

Arizona Vision21 Task Force Considers Intelligent Vehicles, ITS

Arizona's **Vision21 Task Force**, appointed by Arizona Governor **Jane Dee Hull** to plot a strategy for state multi-modal transportation investments over the next twenty years, met on June 7 in Phoenix to focus on the potential of Intelligent Transportation Systems.

The group, composed of citizens, former legislators, corporate executives, and representatives from public interest groups, was formed last year and has been examining a full range of transportation issues: highways, traffic control, safety for cars, buses, heavy trucks, and rail systems, to name but

a few. The group includes members of the Arizona Transportation Board and **Mary Peters**, Director of **Arizona DOT**. The group is co-chaired by **Martin L. Shultz**, Vice President, Government Relations of **Pinnacle West Capital Corporation**, and **Dr. Sharon B. Megdal**, President of **MegEcon Consulting**.

The governor's executive order establishing the Task Force, issued in February 1999, charged the group with "reviewing and evaluating current transportation practices, resources, and infrastructures and with recommending and

prioritizing the transportation goals, funding, and specific plans that will establish a vision for transportation in Arizona for the 21st century."

An interim report was issued last December, and the final report is due in December 2000. Interim findings focused on the reality that the funding shortfall for transportation needs was "tens of billions of dollars" over the next twenty years, and that significant planning would be needed to support Arizona's expected population growth from the current 5 million to 7.4 million in 2020.



Taking Advantage of Intelligent Vehicle Systems: Opportunities for Arizona

Recommendations now under review by the Vision21 Task Force:

- **Distribute Lane Departure Warning "Loaner Units" to Late Night Drivers** — Implement a "device rental" program in which loaner units are offered to late night drivers in remote areas (cars and trucks), which can warn of driver drowsiness and/or the vehicle drifting out of its lane. Installation would take less than five minutes, and the units could be rented and returned at rest stops.
- **Open Existing HOV Lanes to Intelligent Vehicles** — As IV systems become increasingly available, Arizona could encourage citizens to purchase these devices by providing access to the HOV system, increasing both safety and usage of the lanes.
- **Equip Roads With Magnetic Highway Markings** — In areas plagued by dust storms, fog, and snowstorms, frequent users (primarily commercial vehicles) could track the road more accurately and safely in poor visibility conditions to enhance safety, and to help prevent lane departures -- under any +conditions.



The interim report recommended streamlining of the planning process; preliminary planning for construction of bypass routes for rural towns; consideration of rural and urban transit needs and approaches; and thorough education of decision makers. Work to date has relied on an extensive effort to gain public input. Task Force activities can be tracked on www.dot.state.az.us/vision21.

IV Booth Presents the “Next Wave” in Transportation

The June 7 meeting consisted of about eight “information booths” which covered topics including traffic signalization, Arizona DOT’s **AzTech ITS Model Deployment Showcase**, highway safety initiatives,

innovative highway practices, passenger rail technology, and intelligent vehicles.

The intelligent vehicle booth contained information on worldwide activity in IVs, information on upcoming meetings and events, and copies of ADOT’s 1998 study to implement “Intelligent Express Lanes” on Interstate 10 between Phoenix and Tucson, which would evolve into fully automated travel lanes.

The booth also contained information on **3M’s Lane Awareness System**, **Assistware’s SafeTRAC** drowsy driver / lane departure warning system, and the **CiViS** Bus Rapid Transit concept developed by **IrisBus**. **Dave Berry** of **Swift Transportation, Inc.**, a

major trucking firm, provided tours of a Swift tractor that incorporated a suite of intelligent vehicle features.

Magnetic Guidance Demonstrated

ADOT closed one block of 17th Avenue, adjacent to the Arizona capitol, for a demonstration of the 3M system, using magnetic lane marking tape laid down the previous evening. 3M’s new generation demo vehicle (a Ford Bronco equipped with magnetic sensing and a driver interface indicating lane position) was used to give Task Force officials an actual feel for magnetic guidance: several of them drove the vehicle.

Arizona has been testing magnetic guidance for



- **Adopt “Electronic License Plates”** which enable vehicle-vehicle and vehicle-highway communication to support intelligent vehicle functions. New technology approaches enable the production of license plates with embedded antennas and electronics at a very low cost; the entire Arizona-registered vehicle fleet could be equipped within only a few years as tags are replaced.
- **Work With Insurers to Implement Real-Time Premiums** based on actual driver patterns and behaviors automatically measured by IV systems. This has proven to be very popular with consumers in other states, as it has reduced their insurance bills. Another possibility: premium reductions for purchase of collision warning systems.
- **Equip Roads with “Sensor Friendly Highway” Components**, as defined by a recent FHWA research study. Radar-reflective roadway markings and unique radar-coded “tags” for roadside hardware are among techniques under investigation.
- **Join the Intelligent Vehicle Infrastructure Consortium**, a pooled-fund R&D effort to examine cooperative vehicle-highway systems and steps state DOTs can take to support the deployment of IV systems.

snowplow operations since 1998 and plans to equip additional miles of roadway this summer to support additional testing this winter. 3M's vision extends to guidance of transit vehicles (for precision maneuvering) and commercial vehicles (for safer operation in low visibility conditions).

Guided Buses Strike a Chord

New transit initiatives are a "hot item" in Phoenix currently, as voters passed a transit tax in 1999 that provides specific funding for Light Rail Transit and Bus Rapid Transit implementation. However, opinions are plentiful as to what approaches to take and how to best spend these dollars. Task Force members were very interested in the informa-

tion on the CiViS guided bus approach as an alternative to light rail proposals — they were not aware of this "rapid bus" concept and were attracted to its greater flexibility and lower cost.

Task Force Hears IV Recommendations for Arizona

After two hours of demonstrations and booth discussions, the full task force was convened by chairman Martin Shultz to consider what they had seen and heard and to learn more from a set of expert panelists. Panelists included **Tim Wolfe**, ITS Director for ADOT, and **Terry Johnson** of the **Maricopa Association of Governments**. At the invitation of ADOT, **Richard Bishop** served as the intelligent vehicles

panelist and offered a set of recommendations as to how the state could take advantage of IV systems.

The task force discussions were wide-ranging and tended towards very basic issues, such as implementing reversible lanes to handle commuter traffic flows, rather than far-reaching initiatives.

When asked about ways to increase roadway capacity in order to reduce congestion, Mr. Wolfe noted that half of congestion in urban areas was due to non-recurring causes such as accidents (which can be addressed by IV systems) and only half due to capacity limits.

As the meeting drew to a close, the chairman, recognizing that more areas needed to be addressed, requested that the panelists provide



- ***Fund R&D of Cooperative Vehicle-Highway Systems*** — A joint academic-industry center could perform proof-of-concept testing and benefits assessment for vehicle-vehicle communications, low speed automation, sensor-friendly highway components, and other functions.
- ***Implement Automatic Collision Notification for Heavy Trucks*** — Such systems would detect collisions/rollovers and immediately send a signal via satellite to fleet dispatchers, who then provide notification and complete cargo information to public safety officials. This information is key to effective incident response, particularly with hazardous materials. A cooperative effort between truckers and state incident managers could be initiated, using as a model the ongoing USDOT/Mack Trucks operational test of a similar system. Incentives could be provided to encourage truckers to participate.
- ***Equip Transit Buses with Collision Warning Systems*** — Based on a review of transit operational needs, systems such as forward collision warning, lane change/merge warning, and rear-impact warnings could be implemented.



additional input in writing. Subsequent input provided on IV systems included:

- Further elaboration and prioritization of a set of recommendations as to how Arizona could take advantage of IV technologies (see sidebars);
- Emphasis on the congestion relief benefits of collision avoidance systems, which have the

potential to virtually eliminate traffic jam “fender-benders” over the coming years;

- Emphasis on the expected readiness of vehicle-highway automation approaches within the 20-year time frame of the Task Force.

Future Actions

In the coming months, the Task Force plans to continue to gather

information and develop preliminary recommendations. These will be disseminated broadly for comment and discussion. While some insiders say that the Task Force is significantly behind schedule, their literature indicates that final “consensus” findings and recommendations are on target to be delivered to Governor Hull on December 31, 2000.



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- ***Equip Transit Buses with Precision Docking Capability***, to provide better service through faster passenger loading, especially for senior citizens and the handicapped.
- ***Implement Bus Rapid Transit with Automatic Guidance*** — Such systems, now being implemented elsewhere, provide a service level comparable to light rail at a fraction of the cost. The Federal Transit Administration is actively supporting such initiatives through their Bus Rapid Transit Consortium, which is open to new members.
- ***Equip State-Owned Automobiles with Intelligent Vehicle Systems***, such as collision warning, lane departure warning, drowsy driver warning, and adaptive cruise control. This would increase safety for state employees and give decision makers first hand experience with the systems.
- ***Build Separate Truck Lanes for Intelligent Vehicle Operations*** — California is currently sponsoring a study of the benefits of segregated truck lanes for the entire length of Interstate 10, coast to coast. While costs would be significant, the public would be less exposed to heavy vehicles, truck operations would be safer, and productivity could be enhanced through higher speeds. Road pricing to recover costs is one approach for investigation. As a first step, Arizona can join with Caltrans and other states in this study.
- ***Implement “Intelligent Express Lanes” Between Phoenix and Tucson*** — A 1998 ADOT study offers a step-by-step approach to converting the median of I-10 in this corridor to intelligent vehicle lanes, which could be transitioned to fully automated lanes over the next ten years.

