



Surface Transportation Financing: Innovation, Experimentation, and Exploration

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AUTHORS

Benjamin Perez; Technical Activities Division; Transportation Research Board; National Academies of Sciences, Engineering, and Medicine

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**Surface
Transportation
Financing**

*Innovation,
Experimentation,
and Exploration*

July 9–11, 2014
Irvine, California

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Surface Transportation Financing
Innovation, Experimentation, and Exploration

Summary of the Fifth International Conference

July 9–11, 2014
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Irvine, California

Benjamin Perez
Parsons Brinckerhoff
Rapporteur

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Contents

Introduction	1
<i>Benjamin Perez</i>	
 WEDNESDAY, JULY 9	
Workshop 1: Communicating the What, Why, and How: Increasing Transportation Revenues	
2	
<i>Joung Lee and Christopher Clement, presiding</i>	
Alternative Financing Approaches for Passenger and Freight Rail Projects	
4	
<i>Lou Thompson</i>	
Political Incentives for Using Cofinancing and Revenues from Congestion Pricing	
6	
<i>Kirk van Amelsfort</i>	
Questions and Answers	
7	
 Workshop 2: Public–Private Partnerships in Context: Integrating Public–Private Partnerships into Transportation Programs	
9	
<i>Jen Mayer, presiding</i>	
Latest Developments in FHWA and U.S. DOT P3 Initiatives and Related Programs	
9	
<i>Patrick De Corla-Souza</i>	
Integrating P3 Projects With the National Environment Policy Act and the Metropolitan Planning Organization Process	
9	
<i>Benjamin G. Perez</i>	
Innovative Approaches to Managing Infrastructure Assets	
12	
<i>Julie Brogran</i>	
Developing a P3 Program	
13	
<i>Kathleen Sanchez and Tesse Rasmussen</i>	
 Workshop 3: Mileage-Based Pricing	
16	
<i>Lee Munnich, Richard T. Baker, Barbara Rohde, and David Ungemah</i>	
Discussions of Implementation	
17	
Proposal 1	
17	
Proposal 2	
18	
Proposal 3	
18	
Proposal 4	
19	
Proposal 5	
19	
Proposal 6	
20	
Proposal 7	
20	
Breakout Session	
20	

THURSDAY, JULY 10

Welcome and Perspectives	26
<i>Adrian Moore</i>	
Innovation, Experimentation, and Exploration: Landscape of Transportation	
Funding and Finance in the United States	27
<i>Pat Jones, presiding</i>	
National Perspective	27
<i>Gregory G. Nadeau</i>	
Private-Sector Perspective	28
<i>Dale Bonner</i>	
State and Regional Perspectives	28
<i>Malcolm Dougherty</i>	
Questions and Answers	30
Breakout 1: Real State and Value-Capture Funding Options	32
<i>Nancy Smith, presiding</i>	
Value-Capture Practices from Across the United States: Highway Mode	32
<i>Sharada Vadali</i>	
Denver Union Station: A Public–Private Partnership	33
<i>Marla Lien</i>	
Financing Innovations: METRO Vancouver	34
<i>Cathy McLay</i>	
Value Capture: The Good, the Bad, and the Ugly	35
<i>Rick Rybeck</i>	
Questions and Answers	36
Breakout 2: Tolling and Managed Lanes	37
<i>Ginger Goodin</i>	
Crafting an Interstate Tolling Plan that Customers Will Embrace	37
<i>Robert Poole</i>	
U.S. Managed Lanes: Empirical Data Steers Credit Analysis	38
<i>Saavan Gatfield</i>	
All’s Fair in Love and Traffic: Putting Equity Debates Over	
Managed Lanes in Southern California in Context	40
<i>Brian D. Taylor</i>	
Are Express Lanes Fair to the Poor?	41
<i>Nancy Pfeffer</i>	
Questions and Answers	42
Breakout 3: Evaluating Options for New Revenue or Cost Reductions	45
<i>James Bass, presiding</i>	
New York City: Urban Leader or Cautionary Tale?	45
<i>Jonathan Peters</i>	
Breaking the Policy Gridlock: Funding Transportation in Toronto	46
<i>Michael Sutherland</i>	

Funding Advanced Mitigation for the Environmental Impacts of Transportation Projects	47
<i>Jaimee Lederman</i>	
New Model for Funding Transportation: Virginia’s Sales Tax Approach	48
<i>John Lawson</i>	
Questions and Answers	49
Impacts of Technology on Transportation Revenue	51
<i>Sarah Puro, presiding</i>	
Questions and Answers	53
Industry Views on Future Transportation Finance: What’s New and What’s Next?	54
<i>Lowell Clary, presiding</i>	
Questions and Answers	55
Transportation Public–Private Partnerships: Come for the Money, Stay for the Performance	57
<i>Jorianne Jernberg, Jodie Misiak, Bryan Kendro, Leon Corbett, and Will Lipson</i>	
The Maryland Approach to P3s	57
<i>Jodie Misiak</i>	
A Tool for Project Acceleration and Asset Value Maximization	58
<i>Bryan Kendro</i>	
Advancing Projects Through P3s	59
<i>Leon Corbett</i>	
International Perspective and Experience	60
<i>Will Lipson</i>	
 FRIDAY, JULY 11	
Creative Ways to Consider Funding Future Transportation	63
<i>Sharon Greene, Carole Turley, David Ungemah, and Chris Swenson</i>	
Promises and Pitfalls of Transportation Utility Fees	63
<i>Carole Turley</i>	
Developing a Cooperative Ownership Model for Surface Transportation Infrastructure	64
<i>David Ungemah</i>	
Roadway Usage Charges: A Retrospective from 2050 on How We Got There	66
<i>Chris Swenson</i>	
Questions and Answers	67
Closing Session: Applying Lessons Learned to Move the Transportation Industry Forward	69
<i>Nathan Macek, Darrell Johnson, Will Kempton, and David Yale</i>	
Questions and Answers	72
APPENDIX: Participants List	75

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—Adrian Moore
Chair, Conference Planning Committee

Introduction

BENJAMIN PEREZ

Parsons Brinckerhoff, Rapporteur

Since 1997, TRB has conducted five conferences as part of a series addressing the evolution of transportation finance and funding. The first TRB Conference on Transportation Finance, Transportation Finance for the 21st Century, focused on a variety of emerging tools and techniques known collectively as innovative finance. The movement beyond traditional federal-aid and state-aid funding included the state infrastructure banks and the use of public–private partnerships (P3s), which were in their formative stages. The 1997 conference led to the recommendation to provide a resource for federal, state, and local governments to facilitate understanding and increase utilization of new funding and project delivery options. This suggestion ultimately evolved into a research project undertaken through National Cooperative Highway Research Program Project 20-24(13), which created a clearinghouse for innovative finance information and later formed the basis of the American Association of State Highway and Transportation Officials Center for Excellence in Project Finance website.

In 2000, transportation professionals gathered in Scottsdale, Arizona, to discuss the new finance opportunities created by the Transportation Infrastructure Finance and Innovation Act (TIFIA) and the Transportation Efficiency Act for the 21st Century (TEA-21), both of 1998. Two years later, at TRB’s third transportation finance conference, Meeting the Funding Challenge Today, Shaping Policies for Tomorrow, held in Chicago, Illinois, transportation professionals focused on the reauthorization of TEA-21 and on tools and techniques designed to enhance and expedite project delivery.

The 2010 conference in New Orleans, Louisiana, Forging a Sustainable Future—Now!, was conducted at a critical crossroad for transportation finance amid a global economic downturn and related uncertainties. With the Highway Trust Fund having defaulted for the first time in its history and with surface transportation reauthorization still pending, transportation professionals gathered to explore revenue-generation alternatives and help identify research topics to advance the knowledge and understanding of infrastructure and mobility needs.

The fifth TRB conference on surface transportation financing, Innovation, Experimentation, and Exploration, took place in Irvine, California, in July 2014. It occurred against the sober backdrop of transportation funding gaps at the federal and state levels and the ensuing expiration of the 2-year Moving Ahead for Progress in the 21st Century (MAP-21) transportation authorization act. The discussions focused on migrating surface transportation funding from the motor fuel tax to mileage-based user fees and on strategies to increase state and local revenues. It was recognized that funding challenges will only be overcome through education and by making the case for transportation funding at the local level. From value capture strategies to local sales tax initiatives—along with indexing existing motor fuel taxes to inflation, expanding tolling applications, and working with private development partners—the conference explored the strategies that states and regions around the nation are beginning to implement to overcome funding gaps.

WEDNESDAY, JULY 9: WORKSHOP 1

Communicating the What, Why, and How *Increasing Transportation Revenues*

JOUNG H. LEE
AASHTO, Presiding

Joung H. Lee, Deputy Director of Management and Program Finance of AASHTO, served as the moderator for this session. In approaching communications for garnering support for increased transportation funding, he suggested that we need to find messages that resonate and make the value proposition for transportation investment. This entails

- Needs that are reasonable and relatable to the public;
- Clearly identifying the potential benefits of investment;
- Political leadership from the executive branch; and
- Broad coalition of supporters beyond self-interested groups.

Lee engaged workshop attendees in an interactive exercise titled “Are You Smarter than the Average American?” alluding to the game show *Are You Smarter Than a 5th Grader?* Before asking the quiz questions, Lee showed a video in which people on the street were asked questions about how much they pay in gasoline taxes. Their answers ranged from 8 cents per gallon to 25 cents per gallon. According to Lee, the video illustrated that most people have no idea how much they pay to finance streets and highways.

Lee conducted a similar type of quiz for participants. His first quiz question was, “How much does the average driver pay per year in federal and state gas taxes?” The audience had four choices to choose from and was asked to text their answers to a numbered code. The choices and number of responses amongst participants in the audience were as follows: \$110 (11); \$293 (4); \$875 (2); and \$2,778 (1). The correct answer was \$875.

The second question was “What’s the federal share of total road funding (capital, O&M, interest, etc.) in 2010?” Again, the audience had answers to choose from and the responses were as follows: 27% (5); 41% (6); 45% (9); and 62% (1). The correct answer was 27%.

The third question was “What was the share of toll income as part of total highway revenues in 2010?” The choices and number of responses for each answer were as follows: 4.3% (9); 5.1% (5); 6.0% (4); and 8.3% (1). The correct answer was 4.3%.

The fourth question was “Out of 45 projects receiving TIFIA credit assistance so far, how many projects are of nonhighway–intermodal nature?” The choices and corresponding number of responses were as follows: 5 (13); 12 (4); 16 (0); and 22 (1). None of the quiz participants chose 16, and this was the correct answer. Lee noted that it is often difficult to discern which projects are TIFIA-qualified projects and which are not.

The fifth and final question asked to the audience was “When was the last time Congress passed all 12 appropriation packages on time, by October 1st?” The answer and responses were as follows: 2009 (0); 2006 (2); 1994 (8); and 1989 (13). The correct answer was 1994, and Lee commented on the fact that the oldest date received the most votes, because it seems that

“regular order” in transportation finance and government has been irregular for the past two decades.

Lee ended his introduction with another transportation finance fact: the average household pays \$46 in federal gas tax per month, less than what many people pay for electricity and gas (\$160), cell phone lines (\$161), or cable and Internet access combined (\$124). Lee mentioned that the above listed amenities are probably not more important than having access to the nation’s transportation networks. Lee gave an example of how getting people to shore up the Highway Trust Fund would not represent an unreasonable burden: a 10-cent increase in the federal gas tax translates to \$1.15 more for the average driver per week, an action that would fix the Highway Trust Fund shortfall.

Christopher Clement

New Hampshire Department of Transportation

Christopher Clement, Commissioner of the New Hampshire Department of Transportation (DOT), stated that he had 22 years in global manufacturing experience when he began his tenure at New Hampshire DOT. He recognized that New Hampshire DOT had financial issues and needed additional revenue to meet the state’s transportation needs, so he worked with the administration to present Senate Bill 367, which proposed a 4.2-cent increase in the state motor fuel tax, the first increase since 1991. The bill was effective and the increase was implemented on July 1, 2014. This is a particularly meaningful achievement because from an organizational issue, government in New Hampshire is set structurally not to change. The state has 424 state legislators—more than any other in the United States—and the governor is overseen by a five-member council that limits his power.

How did New Hampshire DOT get its revenue increase? According to Clement, it came down to communication. Clement played a key role in making the revenue increase a success and made his presentation, *The Road to New Hampshire’s Transportation Future*, hundreds of times. Clement believes that his experience in industry was transferable to his position in government. When he was working in the private sector, he had to make the same presentation hundreds of times; this was part of the process of convincing large groups of people to believe in projects.

He emphasized the importance of communication in achieving positive change, stating that creating change begins at the ground level with the people. He emphasized that when speaking to people “credibility is everything” and that body language reveals what a presenter believes. Success in gaining consensus revolves around developing a clear transferable message in a simplified form that everyone can understand. But the business community and the people have common sense. If the message is delivered in the right way, they get it. Credibility is paramount. Five years ago Clement was among the majority of New Hampshire residents who had no idea how much he paid in motor fuel taxes.

Clement thought that he had credibility because he was an outsider to the transportation community and he would not be a public servant long enough to qualify for a pension.

Here are some of the points that Clement made in his *Road to New Hampshire’s Transportation Future* presentation:

- New Hampshire DOT exists to support the economy.

- In 2012, China invested 12% of its gross domestic product (GDP) in its transportation infrastructure while the United States only invested 1.6%.
- In 1980, it cost \$35 million to improve 20 mi of I-93 in southern New Hampshire. Today, that same project is costing the state \$750 million.

In his presentation he used a map illustrating that the 4,559-mi road network maintained by New Hampshire DOT would extend from Concord, New Hampshire, to Anchorage, Alaska. The map showed a 1,565-mi stretch of road (37% of the total) from Concord to Fargo, North Dakota, in red, representing the percentage of the state's roadway system that is in poor condition. The map showed a 1,867-mi segment—44% of the total—in yellow or fair condition, extending from Fargo to Lake Watson, Yukon. The shortest segment was shown in green indicating that it was in good condition. This extends 828 mi, or 19% of the total, from Lake Watson to Anchorage.

He then made the point that if 1 ft of snow falls in New Hampshire, New Hampshire DOT makes nine round-trip plow runs to keep the roads clear. He explained to the people of New Hampshire that deferred maintenance is a budget gimmick and pointed out that it costs \$50,000 per mile to maintain a road that is in good condition and that the cost is far greater for roads that are not in good condition. Clement said that even his most conservative constituents understood his message.

Clement shared that New Hampshire had been able to achieve significant cost reductions by doing simple things such as turning off street lights and calibrating salt spreaders so that the amount of salt applied was accurate. Using these types of cost savings to make improvements can help convince people that DOTs and other agencies are using funding wisely.

He also used a simple illustration to help people in New Hampshire understand how transportation revenue is used in the state, using a red cup to represent toll proceeds on the New Hampshire Turnpike and a blue cup to represent the gas tax. The point here was that toll revenues from the red cup cannot be transferred to the blue cup because it must be used to maintain the Turnpike. State residents are well aware of the fact that they must pay tolls to use the Turnpike and they recognize that the Turnpike is in excellent condition. This was an important illustration that helped Clement understand that people will support providing additional funding if they know where the money will be spent. After his campaign, people in New Hampshire understood that the state needed more money in the blue cup to pay for the maintenance of its road network.

ALTERNATIVE FINANCING APPROACHES FOR PASSENGER AND FREIGHT RAIL PROJECTS

Lou Thompson, CPCS Consulting

Lou Thompson with CPCS Consulting summarized his findings from NCRRP Project 7-01, which generated a *Guidebook of Alternative Rail Funding and Financing Revenue Mechanisms*. He observed that the way things used to work was that we could solve problems, but in today's political climate that is not a given. We need new sources of money and new narratives to secure them. The old way of funding no longer work and will not get us where we need to be. The genesis of Thompson's study of passenger and freight rail funding is that we need to rethink when our funding comes from.

Thompson focused his presentation on his experience with rail. He explained the difference between funding and financing. Funding refers to the sources of revenue or other income that can be used to pay for a project or service, while financing refers to the financial tools that can be used to access money to pay for a project or service. Problems arise when revenues do not exceed costs. Class one freight railroads often have adequate revenues, but others do not and that is the challenge. Passenger rail is a good example of this paradigm. Amtrak derives 38% of its revenues from ticket sales, while fare box revenues for commuter rail contribute from 0% to 60% revenue. The situation with short-line freight railroads is often similar. However, shared corridor improvement rail projects, such as the Chicago Regional Environmental Transportation Efficiency (CREATE) program, have benefits to mixed beneficiaries. This \$4-billion project eases both freight rail and highway congestion but, to date, only \$1 billion in funding has been identified.

Planning rail lines is more complicated than just thinking about which lines would make a lot of profit. For example, some short lines may not be commercially viable, but they are important or essential to regional economies. With passenger rail, the main challenge of planning and programming is that, currently, there is no dedicated long-term nationwide funding program that rail owners and operators can rely upon.

Thompson said further that he believes a marked increase in revenue generation is needed. This could be achieved by using airline type pricing for passenger and commuter rail service. In addition, seeking out ways, such as using one quarter of cap and trade revenues directed to high-speed rail—as is done in California—to improve public funding for rail would be helpful. This revenue does not pay for the system, but it certainly helps. There are many different financing mechanisms and options including P3s. The delicate issue is aligning the terms and needs of projects to the appropriate financing mechanism.

The research conducted for NCRRP 07-01 include case studies of California high-speed rail, CREATE, Amtrak, and Virginia Railway Express among others. Although the research has found that private financing is not a panacea, the good news is that there are many pots of money available. Now it is necessary to consider if there is any willingness to make any of the pots bigger or to knit them together.

According to Thompson, the research has investigated two types of alternative rail funding mechanisms being considered in research: (a) service or asset-related revenue (funding) mechanisms which look at opportunities to increase revenues from rail operation, projects, or related assets themselves; and (b) public funding mechanisms (such as grants, one-off subsidies, dedicated income sources, and other funding sources). Three important lessons derived from the case studies are that: (a) private financing is usually not the full solution to a funding gap; (b) there are a lot of sources of funding out there, but individually they do not add up, so it is necessary to have broader political support for general tax funding; and (c) it is necessary to improve benefit–cost analysis, because this can lead to making better policy decisions for the future. In addition, risk analysis is often overlooked and should be used to better allocate and distribute risks. Similarly benefits should also be reallocated to create more winners. These issues are often difficult to quantify exactly, but techniques such as Monte Carlo analysis can be used to determine worst-case scenarios and then if the risk can be mitigated.

POLITICAL INCENTIVES FOR USING COFINANCING AND REVENUES FROM CONGESTION PRICING

Kirk van Amelsfort, Viktoria Swedish Information and Communication Technology Institute

Kirk van Amelsfort with Viktoria Swedish Information and Communication Technology Institute discussed infrastructure financing in Sweden. He explained that normally in Sweden national funding is used for infrastructure improvement projects. As a result, regions and cities are incentivized to overestimate their growth and need for new funding and projects. Instead, van Amelsfort believes that it is important to identify an appropriate level of geographical distribution of responsibilities for infrastructure investments so that the right infrastructure is built at the right time. Cofinancing leads to better outcomes and also increases the amount of funding available.

Van Amelsfort explained that both Gothenburg and Stockholm have taken this approach, using congestion charging initiatives to generate local revenue to support transportation improvements. Van Amelsfort compared the congestion pricing systems in both cities to illustrate which practices were successful and which were not. The main difference between the two charging mechanisms is that the Stockholm initiative was designed to mitigate congestion, while the Gothenburg initiative was designed specifically to raise revenues.

With cofinancing, local and regional governments sit together and political negotiations may incentivize leaders to do more, creating the potential for overinvestment. For example, in Gothenburg where the local population is approximately 500,000, under the West Swedish Agreement the proceeds from the city's congestion pricing program are being used to support a \$5.2-billion construction program that includes major road and rail tunnels.

Congestion levels in Stockholm are similar those in San Francisco. Revenues from the charging initiative were initially used to build a ring road and then they were increased in 2013 are being used to support projects including the Essingeleden Bypass, which is a \$3-billion investment program. However, the net present value of projects is supported by the Stockholm charging. Net present value analysis of these projects shows that these projects are overly costly and are not in line with the level of congestion present. This suggests that the congestion pricing initiative may be overcharging for actual economic cost of the congestion they are intended to mitigate. Perhaps in Gothenburg the congestion charging zone is too big and there have also been underestimates in the costs of the infrastructure and operations and maintenance costs have been overlooked. Now the national audit agency has calculated that additional money will be needed to deliver the tunnel program.

According to van Amelsfort, a major lesson learned from these two cases is that a congestion charging mechanism designed to raise revenues may in itself not be problematic if it addresses the externalities in an appropriate manner. Also, congestion pricing in combination with cofinancing creates competition in which negotiating parties are incentivized to overestimate growth and the need for funding. Also, the desire for more revenue may lead to overcharging and overinvestment. It is necessary to create transparent processes for deciding how the revenue from congestion pricing programs should be used. The neglect in doing so in Gothenburg has led to a referendum that may eliminate the congestion charging scheme there entirely.

QUESTIONS AND ANSWERS

Participants asked panel members the following questions:

Eric Anderson, MAG: A survey was done of 600 voters and nobody knew how much they paid in gas tax. What have we done wrong in not communicating what we actually pay for? How do we make the case?

Chris Clement: Only up until 2005, we had \$100 million in the red cup. When the gas tax went up 8 days ago, the price of gas actually went down in New Hampshire by 1 penny per gallon. Prices didn't go up from \$3.67 before July 1. The market decided to keep prices level.

Lou Thompson: Few Americans can find China on a map. We have overintellectualized this issue and have failed to present it in a way that people who couldn't care less about how we finance transportation could understand. Congestion pricing is frustrating; the concept is ruined when somebody calls it a Lexus Lane. This subjects it to attacks from people who do not understand. Explaining these concepts to people who do not want to know is difficult. We haven't thought our way through of what's the terminology to explain that either you pay or somebody else pays.

Kirk van Amelsfort: Political acceptance for congestion pricing will always be a challenge. Everybody disapproves if you talk to them beforehand, but everybody supports it afterward. People don't really know what they need; we need to tell them.

Clement: Leadership is disappointing your supporters at a rate that they can handle. You have to explain a plan in a way that everybody can understand it.

Thompson: The gas tax should have only been used for maintenance, but not for appropriating capacity. Think about what kind of behavior you want to promote. In the end, what matters is that you have to balance benefits and costs in a way that everybody is slightly positive.

Joung Lee: I had an idea to put stickers at pumps indicating the gas tax. This way, informing people about the fuel taxes they pay would not be onerous. If people knew they will only be expected to pay \$5 a month, perhaps they would be willing to say "I can do that." You have to make it really meaningful.

Comment: It's a good idea for people to be able to relate the gas tax to buying a Big Mac.

David Luskin, Federal Highway Administration (FHWA): You mentioned that you are not satisfied with the benefit–cost analysis. Could you elaborate on what would make benefit–cost analysis better?

Thompson: The main concern is the need for a clear set of requirements of how benefit–cost analysis should be conducted. France has a good example. Public law requires every project above a certain cost threshold be subject to post-hoc benefit–cost analysis that compares the initial forecasts to what actually happened across a set of categories and analysis metrics.

Thomas Ferch, Idaho DOT: To whom did the New Hampshire DOT make their presentations? Did you reach out to the public at large?

Clement: Yes, we spoke to everyone and were out almost 7 nights per week doing it. Calls were coming in asking "Could Chris come out and bring the red cup and the blue cup?" We not only talked about what it would cost to build a road, but to maintain it as well. When people understand where the money is going, you can see it in their expressions.

David Luskin, FHWA: I didn't see a category for fines. In Denmark and Germany, fines for speeding are calculated as a percentage of your income. Any comments for increasing reliance on fines?

Thompson: In terms of red light enforcement, if there were many financial benefits, people would have perverse incentives to arrest people. In Singapore, just being able to drive a vehicle costs US\$60,000, of which \$17,000 to \$20,000 is the cost of the license plate. There is a point where you charge improperly or you charge too much. Maybe in New York this would make sense. Congestion pricing is not supposed to be meant to raise money, since then you suppress travel. What helps with congestion pricing is providing alternative transportation modes. The economic impact effect of pricing needs to be assessed.

WEDNESDAY, JULY 9: WORKSHOP 2

Public–Private Partnerships in Context
Integrating Public–Private Partnerships into Transportation Programs

JEN MAYER
Ernst & Young, presiding

**LATEST DEVELOPMENTS IN FHWA AND U.S. DOT P3
INITIATIVES AND RELATED PROGRAMS**

Patrick De Corla-Souza, Federal Highway Administration

Patrick De Corla-Souza with FHWA discussed what FHWA has done to help states establish their work with P3 programs. First, FHWA provides technical resources, such as the P3 Toolkit, which contains the following tools:

- Fact sheets: one page summaries of various P3 concepts;
- Primers: introduction to P3 concepts;
- Guidance documents: more detailed technical guides for practitioners; and
- P3 screening tool: P3-SCREEN to assist in qualitative assessment of the appropriateness of a P3 delivery for major projects.

The P3 Toolkit is on the FHWA Office of Innovative Program Delivery (IPD) website, which also contains information on training courses which demonstrate how to use the P3 Toolkit. These courses are available to public-sector transportation agencies at no cost (they must only provide the facilities for the course). The website also includes P3 model contracts, P3 best practices, a P3 financial assessment guidebook, and webinars. There is a forthcoming Center for Excellence in Project Finance that will also include training courses, peer exchanges, webinars, seminars, and roundtables.

Furthermore, De Corla-Souza said that research is another important resource provided by FHWA. FHWA is developing a procedure for using benefit–cost analysis in evaluating P3s. This procedure will include a comprehensive approach to P3 evaluation and will include metrics not traditionally incorporated or considered in benefit–cost analyses. FHWA also has list of white paper topics being considered for research, such as revenue risk transfer, revenue sharing approaches, and communicating with the public.

There were no questions on this presentation.

**INTEGRATING P3 PROJECTS WITH THE NATIONAL ENVIRONMENTAL
POLICY ACT AND THE METROPOLITAN PLANNING ORGANIZATION PROCESS**

Benjamin G. Perez, Parsons Brinckerhoff

Benjamin G. Perez with Parsons Brinckerhoff provided an overview of the research completed for SHRP 2 Project C12: The Effects of Public–Private Partnerships and Nonstandard

Procurements on Highway Planning, Environmental Review, and Collaborative Decision Making. The purpose of the research was

To study how P3 procurements influence and interface with the transportation and environmental planning processes—as organized within the metropolitan planning organization (MPO) and National Environmental Policy Act (NEPA) processes—and to identify how and when P3s and other non-traditional procurements should be considered as a means to procure transportation improvements.

P3s are contractual agreements between a public agency and a private-sector entity that allow for greater private-sector participation in the delivery and financing of transportation projects, with a spectrum of options and related risk exposure. According to Perez, the private sector is exposed to the least amount of risk when the government owns and operates a project and to the greatest amount of risk when the private sector owns and operates a facility. Under the concession model, the private partner is responsible for designing, building, financing, operating, and maintaining (DBFOM) a transportation improvement for a specified period of time, but ownership is retained by the public sector. The private partner retains the revenue generated by the project during the concession period and assumes construction and revenue risk.

The research conducted for SHRP 2 C12 focused on the nature of timing and implementation of P3 projects. It explores the different points when private involvement may be introduced in the development of a project, and assesses the effects of P3s on the NEPA and processes. The decision to procure projects on a P3 basis may be made at any point during the MPO and NEPA processes. However, the research demonstrated that most decisions to implement projects on a P3 basis actually occur after the completion of NEPA. It is important to recognize that the NEPA process is linear, involving a series of one-time decisions. This is different from the cyclical nature of the MPO process, with long range plans and transportation improvement programs (TIPs) prepared on a regular recurring basis.

Perez reminded the audience that with P3s, time is money. The dichotomy between the NEPA and the MPO process can lead to delays, and NEPA itself is fraught with the risk of delay. Therefore, private partners may prefer to avoid the uncertainties of gaining NEPA approvals. However, if the private sector becomes involved with a P3 project after NEPA, then private-sector innovation can be discouraged because of the risk that enhancement to the project design may trigger an environmental re-evaluation, and this takes more and more money. While there is value in introducing private-sector innovation in the project development process during NEPA, the private sector may not always want to get involved early.

Perez continued to discuss how the consideration of P3 procurements can be introduced to the MPO planning process. P3s require a dedicated revenue stream, usually tolls, sometimes availability payments. The MPO fiscal constraint process requires demonstrating that project funding is “reasonably available.” However, in regions that do not have a history of tolling or using P3 procurements, MPOs may face challenges in demonstrating that tolls or private equity are “reasonably available.”

Another challenge to the early consideration of P3s is that they require specialized expertise which may be beyond the skill sets of most MPO and NEPA practitioners. In order to assess the feasibility of utilizing P3 procurements, project sponsors must be familiar with such practices as financial modeling; financial feasibility assessment, risk transfer analysis, and investment grade toll revenue forecasts; life-cycle operations and maintenance cost forecasts;

public-sector comparator analysis, toll collection, and back-office accounting procedures; and legal and contractual issues extending over 30- to 50-year concession periods.

In spite of these challenges, early private-sector involvement in P3 projects during the NEPA and MPO processes can add value to outcomes. Yet, it is important to recognize the distinction between a definitive decision to use P3 procurement and considering the possibility of doing so. The best case scenario is considering the use of P3 procurement as early in the MPO and NEPA processes as possible and then using those processes to vet that possibility. This allows agencies to examine the possible outcomes of using P3 procurements before making a definitive decision to actually do so. Perez continued to give examples of projects in the United States that initiated P3s before, during, and after the NEPA process. He then talked about ways of facilitating P3s in NEPA–MPO processes, and gave examples of successful P3 projects.

Perez concluded by identifying five strategies that may facilitate P3s during the NEPA and MPO processes:

1. Introduce tolling and alternative funding, together with the possibility of P3 procurements, during NEPA and the state and regional planning processes.
2. Adapt the MPO long-range plan fiscal constraint process to consider the use of tolling as a source of new revenue.
3. Align project definition with revenue potential and available funding.
4. Manage NEPA to afford greater flexibility and speed.
5. Complete more-frequent TIP and conformity updates to reduce approval delays that may inhibit private innovation.

Questions and Answers

Participants asked panel members the following questions:

Aaron Jette, U.S. DOT: Jette asked if early P3 involvement in the P3 project biases decisions making during NEPA in favor of P3 alternatives.

Benjamin Perez: A good idea is a good idea; it doesn't matter where it comes from. Virginia has done a good job. Virginia DOT's job is to keep the process pure. Early award of P3 projects before a P3 project plan is finalized means competition. Bidders are bidding but the project isn't defined. Costs are probably going to increase. Once the project is planned out, companies sharpen their pencils and negotiate. The competition then is not as rigorous then and they can benefit from an early P3 arrangement. What is missed is the competitive tension.

Robena Reid, FTA: Reid asked if the Metropolitan Washington Council of Governments (WASHCOG) had elaborated on interesting challenges with P3 projects in the region.

Perez: The late Ron Kirby, former Director of Transportation Planning with WASHCOG, was a great believer in using the NEPA process to facilitate a transparent, collective decision making. This could have been true with the I-95 high-occupancy toll (HOT) lane project, which proved quite controversial. This P3 project was awarded prior to NEPA. However, Virginia DOT and FHWA made the decision to approve the project with an Environmental Assessment rather than an Environmental Impact Statement (EIS). There was a lot of opposition to bringing the HOT lanes inside the Capital Beltway and this ultimately led to a lawsuit by Arlington County. The project sponsors backed down and terminated the HOT lanes at the Capital Beltway rather than

extending them to the border with the District of Columbia. Ron believed that this greatly diminished the value of the project. He was also a great believer in working in a transparent setting and believed that if a full EIS had been done it may have been possible to avoid truncating the project. The EIS process could have been used to diffuse the controversy.

Question: How do you evaluate costs prior to NEPA?

Perez: It is difficult to develop project costs early on in the development process. In a sense it is putting the cart in front of the horse. However, there are contractual mechanisms that can be used to engage a private partner early in the development process and then negotiate costs at a later point in time once there is more clarity.

Jen Mayer: You can't do anything more than a sketch-level analysis if the project isn't defined. You can't really get a very good value for costs. Not knowing who will be the private investor but at least knowing a P3 will be used is helpful.

Perez: The simplicity of a P3 project is that you monetize everything. DOTs live in a very real and political world—there are delays. DOTs don't monetize every eventuality that happens to them. DOTs can learn from the P3 experience by thinking about the cost implications delaying projects.

INNOVATIVE APPROACHES TO MANAGING INFRASTRUCTURE ASSETS

Julie Brogan, Ohio DOT

Julie Brogan, the Deputy Director of the Ohio DOT Division of Innovative Delivery, began her presentation by saying that we need to “give it some GAS.” At Ohio DOT, GAS stands for Generate, Accelerate, Save. Brogan asserted that the gas tax is not enough to fix the \$1.6 billion shortfall in shovel-ready projects and the \$10 billion needed for future development. P3s are helping, but it has been a challenge to fit the new P3 legislation in the old legislation.

The process Ohio DOT uses to implement P3s involves four key steps:

- Screening which takes the following factors into account: costs, O&M potential, the priority of the project, the project status, and whether or not there is sufficient time and staff to take on the project;
- Prioritization;
- Value for money—options analysis; and
- Procurement.

Brogan then gave examples of some active P3 projects in Ohio, and their different delivery models, including the Ohio Turnpike and the Portsmouth Bypass (SCI-823) and the Turnpike study. Some of the challenges to P3 implementation in Ohio involve having private partners take on responsibilities that are otherwise carried out by unionized public-sector workers, and coordinating with entirely different neighboring state entities. Overall, Brogan emphasized that with P3s, a lot of things have to be decided with the contractor to make sure that a project is going to perform the way it needs to.

Questions and Answers

Participants asked panel members the following questions:

Question: Will there be a maintenance plan?

Julie Brogan: There will be an independent assessment.

Question: On the Portsmouth Bypass, what conditions do you put on yourself regarding damage?

Brogan: We have a maintenance manual that we are going to be held to.

Aaron Jette: How does the DBFOM procurement accelerate the project?

Brogan: Ohio didn't have funding for the entire project and was going to sell it in three different phases, but then just did one.

Question: Did you factor in a monetary analysis?

Brogan: We did factor in a monetary analysis.

Robena Reid, FTA: Did you work with the Ohio Infrastructure Bank?

Brogan: Yes, we worked with them.

Reid: Was the \$1.5 billion grant all tax exempt?

Brogan: Yes.

Comment: When contracting out snow and ice removal it is really hard to segregate a managed lane portion from a regular portion.

Nicholas Farber, Colorado DOT: Another challenge is that sometimes there are surprise dusting storms in the middle of the night and when the sun comes out, the client notices there is still snow on managed lanes and says that the contractor didn't blow it out.

Comment: Equipment damaging is also an active issue.

DEVELOPING A P3 PROGRAM

Kathleen Sanchez, LA Metro, and Tesse Rasmussen, HDR

Kathleen Sanchez, the Transportation Planning Manager at LA Metro, and Tesse Rasmussen, the P3 Consultant Team Project Manager at HDR, made a presentation on Los Angeles Metro's P3 Program. Sanchez began by giving examples of why Los Angeles County can be a complicated place to implement projects. Los Angeles County is the seventh largest economy in the world, and it is home to over 10 million people. Metro is the county's regional planner, regional transportation funder and builder, and regional transportation operator. Metro has an annual budget of nearly \$5 billion. With so many needs to address, Metro faces challenges in delivering transit and highway programs in a timely fashion. Therefore, Metro sees P3s as a tool to help with this challenge. Metro sees P3s as "mutually beneficial collaborations between a public agency and private sector, sharing risks and rewards." P3 projects with greatest likelihood of success often have the following attributes:

- They are clearly defined (i.e., draft EIR–EIS), high-priority projects with demonstrated public-sector commitment;
- They have a fair risk allocation between public and private sectors; and
- They have transparent, well-defined procurement process overseen by experienced public sector staff.

Metro relies on consultants to provide the skills sets needed for successful projects. Sanchez discussed the structure of Metro’s P3 program structure. Effective communications is a key element with P3 projects and HDR has interacted with the Metro Board to ensure that the agencies’ goals are reflected in its P3 program. Metro’s goals in entering P3 relationships are to deliver projects faster, allocate risks effectively, reduce costs, increase productivity, streamline costs, and create jobs. Rasmussen added that HDR used the FHWA Toolkit that Patrick De Corla-Souza had discussed during his presentation.

Rasmussen explained that HDR and Metro identified three candidate transit and three highways projects to implement on a P3 basis. She discussed the important of securing funding for these projects and stressed that P3s are a financing and procurement approach, and not a substitute for funding. She reiterated the importance of communication and said that it was important to maintain regular communication with decision makers, including senior project managers at Metro, and the ultimate owners of the projects, such as Caltrans.

Sanchez then provided suggestions on forming a successful P3 division within a public agency. She said the P3 group needs to be independent of the traditional organizational structure true P3 experts who understand the partnerships are needed. The P3 division should be mode-neutral, have the ability to access additional resources, and be supported subject matter experts in agency divisions.

Sanchez concluded by offering the following lessons learned:

- Continuous political and agency support is essential (P3s are long-term investments);
- The agency commits to giving project every chance of success;
- Provide a direct line to decision maker(s);
- Policy decisions must be made expeditiously;
- Transparency is key;
- Utilize competent team of advisors based on need; and
- Ensure all partners are on board and educated.

Reminding the audience to be innovative, Sanchez ended her presentation by saying, “The best way to predict the future is to invent it.”

Questions and Answers

Participants asked panel members the following questions:

Nate Macek, Parsons Brinkerhoff: A lot of your projects are on state highways. Can you tell us about interface with Caltrans?

Kathleen Sanchez: Caltrans has a very tiny P3 department and has committed to advancing P3 projects. However, it has challenges in understanding how to allocate risks and in that some people may see P3s as causing the loss of public-sector jobs.

Question: As we look at reauthorization, what do you see evolving in the P3 arena?

Patrick De Corla-Souza: We are going to put information on P3s on the FHWA-IPD website to help coordinate with other agencies.

Carlos Contreras, C&M Associates: Regarding the 710 project, do you have any insight about truck travel on the corridor?

Sanchez: I was not involved in the project, but am aware of some secondhand information regarding truck travel patterns. There is more intermediate entering of trucks. Before, most trucks entered from the ports, but now intermediate entries make it more difficult to make a truck only toll lane.

Jen Mayer: There is a proposal to re-energize TIFIA using the SIB program. At the state level, if SIBs were re-energized, states would have a natural interest and may be willing to take more risks.

David Luskin, FHWA: Do you have anything to add about how P3s can enhance financing?

Tesse Rasmussen: With LA's Metro Measure R, the \$1 billion Sepulveda Pass project is included in the build program, but its implementation is far out in the Measure R time frame. P3s provide a tool to help accelerate projects that are far out in the Measure R time frame.

WEDNESDAY, JULY 9: WORKSHOP 3

Mileage-Based Pricing

LEE MUNNICH

Humphrey School of Public Affairs, moderator

RICHARD T. BAKER

Texas A&M Transportation Institute, moderator

A workshop was held in order to discuss implementation issues with regard to the Mileage-based User Fees (MBUF). This 4-h workshop was the 2014 iteration of the Annual Symposium on Mileage-Based User Fees organized by the Humphrey School of Public Affairs at the University of Minnesota (U of M) and the Texas A&M Transportation Institute (TTI). Each year, symposium organizers work with different partners to bring together experts in the transportation industry to discuss MBUF pilots, implementation issues, and research. For 2014, U of M and TTI partnered with the TRB and conducted an interactive workshop as part of TRB's 5th International Conference on Surface Transportation Financing: Innovation, Experimentation, and Exploration.

The objective of the interactive workshop was to develop a potential implementation scenario for a mileage-based fee system. Participants first engaged in a facilitated discussion on potential operational and institutional parameters and considered the acceptance of these parameters. Participants decided which parameters they wanted to discuss during breakout sessions and then worked in groups to develop various MBUF system institutional and operational components. The workshop was attended by 24 people, excluding moderators and organizers.

Lee Munnich of the Humphrey School of Public Affairs and Richard T. Baker of TTI moderated this interactive workshop designed to develop implementation scenario for a MBUF system. In contrast with previous workshops where presentations are followed by discussions, in this interactive workshop the audience was engaged in a facilitated discussion where individuals proposed a potential operational or institutional parameter to implement MBUF. The participants then rebutted or supported the proposition. The propositions that were accepted were later utilized to develop a set of questions that had to be answer in the context of four frameworks: institutional, management, technology, and policy. The discussion portion of the workshop was followed by a breakout session where the participants were grouped by the four frameworks. The workshop concluded with brief presentations on the MBUF system components developed by each of the four groups.

Barbara Rohde of the Mileage-Based User Fee Alliance (MBUFA) and U of M, gave a brief update on federal activity with regard to mileage fees. She stated that MBUFA was working very hard to educate elected officials on the topic. She noted that MBUFA's objective was to secure funding in the next appropriations bill for state-level pilots, and that the MBUF concept itself is enjoying increasing support. Rohde reviewed legislative efforts that are occurring at the state and national level, and presented a map of the U.S. states where the implementation of MBUF is being considered. Rohde concluded with an overview of federal legislation efforts with

the U.S. House of Representatives, the U.S. Senate, and the Obama Administration to further the implementation of mileage-based pricing.

DISCUSSIONS OF IMPLEMENTATION

Participants were next provided a brief overview of how the workshop would proceed. They were informed that for the initial discussion period, participants would be allowed 2 min to propose and provide support for a particular operational, institutional, or administrative aspect for inclusion in the final implementation scenario. Other participants would then be given 1 min to support or oppose the proposed aspect.

This initial discussion period lasted for approximately 1 h. In that time, the group decided to further discuss the following system aspects in the final discussion on implementation:

- The fuel tax will be phased out at some point.
- As an initial step, tolling will be implemented on Interstate highways with congestion pricing in urban areas. Rebates would be offered for fuel taxes paid.
 - State and local entities will be allowed to develop their own MBUF systems, with third parties providing the overall frameworks.
 - Fees will first be levied on alternative fuel vehicles
 - Providing “consumer choice” will be fundamental to MBUF success. System participants will have choices for privacy protection.
 - Differential pricing will be offered for light versus heavy vehicles.
 - Revenues from the system will be invested back into transportation.

Richard T. Baker stated that roughly 4 months of policy was expended to be drafted in a couple of hours of discussion. The discussion portion was initiated with a practice proposal by Baker that asked to either keep the fuel tax as it stands today, or to phase it out. A number of people in the audience did not agree with the proposal of keeping the fuel tax as is, but instead preferred the phasing-out option. During the discussion of this practice proposal some of the following ideas were briefly discussed:

- Replace the motor fuel tax; people are tired of being taxed.
- Provide the option to opt out and save money.
- Pay at the pump if user fees don't apply, for example, out-of-state users.
- The fuel tax will eventually die of its own weight, and should be used as a transitional tool.
- The public might think is a double tax.
- It should be gradually replaced.

PROPOSAL 1

Chris Swenson of Parsons Brinckerhoff proposed to start by tolling the Interstate highway system with variable mileage-base congestion pricing options, and rebate the gas tax.

The proposition was followed by the following comments from different participants.

- Use existing technology to toll congested roads, and tax 25% of vehicle mile traveled to convert it into revenue.
 - There is no consistency with tolling technology across facilities. Mobile tolling should be considered.
 - Maybe there can be an add-on for electric vehicles.
 - In urban areas, the proposition does not address the financial shortfalls of maintaining a national system. Congestion pricing should be an add-on, not a replacement. Congestion pricing can be a solution to congestion, but is not a fix to the finance shortfall.
 - What about the concerns of congestion on local connector roads? Particularly when discussing goods moments. Heavy trucks can do the most damage to the roads.

The proposal to toll the Interstate system and rebate the gas tax was accepted for inclusion into the final implementation scenario.

PROPOSAL 2

David Ungemah of Parsons Brinckerhoff proposed to allow state and local communities to implement their own MBUF systems, with third parties providing the overall frameworks.

Ungemah added that his proposal could be used to create a framework that accounts for the cost that goes into the collection and distribution of MUBFs. He then suggested separating out the system of collecting MUBF from those who collect and distribute the revenue from that mileage-based fee.

The following critique of the proposal was offered by participants:

- It's important to keep tolling and MUBF separate.
- Use the private sector for the implementation and collection.
- Allow states and local entities to develop a multistate system that is consistent.
- Consider an array of possible solutions within the framework and even multiple frameworks.
- It has to be consistent across states.

To contextualize the discussion of these frameworks, a comparison of the many cell-phone carriers was made. Customers decided which of the many carriers they will use, with the warrantee that the devices will harmoniously work with each other, regardless of carrier. In the case of the MBUFs, the devices are the toll-collection hardware, and the frameworks to implement the fee are the many carriers.

The proposal to separate the collectors and distributors of MBUF devices, which will allow communities to implement their preferred systems, with third parties providing the overall frameworks, was accepted for inclusion into the final implementation scenario.

PROPOSAL 3

Kenneth Buckeye with the Minnesota DOT proposed to leave the motor fuel tax in place, and start by charging electric vehicles and vehicles that exceed 50 mpg a mileage-based fee.

The proposition was followed by these comments from participants:

- I disagree that motor vehicles are doing to do a good job. We have too much congestion. We need something that affects how people drive, and what people drive.
- We need to position the MBUF along the lines of utility service bills.
- We have to start somewhere, and people who own efficient vehicles are aware they are paying less in gas taxes. We need to introduce it as a utility bill.
- This is how it's going to happen, and it's important to have pilots.
- I agree with separating congestion pricing from MBUFs.

There was no decision made on whether to include this proposal in the final implementation scenario.

PROPOSAL 4

Proposal 4 was to give the people a choice of the technology they would like to use to pay this fee. Consumer choice in the way MBUFs are paid is fundamental to its success. Participants offered the following comments:

- How do we craft the different systems? It can be through self-selection, also through mechanisms that allow for different types of payments?
- One of the choices has to be a non-GPS solution.
- The proposal for consumer choice was accepted.

There was no decision made on whether to include this proposal in the final implementation scenario.

PROPOSAL 5

Proposal 5 was to begin MBUF by charging heavy vehicles. Place a MBUF for heavy vehicles at the national level. Participants made the following comments on this proposal:

- I am not sure that local communities are ready to give more money to D.C., and I am not sure federal is the way to go.
- The charge should be distance based which reflects the damage heavy vehicles do.
- Can we include in this proposal a differential charge between heavy and light vehicles? It was agreed to include a distinction in the proposal.
- We should keep in mind there is a limit on the amount of variation that can be used, so that it can still be understandable.
- I feel more comfortable with this proposal if it's by vehicle class.

The proposal to start implementing MBUF with heavy vehicles was accepted for inclusion into the final implementation scenario.

PROPOSAL 6

Adrian Moore of the Reason Foundation proposed a system where participants have choices for privacy protection. The proposition was followed by the following comments:

- I suggest that even with a third party providing the service, there has to be privacy protections and guarantees in place.
- There has to be a level to waive your privacy. Have the option to opt in.
- Add information for the consumer to know what the data will be used for.
- Consider the equity issues for those who can't afford the better technology.

The proposal for the consumer to have choices for privacy protection was accepted for inclusion into the final implementation scenario.

PROPOSAL 7

Proposal 7 was to ensure there is a mechanism that guarantees that new revenue created by MBUFs is reinvested on transportation. There was no time for comments and the proposal was accepted for inclusion into the final implementation scenario.

BREAKOUT SESSION

Participants were next tasked with considering how a fee system with the institutional, administrative, and operational characteristics as discussed by the group would look and function. Participants were given the option of participating in one of the following discussion groups (moderators shown):

- Administration: David Ungemah, Parsons Brinkerhoff;
- Technology: Adrian Moore, Reason Foundation;
- Public acceptance–outreach–education: Richard “Trey” Baker, Texas A&M Transportation Institute; and
- Legislation–public policy: Lee Munnich, University of Minnesota.

Each breakout group was given a form featuring several questions. Some questions were particular to that group, but there were also certain questions for all groups (such as those on research needs). Groups spent 1 h discussing and answering the questions on the form and participants were encouraged to discuss and document issues not contained on the form and to move from group to group if they desired. The listing of operational, institutional, and administrative aspects considered during initial discussion was shown on a projection screen for reference. After the 1 h discussion period, each group reported its discussions back to the main group.

The following is a summary of the main points from each group's discussion.

Administration

What are the specific public- and private-sector administrative roles and functions?

In order for this system to work it must use existing systems to the greatest extent as possible. For example, the International Fuel Tax Agreement is a preexisting mechanism used for addressing multistate fuel tax issues. It could perhaps be leveraged for administration of a multistate mileage fee.

Rate setting should be done through a public commission or a board and should not be left up to the legislature or elected officials. The framework for fee collection should have private input but be publicly administered. Due to a lack of expertise, the public should only be a backstop to private fee collection.

Where should public-sector administrative functions reside?

Every state has different ways of collecting fees and taxes, and whatever entities are currently collecting them now should collect a MBUF. The question of institutional support and the “right size of the bureaucracy” is an issue that should be addressed by the states. It is important to not add “new bureaucracy,” as that would increase the complexity and cost and cost of the system.

How would enforcement of the fee system work from an administrative standpoint?

It will be difficult for a private entity to enforce a public tax, since they are not keeping the revenues from themselves. Initially, the private sector would have to report evaders to the state for enforcement which could utilize state-based operations like air quality checks or vehicle inspections.

What are the major cost factors for administration?

The major cost driver for this application would be the added cost of collecting fees from millions of drivers versus simply collecting fuel taxes from a few sources (i.e., from a limited number of gasoline and diesel fuel distributors).

Public Acceptance, Outreach, and Education

What is the messaging strategy in order to generate an acceptable level of public acceptance for the system to be implemented?

A multithemed outreach strategy for MBUF implementation should focus on the following messages:

- How does the current fuel tax system work and what are people currently paying under it?
- What is wrong with the way the federal government and states are currently paying for transportation infrastructure?
- Revenues from the system will be used to fix specific system needs.

- Show how the system will work. Show that the system can work.
- “Try it and you might like it.” The reality is that people become more accepting of these systems once they have gotten to try them out.
 - Focus on identifying who is not paying under the current funding system.
 - Dispel the myths about mileage fees, such as rural drivers having to pay more.
 - Reiterate that consumers won’t be forced to do anything they don’t want to do (such as install devices in their vehicles).
 - Show the impact of better transportation on the economy.

What is the single most important thing the public should be made aware of?

The most important thing to focus on when looking to implement mileage fees is that the current system is “broke and unfair” and that mileage fees represent the most equitable long-term funding solution currently available.

What stakeholders should be engaged in order to help in messaging efforts? How can message efforts be tailored to the interests of these stakeholders?

Elected officials are among the most important stakeholders. However, they tend to be risk averse in discussing funding issues. Focusing on alternative fuel vehicles as an initial implementation target should help them make the case for a better funding system without too much political risk.

The business community is also an important stakeholder, as it will be able to effectively make the case that better transportation funding can help the economy by potentially creating jobs.

The environmental community will also be an important group to include, particularly if alternative fuel vehicles are to be the initial targets of the fee. These groups need to be shown that better traffic operations, facilitated by improved transportation investment, can have a positive impact on air quality.

Policy and Legislation

What are the major policy principles that should be adopted prior to system development and implementation? What is the priority of each of the policy principles?

The major policy principles worthy of consideration are as follows (in order of priority):

- Must provide a sustainable revenue source.
- Revenues generated must be dedicated to transportation.
- Fairness by applying a user pay–user benefit model.
- Consumer choice in the technology–method for revenue collection. Consumer choices should address privacy for minimal intrusion to consumers by offering:
 - A flat fee or odometer reading and
 - GPS option for consumers to capitalize on added benefits, if any.

To what extent do administrative and technology issues need to be addressed in legislation?

Federal rules related to interoperability may be required to ensure a common platform. It will not be efficient to have a “patchwork” of platforms from state to state. Furthermore, there should be as few statutory frameworks as possible. Technology specifications and requirements should be minimized and only mandated if absolutely necessary.

Technology

What is the “business case” for private-sector participation? Why should they participate?

The business case will require a “starter level” transaction technology that eventually opens up a broader market. Value added services that piggyback on the assessment technologies will be critical for private-sector participation in the system.

How can the technology be deployed in order to ensure high compliance?

Value-added services need to be tied to a user account. That is, accounts and associated services can be shut off or denied if the fee is not paid. It might be desirable to utilize an enforcement regime where vehicle systems are shut down if the fee is not paid. Another alternative would be to utilize a progressive set of warnings via in-vehicle technologies that culminate in vehicular shut-off. Vehicular detection technologies that cross check with other administrative systems would also be desirable.

How can the technology be deployed in order to address privacy concerns from the public?

A “thick client” approach, where data processing and fee assessment occurs within the vehicular device, would be the best for addressing privacy concerns. Privacy can also be addressed by providing consumers with choices in terms of technologies and payment methods.

The system should not punish those who choose to not share data for privacy purposes, but should reward those who choose to share data. It will also be necessary to develop legislation and regulations on the use of data.

How can the technology be deployed in order to maintain a high level of flexibility in terms of fee increases, changes in charging boundaries, changes in fee structure, etc.?

Using mobile phone and other mobile device-based apps can allow for the easier updating of various system elements. It may be helpful to develop systems to inform users about changes in rates, charging boundaries, etc., in advance of those changes.

How can technology be deployed to account for differences in the composition of the vehicle fleet? For example, not all cars have OBD-II ports.

Providing consumers with choices in terms of technologies, starting with nontech or low tech, can address this. Those who choose to not to use technology at all are likely to be a small percentage of users, based on the result of recent pilots.

Multistate Issues

One of the questions that were common to all four of the discussion groups was how multistate issues might be associated when looking at wider scale deployment of mileage fees.

It was noted that by simply showing that these types of fees can work in other states is crucial to getting support for the concept. States should therefore be reaching out to each other in order to share information, research, and experiences, which would also help to potentially address multistate issues before they occur.

Interstate compacts aimed at attaining conformity are necessary, and additional federal funding could allow these coalitions to form. Incentives should be created for larger states to enter into these interstate coalitions—compacts. These efforts should provide an environment for states to agree on certain program elements and would help provide for seamless program implementation and operation across multiple states. These efforts might be enabled by Pooled Funding Programs, based on the current FHWA model. Minnesota currently has a program model where the state contributes \$15,000 to a multistate funded pool, which allows Minnesota to work with other contributing states on mileage fee issues. The use of an interoperability network hub, such as those one being developed by the Alliance for Toll Interoperability, might also be a model worthy of evaluation.

Efforts should be made to see how the banking industry might be brought on board in order to collect fees and provide services. Large interstate banks might be able to address multistate issues.

Research Needs

The groups identified the following research needs for future consideration:

- **Fees.** Determine how fees should be set to remain sustainable over time. Address considerations to capture heavy versus light vehicle impacts or vehicle class versus vehicle categories.
- **Cost recovery.** Determine operating, capital, and other costs that must be recovered by the fee. Define “transportation system” for this purpose.
- **Benefits.** Determine the benefits anticipated from the program: system preservation, maintenance, and other benefits.
- **Non-fee payers.** Determine users and nonusers that should be subjected to a reduced fee (e.g., disadvantaged communities or citizens) or no fee (e.g., fire and police).
- **Value-added benefits.** Identify value added benefits possible through private-sector involvement. Include implications of different payment options related to GPS and privacy options. Determine industry incentives in sharing data likely to result in benefits such as reduced parking charges, rebates, etc.
- **Transition strategy.** Identify and consider methods to initiate the program. For example, should the program apply to only alternative fuel vehicles first, gradually phasing in other vehicles or should the program include high mileage–fuel efficient vehicles initially as well?
- **Technology.** Determine whether a federal role is necessary to address equipment and vehicle manufacturing standards and requirements for the program to be successful. Include a

determination as to whether funding is required to retrofit vehicles for those who are disadvantaged.

- **Impacts.** Determine driver behavior changes anticipated related to mode shift (transit, ATP, land use, housing, etc.)
- **Public perceptions.** What are the public's perceptions of mileage fees and how can myths regarding mileage fee implementation be addressed.
- **Multistate assessment.** How can miles be measured across state lines without the use of GPS?
- **Interoperability models.** How could the model of banking interoperability be applied to RUC-tolls?
- **Leveraging cellular systems.** How can cellular technology be used to charge vehicles?
- **OEM technology.** How to use required or optional technology added to new model years to enable charging?
- **Revenue sharing.** How can off-the-shelf frameworks interact and share funds with appropriate jurisdictions?
- **Refunding.** How do we efficiently and popularly refund fuel taxes?

THURSDAY, JULY 10

Welcome and Perspectives

ADRIAN MOORE

The Reason Foundation

Adrian Moore thanked conference cosponsors. He noted that watching the sessions for the workshop evolve gave him insight into what is going on in the transportation finance sector. Many topics are boiling to the top in the stew of discussion. One common theme is devolution. Now that the Interstate system is mature it seems that transportation funding has become increasingly political at the federal levels. He said further that we are likely facing a painful period where there is a lack of direction at the federal level. Meanwhile, states are addressing their own needs and do not need to meet the strings attached to federal funding. States and local governments will play a more dynamic and innovative role in transportation finance. This change will be an evolutionary process. The process will not be dramatically different from what we see today, but the amounts will be different. The conference will focus on the theme of devolution.

THURSDAY, JULY 10

Innovation, Experimentation, and Exploration *The Landscape of Transportation Funding and Finance in the United States*

PAT JONES

*Bridge Turnpike Association and International Bridge Tunnel and Turnpike Association,
presiding*

Pat Jones of the International Bridge Tunnel and Turnpike Association (IBTTA) thanked Monica Starnes with TRB for her efforts in organizing the conference, as well as her predecessor Martine Micozzi. In reflecting on the title of this session, he hoped to engage the conference attendees early on by posing three questions:

- What thoughts, concepts or images are called to mind by the conference theme “innovation, experimentation, and exploration?” Finance policy needs to change because we have exhausted current possibilities. We need new sources of revenue and user charges to fund transportation. The word that is missing is “solutions.” What are our funding solutions?
- With whatever amount of funding is available to support transportation programs and services in the future, to what areas would you direct those funds? We have many needs: maintenance, ensuring that our assets are in a state of good repair, improving highway and transit capacity, and providing new modal choices.
- If America were to have a national transportation policy, what key elements should be included? Transportation investment should focus on trips that have a destination, rather than recreational trips. We need to resolve freight bottlenecks. People and businesses should pay for benefits they receive and the costs they impose on others. We need to manage demand and compete in the global market. We need more of a user fee focus.

Jones reflected that today we look back on the fall of the Berlin Wall with pride and admiration and see Tiananmen Square as a temporary setback in the long arc of freedom. In the run-up to reauthorization, all options should be open, but instead we see ideas disappearing. In the summer of 2014, we are losing our way, contemplating a temporary fix to the Highway Trust Fund. Therefore, Jones said that Congress should be encouraged to find permanent solutions to fixing the Trust Fund.

NATIONAL PERSPECTIVE

Gregory G. Nadeau, Federal Highway Administration

Gregory G. Nadeau with FHWA stated that the FHWA’s Every Day Counts initiative was inspired by the Maine DOT. The administration’s proposed Grow America Authorization Act would expand transportation funding by 27% over 4 years and would require a one-time business tax reform effort to implement. It provides a bridge to long-term sustainable investment. The original intention was that the Interstate highway system would be owned by the federal government, but the states objected. A one-size-fits-all federal solution won’t work. Every Day

Counts is a partnership with the states. FHWA wants to support state efforts to mitigate impacts on the natural environment and deliver projects more quickly. The California DOT (Caltrans) has been a leading innovator. FHWA has a role to play with state and local agencies by encouraging innovation. For example, Nadeau noted that the leverage of the TIFIA Credit Program with the state and the private sector is well known. MAP-21 provides a transformative policy framework. Now FHWA wants to raise the bar by contemplating what our transportation system should be and then focus on how to achieve that. The administration has put a plan on the table. Executives at a White House roundtable are surprised that the United States is on the precipice when it comes to transportation funding. The Grow America Act sets a framework for the federal role in surface transportation moving forward.

PRIVATE-SECTOR PERSPECTIVE

Dale Bonner, Plenary Group

Dale Bonner with Plenary Group USA explained that he has spent half of his career in the private sector and half in the public sector. He emphasized three main points:

- It is not enough for the collective “we” to look to the President and Congress and complain. Elected officials are a lagging indicator they will do what they think their mandate is. Their lack of consensus enables a lack of action. We need to share responsibility.
- We cannot have a mandate unless we bring the public along. The narrative in the United States is that we are the best, but most Americans have not experienced world class infrastructure. They do not understand that our system is lacking. We need to bring the public along.
- We need to close the gap between solutions and results. We promise results but how do we deliver improvements. We need to expand the role of the private sector. We need to clarify our mandate, and to do so we need to close the gap between promises and results and engage the private sector in an active role.

STATE AND REGIONAL PERSPECTIVES

Malcolm Dougherty, California Transportation Agency

Malcolm Dougherty with Caltrans stated that the current transportation funding model is broken. The federal government does play an important role. We need a national plan for movement of goods and we need to involve private-sector leadership. Although devolution may be occurring, there is still a need for the federal government. Transportation is vital to the economy. Dougherty presented a slide on the history of the federal gasoline excise tax rate. He noted that the purchasing power of the gas tax has decreased by almost 40% since 1994. Perhaps more telling than that, 50 years ago in 1964 the tax rate was less than half of what it is today, but the buying power of that tax was four-and-a-half times higher than today’s revenues afford. He noted that the average American is likely to spend \$1,032 per year on cable television, \$780 per year on coffee, and \$540 for the Internet. However, that same average American only spends \$365 per year in motor fuel taxes. We need to include this information in the dialogue on transportation

funding. We also need to recognize that the growth in vehicle miles traveled has not generated additional funding due to the revenue loss associated with improved fuel efficiency.

Dougherty believes that the use of tolls and a MBUF system would fix our current revenue problems, but they are not an easy sell. California is planning to complete a pilot study of the MBUF approach to see if it is effective and realistic. They want to take the “boogie man” out of it and demonstrate a proof of concept. The pilot will be voluntary. They would need a legislative mandate to implement MBUF in California. The gas tax is a broken model and increases are only a short-term solution. Pricing options, tolling, and P3s are all tolls in the tool box, but they are not the ultimate long-term solution that is needed.

Pat Jones discussed the notion of where innovation is coming from. NCSL reports that 15 states have implemented a variable gas tax indexed to inflation, eight states are completing MBUF trials. How can states become incubators for innovation? There are local sales tax measures in 19 counties in California and tolls and HOT lanes are playing an emerging role in California. The state is implementing new HOT capacity in favor of new general-purpose lane capacity. P3 authority in the state will sunset. TIFIA provides new opportunities but not necessarily new money. We cannot solve transportation problems with highway solutions; we need to think systemically about the best way to improve the transportation system. We need to think multimodally.

Greg Nadeau observed that Maine has indexed its fuel tax to inflation and other states have done so, but the federal government has failed to keep pace. Meanwhile states have been experimenting. We have seen the evolution TIFIA which has now been used on availability payment P3s. Pennsylvania is implementing a bridge cluster initiative. States have always been the laboratory. States have to fund their capital programs any maintain their transportation systems. Nadeau said that the federal government needs to help states to innovate. Tolling is not always economically viable. Federal–state partnerships are critical. We need the national transportation system. In 2014 we still do not have a national freight policy even though there will be a 60% increase in freight movement by 2040. Safety is also critical; we cannot let the system become less safe and more congested. States are coming up with innovative solutions.

Malcolm Dougherty observed that national policy needs to be flexible and that some states are more dependent on federal funding than others. Pennsylvania’s bridge improvement program is innovative, as is Colorado multimodal P3 project on US-36 that combines bus rapid transit and HOT lanes in a situation where transit and highways are interdependent. We need ensure that national policy sustains innovation at the state level.

Can P3s accelerate project funding and delivery? Public agency owners need to determine what their goals for P3 projects really are. The Pennsylvania bridge program will bundle several improvements in a single P3 procurement. There is enough international evidence on on-time delivery and budgets to demonstrate that P3 delivery can provide value, but we cannot implement all projects on a P3 basis. Perhaps they can be used on 10% to 15% of projects and achieve effective results on large and complex projects. FHWA’s loan for the Tappan Zee Bridge replacement is the largest TIFIA loan yet. That project gained environmental closure from concept to a Record of Decision in just 15 months. The reason it was successful was the joint commitment of the New York State DOT, the New York Thruway Authority, and the U.S. DOT. The role of the federal government is to expand these types of innovations to other locations.

Dougherty continued to identify a wide range of dynamics that are impacting the demand for transportation and mobility decisions in California. He observed that we are 10 to 15 years

out in the “sharing economy” which is built around the sharing of human and physical resources. There are different needs and behaviors involved with urban versus rural and commuter versus intraregional travel. The challenge in managing the transportation needs of a state is addressing all these different markets. Being in charge of a state is different than a city. Forty percent of all containers arriving in the United States enter the country in California. What is the overlay and interconnect of this system? When he left Sacramento to fly to Orange County for this conference, Dougherty noted that the flights from eight out of 10 gates at the airport in Sacramento were all destined to southern California. Is this sustainable? California needs high-speed rail, but the last mile will be the challenge.

Dougherty emphasized that demographics play a key role in transportation needs and expectations. He said that young people are often opting not to drive because it is too expensive and too difficult. He believes that all many young people need today to meet their mobility needs is a transit account, the occasional zip car rental, and apps on their phones. While many millennials are choosing not to drive, their aging parents have different needs.

Greg Nadeau agreed that the United States has an aerospace congestion issue and noted that the next 100 million Americans will live in one of 17 major metropolitan areas. While there will be congestion and related mobility challenges in those areas, the middle of the country may enjoy an economic boom supporting the 17 major metropolitan areas.

QUESTIONS AND ANSWERS

Participants asked the panel members the following questions:

Mark Briggs: Should adjustments to California’s P3 practices be made given the Presidio Parkway experience?

Malcolm Dougherty: There are many different models for P3s.

Lee Munnich: The importance of giving people choices, such as to use a HOT lane or not or to vote for a revenue measure or not. Citing the power in the concept of choice, is there is a way of linking funding systems to choice?

Dougherty: In the self-help counties, the choice was “yes, I will give you money”, but the county laid out what the program would be. We need to provide viable options. It is good to offer another option.

Chris Swenson: Transportation professions need to deal with the public and this often involves overall funding policies. Now the administration has offered a transportation bill with a funding source—corporate taxes—that has no nexus with transportation. How do we get back to user pays and user benefits?

Gregory Nadeau: CAFE standards will get us to mileages rates of 50 mpg. Are we going to use a per-gallon assessment model for other fuels or MBUF? We need to redefine what user fee means. In megaregions there will be a wide range of transportation delivery. New user fees will need to be paid. We are going to have to come up with a new model. We need to help the public understand the difference.

Susan Martinovich, CH2M Hill: How do we tell the story? There are planeloads of people going to Washington, D.C., to lobby for transportation needs, but how do we make the case for transportation effectively?

Nadeau: We need to tell a better story. The public does not see the system falling apart. A bridge is a hidden asset. The effects of lack of investment are slow rather than abrupt. The immediate crisis is not evident. We need to have a conversation with states leaders and the private sector. If you ask for more money you need to demonstrate that it is being used well. People are much more likely to trust local governments than their state or national government. All users need to understand how dependent they are on this system.

THURSDAY, JULY 10: BREAKOUT 1

Real State and Value-Capture Funding Options

NANCY SMITH

Nossaman, LLP, presiding

VALUE-CAPTURE PRACTICES FROM ACROSS THE UNITED STATES

Highway Mode

Sharada Vadali, Texas A&M Transportation Institute

Sharada Vadali of TTI presented a summary of NCHRP Synthesis 459: *Using the Economic Value Created by Transportation to Fund Transportation* which focuses on value capture techniques for highway projects. The intent was share practical insights on value capture implementation based on state-of-the-practice case examples from across the country. Some cities and local governments are using different mechanisms in order to pay for both capital costs and operating costs of transportation funding, but in this era of fiscally constrained decision making and budgets, regions across the country may have to get yet more creative about finding alternative sources of funding and finance. The presentation illustrated six case studies that illustrate different approaches to value capture.

Value capture is a generic term with a variety of meanings. The World Bank uses the term “unearned increment” to refer to any rise in land values due to public decisions or the general economy, when the increase is not due to the landowners’ personal efforts. In the United Kingdom, the term “betterment” is used to refer to a rise in land values directly caused by a planning or public works decision. In Latin America the term “plus value” denotes either betterment or unearned increments. The term “windfall” has been coined in the United States and refers to unearned gains in property values.

There are four stages of value capture: value is created, value is realized, value is captured, and revenues are recycled back.

Air rights joint development was the first value capture model that Vadali discussed. She cited Copley Place which comprised two hotels, 900 parking spaces, and retail development built on air rights above the Massachusetts Turnpike in Boston. The value of the unutilized air space over the turnpike was captured in the form of a lease and recycled back to the Massachusetts Highways Department with some of the proceeds used for affordable housing. This project began in 1984 and was completed in 1986, demonstrating how quickly the process can be completed. The negotiated exaction approach involves a sales tax anticipation revenue rebate. This technique was used by Central Properties in Meridian, Idaho, to complete a joint development project at the intersection of the Eagle Road, SH-55, and Fairfield Avenue intersection.

Virginia used a special assessment district on its Route 28 project in Loudon County and Texas used an increment finance like mechanism know as a Texas Transportation Reinvestment Zone at the interchange of El Paso Loop 375 and I-10. Impact fees on new development and sales tax districts involve indirect value capture when there is only a general correspondence between projects and beneficiaries. Portland, Oregon, has used impact fees on new development to fund light rail and road improvements, while Missouri implemented a multicounty sales tax Transportation Development District to fund its Route 36–I-72 project.

Vadali also cited indirect value capture examples where there is a general correspondence between projects and beneficiaries. These include the Butler County Transportation Improvement District; a property tax district in Ohio; pavement maintenance fees in Oregon; and a land value tax in Harrisburg, Pennsylvania. In addition, Montana, Florida, and Texas have authorized transportation corporations that involve collaboration between private individuals and local organizations to oversee the use of a citywide sales tax.

Finally, Vadali said that under the right conditions, value capture can provide seed money to accelerate projects. The location of the project is critical and the project must create value. Value capture can provide gap funding and is a useful tool in larger transportation funding strategies.

DENVER UNION STATION

A Public–Private Partnership

Marla Lien, Denver Regional Transportation District

Marla Lien of the Regional Transportation District (RTD) in Denver, Colorado, showcased the redevelopment of Denver Union Station. RTD is a political division of the state of Colorado and was created in 1969 to provide transit services in an eight-county area with a population of 2.8 million. It is overseen by a 15-member elected board. A 6/10-cent sales tax was approved by voters in the district and directed to RTD in 1974 to fund its base transit system. In 2004 a 4/10-cent millage was approved to the development of the four-line FasTracks light rail transit (LRT) program, all of which converge at Denver Union Station.

Denver Union Station was built in the late 1800s and is located on 19½ acres in the heart of Denver and at the time the FasTracks program was approved it was largely vacant. The station was redeveloped through a partnership between RTD, the City and County of Denver (CCD), the Colorado DOT, the Denver Regional Council of Governments (DRCOG), and Denver Union Station Project Authority (DUSPA), and Union Station Neighborhood Company (USNC). RTD acquired the site in 2001 under the terms of an intergovernmental agreement between RTD, CCD, Colorado DOT, and DRCOG.

The redevelopment of the station has extended over a 15-year period and has involved the construction of light rail and commuter rail stations, 22-bay regional bus facility, extension of the 16th Street Mall, accommodation of the Downtown Circulator bus service, and pedestrian and streetscape improvements.

The partners took the complex project through NEPA approval process and after an 18-month procurement process engaged a private sector master developer partner (USNC) to implement the project in November 2006. A Downtown Development Authority agreement was used to establish a Tax Increment Financing (TIF) district that collects property tax, sales tax and lodgers' tax. However, it was important not to tax land values in the district to the point where it could not compete with the rest of downtown to attract development. Taxes were calibrated to be economically attractive compared to other areas of Denver.

Lien discussed how the Denver Union Station project relied on multiple funding sources. DUSPA received TIFIA and RRIF loans backed by TIF proceeds collected by the development authority. RTD provided sales tax revenue to DUSPA and the City of Denver gave a moral obligation backstop for the RRIF loan. The project has garnered support and buy-in from a wide range of local, state, and federal stakeholders, including the mayor of Denver who is now serving

as governor. This support has been essential in navigating the myriad of legal and contractual challenges the project has faced, including establishing the TIF district and DUSPA as a nonprofit organization to oversee project implementation.

Finally, Lien said that the project was completed in June 2014. The Great Train Room is open to the public in the historic train station with a four-star hotel located above. In addition, Denver Union Station has induced over \$1 billion in complementary facilities around the station area.

FINANCING INNOVATIONS

METRO Vancouver

Cathy McLay, TransLink

Cathy McLay with TransLink in Vancouver, British Columbia, explained that her agency has a unique mandate which in addition to responsibility for transit extends to roads and bridges as well across 21 municipalities. Vancouver is surrounded by water, mountains, and the U.S. border, which means that as its population grows, it must become denser. Innovative funding is particularly important for TransLink because of the scarcity of tax payer dollars and tax fatigue, several large infrastructure investments are underutilized, and the need to add density along rapid transit lines, all at a time when its customer base requires “value adds” to use transit. In response to these dynamics, TransLink is turning to the real estate market in order to derive value to support its continued expansion.

TransLink’s Adjacent and Integrated Development (AID) program is comprised of a cross-functional team that undertakes value capture and transfer of development rights projects. The AID program was created to support and manage development within TransLink rights-of-way and includes real estate, operations, risk, legal, service planning, and infrastructure planning activities. Their experiences have been most successful when the agency coordinates early on with Municipal Development Planning authorities.

Between 1984 and 2011 TransLink completed six AID projects to promote transit-oriented development, with the agency and actually paying developers to undertake projects and absorbing the costs in its overhead. More recently TransLink’s approach has changed, initiating 32 AID projects between 2011 and 2014 with a focus on commercialization where developers are required to pay to partner with TransLink. With these projects TransLink has raised CAD\$4 million in cash and an additional CAD\$45 million in in-kind investment and it as more projects under consideration.

McLay presented a video of TransLink’s Capstan Station AID project. Here TransLink has partnered with a private developer and received money from the sale of condominiums. One-hundred percent of the rapid transit infrastructure at the station has been paid for by private industry. The developer used the site’s proximity to transit as a key factor in its marketing campaign and all the residential units were sold out within four hours of hitting the market. Retail activity at the site increases safety and security for transit users and provides added value to TransLink’s customers. The project has also provided revenues for Metro to provide Wi-Fi access, which also enhances the customer experience. In cases like this, TransLink’s development partners are advertising the benefits of transit.

TransLink is also taking advantage of the strategic and surplus land in its portfolio. The agency’s policy is to buy land early and look for income generating potential. For example, at

old depot sites it has worked with the municipality to change zoning designations and made the parcels more valuable. TransLink's intent is to align its real estate and transportation strategies to maximize returns on surplus lands and grow recurring revenue streams from non-tax dollars. TransLink's AID program has allowed it to expand service and increase customer amenities and has played a role in TransLink's increasing ridership in the past ten years by 80 percent.

VALUE CAPTURE

The Good, the Bad, and the Ugly

Rick Rybeck, Must Economics, LLC

Rick Rybeck of Must Economics, LLC, remarked that the definition of value capture is quite loose, but that there are a number of key questions that should be asked when considering pursuing value capture opportunities. Can it fund transportation facilities and services? Does it encourage development near infrastructure or promote sprawl? Does it make the transfer of development rights (TOD) more (or less) affordable? Is it equitable? Rybeck noted that there is a long history of TOD applications in the United States. In the early 1890s, the Chevy Chase Land Company (CCLC) acquired 1,700 acres of woods and farm in the northwest section of the District of Columbia and Maryland. The land was cheap because it was not accessible to commercial centers and employment opportunities. CCLC built and operated a private streetcar line along Connecticut Avenue connecting their land to downtown Washington and charged patrons a few cents to ride. CCCL then recouped its cost by selling lots for homes and businesses at higher prices.

If CCLC had attempted to recoup all of the streetcar costs through the fare box, both its streetcar and the land development endeavors would have failed. It is worth noting that if a private landowner builds transit to enhance its land value, once the land has been sold, the original landowner no longer has any incentive to maintain or improve the transit. Thus, although some private landowners can build infrastructure and recoup costs from higher land values, there is a reason for the public sector to retain ownership and control transit facilities so that the infrastructure will be maintained over the long term.

Rybeck discussed how value capture is the ability to exchange something produced for money. It is the nexus between the value of what is produced and what is consumed that allows price to transmit information between producers and consumers, thereby informing decisions about consumption, production, and resource allocation. With infrastructure, the value of public goods and services is often reflected in the value of land. Neighborhoods with good schools will have higher residential land prices than comparable neighborhoods with poor schools. Areas near a noisy airport might have low residential land value but high value for land zoned for warehouses.

Public services such as transit generate land value, with the majority that value accruing to primes sites located in close proximity to the services. In this way public services generate windfalls. But there is an infrastructure conundrum, because as land values go up development is chased away. When the provision of transit finally catches up the cycle begins again and this leads to urban sprawl. Value capture provides an opportunity to balance these forces. The benefit of providing services such as transit should not be a windfall to select property owners. Such properties should be subject to higher taxes. By taxing land value, infrastructure becomes more sustainable as it drives down land values thereby encouraging development and greater densities.

Rybeck then explained that if executed correctly, value capture can be sustainable. There are several different value capture mechanisms. They include land value taxes, joint development–access fees, betterment levies, land sale–leases, and in some cases assessment districts. Exactions, impacts fees, and tax increment financing are not value capture techniques. Development fees are calculated as a percentage of the value of a building, whereas value capture fees are calculated as the percentage of the land value. By increasing taxes, value capture reduces land prices and induces more development near existing infrastructure. If value capture revenues are used to offset taxes on building, then development near infrastructure can become more affordable for residents and businesses alike.

QUESTIONS AND ANSWERS

Participants asked the panel members the following questions:

Benjamin Perez: To what extent the 80% increase in transit ridership in Vancouver over the past 10 years was due to new transit services?

Cathy McLay: McLay responded by noting that there was a 6.5% increase in ridership after the 2010 Winter Olympics.

Mark Briggs asked about the politics of getting value capture in place, noting that failure to do so can encourage real estate speculation.

McLay: McLay stated that there is a real estate department located within TransLink. It is great if an agency has legacy land that can be used for value capture, but today we usually acquire only the land that is needed to implement and improvement and nothing more. In the United States we sell off public land. In other places, public owners use long-term leases. For instance all land in Hong Kong is leased for 99 years. Land near transit stations in Hong Kong is very valuable and is leased.

THURSDAY, JULY 10: BREAKOUT 2

Tolling and Managed Lanes

GINGER GOODIN

Texas A&M Transportation Institute, presiding

CRAFTING AN INTERSTATE TOLLING PLAN THAT CUSTOMERS WILL EMBRACE

Robert Poole, The Reason Foundation

Robert Poole, Director of Transportation Policy of the Reason Foundation, made a presentation entitled “Value-Added Tolling: Gaining Highway User Support for Mileage-Based User Fees on Interstates.” He argued that the best way to begin transitioning to MBUF is to listen to highway users and tailor MBUFs to their needs. In addition, Poole asserted that Interstate reconstruction—modernization should be highway users’ number one goal because many portions of the highway system are more than 50 years old. The 40,000 mi that will need reconstruction in the next two decades, and the 200 major interchange bottlenecks that need redesign and replacement will cost least \$1 trillion. However, the U.S. Congress will not provide dedicated funding for that size project, and fuel taxes will not do the job because per-gallon taxes are not keeping pace with inflation or highway use, and alternative fuels undercuts the user-pay principle for highway funding. Poole said that survey data has shown that people are more willing to pay tolls or MBUF than to support any type of tax increase.

When the gas tax was implemented, it was the second-best choice because the administration and delay costs of toll collection would be too high. However, today technology has made those costs virtually obsolete. Yet, there are still obstacles to stopping toll-financed Interstate reconstruction. For example, federal law bans tolling existing lanes and allowing tolling only new lanes won’t pay for reconstruction. Also, there is strong opposition from the trucking industry, and concerns from the American Automobile Association (AAA), American Highway Users Alliance, and the new Air Transportation Association of American (ATA).

Poole stressed the idea of listening to the concerns of highways customers, and taking these concerns into consideration when implementing new finance mechanisms. Some are the key concerns about MBUF are

- No value added—charging tolls on “existing” highways;
- Revenue diverted to other uses;
- Double taxation—paying tolls and fuel taxes on the same highway; and
- Traffic diverted to parallel routes.

Poole stated that in the research paper, the authors were trying to “craft a set of principles to try to get a proposal that will pass through congress.” Therefore, in his presentation, he explained how each of the above mentioned concerns should be addressed.

To address the “no value added” added, Poole suggested the following:

- Limit the use of toll revenues to the tolled facilities;

- Charge only enough to cover the full capital and operating costs;
- Begin tolling only when construction or reconstruction of a corridor is finished;
- Use tolls to replace, not supplement, existing fuel taxes; and
- Provide a higher level of service for tolled Interstates.

To address the “diverted revenue” concern, he suggested limited use of revenues to the tolled facilities. This solution would

- Be consistent with users-pay–users-benefit principle;
- Inherently limit amount of tolls—and hence reduce the extent of traffic diversion;
- Have to be defined at this system level—freeway system of metro area, all rural Interstates in a state; and
- Have long-term protection via enabling legislation and bond covenants.

Poole made these final suggestions:

- State DOTs should support value-added tolling because it would provide large net increases in highway funding.
 - ARTBA, IBTTA, and T2 Group should do likewise, as the best chance of getting tolling flexibility through Congress.
 - Highway user groups should insist on value-added tolling policies as condition for generalizing the toll pilot program to all 50 states.

U.S. MANAGED LANES

Empirical Data Steers Credit Analysis

Saavan Gatfield, Fitch Ratings

Saavan Gatfield with Fitch Ratings began his presentation by asserting that HOT lanes “are getting hotter.” High-occupancy vehicle (HOV) lane conversions to HOT lanes allow for a more efficient use of HOV lanes. Even though they do not relieve overall corridor congestion, they provide congestion relief to those willing and able to pay. Gatfield explained key differences between HOV 2 and HOV 3 occupancy policies. For instance, HOV 2 policies are not meant to make money, but to provide preferential access to efficient users, such as carpoolers and transit vehicles. These get a large share of nonpaying users, which means fewer users are paying tolls. In turn, the high volumes of free users results in loss of control over travel conditions on the lanes, which may make them less attractive to potential paying users. A three-person occupancy requirement on the lanes results in more control over travel speeds, making them more attractive to potential paying users. This results in profound revenue impacts. However, toll caps, such as the one on the I-95, diminish control over travel speeds through price.

Another important point Gatfield mentioned was that while managed lanes are typically meant for time savings, empirical data shows that people are only saving an average of 3 min. Instead of time savings, what people are really paying for is reliability. In addition, traffic volumes on managed lanes are extremely volatile, even in congested corridors. Since pricing is linked to congestion, revenue lines are even more volatile. Therefore, small deviations of traffic

forecasts can have big impacts in long-term revenues. However, predictions about how much traffic will increase with time are usually very uncertain.

Gatfield went on to talk about how revenue is generated from managed lanes. Managed lanes gain most of their revenue from short, intense periods of congestion, and not from low traffic captured throughout the day. In fact, at least 80% of managed lanes revenue is expected to come from peak periods. There are analytical considerations when assessing future prospects of managed lanes. Important questions to answer related to geographical and physical considerations include the following:

- What is the strength of service area? What drives the regional economy?
- What drives road congestion?
- What is there to know about competing facilities?
- What locations would be connected (i.e., suburbs to urban employment centers)?
- Is the facility going to be radial or circumferential?
- What are the travel patterns in the areas? Are there peak hour concentrations or dispersed travel times?
 - Where would users enter and exit the facility and are there going to be single entry or exit points, or will there be intermediate access and egress points in between?
 - Is traffic in the area one or two directional?
 - Will there be lane barriers? This is important because while concrete walls are more expensive than line or pylon separation, managed lane users prefer concrete walls because they protect against traffic weaving in and out of the managed lanes.
 - It is also important to understand the types of trips likely to occur on the managed lanes. For example, will there be commuters, carpoolers, emergency vehicles or trucks?

Gatfield also spoke about the importance of understanding why traffic is assumed to increase. Since economic activity on the corridor is linked to traffic on the corridor, it's important to consider things that affect the regional economy, such as the 2008–2010 recession. In addition, employment rates are another good predictor of general changes in traffic volumes. However, the clearest reason of why traffic may increase over time is expected population increase. Although expectations are fairly flat across country as whole, certain regions expected to take lion's share of the nation's population growth over forthcoming years. The three states for which the highest population growths are predicted are Florida, Texas, and California. As expected, these are also the three dominant states where many managed lanes are being planned now.

After explaining the important considerations when assessing the prospects of managed lane projects, Gatfield reminded the audience that all projects are unique. He also mentioned that the models used by traffic consultants handle and process data and assumption inputs in different ways. This means that the models can yield very different results.

Gatfield ended his presentation by reiterating that managed lanes project will only be feasible if

- The authority is clear on policy, and such policies encourage revenue generation;
- The corridor is either already highly congested, or if it requires traffic growth then forecasts are supported by robust population and employment expectations; and

- Debt will be supported by a combination of high liquidity and the deferrable debt service that allows the project to weather sharp revenue contractions arising as a result of expected volatility, and also to survive if the project takes longer than expected to ramp-up.

ALL'S FAIR IN LOVE AND TRAFFIC

Putting Equity Debates Over Managed Lanes in Southern California in Context

Brian D. Taylor, UCLA

Brian D. Taylor, an urban planning professor at the University of California at Los Angeles (UCLA) Luskin School of Public Affairs, made a presentation entitled “All’s Fair in Love and Traffic: Putting Equity Debates over Managed Lanes in Context.” Governments typically get involved when markets can’t, or don’t, function properly. Yet, elected officials and the motoring public seem concerned that managed lanes are unfair. Some traditional public-sector activities, like managing streets and roads, may be amenable to balancing supply and demand via pricing, but many public officials see pricing as something that governments just shouldn’t do. Yet, taxes for transportation in Southern California, and elsewhere, raise far fewer objections on equity grounds than does tolling.

In addition, research Taylor conducted with Lisa Schweitzer in 2008 on the Orange County 91 Express Lanes revealed that tolls are more equitable than sales or gas taxes. Notwithstanding the results of this research study, debates about transportation finance equity in Los Angeles County became centered almost exclusively on toll lanes. However, Los Angeles Metro has been able to alleviate a lot of opposition to toll lanes with extensive public outreach, extensive work with elected officials, and an extensive equity program. The equity program is its first in kind in the country. It gives toll discounts to low-income drivers that are Los Angeles County residents. More than 3,000 households have enrolled and more than \$80,000 in toll credits have been issued. Another way Los Angeles Metro has addressed equity concerns is that it has used excess toll revenue to fund transit improvements in the toll lane corridors. Still there is a concern that transit users in toll lane corridors tend to have higher income than transit users in other corridors.

Taylor summarized the lessons learned from the now substantial body of research on addressing road pricing equity concerns pricing in the United States and abroad. One lesson is that it’s important to address equity concerns early in the process. The benefits of this are that

- Elected officials are less likely to harden opposition on equity grounds;
- The process transparency increases;
- It helps avoid putting project proponents on defensive; and
- It encourages planners to sincerely address equity concerns

A second lesson is that it is important to secure broad-based support among the public and interest groups because

- Community outreach increases comfort with the idea of road pricing;
- Public education can lead some to argue for pricing to correct for current inequities; and
- Open, ongoing, and sincere public dialogue is common to every successful case of implementation.

A third lesson is that it's important to build trust between public officials and transportation agencies because

- Pricing equity concerns stretch well beyond low-income travelers. Most frequently, geographic equity concerns arise when all or part of the toll revenues is used for other modes or other places.
- Funding distribution debates frequently precede the road pricing project, which means that debates are often about more than the project at hand.
- Successful projects often involve relatively few governmental actors and occur most often in regions with histories of interjurisdictional cooperation.
- The presence or lack of intraregional trust and cooperation strongly influences elected officials' views on project fairness.

A fourth lesson is that it's important to organize constituencies for the toll revenues. The use of toll revenues affects both the actual and perceived equity of road pricing. A suggestion for addressing geographic equity concerns is to dedicate toll revenues to improvements in the tolled corridor. An important note is that these allocations should be explicitly defined to increase transparency and trust.

Fairness is in the eye of the beholder; there is a difference between perceived and true equity outcomes of toll lanes. Perceptions are strong and therefore mitigation tends to focus on perceptions, even if they arguably increase inequities, such as giving exemptions or discounts for groups deemed worthy, such as electric vehicle drivers. Therefore, there is an existing dilemma regarding policies that are meant to make toll lanes more equitable.

ARE EXPRESS LANES FAIR TO THE POOR?

Nancy Pfeffer, Network Public Affairs, LLC

Nancy Pfeffer with Network Public Affairs gave a presentation called “Are Express Lanes Fair to the Poor? Methodological Considerations.” Pfeffer gave a practitioner's perspective on the equity of managed lanes, based on her experience with doing three evaluations of express lane equity concerns in Southern California. The corridors she evaluated are the

- I-10 and I-110 in central Los Angeles County (LACMTA) (in operation);
- I-5 near Santa Clarita, Los Angeles County (LACMTA) (proposed); and
- I-10 and I-15 in San Bernardino County (SANBAG) (proposed).

Pfeffer's evaluation of the I-10 and I-110 (2009–2010) included a literature review and review of demographic data and available project data and analyses. To evaluate the I-5 and I-10–I-15 (2013), Pfeffer based her analysis on TRB Special Report 303. She distilled this report to propose policy recommendations based on the following key questions:

- Who is affected by the project?
- Who makes direct payments, and how are revenues spent?
- What are the benefits and impacts of the project (for low-income drivers)?

- What travel alternatives are available (if needed)?

The elements for the equity assessment included demographic data (of poverty level, median income, and income quintiles), survey data, project funding and financing data, traffic modeling to determine time savings, toll modeling and value of time, travel alternatives, and transponder issues. Pfeffer noted that it was a challenge to identify corridor uses, especially because some may come from outside of the jurisdiction.

The literature review included Taylor and Schweitzer's 2008 study "Just Pricing", which demonstrated that tolls are more equitable than sales or gas taxes. Therefore, Pfeffer compared the share of project costs currently (or to be) financed by tolls, versus other sources. However, she noted that there is no threshold or standard set today for what is an equitable share of costs to be financed by tolls. The traffic modeling results related to value of time showed that sometimes the value of time on the toll lanes was less than the assumed value of time for a low-income person (\$10/h). Also, the model results showed that there were time savings even for those using general-purpose lanes because the new toll lanes diverted some of the traffic that would have otherwise been present in the general-purpose lanes. Other relevant information when considering how equitable toll lanes are is whether or not there are other alternatives, such as transit and parallel driving routes. In addition, there are "transponder issues" to keep in mind, such as some users' inability to use credit cards to open and maintain an account. In addition, account maintenance fees can be a real issue for low-income households.

Overall Pfeffer found that there were consistent findings for equity for low-income travelers, and that low-income travelers used toll lanes when they found it necessary. Pfeffer recommended subsidies or special policies to help low-income households acquire and maintain toll lane accounts. Pfeffer's final recommendations were to analyze equity concerns early (if possible), coordinate with other project analysts, and seek expert and peer review.

QUESTIONS AND ANSWERS

Participants asked the panel members the following questions:

Lee Munnich, University of Minnesota: Excess capacity is a problem, but on the SR-91 there was excess congestion. If you build new capacity, you may not be able to generate revenue from it, so there is a lot of controversy about taking away the entitlement or privilege of using an HOV 2. It's an equity issue but also a public perception issue. Projects have been taken off the table because HOV 2 users couldn't be convinced that they should give up that. Therefore, do you think HOV 2 plus users should be exempt from fees?

Brian Taylor: Studies in Europe show what effect toll lanes had on people's decision to carpool. With carpooling, you can split the time savings and the toll. Because of these two benefits, you see carpooling go up a lot. This runs contrary to entitlement of thought that people should be exempt from fees. The only reason to justify doing that, from an operations standpoint, is that the fee makes fewer people carpool and therefore you have more cars. Yet, if data is showing that people are more incentivized to carpool in managed lanes, then why exempt them (carpoolers)?

Lee Munnich: But aren't you taking away something? Whether it's a general-purpose lane that you are taking away, or you are shifting from a two- to three-person carpool.

Robert Poole: Congress said that managed lane speeds have to stay at or above 45 mph; if they are not, then they must take action to do something about that. One of the accepted ways to do that is to decrease occupancy level, which is most cost-effective.

David Ungemah, Parsons Brinkerhoff: You just don't get the high-end revenue until you get high congestion and by then system is broken down. There is a fairness perspective individuals have with regards to a reconstruction environment and tolls. Right now you don't implement tolling until reconstruction is completed. Should this be amended?

Poole: A smart DOT will prioritize all of the Interstates that it has in its jurisdiction. Separation in time will be the key then, if they had legal permission do all Interstates.

Taylor: There were big projects done in 1990s, when the fuel tax toll paid for mile was a lot bigger than it is now. The amount paid in real dollars is considerably lower now.

Mark Burris, TTI: Did you get license plate data of who was using general-purpose lanes versus managed lanes?

Pfeffer: On the 91 they do collect a lot of information. On the SR-167 they looked at the actual makes of car.

Question: How did you get income with license plate survey?

Pfeffer: The survey that was sent out categorized license plate by income.

Donald Samdahl, Fehr & Peers: You mentioned that managed lanes incentivized carpooling, but I want to give some pushback because even in San Diego, there is no evidence that HOT lanes increase carpooling.

Taylor: HOV lanes have the exact same issue with regards to the ability to motivate people to carpool, which is that the motivation depends on traffic. If traffic is low, there is no motivation to carpool. I was speaking that in general there is motivation to carpool on managed lanes, and managed lanes in Stockholm and Sand Diego did show an increase in carpoolers.

Poole: Also, person throughput has increased although carpooling has not increased. The reason is express bus service.

Sharon Greene: Where are you on carpooling now?

Poole: With regards to putting toll Interstates in urban areas, in order to get federal permission to support HOT lanes, you have to define it as a pure user fee. Transit ought to be supported locally, not federally. If you actually do the per-mile charges on the urban expressways, obviously you would do that in some form of congestion pricing, which is a big benefit for bus transit.

Nicholas Farber, Colorado DOT: One of the things we looked at is how many people would find a third person, and it was something like 0.3%, so we found that managed lanes may increase carpooling, but not much.

David Luskin, FHWA: You said at one point that HOT lanes arrangement will increase speeds on general purpose lanes? To what alternative did you mean?

Pfeffer: Relative to the alternative of having an HOV lane, and not a HOT lane.

Question: HOV 2 plus take away remains a big issue. Have you looked at any studies that show if giving a 2-plus discount in addition to the 3-plus fee will increase carpooling?

Pfeffer: I have not done that study. The 110 in Los Angeles is going to have this discount.

Darren Henderson, Parsons Brinkerhoff: The 91 has a discount for the 3 plus.

Angela Jacobs, FHWA: You refer to I-95 and made a reference to the role of TIFIA financing. Yet, the I-95 did not use any TIFIA loans. Could you explain what you were referring to?

Gatfield: I used TIFIA as an example of toll lane financing. For example, SR-91 received TIFIA, but it's not directly related to the I-95. The OCTA project was a lot smaller cost a long time ago.

Munnich, University of Minnesota: On HOT lanes in Minnesota, there are a lot of cheaters, people driving alone on HOV lanes. So now we are giving people a legal alternative—and equity solution.

Ginger Goodin: In Florida they have raised the toll cap. As toll caps are raised, do you see that equity concerns may come back as tolls get higher and higher?

Taylor: On managed lanes everyone has a choice (to pay or not to pay). There might be discomfort among elected officials, so they explain it in a way that is market clearing. No one has to pay the toll. If the toll went up the income of toll users became higher and higher, which results in a more progressive revenue generating technique. If you have different places on the system that are requiring spikes in toll, then that's a great big arrow pointing down; what we are actually seeing is the demand for these roads.

Chadi Chazbek, HNTB: For those that only used the lanes at night, after the pricing extends to these late night hours, would that be a loss to them because now they can't use the lanes for free?

Pfeffer: There was no loss in that hour that they would have used the general lane.

Taylor: When you add pricing at off hours it shouldn't affect general-purpose lane users because managed lanes are not that beneficial during off hours.

THURSDAY, JULY 10: BREAKOUT 3

Evaluating Options for New Revenue or Cost Reductions

JAMES BASS

Texas Department of Transportation, Moderator

NEW YORK CITY

Urban Leader or Cautionary Tale?

Jonathan Peters, City University of New York

Jonathan Peters, of the City University of New York and the College of Staten Island, presented an empirical case study that explored the impacts of road pricing in New York City. Tolling in New York State is four times higher than the national average, and the majority of the tolling in New York state happened in New York City. If road pricing is the solution, New York City should be perfection, given the majority of its bridges are tolled. New York state and New York City have some of the longest commute times to work. So, why is tolling not fixing New York?

Peters stated that New York City is a great place to study transportation for its multilayered transportation system, but commented on the reliability of road pricing data for this metropolitan area. The sources for this road pricing study included Triborough Bridge and Tunnel Authority, Port Authority of New York and New Jersey, New Jersey Turnpike, and the Garden State Parkway, which combined, collect about 33% of the nation's tolls. The study presented by Peters combined tolling data from these various sources to look at the relative household burden and producer burden of road pricing, and explore the impacts that road pricing has on the New York City region.

Peters concluded with the following pricing impacts on the New York City metropolitan area:

- Tolls have increased in the last 10 years;
- Price increased by about 70%, total;
- Total revenue increased by 60.1%;
- Transactions reduced by 6.04%; and
- Implied rough elasticity of -0.12 .

These impacts appear to be local in their cost and administration, causing a high burden on households and firms in certain regions. Policies affecting road pricing are being set by various agencies that lack coordination of overall regional goals and investments. Peters mentioned that these tolling cost are not adequately captured by existing data sources. However, road pricing remains a very effective revenue tool.

BREAKING THE POLICY GRIDLOCK

Funding Transportation in Toronto

Michael Sutherland, Metrolinx

Michael Sutherland from Metrolinx presented the process to identify revenue tools to fund transportation investments in the Greater Toronto and Hamilton Area. The selection was policy driven to incentivize transit investment and minimize economic distortions.

Metrolinx is the lead planning and capital delivery agency in the greater Toronto and Hamilton area. Metrolinx is an agency of the Government of Ontario, Canada, created in 2006 to improve the coordination and integration of all modes of transportation. By 2013, the agency had delivered \$16 billion in municipal transit projects. An additional \$34 billion was proposed to be funded through new revenue tools. Metrolinx studied 26 revenue tools through a technical analysis of international best practices.

A narrowing approach was utilized to categorize these revenue tools into three categories: big tools, small tools, and federal funding. Four principles were considered in this process:

- Regional and geographic equity,
- Accountability and transparency,
- Socioeconomic, and
- Dedication.

The process of identifying the most efficient revenue tools included an extensive public consultation effort, according to Sutherland. The public consultation utilized three groups of engagements:

- Online engagement,
- Kitchen roundtables, and
- Residents' reference panel.

Metrolinx presented its Investment Strategy to government in May 2014 with 24 recommendations. Approximately 75% of the investment was dedicated to regional transit, 15% for local roads and transits, and the remaining 10% was split evenly for regional highways and other transportation initiatives. Of the 24 recommendations, only two were revenue tools. The two recommended revenue tools were categorized as major revenue generator and complementary policy tools. Some of these tools include business parking levy, development charges, and fuel taxes. The remaining 22 recommendations focused on building trust and accountability by

- Enhancing public engagement and reporting,
- Integrating land use policies,
- Engaging private sector in development contributions, and
- Improving project evaluation and selections.

The result of this approach to fund projects resulted in the creation of a Transit Investment Strategy Advisory Panel. The 2014 budget provides reallocated funding for upgrade of commuter services and other projects.

FUNDING ADVANCED MITIGATION FOR THE ENVIRONMENTAL IMPACTS OF TRANSPORTATION PROJECTS

Jaimee Lederman, UCLA

Jaimee Lederman of the University of California at Los Angeles presented a survey of current possible funding streams from both state and local sources, with a focus on landscape-level implementation. Advance mitigation is defined by the Washington State DOT as “a form of permittee-responsible mitigation constructed in advance of a permitted impact. An advance mitigation site needs to be planned, designed, permitted, and constructed before a transportation project can use any mitigation credit generated by the site.” Funding advance mitigations of transportation projects can provide benefits such as streamlining permitting, increasing regulatory certainty, and decreasing legal challenges. In addition, cost reduction benefits can be achieved with economies of scale on mitigation and administrative costs.

Lederman presented examples of advanced mitigation utilized under various environmental laws. One was the Elkhorn Slough Early Mitigation Partnership that made early mitigation investments while the project was in the planning stages. This partnership was sponsored by Caltrans to mitigate four planned transportation projects.

Lederman assessed the following types of mitigation for potential sources for funding:

- Wetlands banking,
- In-lieu fees,
- Habitat conservation plan or other local initiatives, and
- Programmatic agreements.

Some of the challenges for funding advance mitigation at the landscape level are the scattered transportation funding resources, mitigation is more expensive at this level, and funding is required upfront. A successful strategy to address these challenges includes both funding and financing. Funding refers to revenues to acquire land or other required mitigations, and financing refers to a way to leverage funding for earlier access.

Typical funding mechanisms at the state level consist of a complex array of transportation finance tools, and environmental grants. Funding mechanisms at the local level include grants, private donations, sales taxes with dedicated environmental component, and development impact fees. In comparison, typical financing mechanisms at the state level include infrastructure banks, and credits from the TIFIA credits and the Water Infrastructure Finance and Innovation Act. Financing mechanism at the local level include grants, bonds leveraged against future sales tax revenues, and general tax assessments.

Lederman concluded with state and local solutions to funding advanced mitigation for the environmental impacts of transportation projects. Local solutions include the following:

- Habitat conservation plans,
- Grants,

- Development impact fees, and
- SB 375 funding.

State solutions include

- Legislative changes;
- State gas tax;
- Vehicle registration fees;
- State sales tax or bond measure;
- Mitigation line-item in state budget;
- Loosening existing restriction on when funding is allocated;
- Cap and trade funding;
- Leveraging partnerships;
- In-lieu fees;
- Mitigation banking; and
- Habitat conservation plans with transportation elements.

Partnerships with resources agencies, local governments, and public–private are encouraged for state leveraging solutions. The major findings were that environmental funding is scattered, and that there is little institutional consistency, in particular in not taking advantage of unique opportunities.

NEW MODEL FOR FUNDING TRANSPORTATION

Virginia’s Sales Tax Approach

John Lawson, Virginia DOT

John Lawson of the Virginia DOT presented how in 2013, the Virginia General Assembly adopted Chapter 766 of the 2013 Acts of Assembly legislation which provided a dynamic long-term transportation funding solution with projected funding of \$800 million a year. The solution included new and existing state revenue sources, including \$200 million from general fund and \$500 million annually for regional “self-help”. The legislation was passed with a bipartisan compromise over raising or eliminating the motor fuel tax. Recognizing the need for additional funding, while keeping the motor fuel tax in place, required the exploration of new and existing general fund sources.

Lawson contextualized Virginia’s efforts to identify new additional funding for transportation with an overview of the funding history for transportations projects with fees and taxes. He continued with other approaches that include tolls, the use of bonds, and P3s. The shortcoming of the 30-year-old tax based funding was the driving force behind the support of the adopted legislation.

The adopted solution reallocated existing funds and called for the implementation of a 3.5% motor fuel sales tax at rack, a 6% diesel sales tax to compensate for higher wears on roads from heavy vehicles, and a 3% to 4% titling motor vehicle tax. The solution also increased the revenue for transportation project from the general fund. This increased the share of the general funds from 0.50% to 0.67%. The legislature also increased the retail sales and use tax dedicated to transportation projects from 5.0% to 5.3%, and provides for additional taxes in Northern Virginia and Hampton Roads to deal with congestion. The additional funding of \$800 million a year was provided by Chapter 766 of the 2013 Acts of Assembly, which represents a 17% increase in transportation funds.

Lawson continued with future sales taxes from the Marketplace Fairness Act (MFA), which are to be utilized for transportation. In the long term, revenue from the MFA is expected to provide an additional \$50 million in revenue for transportation projects in the state of Virginia. In addition, MFA revenue provides a 0.3% increase in the general sales tax to support rail and transit projects, which are approximately \$80 million per year to public transit and \$50 million per year for passenger rail.

Lawson concluded with a summary of the investments from the adoption of the legislation Chapter 766. This legislation has moved Virginia from relying on motor fuels tax in favor of a sales tax on motor fuels and the reallocation of sales tax revenues for transportation projects. The new revenues are helping to address the state maintenance fund deficit and provide funding for capital investment. Capital investment is expected to increase by 50%, which will be concentrated on road and bridge improvements. Chapter 766 will also provide additional revenue for rail and transit investments.

QUESTIONS AND ANSWERS

Participants asked the panel members the following questions:

Amber Crabbe, SFCTA: Thinking of land banking at the state level, how do you deal with the idea of credit where a project that implemented advance mitigation did not need it? How do you deal with projects that overlap with natural resources overseen by different agencies? What if an agency accepts your mitigation, while another is expecting additional mitigations?

Jaimee Lederman, UCLA: For the first question, we are looking at mitigation run by state DOTs. If you have financing to mitigate in advance most likely they do need mitigation, and those projects which don't receive funding for advance mitigation most likely will not require mitigation. The second question is more about integration and general planning. Project management and building relations with the different agencies can help in anticipation of these challenges.

Amanda Wall Vandegrift, Parsons Brinckerhoff: In similar initiatives across the country, the business community is involved in launching these kinds of initiatives. Can you touch on the business community and this initiative?

Michael Sutherland, Metrolinx: Definitely, the Toronto Regional Board of Trade was the organization allied in the business community with in this initiative. The board released paper recommending revenue tools a year ahead of Metrolinx. The Toronto Chamber of Commerce was another champion for this initiative as well. You can talk to everyone, so talking to the big umbrella organizations works best.

Marin Wash, UCLA: Can you elaborate on the role played by Virginia DOT, the governor's office, the legislature, versus the local government? What was the motivation for getting consensus on such a complex issue? Where the leadership did come from?

John Lawson, Virginia DOT: The effort was driven by the governor's office and the secretary of transportation. A legislature that recognized the problem that needed to be addressed. We had the construction industry and the chamber of commerce behind us, and they added credibility.

THURSDAY, JULY 10

Impacts of Technology on Transportation Revenue

SARAH PURO

Congressional Budget Office, moderator

Moderator Sarah Puro with the Congressional Budget Office began the session by noting that the Highway Trust Fund is in poor shape and there is some hope that technology can make new revenue options such as MBUFs possible. She cautioned though that we would have the same issue with an MBUF program as we do now with the motor fuel tax where there is political aversion to allowing it to escalate with inflation. Technology is only part of the equation, as much is driven by government policies. She also noted that we need to keep in mind the speed with which technology changes when we consider the impacts of technology on transportation revenue.

Marty Wachs with the Rand Corporation began by expanding on two points made by others. We have heard that the motor fuel tax is broken and that use cannot use it anymore and need to transition to something else. However, when we put the motor fuel tax in historic perspective, we may see the situation differently. The first motor fuel tax in the United States was introduced in Oregon in 1919, which today is the first state to have had an MBUF trial. The federal government introduced its first motor fuel tax in 1932 and by the 1940s all states had one in place. In spite of the popularity of the motor fuel tax, it was viewed as an inferior option to tolling. However, manual toll collection was much more expensive than collecting taxes from fuel distributors. The argument was that if at some point in the future we could toll more precisely, then we should transition to tolling. We need to remind ourselves that in 1920 the motor fuel tax was seen as a second best option for generating transportation revenues.

The second point that Wachs referred to is the fact that technology enables and also limits us. What technological change brings is greater uncertainty. State agencies are failing to take action because of poor forecasts. How can we forecast transportation revenues in the face of this uncertainty? Today we can only predict 2 years out due to the uncertainties of technological evolutions. Today, rather than forecasting, businesses are adopting to design strategies that can be adapted by a variety of futures. MBUF strategies should be flexible too. As we think about innovations such as autonomous vehicles, we need to think about what kind of revenue system could be responsible for different outcomes. We need to get the revenue question on the table as we consider technology options.

Adrian Moore with the Reason Foundation observed that millennials are making new decisions from prior generations. For instance, today it is acceptable to relocate a high school student. High school students have more virtual friends than friends with whom they interact directly. They speak with one another on Skype rather than in person. Moore had three primary observations to convey. First, the biggest change in current transportation behavior from the past is the option of choosing not to make a trip. Today telecommuters vastly outnumber transit rides. The second evolution is that while vehicle miles traveled (VMT) is going up; transportation revenues are actually going down. Is there any business or entity in the United States that is selling any good or service for which the revenue per unit hasn't gone down? This is a trend. The question is to ask what we are missing in the technology on the supply side of transportation so that we can provide things for less. In a world of technical change and innovation, the supply side of transportation

infrastructure is being left behind. Something has caused an imbalance between transportation revenues and the supply of transportation infrastructure. Technology is changing transportation cost structures.

The third evolution is disruptions caused by technology. The shared ride service Uber is an excellent example. Millennials love Uber. However, it is disrupting the status quo and cities across the country are trying to regulate it. Monkey Parking is another example. It is an iPhone app that allows users to auction off public parking by informing app users that they are vacating a space and then handing the space over to the highest bidder. The City of San Francisco has ruled that this is illegal and is trying to curtail Monkey Parking's operations there. Ride Roy is a technology that connects sluggers with drivers of carpools. Users share their travel plans with the app. It finds divers going their way and the two agree on how the costs of the trip will be shared.

The use of technology is changing paradigms, according to Moore. The three examples cited here are all disruptive, but none has required much upfront financing. Technology is changing the way transportation work. When we think about technology and finance—resilience versus anticipation—we need to expect constant change or we will sink under a sea of apps.

J. J. Eden with AECOM began by asking if technology is our friend or our foe. He noted that 5 years ago, most firms involved with electronic toll collection (ETC) were small companies. Today many large companies are involved in the ETC sector, including 3M and Xerox, because of the potential for high profits. As far as ETC technology is concerned, we will solve the front-end transponder issues. The challenge is the back end. We will have multiprotocol transponders in vehicles by 2017, but who will own and manage the accounts? That is where the money is. Will it be a toll agency? Who will set the business model? How will it come together?

Mobile commerce is a very lucrative investment platform. Analysis done by three banks came back with similar numbers, besides tolling mobile commerce will be moving \$50 billion a year in parking and fast food alone. The big companies are jumping because they see the potential for profit rather than for the good of the market.

MAP-21 mandates interoperability by 2016. Effective ETC relies on information maintained by departments of motor vehicles (DMVs), but there are issues sharing DMV information across state lines. The ETC sector and industry organizations are working on the issue and have a vision of establishing an interoperability network hub. Many businesses are interested.

Ken Buckeye with the Minnesota DOT discussed the trajectory of VMT fees. As Marty Wachs discussed, MBUF is an enormously complex undertaking. Minnesota has undertaken two MBUF demonstrations. Three years ago it did a demonstration using smartphone technology and learned a lot in the process. Reflecting on the demonstrations, Minnesota DOT recognizes that we have to be honest about why we are considering MBUF; it has to generate more revenue than fuel tax or else it is not worth it given the complexity. People are looking for clarity and a convincing and compelling message to support MBUF. What is the MBUF value proposition? Users need a value proposition.

The private sector may be doing a better job on things related to mileage-based insurance, other things that ensure safer driving. We need to ask what the government can do that the private sector cannot. Mainstream auto makers are already collecting large amounts of data from sensors in their vehicles. The driverless Google car opens a lot of doors and there are new apps and other add-on travel services. Asha Agrawal's research suggests that we can garner greater acceptance with green vehicle fees. MBUF can be implemented on one of three trajectories: alone by states, industry led, or a hybrid. We need to convince the public that it is necessary. What we've learned from state of Oregon about public acceptance and evasion is enormously important in helping us

understand hurtles and pit falls. Buckeye suggested that we should start small, perhaps with green fuel car fees. The compelling message revolves around choice. We have a deteriorating system and we are going to suffer as a nation. Our quality of life will be impacted without need more additional transportation revenues.

QUESTIONS AND ANSWERS

Participants asked the panel members the following questions:

Sara Puro: No one talked about transit or freight. What other modes besides highways providing a nexus with technology?

Marty Wachs: The goods movement sector is ahead of the highway sector. There are political questions involved with using technology for infrastructure. The hard costs of transit are not affected so much by technology.

Ken Buckeye: In Minneapolis, there is a tremendous amount of technology integration into transit, which has broken a lot of barriers. There is a synergy with TOD and smart cars because the app that knows when the bus is coming and has made transit very user friendly.

Puro: Can you raise user fees for transit to increase fare box recovery?

Adrian Moore: Peak pricing on transit.

Marty Wachs: There are many options with fares and peak policies. The technical capacity exists to charge people by route, time of day, age, and income category. Transit people keep saying that getting the technology is infeasible, but that they are studying it. Technology is not limiting, the question is more about who is going to pay.

J. J. Eden: The MTA in New York City directs three-quarters of its toll revenues to support transit.

Rick Rybeck with Just Economics, LLC, noted that we are already charging transit users by distance and by time of day, but people don't even realize they are already doing it. Transit creates value for more than just people who are using it. In my opinion, only the users should be charged for use of the system. We need to find out how to capture increased land values created through public investment.

Bob Poole with the Reason Foundation asked about smartphone apps and ETC interoperability.

Eden: There have been discussions with a credit card company on using a debit cards rather than credit cards to pay for managed lanes. This is good from a social justice perspective. Five years ago we were not thinking about mobile commerce. We just related tolling to people collecting coins.

THURSDAY, JULY 10

Industry Views on Future Transportation Finance *What's New and What's Next?*

LOWELL CLARY

Clary and Associates, LLC, presiding

Steve Finnegan with AAA reported that his organization has 6.5 million members in Southern California and 54 million members across the United States and Canada. AAA was originally founded as an advocacy organization for motorists. AAA has three lenses through which it looks at transportation issues:

- Ensuring that the money that's being paid by motorists is being used well. Money needs to go to the best and most-effective projects.
- Advocating to ensure that transportation funds are protected.
- Advocating for more money for transportation, but with the belief that those asked to pay more should clearly benefit from doing so in the end.

There are different options for increasing transportation revenues. These include increasing the federal motor fuel tax. AAA believes that the death of the gas tax has been exaggerated and is calling for an increase over 10 years. Traditionally AAA has not supported tolling, but its position has changed. It supports tolling on new roads and the value they provide. It is opposed tolling on general-purpose lanes, and supports HOV to HOT lane conversions on a case-by-case basis. The Interstate 2.0 proposition might be acceptable to AAA if it comes with adequate protections. MBUF needs to be studied and has many issues that need to be addressed, including fraud and equity. The use of sales taxes revenues for transportation has been criticized for being regressive, but it is a proxy for a goods movement fee. Finnegan concluded by saying that there are always five questions that need to be considered with any transportation revenue proposition: How much? What are the goals? From whom? By what method? At what level of government? The public has to understand that value the increase will afford.

Pat Thomas with the ATA conveyed that 90% of trucking companies are small businesses. The industry is still recovering from the recession and capacity on only recently reached pre-2008 levels and tolls are a significant cost for the trucking sector as operating margins continue to be very thin. Nearly 70% of all freight in United States is delivered at some point by truck and over time this level is going to increase. Congestion is a real issue and causes \$9.2 billion in lost productivity for the trucking industry each year. VMT by commercial vehicles will increase by 50% in the next decade.

The Highway Trust Fund is in real trouble. A "patch" is needed soon, but we also need sensible a long-term solution. Road conditions and bottle necks are beginning to negatively impact the supply chain. The ATA believes that we should retain the "user pay" concept that is connected to use. Transportation funding must be reliable, predictable, efficient and sustainable. The federal government has an important role to play, but not necessarily a dominant role. Raising the fuel tax is our best solution; the motor fuel tax is an efficient tax to collect and has a

low evasion rate. We should increase the motor fuel tax and then index it to inflation. We need the political courage to do what is required.

Janet Kavinoky with the U.S. Chamber of Commerce said that with more than 300,000 members it is difficult to arrive at consensus on the issue of transportation funding. We need to figure out how to ask tough questions about how we finance out transportation system. We need to recognize that funding transportation is good for the business environment. As an advocacy organization, the Chamber supports its members' needs. The Chamber's members want multimodal systems that are reliable, safe, and conducive to economic development.

Like ATA, the U.S. Chamber of Commerce believes gas tax is right solution and believes that there is a continued need for a federal role. We need transportation-related revenue sources that can be collected federally. They should be sufficient to cover our needs. However, nothing is feasible politically. Congress is in denial and is angry that we have a transportation funding problem in the first place. Congress' anger has morphed into bargaining and cuts in other areas and to turning to the private sector. Unfortunately this approach does not generate revenue and we are just kicking the can down the road.

Kenyon Gleason with the American Road and Transportation Builders Association (ARTBA) noted that 31 states have expressed public concern about the status of the Highway Trust Fund and seven states are delaying projects due to concerns about the availability of funding. There are a myriad of revenue options that elected officials should considered, but they refuse to do so and meanwhile contractors are laying off workers. The bad news is that Congress is not acting on the issue of transportation funding.

ARTBA believes that increasing the motor fuel tax is an appropriate short-term solution and wants to retain the user fee model. However, CAFE standards are going to decimate the gas tax in the long term. Gleason believes that there is a disconnect in Congress, which feels that there is not a public mandate to raise the motor fuel tax.

People are looking at the mechanics of different solutions, but we should focus on the need for outreach. We need to figure out how to get the public to understand that we need to pay to maintain our transportation system. ARTBA believes that we need to adjust the federal motor fuel tax this summer before the presidential election begins. MBUF is the next best solution and is a fair application, but ARTBA's members want consistency.

QUESTIONS AND ANSWERS

Participants asked the panel members the following questions:

Larry Goldstein, TRB: Why we can't we get together and launch a unified message? We need to stop preaching to the choir and reach out to the public.

Steve Finnegan: There is a level of distrust among the public that they will actually get more if they pay more. How do we get the message across to what appears to be a common goal for a short-term fix and long-term solution?

Kenyon Gleason: I would love to have a national list of contractors going out of business due to reduced spending on transportation. We need to bring this down to the kitchen table level and tell people what they actually pay and ask them how an ambulance is going to get them to the hospital if our roads are in poor condition. Our organizations need to get together and collaborate on an effective outreach campaign.

Question: If people understand the need to provide funding for transportation, then what is the real problem? Is it a problem with our leadership? Why did President Obama come out against an increase to the motor fuel tax?

Janet Kavinsky thought that one possible reason was that there are too many distractions. Many members of Congress are still trying to figure out what's going on with transportation funding. Members often play to their base and if they are worried about keeping their seats, they don't take risks like supporting an increase in the motor fuel tax or supporting other potential transportation funding sources. Therefore, Kavinsky concluded that we need leadership to make a difference.

Pat Thomas: Everyone hates Congress, but they like their congressman, you can tell because they keep getting re-elected. Wyoming has raised gas tax at a more local level. They don't trust Washington with a dime, but they trust the people on their City Council.

Michael Schneider, HDR Engineering: Approximately 70% to 80% of local ballot measures have worked at the local level because they spell out a capital program and they stick to it. What lessons can we learn at the federal level from the local level? How can we provide that lists of projects at a much broader level?

Kavinsky: The national government does not implement projects at the federal level. There are only 31 states that publish lists of projects for which they will use federal dollars. Green books and dashboards validate the work of state DOTs.

Gleason: Washington State and Utah have been transparent in identifying projects, how much is spent, and whether they are on budget and schedule. It would be beneficial if others could also be more transparent.

Chris Swenson: The public gets it, but they need to trust that they will get what they pay for.

THURSDAY, JULY 10

Transportation Public–Private Partnerships *Come for the Money, Stay for the Performance*

JORIANNE JERNBERG
FHWA, presiding

THE MARYLAND APPROACH TO P3s

Jodie Misiak, Maryland DOT

Jodie Misiak with the Maryland DOT discusses the department's current DBFOM procurement for the Purple Line, a proposed 16-mi east–west LRT line extending from Bethesda in Montgomery County to New Carrollton in Prince George's County providing onward connections to the Washington Metro Area Transit Authority. The project is currently in solicitation and Maryland DOT has prepared a draft of its request for proposals. It has already begun the procurement process and has shortlisted four firms. It anticipates receiving proposals in the winter of 2015 and reaching commercial and financial close in the summer of 2015.

Misiak explained that because of the scale and complexity of the project, Maryland DOT believed it would be an appropriate project to implement on a P3 basis, as it would allow the department to encourage private-sector innovation. The P3 procurement would also align well with recent legislative actions in the state enabling the use of the partnership approach. These include Maryland's 2010 P3 Law (Chapters 640 and 641 of the State Code); the Joint Legislative and Executive Commission on Oversight of P3s (2011); the 2013 P3 Law (Chapter 5 of 2013), an Executive Order establishing a P3 Sub-Cabinet in the summer of 2013; and Maryland DOT Regulations: COMAR 11.01.17, enacted in the summer and fall of 2013.

Maryland DOT is interested in building a P3 program and framework and is contemplating the implementation of other projects on a P3 basis. These include the Red Line and east–west LRT, which lie in Baltimore, and the replacement of the 1.7-mi Governor Harry W. Nice Memorial Bridge across the Potomac River between Newburg in Charles County, Maryland, and Dahlgren in King George County, Virginia. The existing bridge was completed in 1939 and is not built to current design standards.

Maryland DOT is considering P3s across all modes using availability payments as well as toll-backed concessions, according to Misiak. The Maryland DOT P3 program is in its adolescence and the department is looking forward to implementing additional projects. Its focus is on maximizing efficiency and that is why it was eager to include operations and maintenance in the Purple Line procurement. The department's decisions are backed by quantitative analysis and are also driven to by state policy.

Questions and Answers

Robena Reid: What goes into a design–build procurement compared to other structures? Do you get any additional efficiencies?

Jodie Misiak: We think about how we can manage these projects over time. Through quantitative analysis, and think about how policy interacts.

A TOOL FOR PROJECT ACCELERATION AND ASSET VALUE MAXIMIZATION

Bryan Kendro, Pennsylvania DOT

Bryan Kendro with the Pennsylvania DOT stated that Pennsylvania DOT is new to the P3 space. The state passed P3 authorization legislation in 2012 and its Rapid Bridge Replacement Project has attracted quite a number of high-profile firms. Launched in 2014, this project bundles 560 bridges from across the state into a single P3 procurement. Pennsylvania DOT made the decision to bundle the projects based on its earlier experience with a project that grouped the rehabilitation of bridges in three counties into a single project. In this case Pennsylvania DOT saw design savings of 30% to 40%, as well as a 10% savings in construction costs. Ongoing bridge rehabilitation was a high priority of the department as heavy trucks were not allowed to travel on a number of routes in the state due to the condition of the bridges.

Kendro then discussed the Rapid Bridge Replacement project that will involve the complete replacement of all 560 bridges. All the bridges are relatively small and the project will achieve efficiencies by using a small number of standard designs that will enable the contractor to prefabricate parts. The project includes 83 early completion bridges that have already gained environmental approvals. The entire project will be completed within 42 months and will benefit from the efficiency and accelerated costs savings of being done today. Rather than keeping the existing bridges open to traffic during their replacement, they will be closed entirely. The resulting detours will last from 2 to 5 weeks, but will result in a cost savings of 40%. The scheduling of the detours will be planned not to impact school buses. Pennsylvania DOT has shortlisted four bidders on the Rapid Bridge Replacement project and proposals were due to the department on September 29, 2014.

Pennsylvania DOT is also pursuing a DBFOM P3 procurement for the redevelopment of the train stations on the Amtrak Keystone Line between Harrisburg and Philadelphia. Half of the stations are shared with SEPTA. Pennsylvania DOT is looking to expanding long-term parking and charge \$2.00 to \$4.00 per day to cover some of the maintenance costs. Following a Request for Information with potential developers, Pennsylvania DOT was encouraged to group all nine stations in the corridor into a single P3 procurement. According to Kendro, the investor community does not want to take on retail risk, but Pennsylvania DOT is interested in working with investors that want to run the commercial space at the stations. The improvements will include upgraded station facilities, surface and structured parking, parking operations, and transit-oriented development. Pennsylvania DOT expects to initiate the procurement process in the fall of 2014.

Pennsylvania DOT is also considering implementing a consolidated natural gas (CNG) fueling infrastructure for transit to provide transit agencies in Pennsylvania with access to CNG statewide. The project would benefit from the state's ample supply of Marcellus shale natural gas and the fact that Pennsylvania DOT has supported the conversion of transit fleets in the state to CNG-powered vehicles. The project would involve the construction of fueling stations and private partners would be allowed to sell to nontransit fleets as well. Pennsylvania DOT expects to release this DBFOM P3 procurement in the fall of 2014.

Questions and Answers

Michael Sutherland, Metrolinx: Is there a structure to encourage different types of retail in the Keystone Line Station procurement?

Kendro: While Pennsylvania DOT is taking a corridor-based approach to this procurement, the opportunities available vary greatly station by station. One challenge is that the timing of the train schedules and the fact that Amtrak may have active maintenance projects.

ADVANCING PROJECTS THROUGH P3s

Leon Corbett, Florida DOT

Leon Corbett, with the Florida DOT explained that Florida DOT's philosophy for embarking on P3 projects is to transfer risk, reduce costs, accelerate project completion, secure additional funding, and leverage private-sector innovation. Together, these points form the collective value proposition for P3 procurements. Florida DOT wants to accelerate and advance the time frame of P3 projects with competitive bids. This drives innovation. Florida DOT has executed a number of P3 projects. These include the I-595 Express Lanes which was awarded in March 2009, the Port of Miami Tunnel which was awarded in October 2009, and the I-4 ultimate project which is expected to be awarded in the summer of 2014. All three of Florida's design-build-finance-operate-maintain (DBFOM) projects feature availability payments. In addition to its DBFOM portfolio, FHWD has also awarded 10 design-build-finance (DBF) projects which involve short-term financings and are a good way to advance priority projects, and to build-finance (BF) projects.

According to Corbett, with the I-595 project, the credit worthiness of the state's availability payment helped the private partner secure financing. This \$1.2 billion project was the first availability payment P3 transaction to reach financial close in the United States. The \$603 million in long-term debt provided to the project by the TIFIA Credit Program was critical to its success. The 10.5-mi project involved the reconstruction of the entire corridor and the provision of three at-grade, reversible, HOT lanes. The 30-year concession does not transfer revenue risk to the private partner, but it does involve an investment of \$207 million in private equity. Florida DOT receives all toll revenue and the project opened in March 2014 and was delivered on time and on budget.

The \$663-million Port of Miami Tunnel has no tolls and was also delivered through a 30-year DBFOM availability payment P3 procurement. The key feature of this procurement has been that Florida DOT shared geological risks with its private partner. The project has been financed with TIFIA, bank loans, and private equity. Construction was completed on time, but the opening of the tunnel has been delayed due to issues with tunnel equipment.

The \$2.38-billion I-4 Ultimate project will add 21 mi of new express lanes on I-4 which runs north-south through downtown Orlando. One the key factors in procuring the project on a P3 basis was the fact that by doing so Florida DOT could group multiple phases of the project together. The complex project will take 6 years to build, with construction anticipated to begin in 2015. The project will be financed using a combination of a TIFIA loan, private activity bonds, and private investor equity. The project will reconstruct major interchanges and bridge and will relieve congestion and improve safety.

Corbett believes that flexibility is integral for project sponsors, especially when accepting innovative ideas from the private sector. There is also a constant need to educate elected officials as the composition of the state legislature is in a constant state of flux. Sponsors also need to cultivate in-house expertise and also engage external experts. The engineers and legal teams should work together in teams rather than in isolated silos.

Questions and Answers

Participants asked Corbett the following questions:

Question: Have you adjusted penalty structures in any way? What are some of the lessons learned from contract delay bonus payment?

Corbett: Our concession agreements make provisions for penalizing construction contractor \$150,000 per day in the event of delays in opening projects. This puts a lot more pressure on the private partner to deliver the projects on time.

Aaron Jetty: Why couldn't you issue bonds or phase project as an alternative to P3 delivery?

Corbett: Bonds are already supporting trust funds. We've looked at direct TIFIA loan. There's value still in transferring risks. Every project is unique.

INTERNATIONAL PERSPECTIVE AND EXPERIENCE

Will Lipson, KPMG

Will Lipson with KPMG Global Infrastructure has worked on P3 projects in Texas and Canada and focused on P3 development in three jurisdictions: Canada, Spain, and the United Kingdom. The international infrastructure sector has had experience implementing P3 projects over the past 30 years, but if we look farther back and consider the development of the railroads, P3s have been used to deliver infrastructure throughout the past 200 years.

Over the past 30 years Canada has implemented almost 200 P3 projects with a value of over \$60 billion. PPP Canada has been established to assist with P3 policies at the federal level, and six of Canada's 10 provinces have created P3 agencies. They include Infrastructure Ontario, Partnerships BC, Alberta Infrastructure, Infrastructure Quebec, Partnerships New Brunswick, and SaskBuilds. In addition to the transportation sector, Canada's P3 experience extends across education, health, energy, corrections, and several other sectors.

Spain has one of the most mature P3 markets of any developed country, according to Lipson. It implemented its first road concession, the Guadarrama bajo el Alto Puerto de los Leones de Castilla tunnel in 1960, and has implemented over 400 P3 projects in the past 10 years. One distinguishing factor about Spain is that it does not have a national P3 agency. Most P3 projects are implemented by regional governments in such sectors as rail and transport, renewables, roads, water, and power, among others. Because of the long history of P3s in Spain, the country has developed a strong contracting community, with many Spanish firms active in P3 projects outside the country.

The United Kingdom came later to the P3 sector, but has developed over 700 P3 projects over the past 20 years with a construction value of over £30 billion. Partnerships UK was a public limited company owned by Treasury and the private sector that implemented P3s across a

variety of sectors and helped establish national P3 practices. It was dissolved in 2011 with the creation of Infrastructure UK, which is located within the Treasury and is focused on the United Kingdom's long-term infrastructure priorities and securing private-sector investment. The United Kingdom has implemented P3 projects across a wide range of sectors including roads, airports, ports, utilities, communications, and social services. The United Kingdom was also the originator of the availability payment P3 arrangements.

The remainder of Lipson's presentation was focused on the Golden Ears Bridge in Vancouver, British Columbia. This \$1.1-billion, 1-km, six-lane bridge over the Fraser River has been open for 5 years. The bridge was sponsored by TransLink and opens new land to the north of the city for development and was viewed as an essential economic development project as much as a transportation improvement. Sixty percent of the cost involved the construction of access roads. The procurement featured availability payments split into two components: monthly capital payments and monthly operations and maintenance and rehabilitation payments, both of which are subject to different kinds of deductibles. Although the bridge was funded with availability payments, it is now tolled, and TransLink keeps all of the toll proceeds. The scope of the project was based on anticipated revenues. Since opening, traffic on the bridge has increased by 30%.

Questions and Answers

Participants asked the panel members the following questions:

Carlos Contreras: Why wasn't the Golden Ears Bridge built as a real toll concession?

Lipson: Toll investors want upside potential, which is a different mindset from being a pure private operator. At the time of the Golden Ears Bridge procurement, TransLink's board was comprised of elected officials, some of whom wanted to keep the tolls low and others of whom wanted tolls to be high to encourage people not to drive. Ultimately the decision was made for TransLink to keep the toll proceeds so that it could gain board approval for the project.

Question: In terms of European experiences, what are some of the lessons learned about hand-backs?

Lipson: I don't know if there is a lesson learned from Spain. There have not been any hand-backs for deals in Canada yet, however, many P3s in Canada have 60-year concessions.

Mark Briggs: Could you discuss the importance of the \$900 million full funding agreement that Maryland DOT received from the FTA for the Purple and Red Line projects?

Misiak: Maryland DOT would have been much more cautious about engaging the private sector without the FTA funding. We would not have moved forward if funding had not been achieved and secured. There are a lot of moving pieces with a project as big as the Purple Line. As you look the projects in the pipeline, it's important to feel comfortable with the funding and financing before bringing in the private sector. The full funding agreement was very helpful.

Jen Meyer: How do you handle snow clearance as a risk?

Misiak: We keep it bundled into the P3, but are always looking out to see if it can be separated out. The private partner will be responsible for plowing, but will have to pay if it

causes damage. Salt is another concern with snow clearance for transit projects and at stations. The key issue here is performance and how you can measure it.

Lipson: In Canada snow removal is project specific. Sometimes the public agency retains responsibility for clearing snow, in others it is passed on to the private partner.

FRIDAY, JULY 11

Creative Ways to Consider Funding Future Transportation

SHARON GREENE

HDR, Inc.—Sharon Greene and Associates, presiding

PROMISES AND PITFALLS OF TRANSPORTATION UTILITY FEES

Carole Turley, UCLA

Carole Turley with UCLA discussed transportation utility fees (TUFs), which have been used in several states and cities to fund the maintenance of local roads. The TUFs are paid by property occupants based on land use intensity and are also known as street maintenance fees, road use fees, and street utility fees. They differ from transportation impact fees and mitigation fees in that they are paid by property occupants rather than developers, and that they are paid on an ongoing (monthly) basis for maintenance and are distributed as a utility. Local utilities do not meter use of the transportation system; instead the fee is set based on trip estimated trip generation based on different on land uses. Sixteen out of 25 TUF ordinances specify the use ITE trip generation rates.

The first TUF were implemented in Oregon in the 1980s and they have been used successfully in states and in some cities with small populations. However in four case TUFs have been removed following legal challenges.

Turley then compared TUFs to three other sources of funding for local government transportation spending: fuel taxes, property taxes, and sales taxes. The fuel tax is a user fee and is based on the amount of fuel consumed. It is a reasonable proxy for VMT; however, with improvements in fuel efficiency and use of alternative fuel vehicles there is more variability. The revenue generating potential of the fuel tax is limited in many cases because fuel taxes are not indexed to inflation.

Property taxes are a value capture mechanism with costs distributed based on property value. They can be used to fund local transportation needs in which case they are a proxy for contribution of transportation access to property value. However, when used to fund local transportation needs, the transportation sector must compete with other government services. In addition, property tax initiatives are often subject to voter approval.

Sales taxes are derived based on spending on taxable items. They have no clear connection to use or benefit from the transportation system. Turley believes that sales taxes may be popular with voters, but there is often a bias towards using sales tax proceeds for capital expenditures rather than operations and maintenance.

In comparison, TUFs are calculated based on an estimate of trips generated by property owners. They revolve around the concept of benefit rather than use and are a hybrid between user fees and value capture. Furthermore, TUFs are not subject to voter approval. However, there have been legal challenges to TUFs. These challenges have centered on whether a TUF is a fee or a tax. The authority granted to cities by their state constitutions may vary, but in general, the power of a city to levy a tax is much more limited that the power to charge a fee.

Are TUFs a tax or a tax that is pretending to be a fee to slide under the radar? If they are a tax, then they are property taxes and have to be based on property value. Therefore, if they are property taxes, then they are likely illegal.

Fees have several specific characteristics. First, they must relate to benefits and be charged in exchange for a particular governmental service that benefits the party paying the fee. They are voluntary, with the party paying the fee having the option of not utilizing the public service and thereby avoiding the charge. They are also earmarked in that the charges are collected to compensate the public entity for its services rather than for raising revenues. In this case TUFs may not be legal fees because they are not voluntary. This issue was finessed in Austin, Texas, where TUFs can be waived if a property owner can demonstrate that they do not drive or own a car.

Turley concluded by saying that there are two possible solutions to the legal challenges facing TUFs: changing the law to allow transportation utility fees or metering trip generation. However, TUFs can be thought of as gateways to MBUFs. If people get used to TUFs then perhaps they could get used to paying for MBUFs, or perhaps TUFs could be a substitute or an important compliment to MBUFs.

DEVELOPING A COOPERATIVE OWNERSHIP MODEL FOR SURFACE TRANSPORTATION INFRASTRUCTURE

David Ungemah, Parsons Brinckerhoff

David Ungemah with Parsons Brinckerhoff discussed transportation cooperatives, which offer an organizational and institutional structure for implementing road pricing. The gas tax has not kept up with growth for the demand for mobility, with fuel efficiency trumping the motor fuel tax and a lack of political consensus on increasing the base tax rate. The current surface transportation funding status brings about the question of how we will fund transportation needs in the future. In the 21st century, road pricing will replace fuel taxes as the primary means for funding and maintaining our transportation system, which could create a more-efficient market for allocating scarce capacity to keep the network sustainable. However, the cost of collection will be expensive and the ownership model for the system may look remarkably different from that of today. The ownership model will affect who receives transportation revenues and what they are able to do with it. We will need to determine what is funded through regular taxation and what is funded through user fees. All communities will want their fair share.

Transportation cooperatives may change the equation. The concept is based on a seminal paper, *The Political Calculus of Congestion Pricing* (King, D., M. Manville, and D. Shoup. *The Political Calculus of Congestion Pricing. Transport Policy*, Vol. 14, 2007, pp. 111–123. Available at <http://goo.gl/nGjZR5>). The premise behind this paper is that you cannot change the curve of political acceptability without fundamentally changing the beneficiary model. The cooperative approach would allow a broadening of the base of beneficiaries. A cooperative is defined as a business or organization owned by and operated for the benefit of those using its services.

Ungemah believes that cooperatives are more prevalent in the United States than most people realize and are particularly common in the electricity and insurance sectors. They also extend beyond local markets and can achieve a national reach. For example, electric cooperatives control \$140 billion in assets, including 2.5 million miles, or 42% of the nation's electric distribution lines.

The basic premise for the use of the cooperative model to fund transportation needs is that a cooperative company would be formed to serve as the investor and operational owner of a transportation facility. The new or reconstructed facility would be funded through user fees or tolls. The revenue would be collected by the cooperative company and investment dividends would be distributed to the owners of the cooperative. The improvements themselves could be funded by state infrastructure bank loans that would be repaid from the revenues generated by the facility. Transportation cooperatives would provide an investment mechanism that would enable us to use broad variable pricing applications to create travel time savings, as well as actual, tangible monetary value that can be contributed back to the community. With these capabilities, transportation cooperatives may provide an opportunity to move the needle on public acceptance of road pricing.

A cooperative ownership structure designed to generate new revenue may prove to be more publically palatable than government or private ownership. The cooperative model would ease public and political opposition to tolls due to “someone else profiting off of something we already own” according to Ungemah. The model also avoids governmental ownership which could be branded by opponents as a new tax, as well as the motives of private ownership may be suspect with the public.

There are two possible models for transportation cooperative ownership. Under the local investor–owner model, local municipalities would be the equity partners that own the roadway. Dividends would be distributed to local governments in compensation for local use of tolls, with dividend revenue used to augment or replace existing local property or sales tax revenue. This model would be P3.

Conversely, under the direct user–owner model, using the toll facility qualifies members of the general public for ownership shares in the transportation cooperative, with caveats for potential minimum use qualification. User categories could be created and would correlate to different levels of revenue distribution, according to Ungemah. Frequent users become beneficiaries of the cooperative and would receive dividends issued on net revenue. This structure aligns with the tradition cooperative model.

There are a number of issues that would need to be resolved in order to implement transportation cooperatives. One issue is owner liability in the event of crashes and incidents, and the risk of financial default, which could be offset by having the government underwrite project financing. Leveraging government funds may potentially be more efficient than any type of direct support. Ownership also introduces a number of key questions:

- Would anyone who uses the facility once be a member of the cooperative?
- Would it take a certain number of uses of the facility to automatically become a member of the cooperative?
- Would some type of signup be required to become a member the cooperative?

The Highway Trust Fund is about \$100 billion in debt and there is near-unanimous opposition to raising the motor fuel tax in Congress. In addition, expanded use of tolls and user fees will likely meet public opposition, according to Ungemah. Nonetheless, an evolution in transportation funding and finance is coming. The path to implementation will be slow, phased, and deliberate. A cooperative model may offer a mechanism to engage change away from opposition to that of benefits.

ROADWAY USAGE CHARGES

A Retrospective from 2050 on How We Got There

Chris Swenson, Parsons Brinckerhoff

Chris Swenson with Parsons Brinckerhoff gave a presentation explaining the future as history in what he called “the first, but likely not the last, historical perspective of transportation financing in the first 50 years of the 21st century.” From this futuristic exercise, he described the following scenario as if he were speaking from the year 2050:

“The regressive fuel tax eventually failed as I drove my Prius that got 200 miles per gallon. The fact that Congress tried to use nontransportation sources to fund transportation didn’t help. Because of the gridlock in Washington, state and local governments began to move on their own and the public wanted to control their own destiny. As we preferred to collect and use transportation funding locally, P3s and transportation cooperatives grew. Industry wanted a high-tech solution and the technology was there, so we went the MBUF route.

“Low-tech solutions were also considered, but they treated all hours of the day the same. We finally had the revelation that congestion was interfering with functional capacity. When we needed our highways the most, instead of a capacity of 2,000 vehicles per lane per hour, congestion had reduced carrying to only 1,000 vehicles. Because proper management could reduce the need for new construction, price management gained momentum.

“In 2017 there was a legal challenge to managed lanes in major urban areas because pricing all lanes was not considered. So then an EIS needed to be done to look at pricing all lanes. We finally realized that roads differ in their functions and that this was tied to lanes use and the amount of nonlocal traffic. This led us to ditch the one-size-fits-all motor fuel tax and migrated to pricing on all lanes. Managed lanes helped and the demonstration projects followed and reinforced the understanding. The public got it and finally the politicians supported it too. The people wanted only to pay for what benefits them. They want value and choice.

“There were always multiple sources of transportation funding from federal state and local income taxes, property taxes, registration fees, sales taxes, excise taxes, and more. So what did we come up with in the end? We have multiple sources of funding, but all with a specific, logical, and visible connection to what they fund. The cooperative ownership structure played a surprisingly large role in, setting minimum standards and using stand-alone financings backed by infrastructure banks.

“We have a collection of taxes and fees working together as a system. Many were phased in to substitute for other taxes and fees. We have variable tolls on highways, flat tolls on local streets, and critical point tolling on expensive crossings where the people who use the facility pay for it. We also have registration fees and mobility fees being used for local roadways and local arterials. As you get into down town, connection between land use and utility fees became more apparent.

“And what about environmental justice, you ask? We used the grocery store model. Instead of lower costs for everyone, we supplemented the economically disadvantaged so they could be able to purchase road capacity at its true cost. The extensive use of pricing also limited the amount of new construction needed, reducing social and environmental impacts. Reduced congestion also resulted in reduced emissions from the remaining fossil fuel vehicles.

“And did all of this kill transit? No, we priced different modes to balance capacity. As more people use transit, their vehicular tolls are reduced. Transit users are members of the cooperatives, too. Everyone realized they were partners. Today in 2050, automated and connective vehicles are a large portion of the fleet and telecommuting comprises a large percentage of work “trips.” We stumbled many times on the way, but it worked out.”

QUESTIONS AND ANSWERS

Participants asked the panel members the following questions:

Patrick Vu: How much money could cooperatives actually raise?

David Ungemah: If you know you are going to toll all lanes, then there is no need for transportation cooperatives. The cooperative comes in when you toll some lanes or sections. A cooperative enables a mechanism that would not otherwise exist. MAP-21 has given us opportunity to toll any reconstructed bridge or tunnel or Interstate network. Transportation cooperatives give us the political juice to make this possible.

Lowell Clary: Transportation cooperatives seem to resemble a local expressway authority. Would you agree?

Ungemah: Many communities have established expressway authorities. The next step is asking what the relationship of the model is to the users. They are land-based, developer-based systems. The beneficiary is the owner–developer of the land.

Chris Swenson: Joe Wagner thought about letting users benefit from any additional funds that are collected and toll roads. He was clear that his business was to move people, not to make as much money possible from the tolls. Early revenues from expressways are minimal, but in later years are more substantial. Local toll authorities may want to move people rather than making money. Toll authorities could be interested in this kind of model.

Bob Poole noted that the presentation on transportation cooperatives was an inspiration, but raised an objection with the paper on which it was based. He noted that state DOTs own the Interstate system and asked how they would view the ownership of the Interstate being transferred to cooperatives.

Ungemah: The issuer goes beyond ownership to responsibility. Ultimately state DOTs are responsible for operating and maintaining the Interstate system. Perhaps they could issue leases back to the cooperatives following the federal land model. It would essentially be like a P3 concession. There are many questions that would need to be resolved.

Lee Haber, Caltrans: Could transportation utility fees be scaled up to be used for commercial development. Could shopping malls and similar developments be charged user fees?

Answer: It has not been done. The only jurisdictions using TUFs have been smaller locations. Small cities generally have one tax rate for all residential properties, then list 4 or 5 business in town and have a different rate for those. In larger cities, the motivation to look outside the property tax exists due to nontaxed properties such churches and universities. For example, Provo, Utah, was able to meet with Brigham Young University and negotiate that as a very large trip generator it should make payments to the city. Direct negotiation with trip generators is helpful for greater buy-in. State DOTs have also worked with large trip generators.

Sharon Greene: It is to see the TUF concept as a mitigation measure or some generalized measure for another use.

Swenson: This would require an independent fee calculation.

Greene: if you consider setting those fees as a life-cycle cost, it might work.

FRIDAY, JULY 11: CLOSING SESSION

Applying Lessons Learned to Move the Transportation Industry Forward

NATHAN MACEK

Parsons Brinkerhoff, presiding

Darrell Johnson

Orange County Transportation Authority

Darrell Johnson with the Orange County Transportation Authority (OCTA), discussed lessons learned to move the transportation industry forward based on his experience as the chief executive officer of a multimodal county transportation agency. He noted that OCTA paratransit services cost 10 to 12 times that of regular transit services. OCTA has been exploring strategies to delivery paratransit services more efficiently. Not all disabled passengers have the same needs. Although OCTA maintains a fleet of 600 Americans with Disabilities Act (ADA) –compliant buses, it recognizes that they do not need to send a bus for every paratransit trip. Therefore, the agency has implemented a new taxi service model with trip costs of 1/3 of those on ADA busses and over 4 years has saved approximately \$46 million. OCTA’s strong emphasis on technology and taxi modes has enabled them to develop a same-day taxi service model that carried 70,000 people in 2013. Every dollar saved has gone back into other services and enabled them to restore fixed-route services that had been cut. OCTA was awarded a Golden Hub of Innovation Award from the Association of California Cities for its paratransit enhancements.

OCTA has been preparing a 20-year comprehensive business plan since 2003. They forecast revenues and expenses across all activities and adjust spending to accommodate available revenues. Johnson believes that this is a very useful process and should be done by more public agencies because it allows OCTA to be proactive rather than reactive. For example, at the onset of the financial crisis in 2008 OCTA saw that their sales tax revenues had fallen sharply and they were able to react quickly and reduced their bus schedule by 20%. The repercussions of their reduced revenue would have been far worse if they had waited longer to react. OCTA also puts money in a capital reserve fund on an ongoing basis. This enables them to pay capital purchases, such a new bus \$100 million fleet, in cash and avoid an ongoing debt cycle. The agency has no debt on the transit side. Johnson noted that it was more difficult than may have been thought to gain board support for the adoption of OCTA capital reserve fund.

The remainder of Johnson’s presentation focused on the SR-91 Express Lanes, the 10-mi, variably-priced, four-lane toll facility in the median of the Riverside Freeway. OCTA purchased the lanes in 2003 from a private developer for \$207.5 million. It raised \$100 million for the purchase in bond debt and used internal funding sources for the remainder. The facility features fixed variable pricings, with traffic volumes monitored daily and toll rates adjusted quarterly. Toll rates on the lanes have been lowered eight times due to a drop in traffic levels. OCTA has spent the past 7 years working with the Riverside County Transportation Commission (RCTC) which is extending the lanes into Riverside. The new extension will open in 2017 and the SR-91 express lanes will look like a single facility even though it won’t be in reality. There will be one

phone number, not two, and a single operator. OCTA expects to gain approximately \$5 million in annual savings due to economies of scale.

OCTA could make more money on the lanes, but its goal is to move more people rather than generate more money, according to Johnson. OCTA is selling dependable trips at 65 mph. If you erode the product 10 people will no longer be willing to pay to use the facility. Customer satisfaction is critical to the success of the lanes and is surveyed every 2 years. OCTA's customers are highly satisfied, but only use the lanes once or twice a week. OCTA is looking at expanding tolling types, including business accounts.

Currently, roughly 300,000 trips are made on the SR-91 corridor on a daily basis, with 35,000 of those using the express lanes. Now that the express lanes are publicly owned and no longer subject to a noncompete clause, OCTA has added general purpose lane capacity. Johnson said that the rating agencies did not like the addition of the new capacity because of the need to maximize throughput on the express lanes in order maintain their credit rating.

OCTA refinanced its residual debt on the express lanes 18 months ago taking out private debt at a fixed rate of 3.85% without extending the term. When they refinanced they were also able to consolidate their reserves. The refinancing has reduced OCTA's carry costs for the express lanes. Now they have \$10 to \$12 million in excess revenue per year. They will reinvest that money with an 80/20 split between highway and transit. This will be revisited every 2 years. The refinancing also includes a line of credit. OCTA's board has just approved five investments to be funded with proceeds from the express lanes. They include increased Metrolink commuter rail service between Orange and Riverside Counties, as well as the provision of a new commuter rail station in Placentia. Express bus service will also be expanded and there will be freeway improvements on SR-91 between SR-57 and SR-55 and an operational study between SR-24 and SR-55. OCTA is also studying the possibility of adding intermediate access points on the existing SR-91 express lanes.

Johnson finished his presentation by saying that OCTA continues to work cooperatively with RCTC on the extension of the 91 express lanes, which will add 8 mi in Riverside County. Its recent refinance of the SR-91 express lanes debt has resulting in a cost savings of \$1.47 million annually through 2030.

David Yale *LACMTA*

David Yale with Los Angeles Metro agreed with Johnson that ADA operations are a growing challenge. In reviewing the conference schedule Yale has been reflecting on his own experience in the transportation funding and finance arena. The motor fuel tax is in decline and perhaps this is what we need to make the transition to congestion pricing. The constraint on the motor fuel tax may provide the impetus to move to a different funding paradigm.

The focus in Los Angeles has been finding solutions for diminished state and federal transportation funds. Los Angeles is a self-help county and has passed three sales tax measures: Proposition A in 1980, Proposition C in 1990, and Measure R in 2008. Propositions A and C provide funding in perpetuity and generate approximately \$4.9 billion per year. Measure R is a half-cent sales tax that generates approximately \$2.1 billion per year that will be in place for 30 years from 2009 to 2039. Revenue from the county's sales tax measure has recovered from the financial crisis and construction costs have fallen.

Yale explained that Los Angeles Metro has also pioneered the HOT concept in Los Angeles County with the I-10 and I-110 express lanes. These facilities use interoperable technology and benefitted from a \$300 million federal implementation grant. This has been a ground-breaking experience for the public in Los Angeles County. All vehicles using the express lanes must have a transponder and to date, nearly 500,000 transponders have been distributed and users like the system. Metro is also studying the possible implementation of HOT lanes on I-5 in the high-growth northern portion of Los Angeles County and exploring the potential of P3s in developing projects. With P3 project life-cycle costs are taken over by the private-sector partner. However, incentives for self-help counties and the state are split. Caltrans is in charge of life-cycle cost and Metro does the ribbon cutting. This disconnect raises the question of whether Metro should take over the life-cycle cost. Metro and Caltrans are current at cross purposes and the party that assumes the life-cycle costs needs to be resolved. By avoiding P3s, Metro incurs costs, but by using P3s, Caltrans avoids costs.

According to Yale, Metro is interested in pursuing America Fast Forward Bonds. With these proposed facilities, pension funds would use tax withholding for annuitants to cover tax credit bonds. These financing approaches would reduce interest payment for the issuers by granting investors annual tax credits in lieu of interest payments. Fast Forward Bonds will encourage pension funds to invest in infrastructure and would need to be used on long-life projects with a minimum tenure of 35 years. Metro is also focused on taking advantage of increased land value near transit stations. Up to now Metro has not taken advantage of value capture mechanisms. Metro intends its proposal to be on the ballot in November 2016 for another revenue measure focused on capturing land values near transit facilities. The proposal would need to gain two-thirds of the vote to pass. The intent is to make it too expensive to leave land near transit facilities vacant.

Will Kempton

Transportation California

Will Kempton, Executive Director of Transportation California, discussed the challenges of transportation finance in the current environment. He began his presentation by saying that the “warning lights” have gone off and we need to shore up the Highway Trust Fund. All states have the same struggle: difficulties engaging the public. California has many needs and challenges. The population will expand from 38 million today to 44 million by 2020. The state has the eighth largest economy in the world, but ranks 48th in the United States in the condition of its highways and incurs 94 million hours per year in traffic congestion. Growth will occur in the state’s urbanized areas, making highway repairs more expensive. The state has 15,000 lane miles of highways, 141,000 mi of local streets, three intercity rail lines with 981 track miles of commuter rail, 70 transit operators, 12 deep-water ports, three major global ports, and almost 20 million vehicles that make over 1 billion trips per year. California drivers travel 327 billion highway miles every year and the state has unfunded transportation needs totaling \$295 million through 2021.

The motor fuel tax is the primary source of transportation revenue in California, but it is in decline. It is supplemented by tolls and local sales tax measures. California’s self-help counties distinguish it from other states, but as in the rest of the country the share of federal funding is declining. In terms of transportation funding California has gone over the fiscal cliff and is in free fall. According to Kempton, more money is needed for transportation and the states options include the following:

- Gas tax increases,
- Sales taxes on fuel,
- Truck weight fees,
- Tolls,
- Statewide bond measures,
- Local sales tax programs,
- Local impact fees,
- Cap and trade funds,
- Lowering required voter thresholds on local revenue measures,
- Vehicle registration fees, and
- Vehicle license fees.

The state's 2014–2015 budget provides \$12.3 billion in transportation funding. However, recent polls have found that 86% of Californians are opposed to increases in the motor fuel tax.

Cap and trade strategies that assess polluters by requirements to buy credits to allow the polluters to keep on operating could increase from \$852 million today to \$2 to \$3 billion moving forward. Although there is some good news for conventional rail transit and high-speed rail in California, the challenges are great. Proposition 1B is over, gas tax revenues are declining, and there are immense political obstacles and skepticism. Kempton said that polling shows that Californians do not see transportation as a high priority and that voters believe they are paying enough in taxes. The transportation sector has few political champions. Our dilemma today is that there is no long-term solution and we face a heavy political lift.

But there are some Plan B opportunities. The state could recapture truck weight fees, advance loan repayments, and increase the portion of cap and trade funds directed to transportation needs. It could also implement a VMT tax pilot and approve a new transportation bond program in 2016. At the end of the day, according to Kempton, we will have to do a better job of delivering our transportation programs; we will have to be more efficient and accountable, and we will have to be more transparent.

Kempton concluded his presentation by saying that in order to be successful we will need to engage in several concurrent strategies. We will need to inform and educate the public. Transportation stakeholders will need to work with the governor and cultivate transportation advocates in the state legislature. We need to build our coalition—expand the tent—and stop preaching to the choir. We need to bring business in a big way. It is up to us as members of the transportation community to get the job done.

QUESTIONS AND ANSWERS

Nancy Pfeffer: Could you comment on adding express lanes on I-405? As a frequent Blue Line rider, it seems that there may be opportunities to capture land values near stations in areas like Watts and other desolate locations. Are these types of stations a problem or an opportunity?

Darrel Johnson: We pursued a 5-year environmental planning process on adding 13 mi of HOT lanes on I-405 up to the Los Angeles County line. We faced extreme public backlash and the climate for OCTA was very difficult. The only other action we could have taken to incite this type of reaction would be cutting bus service to disabled people. The OCTA board has voted twice not to move forward with the HOT lanes. We are approving the project as a general-

purpose lane widening and we will wait to see what transpires after the project gains NEPA approval. We are trying to craft a solution that will be funded through a potential sales tax measure. We do not want to wait 5 years to move the project forward. We are coordinating with Caltrans, but right now our policy is not to go the toll route.

David Yale: The land value question is a relative one. In Montreal we have heard that the land adjacent to stations is taxed and not the improvements of the land. This incentivizes owners to do something with the land and not just speculate on it then do nothing. We need to imagine what the area would look like without the transit station and then capture the value of the land. The Canadian experience is attractive.

Lee Munnich: What is the status of HOV-2+ carpool lanes in California vis a vis the Section 166 requirement to maintain 45-mph operations in the managed lanes 90% of the time during peak periods?

Yale: The MAP-21 requirement to maintain 45 mph speeds or be considered to be degraded and risk losing federal funding does not make sense because when you only look at one lane it does not provide a good sense of the operations in the corridor. We need modifications to the law to look at speed differentials between the managed lanes and the general-purpose lanes and exclude rainy days. We have direct connector ramps and ramp metering. There isn't much low-hanging fruit remaining. In Los Angeles, the switchable transponder allows us to soften the blow by increasing the occupancy requirement incrementally. There would be operations improvement moving to a three-plus occupancy requirement in key corridors, but the most important thing is to get better language in the reauthorization legislation on this subject.

Ken Buckeye: Gas tax swap revenues are fluctuating. Is there a solution to that?

Will Kempton: With the gas tax swap, the program generates more revenue when the price of gas goes up and it declines when the price of gas goes down. We will move past that issue when California implements a road user charge to replace the gas tax.

Sharon Greene: When Proposition 1A was passed in 1990; it included a defined package of projects that was also identified in concert with the gas tax increase. Would this approach possible now if an increase in the state gas tax is considered?

Kempton: We had political support in 1990 from Governor Davis. Having the chief executive office of the state behind the program really helped. We do not have that same support today.

Question: Will [Kempton], could you please expand on the need for reform and efficiency?

Kempton: One reason that people do not support new transportation funding is that they do not think that the public sector manages money well. The self-help counties have been successful because they lay out what their programs will include and have transparent tracking. At the state level we need to be more accountable. We need to show people that their projects are being delivered on time and that they are getting what they pay for.

Jen Mayer: There seems to be a misalignment of P3 incentives for operating and maintaining projects. How can this be made more programmatic?

Yale: The problem with P3s in California is that we need to align split incentives between the self-help counties and the states. We need a firewall between operational and capital

expenditures in Propositions A and D. We need to identify inefficiencies and harness the private sector to use resources better. When our board faces difficult questions about fare increase and operations costs with our labor unions, they can't rely on propositions A and C.

Johnson: It's not just a P3 issues, it's also a local sales tax issues. If we got to the voters and say we are going to build new things, they like that, but when we say we are going to build and then maintain them for 40 years, they don't like that. It gives the impression that tax monies are going to support P3s.

Moderator Nathan Macek thanked the panelists and the conference attendees and announced that the conference had concluded.

APPENDIX

Participants List

Asha Agrawal
MTI National Transportation Finance Center

Barney Allison
Nossaman LLP

Eric Anderson
Maricopa Association of Governments

Baabak Ashuri
Georgia Institute of Technology

Richard Baker
Texas A&M Transportation Institute

Cathrina Barros
PECG

James Bass
Texas Department of Transportation

Dan Baxter
CH2M Hill

Mitchell Behm
OIG
U.S. Department of Transportation

Thomas Boast
THB Advisory LLC

Dale Bonner
Plenary Group

Susan Bransen
California Transportation Commission

Marcus Brewer
Texas A&M Transportation Institute

Mark Briggs
Parsons Brinckerhoff

Julie Brogan
Ohio Department of Transportation

Kenneth Buckeye
Minnesota Department of Transportation

Mark Burris
Texas A&M University

Gary Capps
Oak Ridge National Laboratory

Monica Castellanos
Parsons Corporation

Margaret (Peggy) Catlin
Catlin & Company, LLC

Chadi Chazbek
HNTB

Zhenhua Chen
George Mason University

Derrick Cheung
TransLink

Ross Chittenden
Contra Costa Transportation Authority

Adam Christian
HDR Engineering, Inc.

Tawnya Clark
Schneider Electric

Lowell Clary
Clary Consulting, LLC

Christopher Clement
New Hampshire Department of Transportation

Nathaniel Coley
Federal Highway Administration

Carlos Contreras
C&M Associates

Leon Corbett
Florida Department of Transportation

Thomas Ferch
Ada County Highway District

Amber Crabbe
San Francisco County Transportation Authority

Stephen Finnegan
Auto Club of Southern California (AAA)

Qingbin Cui
University of Maryland

Chuck Fuhs
Chuck Fuhs, LLC

Daniel David
RBF Consulting, Baker International

Colleen Gants
PRR

Michael Davis
RS&H

Saavan Gatfield
Fitch Ratings

Patrick DeCorla-Souza
Federal Highway Administration

Brittney Gick
Transportation Research Board

Karin DeMoors
High Street Consulting Group

Jesse Glazer
Federal Highway Administration

Chris Devlin
Iteris, Inc.

Kenyon Gleason
ARTBA

Malcolm Dougherty
California Department of Transportation

Lawrence Goldstein
Transportation Research Board/
National Academies

Mark Dunzo
Kimley-Horn, Inc.

Ginger Goodin
Texas Transportation Institute

James Eden
AECOM

Sharon Greene
HDR, Inc.–Sharon Greene and Associates

David Ellis
Texas A&M Transportation Institute

Cassidy Grillon
WMH Corporation

Norman Emerson
Emerson & Associates

Randall Guensler
Georgia Institute of Technology

Casey Emoto
Santa Clara Valley Transportation Authority

Rosa Guillen-Sanchez
Orange County Transportation Authority

Morteza Farajian
Virginia Department of Transportation

Lee Haber
California Department of Transportation

Nicholas Farber
Colorado High Performance Transportation
Enterprise

David Hadwiger
New Mexico Department of Transportation

Baruch Feigenbaum
Reason Foundation

Lisa Hague
Aerospace Corporation

Timothy Haile
RBF Consulting, Baker International

Rami Harb
ATKINS

Steve Heminger
Metropolitan Transportation Commission

Darren Henderson
Parsons Brinckerhoff

Tamar Henkin
High Street Consulting Group

Rachel Hiatt
San Francisco County Transportation Authority

Dennis Houlihan
AFSCME

Gary Hudder
City of Round Rock

Laura Huizinga
Lindsay Transportation Solutions/
Barrier Systems

Max Inman
Mercator Advisors LLC

Angela Jacobs
Federal Highway Administration

Yagnesh Jarmarwala
CDM Smith

Jorianne Jernberg
Federal Highway Administration

Aaron Jette
U.S. Department of Transportation

Darrell Johnson
Orange County Transportation Authority

Patrick Jones
International Bridge, Tunnel,
and Toll Association

Marcelle Jones
Jacobs Engineering, Inc.

Steven Keck
California Department of Transportation

Will Kempton
Transportation California

Bryan Kendro
Pennsylvania Department of Transportation

Lisa Klein
Metropolitan Transportation Commission

Norio Komoda
Sakura Associates LLC

Nishant Kukadia
Jacobs Engineering

Daniel Lamers
North Central Texas Council of Governments

John Lawson
Virginia Department of Transportation

Christopher Lawson
Aerospace Corporation

Jaimee Lederman
University of California–Los Angeles

Joung Lee
AASHTO

Gareth Lee
KPMG

Gregory LeFrois
HNTB

Marla Lien
Regional Transportation District

Mark Linsenmayer
Los Angeles County Metropolitan
Transportation Authority

Salvador Montes
Department of Urban Planning
University of California–Los Angeles

Will Lipson
KPMG

Adrian Moore
Reason Foundation

Cathy Liu
University of Utah

Kia Mostaan
Georgia Tech

Joanie Lofgren
U.S. Government Accountability Office

Lee Munnich
University of Minnesota, Humphrey School

David Luskin
Federal Highway Administration

Mike Murray
U.S. Department of Transportation

Nathan Macek
Parsons Brinckerhoff

Gregory Nadeau
Federal Highway Administration

Matthew MacGregor
CDM Smith

Annie Nam
SCAG

Tuyen Mai
Ernst & Young LLP

Gregory Newmark
Center for Neighborhood Technology

Susan Martinovich
CH2M Hill

Alicia Nolan
Federal Highway Administration

Timothy Mathews
TWU Local 100

Sasha Page
IMG Rebel

Jen Mayer
Ernst & Young

Brian Panto
Ontap ITS

Cathy McLay
TransLink

Michael Patella
Federal Transit Administration

B. Starr McMullen
Oregon State University

Ray Patron
Caltrans

Joey Mendoza
Overland, Pacific & Cutler, Inc.

Rubstello Patty
Washington State Department of
Transportation

Chelsea Merrill
PECG

Benjamin Perez
Parsons Brinckerhoff

Alfiya Mirzagalyamova
AECOM

Jonathan Peters
The City University of New York

Jodie Misiak
Maryland Department of Transportation

Nancy Pfeffer
Network Public Affairs

Dave Schumacher
SANDAG

James Pinheiro
Caltrans

Marc Scribner
Competitive Enterprise Institute

Steven Polunsky
Texas Transportation Institute

Geoff Searle
Granite Construction Company

Robert Poole
Reason Foundation

Marie Seguin
Versilis

Sarah Puro
Congressional Budget Office

Marc-Andre Seguin
Versilis

Brian Ragland
Texas Department of Transportation

Deepak Sharma
University of Baltimore

Tesse Rasmussen
HDR

Sean Slone
The Council of State Governments

Edward Regan
CDM Smith

Douglas Smith
Larson Design Group

Robena Reid
Federal Transit Administration

Andrew Smith
HNTB

Marcella Rensi
Santa Clara Valley Transportation Authority

Nancy Smith
Nossaman LLP

Barbara Rohde
University of Minnesota–
Mileage Based User Fee Alliance

Neil Spiller
Federal Highway Administration

Joseph Rouse
California Department of Transportation

Monica Starnes
Transportation Research Board

Rick Rybeck
Just Economics, LLC

Janusz Supernak
San Diego State University

Lan Saadatnejadi
Los Angeles County MTA

Michael Sutherland
Metrolinx

Donald Samdahl
Fehr & Peers

Chris Swenson
Parsons Brinckerhoff

Kathleen Sanchez
Los Angeles County MTA

Brian Swindell
HDR Engineering

Michael Schneider
HDR InfraConsult

Myron Swisher
SAIC

Brady Tacdol
California Department of Transportation

Brian Taylor
Institute of Transportation Studies
University of California–Los Angeles

Patrick Thomas
UPS

Paul Thompson
Lane Council of Governments

Lou Thompson
Thompson, Galenson and Associates, LLC

Darren Timothy
Federal Highway Administration

Cordes Towles
Millennium Challenge Corporation

Carole Turley
University of California–Los Angeles

David Ungemah
Parsons Brinckerhoff

Sharada Vadali
Texas Transportation Institute

Dirk van Amelsfort
Viktorija Swedish ICT

Darrell Vice
HNTB

Patrick Vu
Traffic Technologies Inc.

Martin Wachs
University of California–Los Angeles

Amanda Wall Vandegrift
Parsons Brinckerhoff

Polly Ann Walton
Overland, Pacific & Cutler

Mitchell Weiss
California Transportation Commission

Stephanie Wiggins
Los Angeles County Metropolitan
Transportation Authority

Danny Wu
Parsons Brinckerhoff

David Yale
Los Angeles County Metropolitan
Transportation Authority

Scott Young
Colorado Department of Transportation

Guohui Zhang
University of New Mexico

Susan Zimmerman
U.S. Government Accountability Office

THE NATIONAL ACADEMIES

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