 18 to 24-year-old U.S. drivers would rather give up car access than Internet access.

In Session Four, Sean O'Sullivan presented on the benefits of contemporary ride-sharing, intimating that as a society collective consumption has become more popular over the past few years with the rise of cheaper, communitarian options such as Zipcar, AirB&B, and CouchSurfing. He noted that critical mass is necessary for new real-time ridesharing to be a success, and we can learn from such current options people are choosing such as casual carpooling or "slugging." Christopher Cherry, from the University of Tennessee, proposed e-bicycles (electric bicycles) as a solution to the first and last mile of trip legs (getting to and from a major transport hub), but questioned the technical and economic feasibility of such programs versus the non-electric bicycle. Steven Raney spoke about Personal Rapid Transit (PRT) systems, which are train-like non-stop origin-destination driverless cars. Raney emphasized that such systems could allow people to individually access mobility hubs, alleviating last-mile midday trips and trip chaining problems. However, the track record of implemented PRT systems is rather weak.

Outcomes & Analysis:

With regard to both the mobility applications and transportation pricing sessions, serious questions surrounding privacy, especially with regard to single-occupancy vehicle tracking, were introduced. With technology rapidly advancing, such privacy issues will become difficult to navigate given staid and outdated regulations. In addition, the notion of individual consumption versus programs that support collective consumption was a common theme in all sessions. The questions as to whether technology, or a combination of regulation and pricing mechanisms could be able to provide the "silver bullet" solution for sustainable mobility still remained unanswered at the end of the conference. However, this contrasting set of themes offered an interesting framework for a lively debate among some of the Bay Area's top transportation professionals and academics.

Keywords: sustainability, mobility, transit technology, transit policy, urban transit, sustainable vehicles, mobility applications, car-sharing, ride-sharing

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