University of Minnesota

CENTER FOR TRANSPORTATION STUDIES

GETTING THERE FROM HERE Views on the Financing and Future of Transportation

Summary Proceedings From

Policymakers'
Forum on
Innovative
Transportation
Financing

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Luncheon
Presentation
on the Private
Provision of
Mobility
Services

s the costs to maintain the current transportation system escalate, so, too, does the need for new solutions, approaches, and ideas that will bring us closer to the vision of an improved transportation system.

One of the most difficult parts of planning for the future, though, is gaining an understanding of what the future may bring. At the University of Minnesota's Center for Transportation Studies (CTS), we create and share knowledge and information that helps us move from where we are now to where we want to be.

Consistent with that role, CTS sponsored two recent events to discuss key elements of transportation: innovative financing and a vision for the future that incorporates the elements of management, financing, technology, and service. This report shares summary proceedings from those two events, a Policymakers' Forum on Innovative Transportation Financing, and a Luncheon Presentation on the Private Provision of Mobility Services.

These two events involved national and local experts, legislators, transportation managers and administrators, and other transportation policymakers and professionals in a special discussion about leading-edge transportation issues. We received feedback from participants encouraging us to share the information with others. We hope that you find these summary proceedings valuable in understanding and taking advantage of current and future opportunities.

As always, we welcome your feedback. Please feel free to share your ideas or comments. If you need more copies of this publication, call CTS at (612) 626-1077.

Best regards,

Robert C. Johns

Acting Director, CTS

GETTING THERE FROM HERE Views on the Financing and Future of Transportation

A Transportation Policymakers' Forum and Working Session on Innovative Transportation Financing—Nov. 27, 1995

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Stephen Lockwood, Parsons Brinckerhoff

A

Transportation Policymakers' Forum



Working Session on Innovative Transportation Financing

Executive Summary

National and local experts joined a crowd of 85 attendees to discuss their ideas about transportation finance needs and innovative financing solutions at a Transportation Policymakers' Forum and Working Session sponsored by the Center for Transportation Studies (CTS) at the University of Minnesota.

The central question transportation faces today is how to provide the level of financing that is needed for a quality, high-performance transportation system, keynote speaker Jane Garvey, Federal Highway Administration (FHWA) deputy administrator, told the legislators and CTS Advisory Board and Executive Committee members who attended.

A recent FHWA report to Congress estimates that over the next 20 years, the nation will need to increase its capital investment in transportation by 40 percent annually just to maintain current performance on highways and transit systems, Garvey said.

That amounts to \$16 billion per year that federal, state, and local governments must invest to keep the nation's transportation systems from deteriorating, she said.

Ohio is one state that is looking at the staggering needs for transportation investment in upcoming years and has responded with innovative financing, said John Platt, chief of staff for the Ohio Department of Transportation.

Six projects in Ohio use the following strategies: the issuance of private bonds for a rail project, use of federal funds as a loan to a private operator, payback of bonds through lease revenue from a private rail operator, creation of a Transportation Improvement District, and the creation of a state infrastructure bank.

Various speakers made predictions of what the future of transportation will look like, and attendees participated in several exercises to try to envision the world of transportation in 2010.

- Robert Poole of the Reason Foundation painted a picture of the future where the gas tax is replaced by a fee based on vehicle miles traveled, where drivers pay congestion charges on urban freeways, where the private sector develops major new transportation facilities, and where pension funds invest in portfolios of highway project debt.
- Policy reforms that will move the United States toward that future include High Occupancy Toll
 (HOT) Lanes, Shadow Tolls, the opening up of the interstate system to tolls and public-private partnerships, and policy changes to bring private capital to transportation projects, Poole said.
- To deal with the future of transportation finance effectively, the issue needs to be considered in light

"Tolls are not a panacea, nor is the gas tax. The important point is that you need to have more tools in the tool box than one source of funds."—John Platt

of a variety of other issues, according to speakers on the Reactor Panel.

- Transportation finance needs to be examined in light of land use arrangements and decisions because they create the need for transportation and its supporting infrastructure, said John Adams, University of Minnesota geography professor.
- It will be important to look beyond finance to changing people's behavior because travel demand is not decreasing, said Ed Cohoon, Minnesota Department of Transportation (Mn/DOT) deputy commissioner.
- Results from the StoryTech exercises conducted by futurist Arthur Harkins of the University of Minnesota noted the importance of telecommuting and telework sites in the future.
- Humphrey Institute Dean G. Edward Schuh stressed remembering the substitutability between transportation inputs and communication inputs. The issue is very important because cost varies depending on interaction needs.
- Steve Martin of the FHWA discussed the difference between financing transportation and telecommunications. A huge disconnection exists between who benefits

and who pays for transportation, and transportation then is viewed as free. Telecommunications and other public utilities don't work like that. A continuing theme that keeps coming up is financing transportation with nongovernment capital and paying for it over the useful life of the facility, Martin said.

Although discussions did not reflect any consensus on the future of any type of innovative financing strategy, 70 percent of the participants in the StoryTech exercise said that in the Year 2010 funding sources for transportation facilities will be different from the past. Fifty-five percent said that in 2010 there will be a greater proportion of funds available for new or renovated transportation facilities than in the past.

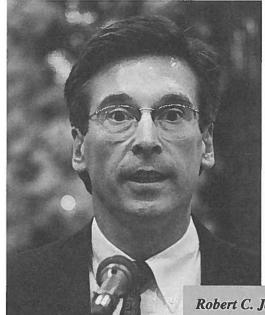
A CTS survey at the completion of the event showed that of the respondents, 75 percent believe that projects with a higher level of local funding should get a higher priority for federal funding. Eighty-three percent said the federal government should provide more incentives and opportunities for privatization of transportation facilities and services.

/ntroduction

Robert C. Johns CTS Acting Director

The Event

Welcome to the Transportation Policymakers' Forum and Working Session on Innovative Transportation Financing. This is an educational event, sponsored by the Center for Transportation Studies (CTS) at the University of Minnesota. It is consistent with the University's educational mission, involving research, teaching, and public service. Our intent today is for all of us to become better educated and informed about transportation financing. We hope that new perspectives and knowledge will help you in making the difficult policy decisions surrounding this issue.



Robert C. Johns

Before joining CTS in

1988, Johns held positions with the Twin Cities Metropolitan Council, the Minnesota Department of Transportation, Santa Fe Railway, and the University of Iowa. He is active nationally as a member of **Transportation** Research Board and

ITS AMERICA com-

mittees.

The Center for Transportation Studies

CTS was established in 1987 when the University hired Richard P. Braun, the former commissioner of the Minnesota Department of Transportation (Mn/DOT). The CTS mission is to shape the future of transportation through research, education, and outreach. Here are some quick facts about CTS:

- CTS is one of the largest university transportation centers in the country. Our research programs are multidisciplinary and multimodal, involving over 20 University departments.
- The CTS research program includes more than 200 completed or ongoing projects in four areas: transportation and the economy, transportation safety and traffic flow, transportation and infrastructure, and transportation and the environment.
- Professionals—engineers, planners, logistics professionals, and others—are primary beneficiaries of our program. They serve on our councils and they interact with our faculty. As a result of CTS research, we have seen innovations in the field, including new traffic detection systems, new pavement and bridge design methodologies, and new policy directions.
- Our educational program supports students and professionals with scholarships, awards, and career opportunities and strengthens the University's transportationrelated degree programs. We have a Technology Transfer Program that offers short courses all over the state to local government transportation professionals. Last year, more than 2,000 professionals attended courses and events held primarily in Greater Minnesota.
- A rapidly growing CTS emphasis, information/outreach, includes events such as this one, an annual research conference, symposia, and luncheon speeches. We also produce various publications, newsletters, and research reports and maintain a library service. To disseminate our results more quickly, we will be making extensive use of the Internet and the World Wide Web.

ITS Institute

CTS is also home to an Intelligent Transportation Systems (ITS) Institute, one of five nationally. The six-year grant from the United States Department of Transportation and our partnership with the state's Minnesota Guidestar program have helped make us a leader nationally in ITS.

Outreach to Policymakers

We feel we have been successful as an educator and catalyst for innovation for transportation professionals. Today represents a new direction. We want to increase our support to policymakers. Gary DeCramer and the planning committee have done a great job in developing this event. We are pleased to have all of you here and look forward to a stimulating afternoon and evening.

Transportation Finance and Wayne Gretzky: Skating to Where the Puck Will Be

Jane Garvey
Federal Highway Administration (FHWA) Deputy Administrator

The Central Question

How do we provide the financing that is needed for a quality, high-performance transportation system? This is the central issue facing transportation today. Financing our growing needs when we have shrinking resources is the key issue.

The Need

At a national level, we just completed a report to Congress. It estimates the nation's investment requirements for highways and transit over the next 20 years. We took a very conservative approach to estimating growth in vehicle miles traveled. We assumed that demand management and ITS strategies would be used to reduce costs, and we imposed benefit cost criteria.

We found that we need to increase our capital investment in transportation by 40 percent annually just to maintain current performance on our highway and transit systems. That

amounts to \$16 billion per year that federal, state, and local governments must invest to keep our systems from deteriorating.

Some illustrations of that need include the following:

- There is a shortage of capacity in all modes, causing congestion and wasting more than \$40 billion annually.
- Vehicle miles traveled continues to rise at a rate of about 2 or 3 percent annually.
- Too many inadequate connections between modes prevent us from realizing the full benefits that are sweeping manufacturing and distribution, such as just-in-time delivery.
- We need to respond to the changing patterns of commuting and goods

movement that our existing systems are not designed to handle. We've got to repair or replace an aging, crumbling infrastructure that causes travel disruption, higher operating costs, and delays.

Jane Garvey

Before joining the FHWA, Garvey served as director of Logan International Airport. From 1988 to 1991, she was commissioner of the Massachusetts Department of Public Works. Many elements of the FHWA's findings from research that Garvey helped initiate have been incorporated into the National Highway System bill. She chairs the FHWA's regulatory reform effort.



The Solution

To meet those needs and the changing demands of the future, we need to rethink our transportation policies. We need to come up with more effective system management strategies, as well as new financing strategies.

System Management Solutions

We can reduce the need for new highway capacity by promoting ridesharing and transit. Efforts to sustain communities are critical—it's a mistake to think of transportation in a vacuum. We must think of it in a much larger context. When transportation decisions began to cut into the heart of communities and affect neighborhoods, they quit being simply engineering decisions and became social, political, and environmental decisions as well. Better management and ITS can help manage systems more effectively.

Transportation Policy Changes

This country will need much more investment in transportation infrastructure than traditional highway and financing approaches can provide. It will need more than one strategy: grant reimbursement. We will need multiple strategies in much the same way as the commercial market does, and we will need to look at new financing tools and the private sector as well. Paying for projects through grant reimbursement is outdated. The system adds to the red tape, adds to cost, and makes it difficult for states and localities to attract private investment. Waiving those restrictions and requirements enhances the flexibility of local decision makers.

The Clinton Administration took the first step in April 1994 when we announced to the states that we were looking for new approaches to financing transportation projects. We said to the states that we would be willing to suspend our rules. We wanted you to bring us your best projects and your best strategies, and we would be flexible and creative with moving those projects forward. We were interested in moving projects into construction faster, helping states leverage their dollars, and making it easier for states to partner with the private sector. The initiative is called The Partnership for Transportation and Investment, better known among the states as Innovative Financing.

Innovative Financing Strategies

Partnership for Innovative Financing strategies include the following:

- Increasing flexible advance construction—construction beyond the life of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991.
- Allowing private sector funds for the state or local match.
- Allowing states to loan federal aid funds on projects other than just toll projects.
- Allowing bond costs as eligible expenses for federal aid reimbursement.

By themselves none of the innovative finance techniques alone will fill the gap. Some may work for some states in some situations, but they will not replace an adequate core federal program of grants and aids.

New Policies, National Highway System Bill

The National Highway System (NHS) bill reflects some strategies developed for states, including the following:

- States are allowed to use federal aid for bond principal, for interest costs, and for insurance costs.
- Private sector funds and materials can be credited toward the non-federal match.
- Federal aid funds may be loaned to non-toll entities.
- The bill allows greater flexibility for states to use advance construction beyond the life of ISTEA.
- It also authorizes state pilot infrastructure banks, a tool to attract private capital and leverage increased financing in private transportation. The states create and operate the banks and may use up to 10 percent of their federal aid money. Funds in the bank could be loaned out for project construction, or they could be used as loan guarantees to lower interest rates and make projects feasible faster. Ten states will be part of this pilot program.

${\it T}$ he Ohio Story

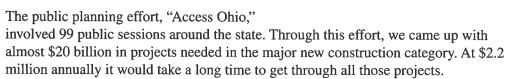
John Platt Chief of Staff, Ohio Department of Transportation (ODOT)

An Experience

Ohio invested in innovative financing. Why did it take that step, what types of projects did it select for innovative financing, and where do we go from here?

Ohio's Need

Ohio's construction budget is about \$1 billion per year, and about 80 percent goes to maintenance, highway resurfacing, bridge inspection, and rehabilitation. A little over \$2.2 million, about 21 percent of budget, goes to adding capacity.



A large number of bridges in Ohio were built during the Interstate era and need replacement in the near future. In fiscal 1995, it cost \$175 million in that category, and we have to more than double financing for bridges over the next years.

By Year 2020, 62.5 percent of Ohio's interstate system will be at a level "F" condition—meaning failure (i.e., congestion). This will have a direct impact on economic activity. If we want to be competitive in the global economy, we have to keep transportation costs as low as possible.

Ohio's Innovative Projects

The following projects respond to the need for new transportation solutions.

- In Ohio, The Panhandle Rail Project was the genesis for state legislation to provide for loans and leases with private sector parties and to establish a depository account for such lease payments. This project, a 160-mile rail link between Columbus and Pittsburgh, used a \$7.2 million Certificate of Participation Shares issue by a private party, with the state passing through lease payments from a rail operator to amortize the financing.
- The **Pedestrian Facility at Jacobs Field and the Gund Arena** in Cleveland was an example of a project that was multimodal in scope. It reduced traffic congestion



John Platt

Platt is responsible for departmental communications, legislative services, customer relations, economic development, and travel information centers. In this capacity he is directly responsible for innovative financing programs for projects that move people and goods conveniently and cost-effectively. Before joining the Ohio DOT in 1991, he was the president of Community Development Planners, Inc., a consulting professional planning firm in Ohio.

- on Interstate 77 and Interstate 71, with nearly 30 percent of attendees arriving by rail. This project's success, using Congestion Mitigation Air Quality funds, developed broad public support of innovative finance use. The governor's and Legislature's support was solidified by this project.
- In a **Stark Intermodal Project**, a new rail/highway interchange created thousands of jobs and lowered transportation costs for an entire highly industrial region. CMAQ funds were used as a loan to the rail operator. In turn the operator pays the lift fee of \$10 per freight container lift—onto or off of a rail flat car—which will be deposited into the State Infrastructure Bank.
- The Legislature created the **Butler Transportation Improvement District**, in Butler County on either side of an 11-mile highway link of Hamilton, Ohio, to Interstate 75. It created many new sources of funds previously untapped to finance the infrastructure. A toll facility linking Interstate 75 and Interstate 71 near Cincinnati will be a future part of this project, with proceeds going to the State Infrastructure Bank.

- In the **Hamilton Third Main Rail** project, a 3.5-mile bypass of congested rail section was completed with private advance construction funding at a total cost of \$15.1 million. The railroad advanced 100 percent of the construction cost. ODOT agreed to reimburse the railroad \$5.1 million—the cost of four rail/highway grade separations—with payback at the rate of \$1.7 million per year for three years.
- Over the next two years, Ohio intends to develop a portfolio of direct funded loans as a first step to obtaining a bond rated infrastructure fund and using the portfolio of loan repayments as leverage for issuance of bonds. ODOT will maintain a 2.5 percent to 1.0 debt service coverage ratio and a cash reserve equal to one year's payment on debt. The cash reserve may be funded by the bond proceeds themselves. On Nov. 7, 1995, Ohio voters, by a 62 percent majority, authorized ODOT to increase its debt ceiling from \$500 million to \$1.2 billion with the idea that a portion of this expanded debt would fund an infrastructure bank.

${\cal A}$ Privatized Future

Robert Poole, President, The Reason Foundation

Future Visions

The following ideas have been discussed at the Blue Ribbon Commission on Transportation Investment in California:

- Twenty years from now, the gas tax has been abolished. A fee based on vehicle miles traveled is the main source of funding with different rates for different classes of vehicles.
- The other source of funding is congestion charges on urban expressways. The private sector has developed most major new bridges and highway additions, and manages many of the major facilities like interstates.
- The debt and equity of highway development and operation firms have become important elements of the financial markets. Pension funds invest in secured portfolios of debts for highway projects.

The Forces Behind the Vision

- Changes in vehicle propulsion systems make the gasoline tax increasingly
 marginal as a future source of revenue. The continual increase in fuel
 economy with new fuels like LNG, CNG, and, maybe within 20 years,
 hydrogen, as well as some versions of electric vehicles, also contribute to the
 demise of the gas tax.
- Recent electronic technologies allow charging for transportation in new ways such as state-of-the-art nonstop toll collection. Tamper-proof electronic
 - odometers are on the horizon, in addition to video systems that can accurately photograph license plates and allow us to charge people.
- There is less federal aid and an overall funding shortage at the same time that vehicle miles traveled is growing. There also is a need to rebuild much of the interstate investment made in the 1960s.
- In transportation we could be doing a better job of resource allocation. We need to make our scarce funds go further and get the highest return on the investment. There also is a growing recognition that users should pay in a more direct way for transportation use.

Robert Poole

Poole is founder and president of the Reason Foundation and a nationally known expert on privatization and transportation policy. He advised the White House Office of Policy Development on privatization during the Reagan years, and testified before the President's Commission on Privatization in 1987. In the field of transportation, Poole was one of the first to propose privatization of the air traffic control system, and his work in this field has helped shape current proposals for an ATC corporation.



Key Policy Reforms

Hot Lanes — High Occupancy Toll Lanes Instead of simply letting rideshare vehicles go free on these lanes, let anyone who either qualifies in that way or is willing to pay a price. This concept will see its first application in about two weeks in California on a privately developed set of express lanes in the median of the Riverside Freeway called SR-91.

Shadow Tolls

With shadow tolls, the private sector identifies a project that they want to support, but because of projected use or political reasons the project is not feasible as a toll facility. The state department of transportation (DOT) commits to pay the firm that finances, builds, and operates this facility a certain amount of dollars per year for each vehicle mile traveled. It's the state in effect building out of existing highway funds into the future for a given period of years, the equivalent of a toll on behalf of the users of the road. Payment on basis of traffic counts. Great Britain's Private Finance Initiative currently uses this approach.

Public-Private Partnership and Tolls on the Interstate System

Everyone says that we need more private investment in the highway system, but it has been very hard to bring that about. Only 12 states including Minnesota have adopted laws that permit private investment, and so far only three projects have been financed and built—in Virginia, California, and Puerto Rico. One problem is that the most attractive candidates are the high-traffic routes that are almost all exclusively interstates, yet ISTEA prohibits them from becoming toll facilities.

We need to examine not only debt and private revenue bonds, but also equity—basically stock ownership in projects. An unlevel playing field makes it difficult for the private sector to invest in projects. State DOTs that build an identical project don't have to pay taxes on profits and can issue tax-exempt bonds with tax-free interest. Australia last summer had the world's first public stock offering for a private toll road—the project M2 highway in Sydney. Australia plans a \$300 million public stock offering this winter to raise stockholder money for the \$1.7 billion Melbourne Citylink project. China had its first stock offering for a project this year as well.

Q&A Panel Highlights

Panelists: Jane Garvey, John Platt, and Robert Poole

Moderator: Mary Hill Smith

How is California dealing with the issue of equity on its "Hot" lanes?

Poole: Basically it's being framed as an opportunity to take advantage of people willing to pay for a system over and above what they pay in gas tax. There hasn't been any significant public outcry about the idea. The acid test will come when the road opens in a couple weeks. It is expected to save 20 minutes on a commute. If large numbers of people use it, you'll probably see the opposition melt away. If it attracts a handful, it will be much easier to say "How come they get this and nobody else gets to use it?"



Garvey: From our perspective, we've looked at that same issue. If there is an

alternative for people, we would agree that providing another option is something we can do.

Platt: Doesn't it in fact reduce congestion on the free part of the roadway, so for every vehicle that pays, it frees it up for someone who is not able to pay?

Could you pay enough for enforcement? What is the cost of California's "Hot" lanes?

Poole: On SR 91 in California, the initial charge at rush hour is \$2.50 for 10 miles—higher than any toll in the United States—with a \$.25 or \$.50 fee for traveling in the wee hours of the night.

We've heard some dire predictions of the cost of maintaining the infrastructure. But what's being done to look at what's driving those costs?

Garvey: We've made some very good progress. The NHS bill has a number of provisions that I think get at the issue of regulations—streamlining the transportation enhancement program; taking sanctions away on the management systems, allowing those and much more of an option for the states; and the crumb rubber provision that was in ISTEA originally. ISTEA is still a work-in-progress. There's always some balancing. There are issues we care a great deal about, such as the environment. So while we may want to simplify and there are things we may want to do simultaneously instead of sequentially, I don't think you'll see those requirements disappear.

If the public sector comes up with the upfront money in shadow tolls, is there no risk for the private sector?

Poole: The public sector comes up with the upfront money on the strength of a 20- or 25-year franchise. The private sector then uses the franchise as a means to raise the capital to build the project or to rebuild or modernize. The franchise comes up with a negotiated or competitively determined amount, for example, so much per vehicle per actual recorded vehicle mile traveled on the road. The private sector takes the risk on the traffic outcome and makes its best guess of what it can attract in the next 20 years, and they set a price that they can agree to contractually. If the traffic is better than that, they make more money. If it is worse than that, they take that risk. It is definitely a risk transfer in terms of planning and design from the public sector to the private sector.

If transportation infrastructure becomes a source of stock investment, how do you reconcile that approach with the sort of societal goals and environmental goals that Jane Garvey was just talking about?

Poole: This is true in all sorts of privately financed infrastructure projects around the world. Most of them are financed with a mixture of debt and equity. Typically what

we're seeing for new toll roads is 25 percent equity and 75 percent debt in the form of revenue bonds. The developer provides equity in most cases in the form of cash contributions.

But in these few cases that I highlighted, a portion of that equity is provided through an initial public offering in the stock market instead of the developer just kicking in his own cash. These roads still must meet all the normal planning permissions, environmental impact statements, and so forth, that any other project would need. So there isn't any particular conflict between providing good environmental quality and having stockholders versus having revenue bond holders putting in the money. It's new to the highway area, but it's not different in principle than the shareholders of U.S. Steel facing environmental constraints. They want to increase production and they bring back into service an obsolete facility that doesn't meet today's pollution control technology. It's the same kind of question. We definitely need to pay attention to it, but it isn't a reason not to think about using that source of capital for funding.

StoryTech Working Session

Arthur Harkins, Associate Professor, Education Policy and Administration

The group completed six StoryTech exercises, where they helped construct transportation scenarios for the future. The following summaries highlight the results of some of these exercises. A complete summary is available upon request from CTS.

New Transportation Facility (Exercise 1)

When asked in the StoryTech Exercise No. 1 what type of new transportation facility drivers would use in the year 2010 as they overcame morning rush hour, the answers were grouped in the following categories:

- Intelligent transportation systems/personal rapid transit
- Freeway (smart, HOV/many lanes, elevated, toll road)
- High-speed rail (connecting with other modes of transportation, magnetic resonance driven)
- Telecommuting/telework

Estimates of the average weekly toll charge for using the facility are:

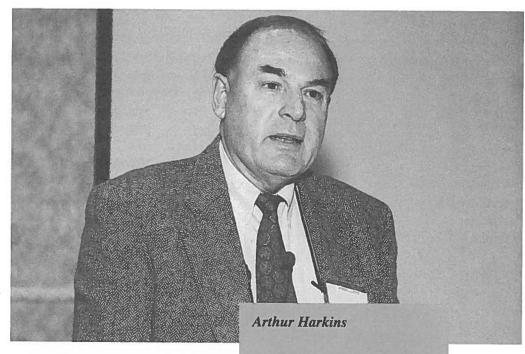
- \$25 to \$50 per week
- \$10 to \$20 per week
- Distance/variable user fee
- Greater than \$50 per week

Source of Funds (Exercise 2)

In StoryTech Exercise No. 2, the group selected the following options for future funding sources for transportation facilities.

- Combination of public and private funds
- User fees
- Private businesses/investments
- Public taxes

Seventy percent of the group agreed that sources of transportation funding would be different from past sources. Fifty-five percent of the group agreed that funds for new or renovated transportation facilities would be greater than before or proportional; 25 percent said funds may be tempered by market forces; 20 percent believed that funds would be less than



Harkins applies practical futuring techniques to business and public agencies. He has researched and developed organizational simulations based on StoryTech, a knowledge-based technique for bonding personnel commitment to plausible organizational futures. He has conducted futuring and strategic planning projects with corporations, communities, school districts and colleges, medical groups, and other organizations. His 10-part T.V. series, Inventing the Future, has run on Minnesota Public Television for six years.

before; and 5 percent said funding would depend on the quality of new partnerships.

Primary Sources of Equity (Exercise 4)

StoryTech Exercise No. 4 asked what the primary "equity" sources for toll facilities might be. Responses included:

- Alternatives to toll facilities
- Payment per use
- Subsidies/proportional payments
- Better community planning

Future Needs (Exercise 6)

StoryTech Exercise No. 6 asked about the top three items for a follow-up session. Answers were grouped as follows:

- Planning and use of new transportation methods and technologies
- Funding
- Public involvement

Participants included these reasons for their top three choices:

- Land use; feasibility of future technology; consideration for community
- Transportation is expensive yet appears "free" in some
- Redefined role of user as customer requires new methods

The group indicated an interest in topics on planning and the use of transportation methods and technologies, as well as continuing to look at both new funding and technological mechanisms for improvement of the transportation system.

Specific planning topics mentioned included "land use planning," "future of the auto," and "privatization of Mn/DOT services." The group also mentioned topics on alternative funding methods, such as "revolving loan funds," "allocations of revenue" and "income distribution of user fees." Many participants wanted to talk more about the realities of telecommuting and the necessary infrastructure for public use.



${\cal R}$ eactor Panel Highlights

Panelists: John Adams, Ed Cohoon, Jane Garvey, G. Edward Schuh, Steve Martin

Moderator: Joe Gasper

Speaker: John Adams, Geography Professor, University of Minnesota

An Issue Bigger than Financing

As a geographer, I am aware that land use arrangements dictate some of our interactions, which are then resolved by our movement patterns. We inherit these land use arrangements from the past. Techniques such as ways to finance

transportation can pick up the pieces, but they can't really cause a remod-

eling of the problem we had in the first place.

History and Competing Interests

We have in place a particular communications/transportation infrastructure that's enormously expensive and not a great deal different than it was 35 years ago. And it's my guess it won't be much different 35 years from now. That's a problem. We currently have in place a series of rigid and very self-serving economic interrelationships in our economy, each one trying to protect its interests rather than trying to add value to our national balance sheet. Then adding to that, we have individual behavior, perfectly normal behavior, where we try to get something for a price or no price, more than we are willing to pay.

Transportation Benefactors

To talk about a technique for rationing the use of a public facility, which is what tolls and congestion pricing imply, carries along with it an awful lot of assumptions that need examination. Whatever we build, any kind of infrastructure improvement put in place, involves giving as well as taking. We are good at identifying the takings, but not the givings—whether they're purely public actions or public/private partnerships of the sort we've identified here today. Unless we do better at identifying these, we will compound the felonies we've committed in the past.

John Adams, Professor, Department of Geography, University of Minnesota

Adams researches issues relating to North American cities, urban housing markets, housing policy, and regional economic development. Adams directed the Humphrey Institute from 1976 through 1979 and twice chaired the University's geography department. He is a National Science Foundation research fellow at the Institute of Urban and Regional Development, University of California, Berkeley, and economic geographer in residence at the Bank of America World Headquarters in San Francisco.

Land Use, Transportation, and Property Taxes

The way we do these things at the neighborhood level where people live their lives, go to work, go home, is the consequence of a series of intergovernmental relationships that just can't go on in the future the way they have in the past. We force local units of government to raise money with a property tax and force them to compete with one another with things that they are able to tax. We force them to create land use arrangements that are in no sense serving the long-term aggregate public interest. We force them to make arrangements that create a need for interaction, which then creates the need to create the facilities that permit the interaction.

Speaker: Ed Cohoon, Mn/DOT Deputy Commissioner

Travel Demand and Changing Behavior

Ed Cohoon, Deputy
Commissioner, Minnesota
Department of Transportation
(Mn/DOT)

Cohoon is Mn/DOT's deputy commissioner and chief financial officer. He was appointed to this post in April 1991, after having served in several top management positions in Mn/DOT. Cohoon is a licensed public accountant and certified government financial manager. Cohoon currently is chair of the American Association of State Highway and Transportation Officials (AASHTO) TEAM Institute Steering Committee; vice chair of the AASHTO TRAC program; and vice chair of the **AASHTO Standing Committee** on Administration.

In 1975 I warned that we couldn't raise the gas tax big enough or fast enough to meet the demand for highway improvements. Nothing's changed in 20 years. Travel demand is increasing faster than we can provide the solutions.

We're behind the curve—13- and 14-year-olds are interested in personal freedom vehicles, and maybe we've lost that generation in terms of travel demand. Maybe these young people are part of the technology generation. In alterna-

ive finance, we have to look not just at finance but at changing behavior. That's got to be part of the solution, and that may be tougher than just raising the gas tax.

Speaker: G. Edward Schuh, Humphrey Institute Dean

Transportation and Communication

It's important to understand the substitutability between transportation inputs and communications inputs. We ought to give more attention to substituting communication sector technology for transportation. This issue is very close to the financing issue because the cost is different if you do it one way than if you do it another way.

Global Competitiveness

The role of transportation in our competitiveness is very important, both for Minnesota and for the United States. Three very significant technological breakthroughs have changed our world: transportation technology, communication services, and the computer revolution. These have enormously increased the scope of markets and have enormously increased the competitive advantage of people who have access to these technologies. These have hardly touched the developing countries and the previously centrally planned countries of Eastern Europe, the Soviet Union, and China. Ability to compete is going to be very much determined by what we do with our transportation technology.

Equity

The present transportation system is not an equitable or fair system. All the implicit subsidies benefit the well-to-do. You can raise taxes to deal with the congestion issue and those using it won't feel a thing; in fact you make life a little easier for them. It's really not true that if you take the present system and impose congestion pricing, you are making it an inequitable system. This is true in other modes, such as the development of the Metro subway system in Washington. The wealthier suburbs got the first lines, the poorer the last.

Speaker: Steve Martin, Federal Highway Administration

The Correlation Between Who Pays and Who Benefits

The current system has a huge disconnection between who pays and who benefits. I don't mean this in terms of equity among classes but in terms of time. The current system of paying for infrastructure—get cash together and pay for it—is viewed as free. Nothing else is like this—the telephone system isn't like this, public utilities aren't like this. No one says: "telecommunications is really important to us, let's build a grid, and allow people to use it for free." There's no sense in paying for these things upfront.

Finance brings up two important considerations—some degree of discipline about what should be built and some way of correlating benefits to use. That may not be a toll. It could be some of the lease/financing structures that people are discussing and that Ohio is doing. Tolls don't have to make up 100 percent of the payments or even 50 percent of

the payments to bring the system closer to use and payment. We have the opposite extreme. A consultant says we have to invest X billion dollars in the state of Y, so you need to raise your gas tax by \$.05 or \$.07 today for transportation to be free tomorrow. That is no solution and perpetuates the perception that everything is free because it is paid for upfront.

A continuing theme is financing these things using non-government capital and paying for them over their useful lives—like the way that you pay for your house, like the way that you pay for your telephone, like the way that you pay for everything else. You will get a more rational sys-

tem of use, and you will also be able to build the things that are currently falling down, because you can't amass enough government capital in the current budget climate to address these problems.

G. Edward Schuh, Dean, Humphrey Institute of Public Affairs, University of Minnesota

Schuh has served as director of agriculture and rural development with the World Bank, located in Washington, D.C., director of the National Bureau of Economic Research at Cambridge, Mass., director of the Economics Institute at Boulder, Colo., director of the Minneapolis Grain Exchange, and director of the American Agricultural Economics Association.

Steve Martin, Director of Financial Development, Office of the Secretary, U.S. Department of Transportation

Martin has been with the U.S. Department of Transportation since November 1993. For the prior six years, he held the position of director of business and financial development at the Massachusetts Port Authority (Massport). He earlier held the positions of assistant director of Logan International Airport in Boston, and aviation industry analyst while at Massport. He also served as transportation industry analyst at the New England Regional Commission.

${\cal R}$ eactor Panel Discussion

Highlights

In many areas of rural Minnesota the roads and bridges are in terrible disrepair. There's not enough density for toll roads, and people are paying less than they used in gas tax. Why don't we just raise the gas tax?

Martin: Tolls are not appropriate in all situations. They are one of a series of things that are situationally appropriate. It is possible, say, to raise the gas tax a lot less and pay for something over its useful life rather than face a very large gas tax to expense something on the state budgets, as it is done now.

Platt: Tolls are not a panacea, neither is gas tax a panacea. You need more tools in the tool box than one source of funds. We do know there are certain types of projects in Ohio that can be used in innovative ways to capture the value added by the transportation facility. Let that pay for those projects. That frees up other monies to repair the infrastructure system.

Poole: Tolls are not appropriate in an area without population density, but that does not mean that the gas tax may not be the best remaining alternative. If you look ahead, you see how it is difficult to raise the gas tax, that



Commissioner James Denn, Mn/DOT

more and more vehicles with new fuels and new technologies will not be paying the gas tax, and that we now have the technology to charge all users on a per-mile basis as a basic level of transportation funding. It's really time to look at a series of alternatives to the gas tax, such as a VMT fee for basic level funding, and then use tolls and other benefit-capture techniques where they're appropriate on high-value projects.

Garvey: Just one other point. How do we convince the public that raising the gas tax is a good option? I think one of the frustrations is that when you mention the "T" word, there is very, very little support. We have one of the lowest gas taxes in the world. But it is very hard to capture the public's interest and attention on that issue. What should we be doing on the federal level or what could we do together to engage the public in that kind of debate or support?

Is any action under way by the federal government to take a uniform approach throughout the nation on transportation funding and solve the problem of differing taxes at state borders?

Garvey: Certainly some of the innovative financing that we included is one way to try to provide more flexibility. In terms of additional dollars, I think those are issues that will be part of the reauthorization. I have to be realistic. Every time we've gone to Congress in the last few years the national dialogue has been focused on keeping away from increased taxes, particularly the gas tax. The national mood does not seem to be embracing that issue. Perhaps when we reach ISTEA reauthorization, perhaps when it becomes clearer what some of the implications of the balanced budget will be, then perhaps Congress and the Administration will be willing to take that on together.

Martin: I think if you were looking for leadership from Washington, it would be to hand the responsibility back to the states. The only discussion that I've heard at meetings has been about tolling the interstate. It has not been about even indexing the gas tax with inflation. Part of it is that the gas tax is an efficient revenue source to collect. It is more efficient than collecting tolls; it is more efficient than anything else. But generally the perception is that it is an incredibly inefficient tax to redistribute. It is either not all redistributed and is taken off budget, or it is inequitably redistributed from the people who pay in. That is a strong rural-urban argument. And nobody wants to take on the question of increasing the "pot" so that we can have a bigger argument about the inefficiencies of redistribution.

If we start bonding for roads, how do we respond to the statement that we're just putting up more infrastructure and passing the bill on to future generations to pay?

Martin: There's probably some reasonableness test someone could devise. For example, we've seen some work that says if you are at a point where you get more than 50 percent of your infrastructure funded with debt, you are probably getting to some degree of irresponsible finance. Because at the 50 percent level, your life-cycle cost average is in the 10- to 15-year window, not 30 years out. There are some things you can do rather than just loading up with debt and transferring debt from the general fund over to specific transportation accounts that probably offers a happy medium. But some indications say that a

yardstick like 50 percent equity and 50 percent debt is a responsible thing to do because you are financing over a 10- to 15-year horizon.

Platt: I don't know if I agree with 50 percent, but there is a certain amount of bonded indebtedness that is okay. Everybody has a tendency to go to one answer. Don't go to one answer. You need a multiplicity of answers to address this transportation funding problem. On Nov. 7, the voters of Ohio agreed to raise the bonded indebtedness ceiling for the Ohio DOT from \$500 million to \$1.2 billion. They agreed to do that because they did not want a gas tax increase. The polls showed 20 percent or less wanted a gas tax increase. But 62 percent of the voters supported changing the constitutional debt limit to go to \$1.2 billion because they said, "We need to see you finance more." We were at 3 or 4 percent of our operating budget for debt service, now we'll be about 7 percent. A certain amount of long-term debt is okay. With the interest rates the way they are today, it's much cheaper to borrow now and pay on your future success.

You didn't answer the question about state-tostate differences. By adding more tools to the tool box it's going to be even harder to assess equity state to state. Is there any way the federal government can take all of these tools and at least put them on a level where they can be easily compared?

Martin: It's a good point, but the answer is that no one is talking about that issue. Georgia has a gas tax of \$.08, probably the lowest in the country. Massachusetts has a gas tax of \$.21. The federal formula that redistributes the efficiently collected federal gas tax does not recognize what states put in to the equation and has no reward system for what you put in for yourself.

Could that be a role for the FHWA?

Garvey: Congress wants the states to compete. Collecting the tools is exactly what we are trying to do. I'm not satisfied with my own answer to you because I feel that the issue of the gas tax is one that I am disappointed that we as a nation haven't taken on. Part of what we are faced with is that you choose your battles. You have to choose them carefully and you have to choose them well. We decided in the NHS to fight for more flexibility for the

states and more streamlining. We took a battle that we thought we could win. I think what you have outlined is exactly the debate that is going to take place in ISTEA reauthorization. What are we going to do about the formulas? What are we going to do about the issue of equity—the competition among states? Congress is not going to willingly love to see the FHWA take on a role in that.

I agree that the Minnesota property tax may not have the right rewards built in, but if you shift to a sales tax as they did in California you have a bigger problem where every municipality wants to have a car sales lot—high-income producing businesses.

Adams: I'm not sure I would agree with regard to shifting taxes away from real estate, especially residential real estate, toward general revenues in the form of sales tax. We have a penchant for taxing property and income rather than expenditures and consumption. There are historical reasons why we do that. I think it puts incentives in the wrong direction in this country. You could tax food and clothing, but then the Legislature would have to decide how to disperse it. There are different ways of handling that as well.

A lot of general expenses of government are on the local level of government—should they be? Why should Iowa farmers educate kids who

then move to Colorado? We should think about those things more carefully than we have in the past. In the past people weren't as mobile, and costs borne locally had local impacts. At the center of these transportation discussions are land use and tax issues of a major sort. Consider, for example, the Bloomington Ferry Bridge. Who paid for the bridge, and who are the primary beneficiaries? You'll find there are two completely different sets of interest at work there. Now why do we do that?

Poole: I wanted to challenge the idea that tolls would encourage sprawl. I think the likelihood is more the opposite. If you switch from indirect payment particularly by commuters to a direct payment where people feel it

every single day, that's more likely to encourage people to live closer to work rather than in the further and further-out suburbs.

What about selling Mn/DOT? Has any thought been given to whether the private sector can do a better job? Could they stand the scrutiny of a public referendum as to the quality of their services? Are they willing to go out and purchase land without a public condemnation law? Are they even willing to buy a segment of the public service?

Cohoon: At Mn/DOT, we have looked at individual activities that may be areas where the private sector can do the



State Senator Mark Ourada

Job better. We have a number of things under way today. One small example is our sign fabrication. We make virtually all the signs along the roadside. That may be a business we should not be in. We have a study under way to see if that is something that could be spun-off to the private sector. We have not looked at a wholesale abandonment of the activities that we're in. Situation by situation, that's something we need to examine. I don't know if the private sector is interested in taking over all the things that Mn/DOT does. In some areas, every time Mn/DOT has a transaction we lose money. Take transit for example. Every time someone rides a bus, we lose money. I don't know if the private sector wants to take that over. It may be something that

government should be in.

Schuh: I would like to pick up on the question over here. You can answer that question by asking if the private sector is going to be able to charge for the use of the highway or whatever the transportation facility is. You're going to find that in most cases the transaction costs are going to be so high that they can't do it. That's why we decided long ago that they should be in the public sector. That generalizes to the discussion of toll roads. All of a sudden we've discovered toll roads and we think toll roads are going to solve all of our problems. That surprises me. The conditions under which you can have a toll road are really very limited. You might find about a half-dozen places where you can use it or in the state, but not more than that.

When you drive your personal car, you are engaging in a highly subsidized activity. You should not be surprised if the demand for vehicles and the demand for highways keep going up and up and up. There are ways now to charge for these facilities, but it will most likely have to be done through the public sector. It will be politically hard to do because nobody wants to shoot Santa Claus, and we have Santa Claus. We get these huge implicit subsidies, and we love them.

\mathcal{S} urvey Summary

The following summary details the numerical results of questions in the forum survey.

Governmental Funding for Surface

Transportation — 37 respondents

How would you rate the job the federal government is doing funding surface transportation?

Excellent	6	percent
Good	35	percent
Fair	51	percent
Poor	8	percent

How would you rate the job the state is doing funding surface transportation?

Excellent	6	percent
Good	22	percent
Fair	54	percent
Poor	18	percent

How would you rate the job that local governments are doing funding surface transportation?

3 percent
30 percent
54 percent
13 percent

Federal Government Funding Policy

Changes — 36 respondents

Projects with a higher level of local funding should or should not get a higher priority for federal funding.

should	75 percent
should not	25 percent

The federal government should or should not provide more incentives and opportunities for privatization of transportation facilities and services.

should	83 percent
should not	17 percent

Short-term Funding Solution — 35 respondents

The best immediate short-term solution to the state's transportation funding problem would be to (more than one response possible):

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Luncheon
Presentation on
the Private
Provision of Mobility
Services

\mathcal{T} he Private Provision of Mobility Services in the 21st Century: How It Happened

Stephen Lockwood, Vice President, Parsons Brinckerhoff

The following summary highlights a presentation by Stephen Lockwood, held Dec. 5, 1995, as part of the Center for Transportation Studies' Luncheon Series.

Need for Change

Today's surface transportation sector faces a need for radical overhaul to bring it into the postindustrial 21st century. There are significant problems with a public service delivery system that accepts the level of service that reigns on many urban highway systems, with low speeds and unpredictable disruptions that encourage commuters and businesses into costly lifestyle and locational changes. The congestion delay alone costs an estimated \$30 billion in the 40 largest metropolitan areas. And the accompanying unreliability imposes enormous logistics costs, crippling attempts to capitalize on much

of the efficiency potential promised by contemporary production and communications technology, such as just-in-time delivery.

Barriers to Change

In current metropolitan systems, there is no managed relationship between supply and demand—it is a "dumb" system with few of the system owners (state and local governments) taking operational responsibility seriously. Since unpredictable incidents cause about half of delay, provision of capacity without management is ineffective, leaving users with poor service, few options, and little foreknowledge of problems and options. Handicapped by fragmented jurisdictions, undercapitalization, limited technical capacity, and often politicized

priorities, most urban systems are operating with 1970s technology and investment levels. The curious thing is that most of us as consumers accept this situation as the best our transportation agencies can do. Imagine living with hand-cranked, wall-mounted, operator-manned telecommunications today as we still live with 1950s highway technology. What we accept in transportation, we don't accept in other services.

The Last Public Monopoly

Other public utilities services like telecommunications and power have evolved very differently from urban transportation: They're technologically innovative, offering

Stephen Lockwood

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Highway
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improved services with a range of customer-responsive options at prices varying with demand. Although they are publicly regulated, many of them are investor-owned, privately managed, and experiencing increasing market segmentation and competition. Virtually none of these characteristics are present in transportation. After World War II, we developed a set of sectoral role and intergovernmental relationships, a technology-and-financing system tailored around building the Interstate Highway System. It served us well for 50 years, but is now out of sync with the new surface transportation missions and circumstances. Highway transportation is the last great government-provided public utilities monopoly still surviving into an age of increased government downsizing, deregulation, devolution, and privatization.

No One Silver Bullet

There isn't any single silver bullet—whether it's light rail, intelligent transportation systems, reinventing government, innovative finance, or public-private partnerships. Technology offers opportunities for improvements to capitalize on those opportunities, but the transportation sector itself needs radical change. There needs to be a holistic strategy which holds realistic promise of achieving the service mission.

2050—A Vision for the Future

To envision the possibilities unlocked from today's discouraging inertia, let us "backcast" from the year 2050 to paint a possible vision of transportation as it could evolve following trends in other public service sectors.

As far back as 2025, progressive states had already moved quickly to develop priced toll networks on the upper-level highway systems together with consistent application of advanced traffic operations and demand management. This established the kind of framework and control over highway systems that had long been achieved by power and telecommunications companies. Some of these were private franchises and others were publicly operated.

The exacting demands of operating and financing the evolving technology soon led to the consolidation of high-way agencies with major private transportation and technology companies into regional "transcorps" on a multi-jurisdictional basis. Twentieth century public agencies, such as the Minnesota Department of Transportation

(Mn/DOT), had joined with the Iowa Department of Transportation, Bell, IBM, and Chrysler to form the "Midwest Transcorp," whose shares are traded on the stock market to raise capital for automation.

Congestion is now an obsolete term because we use variable pricing and capacity manipulation to offer consistent service. Drivers receive discounts if they use pre-trip registration, which allows the transcorps to predict traffic volume and patterns and anticipate problems.

The transcorps leverage information and prices to moderate demand and operate the available capacity on a demand-responsive basis. The system makes use of comprehensive real-time knowledge of traffic and travel conditions to send routing time advisories directly to portable in-vehicle communication devices. As a result, they are able to take reservations and guarantee arrival trip times.

Automated highway technology fosters improved crash avoidance and led to intercity speed limits of 105 miles per hour, as well as advanced urban bus and truck platooning.

Electronic billing services keep track of time, distance, and type of service. Customers receive their transportation bills consolidated with their communications bills so they can make the appropriate personal trade-offs. Customers may grumble somewhat about fees, but they believe the higher speeds and delay-free travel are well worth the price.

New Paradigms

Moving toward such a future requires not just a new paradigm, but a whole new collection of paradigms, including:

- · prioritizing operations alongside preservation
- · converting users to customers
- replacing command-and-control with market-responsiveness
- providing service options beyond one-size-fits-all
- converting infrastructure to infostructure through new technology
- · separating regulation from provision
- substituting entrepreneurship for bureaucracy
- supplementing on budget tax funds with private finance
- introducing competition into monopoly

To move in these directions, transportation institutions must go beyond the preoccupation with preserving sunk investment to embrace a new mission focused on operational performance. This presents a set of simultaneous and interrelated challenges of integrating technology into the existing infrastructure, commercializing service based on fee-driven finance, and developing new forms of institutional and sectoral collaboration. The challenge is to consider what that really means as a practical manner, as well as conceptually speaking.

Building the Future

How do we move toward that vision? The key to this future is the necessary dependent synergy among management, finance, and technology, in five areas:

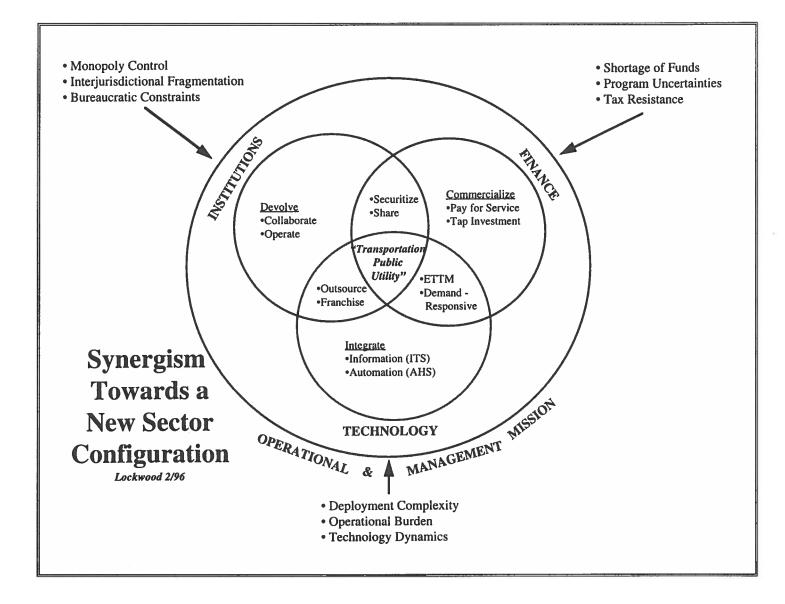
- Transportation services must be provided more like managed business, similar to the structure of other public utilities. The upper-level systems offer opportunities for self-supporting improvements in services and operations.
- 2. Reliance on service-based pricing must be evolved as users experience the potential for improved service and the advantages of real-time information.
- 3. Sector roles need to be reallocated, with public agencies focusing more on the policy, regulation, and measurement of system performance. The widespread deployment and operations of complex, rapidly evolving technology implicit in intelligent transportation systems are not within the capacity of most public agencies.
- 4. New forms of collaboration are needed, reallocating risk and reward between private profit-driven entities and public agencies providing policy oversight. Public institutions like infrastructure banks can induce significant private investment. This is quite common in other countries.
- 5. The concept of "transcorps" should be advanced. Transcorps could merge public interest and private management into a single new type of enterprise, delivering innovative service to transportation customers, priced according to market yet responsive to public policy objectives.

Beyond NexTEA

The upcoming reauthorization of the federal transportation program offers an opportunity to progress in some of these directions, building on the momentum of ISTEA. Changes in structure of the federal program might consider further devolution through block grants and encouragement of a new set of new state, local, and metropolitan relationships appropriate to a performance orientation. Resource policy might focus on some degree of federal tax turnback with support for commercialization and further incentives to encourage private investment. Technology policy might emphasize continuing federal commitment to research and development and a stable cooperative technology development program.

Moving Forward

The options for change presented today may seem like large steps—aggressive and politically difficult. But the palette of incremental options for evolutionary change is growing through progressive experimentation, such as here in Minnesota. What is lacking is an overall vision that can help bring the future forward. Many professionals in transportation are exhausted through coping with an undercapitalized, bureaucratic environment with strong political limitations. The challenge before us is to initiate a serious professional dialogue that defines a future worth fighting for and then focuses on the preconditions for the necessary changes and innovation. What is then needed—and is equally difficult to define—are the doable small steps that constitute real progress towards a vision. Without these steps, these grand concepts don't mean anything. Everybody needs to contribute to this process.



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