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**Public Transportation  
Management and Planning in a  
Rapidly Changing Environment:  
Strategies for Survival**

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**WORKSHOP ON PUBLIC TRANSPORTATION MANAGEMENT  
AND PLANNING IN A RAPIDLY CHANGING ENVIRONMENT:  
STRATEGIES FOR SURVIVAL**

Committee on Public Transportation Planning and Development  
Committee on Transit Management and Performance  
Committee on Public Transportation Marketing and Fare Policy  
and  
International Institute for Surface Transportation Policy Studies  
College of Business, San Jose State University

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**Transportation Research Board Workshop**

**PUBLIC TRANSPORTATION MANAGEMENT AND PLANNING  
IN A RAPIDLY CHANGING ENVIRONMENT:  
STRATEGIES FOR SURVIVAL**

**SUMMARY OF PROCEEDINGS**

**July 27-29, 1995  
Arnold and Mabel Beckman Center  
of the  
National Academies of Sciences and Engineering  
Irvine, California**

*Sponsored by*

*Transportation Research Board Committees:*

**A1E02 Public Transportation Planning and Development  
A1E05 Transit Management and Performance  
A1E06 Public Transportation Marketing and Fare Policy**

**and**

***International Institute for Surface Transportation Policy Studies  
College of Business  
San Jose State University***

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## FOREWORD

In the last few years the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) as well as other factors have encouraged transportation providers to look at their decisions in a different light. More recently, direction coming from the US Congress indicates further limitations on financial support for public transportation. These events are occurring at a time when local support for public transit is threatened and transit's share of the total travel market continues to decline. These events have occasioned a rethinking of the role of transit in the nation's communities. The *1995 Workshop on Public Transportation Management and Planning in a Rapidly Changing Environment: Strategies for Survival* was designed to stimulate discussion among its participants regarding changes that need to be made and the framework necessary to make these changes.

The workshop, held at the Arnold and Mabel Beckman Center in Irvine, California during July 27-29, 1995, was one in a series of mid-year meetings sponsored by the Transportation Research Board (TRB). Sponsorship of the workshop was provided by three TRB committees - A1EO2 - Public Transportation Planning and Development, A1EO5 - Transit Management and Performance, and A1EO6 - Public Transportation Marketing and Fare Policy. Approximately 50 participants took part in the workshop representing a wide range of interests, including transit management, policy boards, academia, and the consultant community.

During approximately the first half of the workshop, a series of presentations were made relating to four primary themes that provided focus for the participants - 1) the changing transit environment, 2) uses of market research, 3) transit management issues, and 4) innovative and nontraditional strategies to provided transit service. Using the results of the presentations, the remainder of the workshop concentrated on major issues that needed to be addressed by the transit community. Through a series of breakout sessions, three major topics were discussed by the participants:

- *Management- Converting Challenges to opportunities,*
- *Planning - Methods to Meet Future Markets, and*
- *Funding - Responding to the New Environment: ISTEA and Beyond.*

The following proceedings provide a documentation of the workshop, starting with the results of the breakout sessions. These sessions serve as the essential "product" of the workshop since they identified both barriers and potential solutions that address key issues. Following the documentation of the breakout sessions, the workshop presentations are provided, including a summary of several case studies and panel discussions associated with major topics.

Public transportation's future role in a rapidly changing environment will continue to be examined by the industry and the communities it serves. This examination will be particularly evident as the US Congress debates the re-authorization of ISTEA. The results of the 1995 mid-year workshop provide timely and important input to this examination.

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## OVERVIEW OF BREAKOUT SESSIONS

The presentations that occurred during the initial phase of the mid-year workshop provided important direction regarding major issues that public transportation is facing in a changing environment. Through a series of breakout sessions the workshop participants further defined these issues along with barriers and potential solutions to address these issues. The breakout sessions focused on three major themes:

1. Planning - Methods to Meet Future Markets,
2. Management - Converting Challenges to Opportunities, and
3. Funding - Responding to the New Environment: ISTEA and Beyond.

For the breakout sessions, the workshop participants were divided into groups of approximately 15 each. Each "group" then discussed the three key themes in separate breakout sessions. The discussion for each theme was led by a facilitator, thereby providing a continuum for each of the major themes. Following the sessions, the facilitators documented the breakout results and presented major findings on the closing day of the workshop.

### PLANNING — METHODS TO MEET FUTURE MARKETS

*Shirley Maimoni*  
*Los Angeles County Metropolitan*  
*Transportation Authority*  
*Los Angeles, CA*

The topic of these breakout sessions was "How Will (or Should) Transportation Systems Change the Way We are Doing Business to Meet the Changing Needs of the Marketplace?"

#### Issues and Barriers

- Plans and planning processes lack credibility and buy-in and are difficult to implement.
- Plans do not always do a good job of balancing the needs of and serving their many publics, because the planning process and outcomes are often compromised by political concerns and because regional planning is complex and fragmented.
- Plans and their underlying assumptions are complex, technical, and difficult to explain. It takes too much time to get everyone on the same page. People can't support what they don't understand; this makes implementation difficult.
- Planning is perceived as academic, outside the role of managing and providing services. Planning is stereotyped as "analysis-paralysis." Planning time is resented because it takes away from "productive" time.
- Plans are often prepared to meet the *funder's* requirements and not management's requirements. As a result, plans are often NOT designed to be implemented, thus reinforcing the stereotype.
- The public process in planning has gotten out of hand.
- Contentious public hearings are often the norm, masquerading for participation. They often do not give good results or represent the majority of the community.
- There are unrealistic expectations for reaching agreement, especially when public interest groups are unwilling to compromise.
- More time should be spent with the different stakeholders in the planning process — not just the vocal ones.
- NIMBY (*not in my back yard*) and other attitudes bring public policy processes to a halt or help to make planning outcomes the lowest common denominator.
- Elected officials are not willing to be associated with unpopular decisions, no matter how great the public benefit.
- Elected officials do not take the time to understand the issues and then make the tough decisions.
- Planners are not trusted or respected by transit operators and others who are responsible for living with the results.

- Planners are perceived to be elitist, uninformed, and callous and indifferent to the day-to-day problems in the "real world" and to the unique challenges faced when plans are implemented.
- Nonplanners believe that planners think they have all the answers and that the process is merely token; planners give the impression that they would rather develop solutions in sterile environments and not get their hands dirty.
- The functional areas of most agencies still reside in their individual silos with little, often ineffective communication between functions. This reduces communication, trust, and effective planning and implementation. The competition, political jockeying, and lack of coordination between planning agencies and operating entities continue to reduce the effectiveness of both.
- The power, identities, and potential impacts of transportation have been badly fragmented — bus vs. rail, transit vs. highways, ground vs. air vs. water, people vs. goods. And funding methods have strengthened and institutionalized these separations.

### Solutions

*Planning must do better at identifying, understanding, and serving its many publics:*

- Improve credibility, broaden participation and increase buy-in.
- Improve the process of soliciting and integrating community input by ensuring that it is not merely a token effort of what is required.
- Demystify and open up the process; get input earlier; have stakeholders help define their own criteria for a successful outcome; increase education, training, and development for planners and participants to enable all to participate effectively.
- Balance "too many people" and "not enough people" with the "right people" involved in developing the plans.
- Identify, quantify, and manage expectations; clarify and communicate roles and responsibilities.
- Focus resources and action where they can be the most effective as defined by both the customers and planners.
- Allow others — even another government agency — to take the lead if they can better meet customer needs or implement the plan more effectively.
- Continue to experiment with strategies and techniques to solicit input, promote buy-in and generate public participation and support, including one-on-one interviews, small focus groups, telephone surveys, electronic Delphi's, and meetings with polling devices.
- Place a greater emphasis on understanding customers before launching service and quality programs.
- Have planners regularly ride the system and evaluate it from a customer point of view.
- Involve planners in product acceptance studies.
- Train planning staffs to understand their role in the process as facilitators toward a community's solution. Teach planners how to ask for input; how to listen carefully and methods to provide meaningful feedback to the customers.
- Work with management and policy makers to build commitment for consensus building, where the means can justify and support the ends, and where the ends do not have to equate to the lowest common denominator.
- Conduct periodic product acceptance studies to determine what riders, drivers, schedulers, etc. are thinking. What kinds of problems are they encountering on the system? What kind of image does the planning agency have? How are plans working?
- Improve the communication abilities of planners.
- Improve the speaking, writing, and presentation skills of planners.
- Teach planners to communicate technical information clearly and simply, with visuals, using commonly understood examples.

- Create more opportunities for planners to work with or in other functions.

*Transportation planners and transit operators need to work together:*

- Evaluate and reward planners for efforts to serve customers first, in order to improve public support, the overall efficacy of plans, and planning-operator relationships and outcomes.
- Get serious about implementing and stop talking. Change the incentives and definitions of good planning processes and good plans.
- Fund worthwhile projects that promote more collaborative planning and operations.
- Devise benchmarks that measure this kind of collaboration.
- Create more and better opportunities for cross-functional problem solving to occur. Have cross-functional people on projects sit together in the workplace.
- Work with management to build programs that involve both planners and operators in identifying problems and finding solutions.
- Convene work process and planning process improvement groups.
- Create more opportunities for planners to work with transit operators.
- Recruit and train planners with transit operating experience.
- Conduct cross-functional performance evaluations. Planning should be evaluated by the public and operators — and vice versa.
- Work with schools to improve planning programs so students gain more real world experiences.
- Rotate and cross-utilize planning staffs so they have one foot in each world.
- Require planning staff to move into the field and spend time operating a bus, scheduling buses, riding the system, and monitoring performance, etc.

- Have planners team with trainers in maintenance, and other programs to improve their knowledge and to share their experiences.

*Planning must improve its models, methodologies, technologies, and outputs:*

- Find new and better ways to involve the public in real and meaningful ways.
- Identify, quantify, and manage expectations; clarify roles and responsibilities.
- Look to other disciplines and industries for other tested and successful models.
- Conduct periodic studies in the communities served, to determine what the people are thinking, what kinds of problems they are encountering in using the systems, what kind of image the planning agency has, etc.
- Develop better ways to increase the timeliness and effectiveness of the planning process without reducing participation and input from the public.
- Consider using technology — for example, electronic polling — to help understand the perspectives and priorities of large groups of people and move them toward agreement.
- Increase the usefulness of plans.
- Make sure that plans address the real and pressing needs of the community as expressed and prioritized by its members.
- Provide ways for plans to be updated frequently, so they respond to the community's changing requirements.
- Evaluate the effectiveness of a document on its clarity and brevity, not on the old axiom of "the heavier and thicker it is, the better."
- Make planning documents more "user friendly." Eliminate redundant or bureaucratic words and phrases. Ban acronyms. Use clear and informative titles and headers. Write in everyday language.

*Transportation needs people at all levels to think more like "mobility managers" and less like "bus," "rail" or "highway managers:"*

- Integrate transportation planning with the planning done by other entities, especially as public resources become more scarce and the public becomes more concerned about duplications, waste, and wise use of public funds.
- Build better bridges with other industries and within the transportation industry itself.
- Improve the ways transportation communicates its vision to the public and to policy makers. The vision needs to be benefits driven. The benefits need to be crystal clear and have long term value to critical audiences, especially taxpayers.
- Carry the transportation message more effectively to the public. Look at what anti-smoking advocates were able to do in 30 years. What must it accomplish in 3, 5, 10 years, in order to realize its potential in 30?
- Expand beyond the traditional set of allies. Consider how transit can build stronger, more effective coalitions with others, including unions.

*Transportation needs to become more like a business, using business terms and tools, without losing its commitment to the transit dependent:*

- Look at other industries and borrow strategies for increasing and retaining ridership.
- The airlines use frequent flyer programs. How might that work with bus or rail programs?
- The hotels use joint marketing with airlines. How might that work with local businesses or people who carpool?
- The financial industry has been very aggressive in identifying and direct mailing to their current and potential customers. Can we effectively direct mail to customers?
- Critically review, update and improve the benchmarks used to assess improvement and progress.
- Increase the transit farebox recovery rate beyond what is required; it is clear that operating subsidies will be reduced in the future.

- Publish benchmarks and progress throughout the company so employees have a report card and can understand what they can do to help.
- Go to school on marketing, market research, and product development.
- Start with current riders. What do they need? What do they want? What are they unhappy about? Make sure you retain riders by providing the service — routes, stops, and schedules — that they need.
- Ask past customers why they left transit and what can be done to bring them back.
- Define and clearly understand what influences the market's education, entertainment, and work choices; and then what influences their transportation choices.

#### **MANAGEMENT — CONVERTING CHALLENGES INTO OPPORTUNITIES**

*Subhash R. Mundle  
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Philadelphia, PA*

The task of these sessions was to debate the management aspects in public transportation and to identify the issues, barriers, and solutions to consider relative to the changing environment that we've been discussing at this workshop.

#### **Issues and Barriers**

- Transit agencies lack focus and direction.
- Transit agencies often lack a customer focus.
- Transit agencies do not have clearly defined expectations for the organization.
- Boards or policy bodies often fail to provide a clear policy statement or direction to transit agency staff.
- Traditional performance measures, such as passengers per hour or cost per hour, are inappropriate for guiding many management decisions.

- Transit systems are not being evaluated equitably, and are not getting a fair share of recognition for their contribution to mobility issues.
  - Cultural and environmental barriers impede management decisions.
  - Transit systems tend to be very rules-driven organizations.
  - Bargaining unit employees are treated differently than the salaried employees.
  - Transit agencies are risk-averse; there are seldom rewards for doing well. Fear of litigation also plays a part. Moreover, there is a lack of good examples of cultural/organizational change in the transit industry.
  - Transit systems generally have a persecution complex. They never really get recognition for the mobility contributions they make.
  - Governing boards fail to provide adequate leadership.
  - Boards often serve different constituencies or different customers than the customers or constituencies of the transit agency. For instance, boards might be more concerned about development or land-use related issues than mobility related issues.
  - Boards have a tendency to establish conflicting policies in terms of their expectations and the expectations of transit managers.
  - Some boards have a propensity to micromanage both the policy side and the operating side of what is actually management's responsibility.
  - Management lacks leadership skills and/or management skills.
  - Managers often don't really know where they're headed or how they're going to get there or how they're going to guide their organizations to accomplish whatever change that needs to take place.
  - Managers tend to have an inward focus, which causes resistance and fear of change. They lack openness and do not encourage cross-functional communication and team building.
  - The structure and skills of the employee work force can cause management difficulties.
  - Diminished language skills and communications skills hinder communications with passengers and routine training.
  - The spatial distribution of transit agency divisions and the distribution of employees' shifts make it difficult to schedule and hold training sessions.
  - Bargaining units represent all union employees, and, as such, they must represent problem employees as vigorously as any other employee. This puts most union employees in an uncomfortable position from time to time, and strains relations with even a cooperative management.
- Solutions**
- Build transit organizations that are value driven and customer oriented:*
- Forge ahead in the absence of a national and, in most cases, statewide transportation policies.
  - Build an environment and culture of trust that encourage risk taking.
  - Performance should be awarded and positive behavior reinforced.
  - Develop performance measures to reflect the real value of transit.
  - Emphasize the success of transit in supplying mobility to society.
- Improve hiring, training, communications, professional development, and cross-functional problem-solving:*
- Resist the tendency to cut training programs in times of budgetary need.
  - Educate board members, media, and external partners to make sure that they understand the organization's objectives.
  - This may or may not help transit get a larger portion of the resource pie, but an informed board

and public will actively and intelligently resist any efforts to cut funding.

- Build better labor/management cooperation and identify shared interests.
- Acknowledge the fact that management and labor both benefit by cooperation.
- Understand that changes in resources will impact both parties, and the need to reduce service will not necessarily spare either group.
- Improve leadership training.
- Develop a "buddy system" so that transit managers have a structured way to learn about initiatives occurring at other systems.
- Provide and use information industrywide.
- Better utilize the Internet to give and receive information on transit agencies activities. This might include "chat rooms" for multi-party, interactive communication.

#### FUNDING — RESPONDING TO THE NEW ENVIRONMENT: ISTEAD AND BEYOND

*Christina Altmayer  
Ernst & Young  
Los Angeles, CA*

These sessions discussed the funding perspective of transit and transit management.

##### Issues and Barriers

- The loss in federal and state support is apparent to all.
- The federal government has a huge deficit, as do many states. The outlook for transit or for any type of public funding is not hopeful.
- "Legislative fiats" by legislatures, such as the State of California and Orange County, California, are raiding the funding sources upon which transit has traditionally relied.
- There are conflicting calls for transit to both be business-like and yet still meet many regulations and requirements.

- The "reinventing government" campaign is strong and growing stronger, but transit still must meet process restrictions that fail to provide value to the customer.
- The culture shift throughout the country limits transit's options.
- The public upswell which elected a very conservative Congress resists new taxes, new fees, and any other additional government requirements.
- There is also a reluctance to support income transfers from various economic groups to others. This makes it difficult for transit to respond to its changing market.
- Similarly, the political environment challenges transit.
- Cutting service is, in many cases, politically impossible, even when declining ridership warrants it.
- Calls for greater security and a combat against vandalism drain dollars that are also expected to fund greater service.
- Finally, there are the "real world" challenges of getting the buses out on the street. They've got to be on time, they've got to be clean every day.

##### Solutions

*Transit must provide value commensurate with its revenues and public funding:*

- Make transit more credible.
- Transit needs to be perceived in the public eye as efficient, maximizing revenues, providing quality service and being responsive to the public's needs.
- The objective should be to foster a positive, energetic attitude among the public.
- Develop and use appropriate performance measures.
- These should include measurements of the community economic benefit provided to the community as a whole.

- Define how the issues should be perceived by the public.
  - Look at the contribution public transit is making on a daily basis and then sell that story to the press and the taxpayers.
  - Transit should quantify and report on the true cost of auto subsidies, including costs of parking, air pollution, and other “hidden” costs.
  - Sell transit’s successes in comparison to this subsidy.
  - Consider cutting back on service.
  - Cutting service, finding an appropriate niche, and then slowly and intelligently building service back up may be politically unpopular and difficult, but it may also make good sense.
  - Transit might create a crisis by pulling service and providing only what it can truly supply.
- New avenues of funding should be explored:*
- Seek public-private partnerships.
  - Non-traditional public sources, such as U.S. Department of Health and Human Services and other social service agencies, can contribute to transit’s operations.
  - Non-profits and community-based organizations can help too.
  - Interaction with the disabled community should be mutually beneficial. Too often, these groups demand things of transit, but then, at other times, they are not on transit’s side.
  - Transit should understand the private sector’s needs when pursuing private contributions to projects. This means that transit needs to make transparent its bureaucracy.
  - Seek out and secure any new funding sources.
  - Most transit funding sources are not truly dedicated; they can be stripped away. New sources should be more closely tied to transit.
- Pricing strategies that tie in parking taxes to transit revenues are an option consistent with transit policy. Such pricing provides funding and encourages greater transit (less auto) use.
  - Real estate value capture is starting to be done more and more. If there is a joint development project, then the transit agency captures the value that is associated with the development near transit stations.
  - A special transit tax that is assessed to support the transit development. For example, Los Angeles Metropolitan Transportation Authority (MTA) has created benefit assessment districts surrounding the Red Line train stations.
  - Employer-based subsidies that leverage employers to pay their fair share.
  - A general use pass. For example, in St. Louis, they have assessed a very small property tax on property owners within so many miles around the Air and Space Museum. As a result, there is no charge to enter the museum. How can transit apply that concept?
  - Technology may be the next area for advertising. What other creative ways can we use technology in our vehicles as a revenue source?

**ONE GENERAL MANAGER’S PERSPECTIVE**

*Thomas F. Larwin*  
*San Diego Metropolitan Transit Development Board*  
*San Diego, CA*

**Introduction**

As a general manager, it is hard not to be constrained by the “real world” when our federal, state, and even local legislators are taking adverse actions that directly affect how we can provide service. We have to find ways of doing with less, because having less is the reality we must deal with. To the degree we can turn this situation into an opportunity, we are going to be in good shape.

When we start talking about markets and market share, public transit presents a pretty pathetic picture. In San Diego, for instance, we get about two percent of the regional daily trips. That is not much! While we have done some good things in trying to increase the market share, our competitor still has 90 percent or more of the market.

However, we cannot give up, because we are making a positive impact in serving various market niches, as well as high activity centers and major travel corridors. When we compete for trips, we're competing with the automobile and, in San Diego's case, the automobile has a very nice system within which to operate. The majority of employers have free parking, except in limited cases downtown. That is our real and everyday challenge, and it is not going to go away.

Despite this competition, we are proud that in San Diego over the last 13 years, since the start-up of light rail (LRT) in San Diego, our total Metropolitan Transit System (MTS) bus and LRT ridership has doubled. That positive trend is despite the adverse impacts caused over the last couple of years by economic recession as well as the impacts of several fare increases.

At the same time that ridership has increased, our farebox recovery has also increased. In the late 1960s we went from a private operation to a publicly owned system. As the company transitioned from private to public, our farebox recovery went from 100 percent to about 30 percent by 1976. We brought that ratio up to about 40 percent with the start-up of LRT service in the early 1980s. Now it is around 50 percent systemwide. We have been able to show that you can raise fares, you can improve the quality of service, and you can increase ridership — all at the same time. There is no secret to it; people want good quality service and they are willing to pay for it. I think San Diego proves quality does pay off.

As much as I would like to be a mobility manager, that goes against my grain. I am in the business of getting as many people as possible to ride transit. Mobility management gets into trying to make available a range of alternatives for a large range of trips. I look at myself as somebody that is in the *mass* transit market and I am trying to boost ridership. More and more this ridership objective is being frustrated by the fact that land uses are creating dispersed origins and destinations and by a highway/freeway transportation system, at least in San Diego, that is expanding. My prime competitor is simply doing more than I am.

Further, more of our riders are people who are dependent on transit. We are losing that choice rider because the alternative is too good, or because he or she is afraid to walk to and from a bus stop or a trolley station after dark, or because there is a perception that it is unsafe to ride through certain neighborhoods.

### Planning

*Knowledgeable planning:* Knowledge is the foundation for good planning and really that comes down to knowing your market. In some cases, it is not just who is riding the system, but who is making decisions that influence what happens in the future with regard to the system. We are trying to do more and more surveys in our area, of those people who do ride as well as those people who do not ride. We have focus groups that we are now conducting on an annual basis so we can compare one year's views with another year's views.

*Informed Boards:* It is not sufficient just to have the information and the facts, if it is not understood what the information really means. The information must be understood by the boards and by top management. Furthermore, the information must be communicated down in the organization in a very consistent fashion. It can be tough communicating knowledge to a board, especially if they are elected officials. Their attention may really be on a lot of other things. Often the knowledge does not get through to individual board members, either because there is not sufficient time or their attention span wanes. For example, in San Diego, we had a budget workshop in April. We have had four Board meetings over the last two months specifically to discuss the budget. These meetings total 10 to 12 hours, yet, after we have gone through all these meetings, there are still members who will not appreciate or recall critical facts.

*Customer focus:* The basic foundation for ridership is today's riders, the people currently using the system. Transit has to give them a good ride. It must satisfy them. Managers must respond to customers' needs and complaints. And they have to keep bringing customers back. Then, on top of that, transit must go after infrequent riders. Finally, transit must encourage those people who have a choice of modes to ride.

Even more important are those people who would really like to use transit, who have tried it, but don't ride anymore for one reason or another. Maybe their car was vandalized at a park-and-ride lot, maybe they

did not like going through a particular community, or are uncomfortable riding. That is the biggest market we have in San Diego. We need to bring them back to transit and give them a good trip.

### Management

A critical task of transit management today is to tap into the "influence network." That is, the area business leaders, who might not use transit but can influence employees and decision-makers. I find, as management, that I have to spend, or should be spending, as much time dealing with the influence network as I am in managing, because the perception of how well I do and how the system is performing is often in the minds of those people. They are the ones that talk to elected officials and they are the ones that talk to editorial boards, and so on.

Another aspect under management is training at all levels. In San Diego, we have a customer outreach program where management gets out to ride the system. They conduct a brief survey as an icebreaker in approaching people. This has been very helpful. Management then gets back together as groups and try to share what we have learned.

### Funding

In some ways I think the Intermodal Surface Transportation Efficiency Act (ISTEA) was oversold for transit, since it was not completely funded. I think the flexibility offered by the ISTEA is great if one has a major capital program, but it did not offer the operator any more flexibility regarding operations. And that is where we need help in San Diego.

When it comes to the next ISTEA, one of the important things for transit is to be involved, sitting at the table, and getting an increased share of money and increased funding flexibility of transit dollars. I, for one, would consider getting less money if I had more flexibility. I could do more and better things if I had increased flexibility.

Also, the idea of "funding pockets" may have great application. This concept allows local areas, maybe subregional in nature, to have greater flexibility in how the service is provided in that area. It gives more flexibility in saving costs and reducing the unit costs, whether by way of competition or just providing service in another way.

I would also like to see Congress and the state legislatures eliminating or relaxing regulations, especially those that are counterproductive to efforts to reduce costs and that add inefficiencies to the service. I think an opportunity is present in the next couple of years, when more money is not going to be available and perhaps even less going to be available, to go to our legislators to ask them for relief on things that add cost burdens.

Another very important area under the funding banner is coming up with creative ways to get people to pay a fare that is more than a dollar a ride. We are dealing with larger and larger fares. In fact, in San Diego we are setting some fares at two dollars and more for many of our trips. In San Diego 70 percent of our ridership is paying by prepaid means, that is, with single-ride tickets, transfers, and passes. I think we have to continue to do more of that, because it resembles people use of the automobile; people drive their automobiles without really knowing how much they are paying for that trip. I think we also have to concentrate our fare collection efforts in doing things that make it easier and easier for people to pay fares.

### Conclusions

We need to remember the basics of the market that we serve. In my case, I still think it is ridership. That is the most important thing that I am judged on. If ridership is not increasing, I feel I have not done my job. But another thing is the opportunity that less money gives us, that is, to look for ways of restructuring how we do our jobs and doing them better.

Let me conclude with the "five C's" of basic transit management:

1. *Credibility.* As I said, credibility is very important. However, when you have someone who's a board member counteracting you that really hurts credibility. You have to work on credibility to your employees, to your board members, to your users, and to all external groups.
2. *Communications.* Up, down, externally, board members, riders, employees, influence groups — communication really is a very important key, especially for management. As much as my job is motivating employees and carrying out policy, it is also communication. Employees need to know where I am going, what my philosophy is, and what things I feel are important. It is also

important that your board, the community, the chambers of commerce, and so on have to know where you are coming from.

3. *Customers.* Customer orientation is not just a new "buzz term." It is real, and you need to focus on it continuously. You need to know who your customers are, where they are coming from, and where they are going.
4. *Common vision.* Establish a common vision so everybody knows where you are going and everybody can get behind that common vision.
5. *Clear understanding.* Have and project a clear understanding of your policies and objectives, and mission. I do not think there is anything worse than a manager providing a message that is not consistent and clear.

### ONE BOARD MEMBER'S PERSPECTIVE

*Jacki Bacharach*

*Consultant (and former board member, Los Angeles County Transportation Commission)*

*Los Angeles, CA*

#### Introduction

When I was on the National Commission on Intermodal Transportation, everyone on the commission made it very clear that they always watched California because that was where the rest of the nation was going. Unfortunately, if that is true, transit is in a bad way.

The state government has stolen from the counties for the last several years, so the counties have figured that, if it worked for them, then it will work to go steal from somebody else. We are slowly eating our young and it is very distressing. It is distressing that one can be a good local manager and build up an organization, but then be raided by other powers. It is indeed a strange time of transition, and the outlook is going to be rather frustrating for the next couple of years.

#### Policy Boards

I want to present my perspective as a policy member, although I no longer serve on a transit board. However, I did serve for fourteen years. Now it is interesting to watch the process from outside. Credibility has been

sorely hurt by the very weakest link in the chain of transit, and I have to say that the weakest link is the policy board.

Policy board members come with many different perspectives, different levels of dedication, and different attention spans. These differences are actually both a strength and a weakness. A policy board that is only transit oriented does not create the needed linkages to local government, land use, and to other societal issues. On the other hand, a policy board that is all over the map has so many things on their plate that they are not focusing on transit. A happy medium must be struck where board members can be engaged in transportation as it relates to other societal issues. Transit is like the foundation upon which we lay the rest of our services and community needs. If you can build the linkages, then transit affects land use, health care, and social services. In order to do this, board members must broaden their perspective so that they can see that those linkages are made possible and those services enhanced by an efficient transportation network.

When I started serving on the Los Angeles County Transportation Commission, there were 23 people there and we had just validated the sales tax to start collecting money for rail. I have found that the difference between our board and today's is that we said openly to the world that we did not know everything. We had to learn, and we learned together. We were all on the same team. Today's policy board members need to know that the answers are not only for the staff to bring to them, but for them to seek as well.

To accomplish this there is a tremendous amount of training that has to go on, a tremendous amount of working with them, but remember you are working with people who have tremendous egos. You have to help them by feeding those tremendous egos. One of the things we fed them was by deeming each of them specialists in a certain area. Each of the chairs of the committees were the specialists. When the finance committee gave its report, it was not staff, but rather the board member, who gave the report on what was going on in that particular area. There were chairs that did not know what they were talking about, so the staff had written that report. We all knew that, but if a board member is making a report, it is more difficult for another board member to really go after them and they really do not know what they are talking about. Board members simply do not do that to other board members. The meetings became much more civil.

There was a feeling that the board understood and could explain board policy, even to the press and people that were out in the audience. There was much less acrimony, much more mutual respect, and a better presentation of the agency as a whole.

One especially disturbing observation of the current MTA is that the board members have been allowed to step outside and pretend they are not on the board. When they get quoted in the paper, they say things like, "I don't know how this happened; who was watching?" In fact, board members are all on the same team and should not be able to step outside and pretend they are not responsible. If they are part of the presentations and act as the specialists, it becomes a little harder to disown an issue.

Another board activity I would encourage is taking trips. Riding and experiencing the system is very important. I once took another board member to ride wheelchairs for a day. We obviously could not replicate the experience of being handicapped, but it was fascinating to see from the wheelchair user's perspective what happens on a bus when a wheelchair approaches it.

Out-of-town trips are also valuable. When we were considering a light rail system for L.A., we hardly knew anything about it. Light rail sounded good, and we saw it working in other cities. So we decided to see one of these other systems. We started taking bus loads of community people and board members to San Diego. We found it extremely useful to actually see its potential.

I also found my trips Europe and Japan very helpful. There are some things that cannot be figured out from reading about them in a book. A video tape can be very helpful, but witnessing and experiencing the system first-hand means a lot more.

Trips like these are often considered "junkets," or simply expenses-paid vacations for the board members. This is unfortunate, because there really is value to be gained. I am a strong advocate of taking your board members out. If people want government to act like a business, they should ask themselves, "Do businessmen in the world build something that they don't know anything about?"

To help dispel suspicion that the board was simply vacationing on the public's money, we started to invite the media to join us. Press participation is a good check on both the board and the media. It helps keep

the board focused on their work, and it generates positive media. Most importantly, these trips allow the board to become part of the system and understand the potential. Too often, board members truly are the weak link. These are some ways to address this problem.

### **Celebrate Success**

In transit, we never celebrate our own successes. It is particularly hard to celebrate now, because we are so caught up in crises that we forget the good things. In reality, we do a lot of great things and no one knows it. The good news is not only good for the media and the public, but for the board as well. The policy board members do not want to be associated with an agency that only has bad news to distribute. We need to showcase the good things we do by getting board members out to the community with press to present a success. We have several successes, and we need to make their promotion a priority.

Recently in Los Angeles a wonderful thing happened and no one knew it. It was the fifth anniversary of the Blue Line. The whole rail system is under public attack, yet the Blue Line is carrying more people today than we projected it would be carrying. It is servicing our community; it has a constituency. But there was no celebration, only a small paragraph in my local paper that said it was the fifth year of the Blue Line. We could have had all kinds of officials there, owning a piece of the system. That is the kind of thing we need to do to bring the policy members on board.

In summary, we all have to be responsible because ultimately the public says, "I don't understand this." The public looks at us as if we are all on the same team, and we all better figure that out because it hurts us all if we fail to understand.

### **Media Relations**

It is unconscionable to me that we are expected to know everything we are supposed to do, but somebody gets a pad of paper and a press badge and does not have to know anything. They can come out and destroy your career or even your agency. My favorite story in this regard is from my city council experience in a very small city. We had a reporter come, spend the whole evening, and write everything up. These local reporters are really important to us. At the end of the council meeting, he came up to me and said, "Could you just tell me what an ordinance is?" He sat through the whole evening without understanding what

he was covering. We know they want to sell ads and they have deadlines, but they also have a responsibility. They are a communication channel.

There may be ways that we can help cross train each other so that we can be responsive to their needs and they can become informed. Perhaps APTA or TRB could sponsor a workshop for the media. I personally believe the media are getting more and more irresponsible at reporting on our business and the news in general.

### **Partnerships and New Ways of Doing Business**

Transit is, in and of itself, the provision of access and the ability to allow people to get to the services that they need. Are we mobility managers or are we access providers? I am not sure. My uncertainty stems from the fact that we are in the middle of a revolution in the way we do business. The revolution is telecommunications and information delivery, and I am not sure how it is going to turn out.

I do know that there will be a lot of people who will no longer need to go where they used to go. Transit will have to adjust to that and may have to provide access to different places than it has been providing to before. We, as transit officials, have to try and look ahead to figure out what all that means. Part of what it means is access to services that might not be in the traditional places. For example, Los Angeles MTA is involved in a project called the Blue Line Televillage. Fiber optics from the rail line have been strung up to a transit center to provide tele-medicine, tele-education, tele-distance learning, etc. With the fiber optics run along the transit line, MTA is providing an information highway. The Blue Line Televillage is located in Compton, a community that will not necessarily have a lot of private access to this new technology, so public access is being provided.

In several similar ways, transit centers can become the focal points for this new-age way of providing services. These are the kind of things transit managers and boards need to begin to look at. Transportation is changing, and it is our job to be responsive to these changes.

There are other partnerships that are more problematic, but which might also have application. When I was in Europe I went to the theater in Germany and on my theater ticket was a transit pass. It gave me a ride to and from that theater on transit. The ride must have been included in the price of my ticket. Of course, that

only works if the system runs to 11 o'clock at night or later. If you figure that in a downtown area you could work with all the hotels and the performing arts centers and try to establish those kinds of linkages. You would get a different kind of rider. You would have a safer system because a lot more people would be riding at different hours of the day.

We should also create partnerships with social service agencies. Maybe some food stamp users also ought to get a transit pass to go to get and to use their food stamps. I think Smart cards will be a tremendous help to instituting this type of system. In this case, we can give somebody something that is of value that the social service agency can control. The social service agency still feels they can control the use, the transit agency gets paid, and a real service is provided to someone in need.

### **Conclusion**

I think that we live in very interesting times. I learned when I achieved public office that you never have any problems, you only have opportunities — and we do have opportunities! It is important for us to continue in this positive light. Transit agencies are very creative and are doing wonderful things. We need to get that message out. As long as we feel we are accomplishing something positive, we can handle a lot of these crises a lot better.

## OVERVIEW OF THE WORKSHOP SESSIONS

The workshop sessions provided a major basis for the key issues, barriers, and potential solutions identified in the breakout sessions. The sessions involved a variety of formats, including a presentation of an issue paper on the changing environment for transit, panel discussions, and case studies that illustrate current transit agency approaches to meeting today's challenges. Results of work being conducted under the Transit Cooperative Research Program (TCRP) provided a major basis for several of the presentations.

The following major topics were addressed by the workshop sessions:

*The Changing Environment in Public Transportation Management and Planning:* The session's goal was to provide a perspective regarding major challenges facing the transit industry. A resource paper identified major issues facing public transit and helped facilitate discussion of challenges and opportunities. This presentation was followed by a panel discussion by general managers of transit systems of challenges and issues.

*Using Market Research to Improve Transit Management and Service Decisions:* This session focused on how market research is being used to help identify and address key issues facing transit management and service planning. Using the results of TCRP Project B-2, the session describes major findings of an in-depth review of current market research efforts by North American transit systems. This presentation is followed by case studies of specific market research efforts being conducted by transit systems.

*Opportunity and Feasibility of Changing Transit Management:* This session explored opportunities for changing the culture and management practices of transit agencies. Presentations included a summary of results for TCRP Project F-3 which examined total quality management (TQM) in public transportation. This summary is followed by presentation of case studies that examined application of TQM at three transit systems.

*Addressing Our Challenges - Solutions "Outside the Box":* This session's goal was to examine non-traditional solutions that can address specific

challenges facing public transportation. Included in the presentations are initial findings from TCRP Project B-6 which is examining how transit connections can be improved through enhanced suburban mobility. This summary is followed by presentations of how non-traditional solutions are being applied in three major areas - service planning/operations, funding, and technology.

## THE CHANGING ENVIRONMENT IN PUBLIC TRANSPORTATION MANAGEMENT AND PLANNING

*Moderator, Sally Hill Cooper*  
*Federal Railroad Administration*  
*Washington, D. C.*

This section begins with a synopsis of the workshop resource paper, *Public Transportation: Challenges and Opportunities*. (Complete resource paper begins on page 55.) The paper is an excellent reference piece that identifies the issues to be discussed throughout these proceedings. Following this synopsis, a number of general managers offer their perspectives and experiences.

In setting the stage, I would like to offer a few personal comments related to some key issues presented in the resource paper. The resource paper refers to flexible funding. We follow a message in freight rail that works for transit as well. That message is this: when considering projects, a critical question to ask is not what is eligible under a specific category of the Intermodal Surface Transportation Efficiency Act (ISTEA). The question is, "What makes good sense?" Or to phrase it another way, "What projects make good public policy sense?" And then, with strong local-state cooperation, seek federal help to answer the question: "How do we make that project happen?" This approach is very important for the ISTEA's re-authorization. Concentrating on what makes for good public policy and also good transportation sense is the essence of flexibility. We need flexibility and vision, not project choice made by habit or modal myopia. Flexing as much as possible now lays a strong foundation for re-authorization.

This is a critical time for the future of the ISTEA. Although ISTEA was signed in December 1991 with a six-year life, it is still quite new. Habits are hard

to change and the flexibility opportunities offered by the ISTEA have not been fully or universally explored. Adopting a transportation approach — rather than a modal approach — to decision-making and problem-solving has not been accepted by all our current transportation leaders, nor by all of their advisors. There are too many transportation officials who would prefer to return to pre-ISTEA programs and procedures. You can help in convincing them to change their minds.

The members of the panel of general managers have varied experience and varied backgrounds. They represent different operating environments and organizational structures. They have moved into transit from teaching, counseling, and law, civil engineering, and business administration. Their varied perspectives on the challenges and issues in this changing environment are most enlightening.

#### TEACHING TRANSIT THE IMPORTANCE OF PRINCIPLES

*Sharon D. Banks  
Alameda-Contra Costa Transit  
Oakland, CA*

##### Introduction

In each of my careers, be it counseling, law, or public transit, I have applied a multidisciplinary model that requires bringing partners to the table for problem solving. Who are the people we need at the table? Who are the stakeholders? At Alameda-Contra Costa (AC) Transit, we try to answer these questions and explore other new approaches.

##### Innovations at AC Transit

We have tried some innovative strategies at AC Transit. I could speak about organizational change: changing the heart and soul of this organization for the people there and our customers. I can talk about how exhilarating that process is and how exasperating it is, because it is really tough work. I could talk about our union/ management collaborative effort. I could report on our partnership efforts that work, most times. "Partnering" is tough, particularly when we are looking at layoffs and cuts. It is difficult to be schizophrenic, i.e. to collaborate on one hand and litigate on the other, but it is possible.

I could review the recently formed partnership between the Federal Transit Administration (FTA) and Amalgamated Transit Union (ATU) International to create new, nonadversarial approaches to labor/management relations. I could discuss the Bay Area Partnership strategies developed in support of Intermodal Surface Transportation Efficiency Act (ISTEA) with transit agencies, the California Department of Transportation (Caltrans), FTA, ports, congestion management associations (CMAs), the metropolitan planning organization (MPO), the Bay Area Air Quality District, and others in bringing partners to the table to look at transportation/transit issues from a regional point of view.

##### Lessons From Saturn

Instead, I would like to consider some new models for organizations. When I traveled to the new Saturn plant in Spring Hill, Tennessee, I was expecting to see something different; but what I saw was a revolutionary approach to working with people. The reason that I believe Saturn is so successful is because they are built on some guiding principles. They did not start and end with a vision of a new building. Saturn is built on these strikingly simple guiding principles:

*Saturn team members are trustworthy. Saturn team members want to be involved in all decisions that affect their lives. Saturn team members are responsible. Saturn team members are competent.*

These principles are not just platitudes that are placed on the walls and become mere slogans. The principles are fully incorporated into and woven into the fabric of Saturn's way of doing business. For example, when designers were putting the finishing touches on the new Saturn facility, someone said, "We didn't figure out where we're going to put the time clocks. Where will we put the time clocks at this late stage to accommodate the flow of workers?" Then it occurred to them that they had a guiding principle, "*Saturn team members are trustworthy.*" When they held time clocks up to the light of this principle, they saw inconsistencies. So, based on the principle, there are no time clocks at Saturn. Eight-thousand people come to and leave from work at Saturn without time clocks.

### Models to Live By

I would like to propose a hypothetical organization that has broken out of all the boxes and established a new way of doing business. To do so, the employees of this organization live by a set of principles.

The first guiding principle from this organization is:

*We move quicker when we share a common direction and a sense of community.*

What does this mean? What strategies should the organization adopt in order to live by these principles?

1. Press for direction.
2. Emphasize every avenue of communication.
3. Press for commitment.
4. Develop two-way communication.
5. Set up a schedule."
6. Stay grounded on the goals.
7. Stay focused on the goals.

Yes, new strategies and innovations can be developed from new principles.

Another principle applied by this organization is:

*We stand by each other in tough times.*

What does this mean?

1. Cross training.
2. Break down traditional silos.
3. Stop the blame game.
4. Become more flexible.
5. Provide training.
6. Schedule employee meetings to discuss mission and direction.
7. Get rid of year-end evaluations.
8. Give constant feedback to employees.

Another principle that was adopted by this organization is:

*It pays to take turns doing the hard tasks and it pays to take turns sharing leadership.*

How can the organization follow this principle?

1. Require vacations.
2. Cross training.

3. Sharing duties and responsibilities continuously so people formally and informally receive the training they need to step into leadership roles.
4. Change the reward system.
5. Share information.
6. Give people the chance to walk in the shoes of the leader.

Leaders need to figure out a way to replace themselves. This is accomplished in other industries. We certainly have to explore ways to do this in transit.

Can you guess which organization we were studying? The answer is geese. Yes, geese. One of our board members gave me an article written by an unknown author about geese. A week later, one of our road supervisors sent me the same article. Receiving the same article within two weeks can't be a coincidence. There is a message in "geese" that I am supposed to learn.

If we look at geese, you will see these principles. Geese fly in a V-formation. Each goose flaps its wings and creates an "uplift" for the other geese. They get 71 percent more flying power from flying in that formation than they would if they flew alone. Whenever one goose is hurt, two of them fly down with the injured goose and stay with that goose until it dies or is able to come back. After it dies, those two fly off and find another flock or the flock that they were with. Whenever a goose falls out of formation, it immediately feels the drag, being out of synch with the rest of the formation, and it pulls itself back because it wants the benefit of the lifting power. If we have as much sense as geese, we will stay in formation with those who are leading us.

Regarding the issue about leadership, when the lead goose gets tired, it rotates back into the formation and rests. Another goose always moves up into the lead role and carries that formation forward until the lead goose is rested. If we learn from geese, we will learn to take turns with the hard tasks; we will learn to take turns in the leadership roles.

Finally, geese honk all the time. They are constantly honking. The honk is to encourage the leader, not to discourage it. Honking says to the leader: "We know you may be tired, but keep going, keep the pace. We'll get there."

If we can break out of the mold and look at innovative models, even look at geese as a model for organizational change, we will have accomplished a great deal. After all, I have never known a flock of geese to get lost. Our challenge today is to keep breaking out of the box, keep stretching the envelope. If we do this together, we will develop real strategies for innovation in transit.

### INSIGHTS FROM LAS VEGAS

*Kurt Weinrich  
Regional Transportation Commission  
Las Vegas, NV*

I would like to offer some perspectives on the changing environment. Certainly a lot of changes are taking place today, but if you look back in history, there's always been changes in the environment for any public service, including public transit.

#### The RTC System

The RTC in Clark County, which is headquartered in Las Vegas, Nevada, serves three roles and has been serving these three roles for almost thirty years. RTC predated the Intermodal Surface Transportation Efficiency Act (ISTEA) model, showing the way before 1991. We are the metropolitan planning organization for the urbanized Las Vegas area, which has now reached one million in population. We are also the public transit agency for Clark County. We actually operate the public transit service that we plan as the MPO. We are also a road building funding agency with a county-option motor fuel tax that comes directly to the RTC. Our budget split is roughly one-third transit and two-thirds highway funding, so that gives you an impression we're multimodal, but, at the same time, most of our funds go into the highway construction area.

By way of organizational background we have four employees managing that highway building program of about \$90 million a year and we have, inside the RTC, about 100 employees managing that one-third transit program. In the start-up of the first public transit system in Clark County, the Citizens' Area Transit System (CATS), the Commission adopted a policy of contracting out all of its transit services. That is why we only have 100 employees dealing with the transit arm. These are employees of the RTC. We actually have in excess of 650, now reaching 700, new jobs created in the transit sector,

but they are all employees of private contractors. Weigh that against the four employees that deal with our \$90 million road building program. We contract with the local entities, the cities, the county, and the state Department of Transportation. They then actually go out and acquire and build the arterial roads with our money, so we have a hidden work force there in the other agencies.

#### The RTC and Organizational Change

Change has defined our organization, certainly in the last five years, and I think all the way back to its beginning in 1965. Las Vegas is the fastest growing community in the country today. It has been for the last ten years, consistently, both in terms of job growth and in residential growth. It is likely to continue in that category for the foreseeable future.

With an initial fleet of about 108 vehicles and 18 routes, the CATS start-up in December 1992 was the largest single bus new start in North America in twenty years. We have since grown to 161 vehicles and are constantly on the run to catch up with the growth of the community demands for new transit services. We have some very unique situations in Las Vegas. One is with the resort corridor in the central part of the community. We have a ridership base that is not duplicated anywhere else in the world with up to 400,000 tourists and about a quarter of a million employees in that corridor on any given day. We have contracted out all of that transit service. It has been contracted out on a competitive basis. It has been a model not only in Nevada, but also in the rest of the country for the privatization and the use of entrepreneurial services in providing a government service.

#### Customers and Change

Whether they are the fare payers who ride our vehicles, or the automobile occupants who pay their gas tax that helps us build the roads, or the taxpayers who support the tax subsidies to either of these services, the voters are saying they want governmental services to be efficient and responsive. They have to be delivered on time or they are going to look for an alternative, not modally, but in terms of service delivery. Costs are very important to the fare payers as well as the taxpayers, and they are very sensitive to those costs or to decisions by their elected or appointed officials that affect those costs. We see increasingly among the electorate, if it cannot

be done for less money by the existing organization, whether it is government or private, let someone else do it or don't do it at all.

We have been very fortunate in southern Nevada in that the local electorate — which does not include the tourist — is very concerned about traffic congestion and being able to keep up with the mobility in the area that is impinged upon by the constant growth. At the same time, there is a lot of understanding of what the problem is among our electorate, partly due to some very sage elected officials who took some time four or five years ago to inform the electorate of just what it takes to keep mobility in pace with our growth. We now have an electorate that is willing to tax itself to address congestion needs, in both the transit and highway construction area.

We are finding — and this may be the old western spirit that some people say has died out, although in southern Nevada we still see evidence of it every so often — that government is here to provide a service, not to provide full-time employment to anybody. Public transit is not an entitlement, but just one of many services, one of the many diverse public services that the community sees government is in the best position to provide. Therefore it has to be provided, but it is under constant scrutiny for cost efficiency and relevance and responsiveness to the local voters. If, in fact, the public service has been provided for a period of time because it was needed at one time but is no longer relevant to the local community, increasingly we are seeing our electorate telling us, "Don't keep doing that. Just because you have a bureaucracy in place to provide this and you have an infrastructure in place and you have employee groups in place, that doesn't mean it needs to continue to be provided, because we don't need it anymore."

### **The Transit Industry and Change**

The recent vote in Congress on repealing Section 13c and eliminating existing agreements adopted under that provision saw a lot of miscommunication, misinformation, and an unwillingness by many parties, on both sides, to deal with change. Proponents of change argue that the provision in the 1964 Urban Mass Transportation Act that protects the collective bargaining rights of employees from private sector companies is no longer the condition under which collective bargaining is applied under state and federal laws today. It is certainly not the

situation in which we find ourselves in southern Nevada, being 100 percent reliant on contracting out with the private sector for these services.

We are finding that our public, our electorate, has a real problem hearing that there are certain things we have to do and certain things we cannot do simply because there is this particular provision in place to protect, not the collective bargaining rights, but to protect the job and the employment conditions of an individual employee for six years. It is basically an unemployment compensation act for six years.

This strikes a chord in our particular community. We have all heard the horror stories of people getting laid off in the defense industry, many of them in southern California. Many are not finding work in their chosen or trained fields and are coming to Las Vegas for employment because jobs are being created there. And when they hear that our system cannot grow as fast as we want it to or it needs to because we have to set aside and make decisions based on protecting six years of employment for employees who operate buses, we get a very vocal reaction. We have a very high unionized work force in the Las Vegas resort industry, from the culinary employees to stage hands, but they do not like the idea that somehow one group of organized employees has a much higher level of benefit protection than others. That is the message that Congress did not hear in the appropriations debate. I can assure you that they will hear it in the future debate on this issue.

### **The Challenge of Preserving ISTEA**

In the world of public transportation and the world of transportation in general, we are coming up to the reauthorization of the ISTEA. Everyone is going to be looking at the report cards that different interest groups are keeping on the performance of different parties under the ISTEA. We know in our particular region that there are people who are preparing today for the authorization hearings, with the intent of indicating that the MPOs have failed to meet the mobility and congestion relief needs of this country because there are too many people at the table. Of course, we all know that the whole point of the change of the planning process the ISTEA brought us was to make a place at the table for everyone.

There have been many successes around the country. I feel that in southern Nevada we can be counted as one of the successes, partly because we did not have

to spend any time developing that round table for everyone to have a voice at. We were already sitting around the table doing the same things anyway. But, there are going to be people who, for very limited-scope reasons, are going to be coming back at that whole issue during the reauthorization hearings, saying, "This didn't work." I would only suggest that you keep your ears open today, and not wait until next year's hearings for who those groups are and what their arguments are. I would not be surprised that some of their arguments are based on misinformation.

### CHALLENGES IN SALT LAKE CITY

*John C. Pingree  
Utah Transit Authority  
Salt Lake City, UT*

#### Introduction

I look at myself as a general manager, as a person who tries to keep up with the great people of our organization that make the difference in our community. I had come through the traditional idea that managers are in the business of planning, motivating, and directing. So much time is blocked off here, another block is here, and it is all very organized.

Then I thought of my own managerial life, and it was not that way at all. I would go into work and someone would walk in and lay a problem on my desk. Then I would quickly try to get the monkey off my back and put it on theirs. I would ask them what they would do about solving the problem. Then someone else would come in with an entirely different thing and then I would get a call from a board member. I found out my days were really almost totally out of my control. The only way I could get anything done was to tell my secretary to shut the door and do not let anybody come in. That was hard because the phone would ring, and my curiosity would get to me about who could be on the other end of the phone and what I might have to deal with them about.

#### Insights from UTA Experiences

I would like to present seven areas that offer a challenge to us as an industry. More particularly, I will refer to the Utah Transit Authority (UTA) for examples.

*The Changing Political Environment:* During my 18 year tenure at UTA, I do not think we have ever

operated at a time when people have not said, "This is going to be the toughest year. This is the year when there's just no money. This is the year when everybody is going to be coming at you and you have to do more for less." They say those things, yet nothing had changed. It has always been that way.

Now, things coming from Washington indicate that transit really is going to be working in a different environment. As an industry, we previously put all of our political investment in the Democrats in Congress, and now the Republicans are running the show and they are not very friendly. In fact, their agenda is a lot different than what our present agenda is. If their actions hurt people in urban centers, that is not a big deal to them because that is not where their votes come from. The way I see it, if they hurt public transit and put money into highways, which is basically what happened with House Resolution 2002, that does not hurt their support. Having been a traditional Republican, I am now converted, but it is tough to face the fact that, to a large extent, the friends of the transit industry are no longer in influential positions in Congress.

*Funding:* One of the biggest challenges facing our organization is funding. At the UTA, we have three sources for funding: the farebox, federally funded operating assistance, and locally generated sales tax.

I came from the private sector where we had a lot of tools in our box, so to speak, that we could use to raise revenues. In transit I do not have any tools. I have three funding components, and two of them are out of my control. The sales tax comes in whether you do a great or lousy job, and the federal operating assistance looks like will be cut by at least 40 percent.

So, what do you do to keep your organization viable? Our challenge today is to provide stable employment to our employees. We do not want to be going through reductions in force (RIFs). Our management/labor contract has always been such that we will not go through RIFs. We may not pay highest wages, but we will give stability. Can we really continue we will guarantee to keep that contract as an organization? That is a question we currently face.

In 1992 UTA lost a sales tax election to expand our system with light rail transit (LRT). The scenario then was 50-50 federal and local funding, but we could not provide the local share without a sales tax increase. We got a resounding, "No," from our community.

"Don't tax us more for transit. We like what you do. We'll give you high marks for the kind of things you're doing in the community. But don't ask for more money."

We have been beat up consistently since that time for continuing to push light rail transit in our community, because now we think maybe we can get 80-20 funding. In fact, we are very close to a full-funding grant agreement for 80-20 and still the community, or rather, the negatives in the community, come back to us and say, "You were told in the election of '92 that we don't want light rail so why do you keep pushing it?"

It would have been better, in hindsight, not to have gone through that election, but to try to have moved slowly through a process and to build an LRT system, which is what has happened in most communities with LRT. They have built a core system and shown how effective it can be and then obtained community support with additional sales tax dollars or some other funding source.

*Market Share:* As hard as we try in our community, which is the metropolitan area of Salt Lake, we are losing in terms of market share. We are growing in terms of numbers of public transit riders, but we are losing in terms of market share. We are down, and yet we are providing more service and have more people riding because we are in a growing community. So we are losing the battle of being more effective and being significant mobility providers in our community. We have had some remarkable changes in our organization since we have done the community outreach; nevertheless, we're still losing in terms of the fight for how much of the community mobility we are going to provide. The automobile is still winning the battle.

*Employee Relations:* The third area that UTA struggles with is attracting, retaining, and motivating employees. We spend a lot of money in our organization on training. We believe that training is the key to helping our employees get a lot out of their job and see other opportunities in the organization. We have, for example, an educational reimbursement program. The board said to me, "How much did you spend on that last year?" We spent about \$20,000 in subsidizing people, helping them get additional education. A third of those people left us. We educated them to the point where they could go out and get a better job, and the board said to me, "Why

are you spending all this money to send people off somewhere else to get a better job?" Sometimes it is not easy to defend such a program when they come at you that way, but we still continue it because we believe it is the right thing to do. We believe that people will always act in their best interest, and they should. So when they have a better opportunity because they are better educated as a result of a program that we run, so be it. They are usually going to leave, which then provides opportunity for movement in the organization so that other people can move ahead.

Last year, for the first time, we were able to institute a program of incentive pay and we are pushing it to every level in the organization. We have gotten it down to the operators and mechanics with a Christmas bonus of about \$100 if we reach certain ridership objectives. We distributed almost \$350,000 in incentives last year. That's not typical for a public organization. We find that the bonus incentive really does work and as we gave some of our division managers a check for \$6000, you could see what was going through their minds about what would happen next year. The board has set as criteria ridership, reliability, cost containment, and miles between road calls. The fifth criterion is number of service complaints.

*Cost Containment:* Another area that is a big challenge is cost containment. As a transit system, money is the gasoline (or the diesel fuel) that we run on. It is becoming more precious. As I have mentioned, we cannot completely control our revenues, so we must be relentless in cutting costs. The biggest opportunity for that is in labor; 77 percent of our costs are for labor. We are now preparing to go into labor negotiations. I sat in a session about five months ago put on by the Amalgamated Transit Union (ATU). ATU, in anticipation of the Republican Congress and the thought that Section 13c might be taken away from them, was looking for ways of doing mutual gain-sharing. We had our union president in the same meeting and we agreed that we needed to become involved in joint gain sharing or win-win. He went back to his executive committee and they turned the concept down. Thus, we will not see any immediate change in our labor relations. The basic obstacle is *trust*. That is, trust for both sides.

Trust labor? That is tough to do. In our labor negotiations we go in with a list that is every bit as long as their list. We expect to come out with as many

gains as they expect to come out with. We do not go in with the idea that it is going to be a one-way street. As a result, we have aggressively fought for benefits that management can use to be more cost effective. Wages have gone up every year that we have negotiated, but we have been able to wring efficiencies out of the organization that have been very effective for us. Right now, for every dollar we pay out, about 90 cents is wheel time. If you look into that factor for most transit organizations it is in the 70 percent range.

Purchasing is another place we have found that we can be very aggressive in going after cost savings. We have found our inventories growing out of control. Often times we had the same part with four different part numbers. We now aggressively go out to bid after deciding which bus we want. We write a specification around the desire to maintain consistent parts and identification numbers.

We have worked very hard to institute the idea that we have only so many bucks and, if we waste them, we don't get them into high priority items like wages, so let's not waste them. We then get good support.

We also have had to cut service. We go through a process at every board meeting where we consider both service additions and deletions. The last three years we have tried to follow the philosophy that we do not add service unless we also cut service. We are cutting less efficient service and adding more efficient service. I must say though, we do fall into the political process. So, sometimes we cannot always provide efficient service. Sometimes you cannot always be what you want to be when you have to work in an environment where there are political challenges.

*The Planning Process:* Back in 1982-83, UTA was reluctantly pulled into what I call strategic planning. It was in the Reagan era, and President Reagan was to be the savior of public transit by taking money away and helping us with better management techniques. Our federal government representative for Region 8 said, "I've got a great idea: strategic planning." And I said, "I don't need that. I've got enough problems." And he said, "Well, we're going to give you a grant to do strategic planning. You're a mid-size transit organization and wouldn't it be wonderful for you to do the planning, then you can be the model for everybody else." We got pushed into this, but I need to tell you it was one of the best things we ever did, because it forced us to look to the future and determine what is critical to us as an organization and where we

were going. We laid out some things through the strategic planning process that have had profound impact on our organization. It got all of us running in the same race, because we pulled many of our people into the process and asked them what they wanted to do and where did they think we should be going.

We said that we will expand into communities that invite us in and try to help them have public transit. As we went through this planning process, we envisioned and saw strategically that, if we were going to be successful in our community, we needed to be a service provider to the *entire* area, what we call the Wasatch front. We started working with communities that invited us in. We have now expanded into five different areas with public transit service. And this growth has gone well. Today we are an organization with a \$50 million budget and 500 buses. Before we were at about 350. Each area had to vote for the tax. We usually had about a 60 percent plurality in each of those elections.

The strategic planning process has been very helpful and even today, three times a year, we report on all of the objectives to our board. We report numerically. It is not a lot of fluff, but good hard numbers about how we are doing. We do well in some things and we do poorly in other things. It gives us a status as to where we are. As an organization, we need that report card telling us where we are and what we are doing. That is what the strategic plan does with its goals and objectives, quantitatively measured. Since 1983, we have been doing it regularly and we have gotten better as a result. When you keep track of data and your mistakes, you get better. It is just a natural occurrence.

*Regulation:* We struggle with the triennial audit. We happen to be an organization that is high profile in our state, so everybody wants to audit us. Even the state legislature comes down and regularly does management audits. We have had only good reports. The strategic plan has helped us to respond favorably to the audit process of regulation. We have goals and objectives, together with measures that give us direction, which is appealing in the audit process.

We struggle with the issues of minority business enterprises (MBE). We have the federal mandate to increase our commitment for more MBE participation. Our objective is 13 percent, we have consistently hit 19 percent to 20 percent when we were doing construction. Other than construction, it is very hard to hit 13 percent. Our ongoing type of processes and

purchasing certainly does not give us the opportunity to support an objective of 19 percent to 20 percent.

We also struggle with affirmative action. We are not able to get enough women. The person running our operations is a woman. We have tried as hard as we can to promote, but we just have not had the opportunity. We do not have a lot of turnover in our organization. We struggle with those kinds of issues and do not seem to resolve them.

The Americans with Disabilities Act (ADA) program has been a wonderful opportunity to serve the community, but it has been a black hole for costs. We started out with a program that had a flex point so we could share rides. We were carrying program participants at about \$5.80 a ride. We felt very good as we looked around and saw what it cost other cities. We have blown the costs up to about \$9.30 a ride now. There is more demand than supply. Over the last three years, most of our growth and opportunities have gone into meeting the needs of people with disabilities. As we have been willing to pick up paratransit demand, agencies who were providing the services have pulled back. We are left trying to provide still more services. Thus, we keep putting more of our resources into these ADA mandated services, which makes it very difficult.

A further area of regulation is clean air requirements. If you look at the B.t.u. (British thermal unit) content of a gallon of diesel, it is very hard to beat in terms of basic efficiency, moving a 23,000-pound coach around. Clean air has some real opportunities for us in forcing people out of cars, but it has some real costs for us in terms of looking at alternative fuels.

There are other areas where we see these hidden costs associated with environmental issues. Ten years ago we thought we were doing the right thing by sending our spent oil to the reclaimer who was going to turn it into virgin oil again and sell it. Ten years later we find out they were not doing that. We did not keep a very good genealogy on that oil, in fact, we did not know where it went after it went to them. Of course, there was no reason to keep track of it then. Now we are looking at a \$700,000 bill to pay for the clean up of an Environmental Protection Agency cleanup site. The reclaimer polluted the site but is bankrupt. The area is now one of the Super Fund sites. And when the primary organization cannot pay, then the originator of the waste products is responsible. They are now coming back to us to pay for about our 90,000 gallons of oil that we sent. They have suggested to us that we

will have to pay \$7 a gallon to clean up the site, and we are now fighting this. We are trying to reduce the liability. This is a hidden risk we never thought we would have ten years ago. Today we burn the oil rather than send it out. We burn it in waste oil heaters. That has cut our cost for heating our buildings by about \$120,000 a year. We find we get very creative when we have these challenges.

*Political Issues:* I never thought that the election of one representative to Congress would make such a difference for our community. We have the distinction of having elected one of the Republican freshmen, Representative Enid Greene-Waldholz. She was elected on a plank of trying to kill light rail transit, and she is doing a good job at it. She is the person in Congress who was able to take transit funds out of Section 3 and convert them to highway uses. She was able to take \$5 million and convert it into high occupancy vehicle facilities for highways. The highway folks did not want it. They feel they cannot offend her by saying they do not want it, however five million does not do much for them. So, when it comes to Congress, one person has made a big difference.

The Democrats have been our traditional allies. The Republicans now are in control in Congress. Our big challenge is how to develop the relationships on both sides of the aisle so that nationally we are not going to get decimated when it comes time for funding if the Republicans are in power. For example, under the guise of balancing the budget they take \$600,000 away from transit and put \$500,000 into highways. That is neither leveling the playing field nor balancing the budget.

Then we have an administration whose idea for cutting costs is to put all the surface transportation organizations together. You've all heard the joke, "What do you get when you marry up the Federal Highway Administration (FHWA), the Federal Railroad Administration, the Federal Transit Administration, and the Coast Guard? You get the FHWA." That's what we're going to end up with, more of FHWA and no one to really carry our cause and fight for our needs as far as public transit is concerned.

As an industry, we will soon see a change at the head of the American Public Transit Association (APTA), the industry's main lobby arm. Jack Gilstrap, Executive Vice President of APTA, has announced he is going to retire. We have had his leadership for 16

years, a consistent leader in the national organization. What kind of a leader is going to step into that position at a very challenging time, a time when we need to have very consistent and experienced leadership in terms of the Intermodal Surface Transportation Efficiency Act (ISTEA)? The ISTEA is up for reauthorization and our main lobby group is changing leadership. Who is the new leader going to be? This has some challenges for us as an industry.

I do not mean to lay out just problems. I think the times also present great opportunities. I think that we are heading in the right direction. I feel morally committed that the things we do in public transit are good for our community; they will make our community a better place and increase the quality of life. So while we have challenges, we are on the moral high ground in this pursuit. There are new models out there, wonderful opportunities to grow and develop. And the things we stand for, I think, are right, and with that moral high ground we will eventually prevail, but we are going to go through some tough times doing it.

## USING MARKET RESEARCH TO IMPROVE TRANSIT MANAGEMENT AND SERVICE DECISIONS

**Moderator, Larry Sauvé**  
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Improving management and service decisions in the transit industry requires consideration of new, innovative approaches to management and service delivery. One important strategy relates to the ultimate goal of transit service. That is, meeting the needs of the travel market, both current and future. While market research is being carried out by many transit agencies, a fundamental question facing the industry is whether these efforts have actually achieved the best results in terms of meeting management and service planning needs.

This session includes two major components. The first is a presentation of major findings from TCRP project B-2, a comprehensive examination of market research efforts by transit systems in North America. The presentation focuses on approaches and methodologies relating to market research and current barriers to making research more effective in supporting decision-making.

Following this presentation, three case studies present the actual application of market research efforts to service and management decisions:

*Route Planning in Houston, Texas:* Market research helped Houston Metro determine travel needs and attitudes of employees at the Texas Medical Center, a major activity center.

*Comprehensive Transit Planning in Whatcom County, Washington:* Market research results were integrated into the Public Transportation Plan and several service changes of the Whatcom Transportation Authority.

*Customer Loyalty in Minneapolis, Minnesota:* The relationship between transit agencies and customers is presented with emphasis placed on building and maintaining customer loyalty.

## USING MARKET RESEARCH TO MANAGE CHANGE

*Rebecca Elmore-Yalch*  
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*Bellevue, WA*

TCRP Project B-2 is designed to help transit managers better understand market research, its uses, and its application to transit decision-making. The project's objectives include:

- identifying the market research activity in transit today;
- determining the extent to which market and customer research is being integrated into transit decision-making; and
- presenting market research strategies from both the public and private sectors that are appropriate for decision-making in transit.

Project research activities included:

- administering a survey of over 400 individuals from over 200 transit properties;
- conducting in-depth case studies on five agencies that use market research in unique ways; and
- hosting a workshop to discuss market research activities in transit.

## Who in Transit Does Market Research?

About 80 percent of transit agencies do some kind of research. Seventy-two percent are doing primary research; that is, they are collecting information directly from their customers. Twenty percent of the agencies who responded seem to be operating in some kind of vacuum where they do not get research information from their customers, their metropolitan planning organizations or their departments of transportation.

### Nature of Market and Customer Research

Most of the agencies are conducting research to assess the quality of their service. Market and customer research that provides the information needed for service planning and developing new products or services is being done less often. Very few transit agencies do market segmentation research. By contrast, 98 percent of private sector firms do market segmentation research. This means most transit agencies do not know their market segments and are developing products or services without knowing what the market wants. Finally, only 14 percent of the agencies say they use any market research to make public policy decisions.

### Methodology for Market and Customer Research

Not surprisingly, on-board surveying is the research mode of choice for most transit agencies. This is a very cost-effective manner of gathering information quickly and efficiently. However, on-board surveys risk continuing the tradition of talking only to riders. This misses the whole other mass of people out who are not riding. Telephone surveys are also widely used. These often capture non-rider respondents. However, telephone surveys typically are conducted once every two or three years and are viewed as special projects. Little use is made of focus groups, despite their value in capturing in-depth information as to why people think the way they do, what motivates their behavior, and getting their reactions to new ideas.

### Market Research Users

Only 56 percent of the agencies say they are using market research in strategic planning and service planning. And despite important funding issues, only 38 percent of the agencies do any kind of fare policy research at this point in time.

While most agencies believe that market and customer research is useful and that it can lend some value to decision-making, they also report that they are not finding their current efforts at market and customer research particularly usable. This implies that market researchers may be providing transit agencies a large amount of information that the agencies have been unable to use.

### The Limited Success Of Market Research Efforts

In general, past research efforts have been successful. Only 14 percent of the agencies said their past efforts were not successful. However, the fact that only 36 percent of the agencies that have conducted market research said that their last effort was very successful is an issue.

Market research should be always a successful endeavor. Nobody should ever say it is not successful, and few people should say it is only moderately successful.

Barriers to greater success include:

*A Lack of Understanding:* Most people fail to grasp the essential purpose of market and customer research. They view it largely as something done for marketing, not for service planning and not for service or product development. Furthermore, they do not understand what different types of research can do. Moreover, they fail to understand how it relates to their needs. Nor do they perceive market and customer research as a risk reduction strategy. As a result, they see it in a very limited focus.

They do not see a need for market and customer research. That is, they don't understand what it is going to do for them, personally, in their day to day business decision-making. They don't see the link between information, risk reduction, and decision-making.

*Infrequent and Sporadic Use:* Transit agencies use market and customer research for decision-making very infrequently. In the private sector, decision makers often say, "I have a decision. Information can reduce the risk in making that decision. Can market research give me that kind of information?" This is an ongoing thought process in the private sector that one does not often see in public transit.

### The Need For Market Research

Why should transit agencies conduct market and customer research? The reasons are several:

*The Market is Changing:* The market for public transportation services is characterized by a growing number of stakeholders. Ridership retention is important, but transit must also focus on customer acquisition. It should not be an either/or type decision, but rather an on-going, connected process.

*Broader Public Support is Required:* Transit must learn why people have stopped riding. It needs to look at non-riders. It needs to look at the public that votes to support public transportation. And it needs to look increasingly at businesses, chambers of commerce, retailers, and people from whom it will need to provide support to public transportation in the future. Transit must know as much about these stakeholders as it does about those people who actually use public transportation services.

*Time is Short (and Getting Shorter):* The time available for decision-making is increasingly short. In the private sector they say you have about six weeks to gather information and make a decision. In transit, you may still have three months or even six months. However, the time that most people have to make a decision to introduce and launch a product has shortened significantly in all industries.

*It Aids in Decision-making:* Market research simply improves the quality of your decision-making. It helps to choose between alternatives. If done correctly, it can reduce the risk of selecting the wrong or bad alternative. That is, it reveals what not to do. Even more importantly, it also helps to identify what potentially may be the best solution. This is a real subtle aspect of market research that a lot of decision-makers do not understand. Market research does not make decision-making completely risk free, but it does winnow down the inherent risk. It brings a problem and potential solutions down to a potentially more manageable thing.

*It Helps Managers See Tomorrow Today:* Market research can help transit decision-makers understand the marketplace of tomorrow. It looks beyond how a service is doing today for its current market, to what the market needs are going to be six months from now, a year from now, three years from now. This leads to a proactive position. Knowing this will affect service planning and the development of new products and services to meet these changing needs.

*It Helps Managers Learn from Mistakes:* Market research can find out what went wrong. This does not mean market research serves a report-card function. Rather, by constantly evaluating and monitoring the marketplace, it leads decision-makers toward continually focusing ahead to see where the marketplace is going. So, by finding out what went wrong, it tells where to go in the next year and beyond.

### **Barriers To Transit Market Research**

There is a significant need to integrate this research into transit management. However, major organizational barriers remain that restrict the full use of market research in decision-making. First, top management commitment required for the on-going use of market research is often lacking. Second, the methodologies currently used, such as on-board and other surveys of only current riders, raise questions regarding reliability and validity and offer limited usefulness to the organization. Other aspects of technical quality that restrict the use of market research are how the research is designed, the types of measures obtained, the way in which the data is analyzed, and how it is all presented.

A third barrier is the degree of trust decision-makers have in the research process and in those conducting the research. For example, there is a wariness to share information. Consultants often encounter barriers in getting the information they need to conduct their research. And, internally, departments or divisions may likewise be hesitant to share information with the agency's research function, or with each other.

Finally, the organizational structure and culture of many transit agencies represent barriers to using marketing research. Many transit agencies simply are not structured in a way that is conducive to an effective use of market research information for developing strategies and working in ways that share and absorb information. This is potentially the most difficult area to address, because transit agencies are generally organized to be operationally effective and efficient.

### **Summary: Getting From Here To There**

Agencies successful in market research share these attributes:

*Management Support:* Again, top management must offer its support. One way to get this support is to have demonstrable success of past research efforts. If a manager can come in and can say, "You know, we did research and got this information; we made this decision and, look, our decision was better because of the research," top management will start to believe.

*Quality Research:* It is important to focus on appropriate, quality research. Not just on-board surveys. Not just telephone surveys. Not just focus groups. Identify the need and understand what each type of information different methodologies and each type of design.

*Involving the Right Players from the Start:* One way to insure quality research is to get the research function involved early on. Often, a transit manager will design an entire research project before involving the actual researchers. When this happens, the researchers -- be they internal or external -- lose the necessary synergy and the ability to provide some objectivity in using research to help solve a given problem. The lesson is: Involve the research function as early as possible in the decision process. Make them part of the team.

*Commitment of Resources:* High-quality research costs money. If you spend less, you invariably get less. Transit managers must realize that, even in today's cost-cutting environment, market research is money well spent. In fact, it often yields information that can help lower costs.

*Flexibility of Research:* Finally, to get all of this to happen, transit has to be innovative and flexible. Managers and researchers have to understand what is happening in their environment and when market research or a particular method is appropriate and when it is not appropriate.

## Conclusions

Transit faces major challenges. To meet these challenges and succeed in the years to come, transit managers should focus on:

*Retaining Current Riders:* Transit agencies should focus on ridership retention. It is very expensive to replace lost riders. Transit cannot expect to keep customers forever, but it can and should focus on retaining people for a long period of time. Ridership acquisition is important, too, but in some ways it is actually easier to achieve.

*Adopting a Customer Focus:* Transit must adopt a market orientation and have a customer focus. Many transit agencies have implemented customer service initiatives and taken a customer focus. But they should take it one step further and recognize that they are operating in a broader environment than simply providing transit services. They are in the mobility market and that means that they are competing. To succeed in this larger, competitive reality, transit agencies must use market intelligence. This includes not only market research, but, in fact, all information.

*Integrating Market Research throughout the Agency:* Finally, transit agencies must develop an integrated market research effort. Agencies need not do research for everything or all the time. But they should think about market research in problem-solving and strategic planning and have a familiar and tested program that is integrated into their organizational and functional structure.

## MARKET RESEARCH AND SERVICE PLANNING

*Mark Douglas  
Houston Metro  
Houston, TX*

Like many transit agencies, Houston Metro traditionally uses market research for evaluating advertising effectiveness, rounding out marketing campaigns, etc. More recently, we've started using market research more for the design of transit services — that is, deciding what we are going to put on the street.

We have begun supplementing traditional transit planning tools with market research, both quantitative and qualitative research. We recently added focus groups to our research mix. With them, we can bring in potential users of a service, lay out what we are thinking about, and get a lot of depth and feedback not normally available with a survey instrument.

### Case Study: Texas Medical Center

The Texas Medical Center (TMC) is a major activity center for Metro, employing about 50,000 Houston residents, and is second only to our central business district in terms of employment and activity. In fact, it is one of the largest health care centers in the world.

This case study considers one bus route serving the TMC. This route initiated at two park-and-ride lots, made some local stops, and stopped at a third park-and-ride facility before arriving at the TMC. This route was on Metro's list for potential discontinuation due to poor ridership. In talking with the employers at the TMC, it was agreed that Metro would do some research and see if there was some unmet potential demand to consider before discontinuing the route.

### Initial Survey of TMC Employees

We mailed about 13,000 surveys in this corridor to people who work in the TMC. With that concentration of people working in the TMC and living within 10 or 11 ZIP codes, we believed that we could come up with a service that would do fairly well for the area.

Some of the key findings of the survey were as follows:

- transit holds about a 13 percent share in terms of work commute mode choice in this market;
- of that 13 percent, about 21 percent were using the route in question, the 196 Westwood/TMC Express. In other words, only about 2.5 percent of the people living in this corridor who worked in the Texas Medical Center were using the 196; and
- there was about a 26-minute average commute to work, in the range where transit starts to become attractive.

People participating in a survey often will overstate their intent or likelihood to use a product or service. To avoid overstatement of intent, we assessed how burdensome the respondents' commute is by asking them a number of questions and asking them to rate each factor on a scale of one to five, one being "no problem at all" and five being "very major problem." We then rolled up scores for each factor into a single factor which we call the *commute burden*. About three percent were in the high commute burden range and 27 percent in the moderate commute burden range.

We wanted to be very straightforward so as to not overstate likelihood for transit use. The survey noted some of the things riders might encounter when riding a bus to work. For example, it noted that riders would have to walk to a bus stop, pay some out-of-pocket expenses, wait longer than they sometimes might want to, and might experience longer travel times to work. The survey measured people's concerns with these four variables and combined them into a single factor. Results indicated that about a fourth still expressed a high willingness or moderate willingness to use public transit. As this total was higher than our current transit market share was in this corridor, we were not quite ready to give up the route.

The survey revealed that four far western ZIP codes indicated a significant willingness to use public transit with a calculated commute burden about four to five times higher than what it was for the corridor as a whole. Based on this research, we concluded that Metro should try to get a larger share of a smaller market rather than getting a small share of the larger market.

### Follow-up Survey of TMC Employees

We undertook a second survey, focusing only on the four western ZIP codes. Utilizing a telephone survey conducted among TMC employees living in these ZIP codes, we collected information with which to design a service that they would find attractive. We tested a series of components that would go into a new service, including travel time, frequency, and fare.

Conjoint analysis yielded a series of utility scores; the higher the score, the more attractive the service. In this case, a nonstop service that ran every five minutes and only cost 80 cents was the most attractive service. Of course, Metro could not even begin to afford to provide that type of service. At the bottom of the utility scores was a local service that only had a frequency of every 20 minutes and cost \$2.20. We felt that within these bounds we could design a service that was closer to the middle utility scores and that would still be attractive. A nonstop, 15-minute peak service finished near the middle of the utility scores.

One of the most useful features in conjoint analysis is the ability to hold constant some of your variables and then take a look at one of the other components. In this case we held service amenities constant—a nonstop, peak hours, 15-minute frequency service—to determine fare sensitivity. This analysis demonstrated that we get absolutely killed when the fare goes over the \$2 mark. Unfortunately, this service fell into our \$2.20 fare zone. But, with various subsidies that employers offer and through the discount Metro offers large employers who sell prepaid fare media, we could get the trip cost down to the attractive \$1.80 range.

### **From Research To Action**

As a result of the survey, a new service, route 292, was born. This service is staged from a well-lighted, secure park-and-ride lot. This lot has direct access to a high occupancy vehicle (HOV) lane, so the buses never mingle with surface traffic until reaching the TMC. Even though the new 292 route is longer in distance than Route 196, we cut 12 minutes off the travel time of the old route by having it use the HOV lane and eliminating the local stops.

We depended heavily on direct mail to promote the new route. The TMC institutions either mailed brochures for us or provided mailing lists for us to use. Research told us that we were going to have to sell the fact that you could get sufficient subsidized fare through employer programs to get the cost of the service well below the list price cash fare. In the brochure, we compared the cost of driving to work (\$4.35 for a one-way trip) to buying a monthly pass at various discounts. The brochure showed how riders could get the fare down to about \$1.40 or even lower. We also included the list of Employee Trip Coordinators' phone numbers so that potential riders knew where to purchase discounted fare items. We believe this gave potential riders virtually everything they needed to know in order to make a decision to get on the system.

### **Follow-up Research**

We conducted some follow-up research, primarily because, even though the ridership was moving upwards (three to four times that of the old route), the new route was still not getting quite the ridership we expected and wanted. We recently conducted a telephone market-area survey of non-riders to find out why they are not using the route. Unfortunately, survey results are not yet available.

Metro has also done an on-board survey to confirm that the service was meeting customers' expectations. Eighty-five percent of our Route 292 riders ride five days a week, 14 percent ride four days a week, and only one percent are not regular riders. Almost three-fourths get a subsidy in terms of their out-of-pocket costs, up to half the cost of the list fare.

The survey also indicates that the number of Route 292 riders telling us they are completely satisfied — our highest rating — is about three times what we see in the rest of our park-and-ride service system. Market research helped Metro establish a service that people like and use.

### **Comparisons with the Drive Mode**

About 90 percent of riders on this route reported that it is much less stressful to take the bus than to drive. In terms of travel time, almost half are telling us that the Route 292 is much faster than driving and another third are telling us that it is somewhat faster. Given that one of the most frequent complaints about transit is that it is too slow, we were very pleased to see three-fourths of our customers telling us the new service is faster than driving to work.

Our toughest area to succeed in is cost. We are not getting the positive numbers we received with some of the other preliminary results, though two-thirds of riders responded that the bus is less expensive.

### **Re-capturing Former Metro Riders**

Some of the best news out of the on-board survey of our Route 292 customers is that almost half of the new riders are former riders. They had quit riding our system sometime within the past five years. With this new service, Metro has drawn them back into the system. And, as a system that has experienced overall declining ridership, it is gratifying to see that you can bring people back; they are not necessarily lost forever. About a third, or 30 percent, of riders changed from some other bus route to Route 292. About 21 percent are new transit riders.

**Marketing Where Riders Live**

In our marketing efforts we concentrated on four ZIP codes as our target market, based on proximity to where the service initiated. Looking at the on-board survey data, we were surprised to discover that almost 50 percent of our customers come from outside our target market area. In planning another ridership building effort, this finding told us that we need to expand our definition of the market area.

**Summary and Conclusions**

To summarize, we have used market research in probably 10 to 12 service development cases in the past couple of years. It has been a very useful tool for defining the market very narrowly, yet accurately. With market research we collect current data, not years-old like most census data.

The primary advantage of using market research for service decisions is the ability to test a service or concepts before putting the service on the street and potentially making a six-figure or larger monetary mistake.

**EARNING CUSTOMER LOYALTY:  
RESEARCH, INCENTIVES, SATISFACTION**

*Debra Alexander*

*Arends and Samhoud Marketing Services*

*Chicago, IL*

Many public transportation professionals believe that they do not operate in a competitive marketplace. The fact is, we do operate in a competitive marketplace. The automobile manufacturers have recognized us as a competitor (recall the recent "tear up your bus pass" ad campaign), and we should recognize them as a competitor.

Of course, transit cannot hope to compete with the auto industry in advertising. But this is not the place where competition begins. Competition begins with consideration. Transit competes against all modes of transportation, and it begins when people think about, "I want to move from point A to point B. How should I make that trip?" That consideration is when competition begins, and that is where we need to focus our attention. If we gain confidence at the consumer level, that will increase ridership.

**One Small System's Use Of Research**

In Lansing, Michigan, non-rider research told us that people did not know there was a bus near their home or work area. And research of riders told us that the bus did not go where they wanted it to go or when they wanted it to go there. To clarify this, we conducted more in-depth research and found out that people wanted Sunday service. Lansing had six-day service, but a very large percentage of the population wanted Sunday service.

Operationally, this service improvement would be neither very difficult nor very costly. We went back to the research and identified the routes on which respondents requested Sunday service. Then we offered these riders a month of free Sunday riding. There are normally only four Sundays in a month, so it was only four days of lost fares. But to the customer, a month of free riding sounded fabulous.

We also marketed these routes. We used mail carrier route marketing rather than ZIP code level marketing. We purchased mailing lists within a quarter of a mile on either side of a given bus route and sent those addresses a package telling them about the new service available in their community. Within one month, this service was among the most productive services that Lansing carried.

**Market Research In Minneapolis**

The Metropolitan Council of Transit Operations (MTCO) in Minneapolis had not done market research for a number of years. When marketing research was used, the agency conducted traditional kind of research focused on determining from the public how the transit agency had been doing. It was doing fairly well; in fact, 80 percent of the people thought we were either very good or good. The reaction inside the organization was, "We are very good."

Still, having 80 percent satisfaction level was, to me, not acceptable. This was only a picture of the customers' perception today. It is not a picture of what the customers would like in the future or how long they will stay with us. I said, "Is that good enough? No." We did another on-board survey and another non-rider survey.

*Public Perceptions:* The non-rider survey revealed that we would never be able to sell any kind of local tax measure to the voters. It would not win; only about 30 percent to 40 percent of the people would have supported some kind of voted tax increase, be it sales tax or property tax, to support public transportation. The Minneapolis system does not have a dedicated source of state funding, so the low public support for a potential tax measure for transit was a critical finding.

*Rider Satisfaction:* From our on-board survey, we found that those customers who had been riding us the longest and the most frequently were the least satisfied. This survey revealed that we were not doing very well in satisfying our customers and establishing a loyal ridership base.

Minneapolis also participated in a nationwide demonstration project conducted by J.D. Power and Associates to develop a national customer service index (CSI). From this work, we learned that a large percentage of our customers were "satisfied" or "very satisfied." However, when asked, "Will you ride again?" the percentage of "satisfied" riders responding "yes" drops dramatically. Even the percentage of "very satisfied" riders drops about 10 percent. If you ask those same two groups, "Will you recommend us in the future?," they drop again, very dramatically. That is bad news for an agency's customer referral base, one of its best selling tools. We determined that we should focus on those customers who are somewhat satisfied and very satisfied.

### Using the Research

We asked, "What do we need to do?" And we looked at the private sector for the solution. We decided to test frequency and loyalty programs similar to those used for years by the airline industry. We asked riders of six selected routes to sign up and give us their names and addresses. At the end of the month, if the customer sent his or her payment tool — a monthly pass or a ten-ride punch card — we would send him or her a reward booklet.

We had seventeen partners involved in the reward booklet, offering coupons for venues or restaurants, etc. in the local area. It was a significant package. We had about 30 percent of our customers participate. We found that riders thought this program was important because we were finally talking to them. Participants also indicated that the reward program did not entice them to ride more frequently.

Again, we were striving for both frequency-building and loyalty-building. Seventy percent of the riders in Minneapolis already rode five days a week or more. So, we had a very small percentage of the market that could ride more frequently, but a very large percentage of the market from which we needed to gain loyalty. The first challenge was to test whether or not frequency could actually be gained. We had decided that one of the coupons should be a free ride coupon on our system. This coupon actually became the number one requested incentive. Our customers told us that they did not need all the other benefits from our partners. All they wanted was a discount on our product.

Under the airlines frequent flyer program model, when you use an airline, you are rewarded, and you come back and use it again. We decided to roll out a very large program in the following phases:

*Phase 1 - Establish Database:* We told our customers, "If you'll send us your monthly passes, we'll give you a five percent discount." We then put the customer on the database and sent back a coupon worth five percent of the cost of the monthly pass.

*Phase 2 - Rider-Get-a-Rider:* The next phase was to encourage riders to introduce a new rider onto the system. We offered incentives to both the "old" and new riders.

*Phase 3 - Frequency Program:* The third phase was to reward riders for frequently using the system. This depended on fare collection/database technology Minneapolis is hoping to introduce in 1996. Each rider would receive a number on a magnetically striped card. When riders swiped the card through the farebox reader, it identifies the rider and records your ride on your route. This is linked into the database system to track behavior and give riders rewards for their frequency. This is the dream of the not-too-distant future.

### Earning Loyalty - A Team Effort

Achieving customer loyalty takes buy-in from everyone, not just the marketing team. The database puts customers at your fingertips. If the planning team is now going to change a route, it could go to the database, pull up the names of all the people that ride that route, call them in for a focus group or send them a letter saying, "We're having some problems with

your route. We'd like to talk to you." You could send them a survey. You can have focused, direct contact with them.

If, for example, a bus route is temporarily detoured, the agency no longer has to send out rider alerts and place them on every seat. Instead, it can simply call up the database for that route, send those customers a letter, personalized to them, saying, "Sam, we appreciate the fact that you're riding. Now, for the next few weeks your bus is going to be detoured. Sorry for the inconvenience. Let us know if there is anything we can do to help." You have established a relationship, a two-way conversation with your customers, that will help develop loyalty.

### Summary

We must look toward the future and develop a mutually agreed upon relationship or definition between our customers and ourselves regarding service quality in the future. Until we have an agreed upon definition, we cannot know whether or not we are meeting the expectations of the customer.

We must also identify customer expectations. We have been fairly content in the public transportation industry to not look at what the customer expects. We think we know what they want. Once we have customer-defined expectations, we put them up against their perception of current service quality. With these expectations and our service statistics, we can develop a real focus for the transit agency.

There is one other element. Focus can only be achieved if there is a cultural change within a transit agency. All employees must understand their role in meeting customer satisfaction. In Minneapolis the agency lays out operational statistics against the customer expectation. Every month the results are publicized. What we are doing, how close we are to meeting customers perceptions. The Customer Satisfaction Index makes all employees aware of their role, their contribution in overall customer satisfaction. Listen to the customers, learn what they want, make changes in procedures, in policies and in processes that prevent you from meeting the customers' expectations.

By doing these things, the agency will be in a position to look five years down the road and say that this is what the customer of the future is going to want and we will be there before they know they want to get there. We will meet and exceed those expectations and lead the customers down the path instead of always transit being led down the path.

### BIG RESEARCH AT A SMALL AGENCY

*Rick Gordon*

*Whatcom Transportation Authority*

*Bellingham, WA*

This case study is intended to demonstrate that market research is important and achievable even in small transit systems. The small transit system is the Whatcom Transportation Authority (WTA). The WTA operates in Whatcom County, located northwest Washington near the U.S.-Canadian border. The WTA provides fixed-route service for the general public and specialized transportation service for the elderly and disabled. We're beginning to develop dial-a-ride programs for the general public and are in the process of starting a carpool/vanpool program. The WTA operates 26 bus routes using 27 peak-hour vehicles as well as a specialized transportation program using 26 peak-hour paratransit-type coaches.

Whatcom County has approximately 148,000 people. The city of Bellingham is the primary city in the area with a population of 55,000. Western Washington University, with 10,000 students and 2,000 staff and faculty, is our major trip generator.

The conditions we face in Whatcom County are as follows: there are no parking problems, except for Western Washington University and maybe some downtown areas. Seventy-four percent of the respondents to our market research said their employer or school provided either reduced or free parking. There are few problems with traffic congestion. Congestion in Bellingham lasts for about 15 minutes on major corridors. The air quality is great. The average commute distance is 9.1 miles. The perceived cost of operating an automobile is very low.

No parking problems. No traffic problems. No air pollution problems. For the WTA this means a one and one-half percent share of trips taken in Whatcom County. Still, there are a lot of opportunities to increase market share.

### Market Research at the WTA: Overview Of Major Findings

The WTA used market research to determine the community's public transportation needs, to look at the its perceptions regarding public transportation, and to assist us in developing our mission statement, vision, and goals. We have also used market research to focus on the efforts the WTA should undertake to retain existing riders and to attract new riders.

The results of the market research had a profound influence on the development of our six-year Public Transportation Plan. The Plan identified our service delivery program and laid out the mission and vision for the WTA.

Market research was used to give us an idea of both the demographics of our ridership and non-riders and perceptions of our customers. In our general findings, we found that 37 percent of our riders rely on the bus for most or all of their transportation, 43 percent rely on the bus for some of their transportation needs, and 19 percent rely on the bus for a few of their needs.

Ridership is very stable, with approximately 46 percent of our ridership being long-time riders. Also, thirty percent of our ridership comes from the University, and every year we have a turnover of eight percent of our ridership because of the graduating senior and incoming freshman classes.

Riders are young; the average age is under 35 years old. Most of our riders, about 77 percent, are commuters traveling to work or school. Our riders, for the most part, have low annual incomes. We found that 49 percent of riders use the system because they are transit dependent. The primary purposes for riding the bus were for work and for school.

From the non-rider survey, we found that 53 percent said that under most circumstances they would not ride the bus, and 34 percent said they would never ride the bus.

### Guidance for Future Service Development

Riders showed quite a bit of interest in extended hours of service and Sunday service. At the time of the research efforts, the WTA had operated services from 6:40 a.m. to 6:40 p.m. Monday through Friday and 9 a.m. to 6 p.m. on Saturday. Since almost half of our riders are transit dependent, it is logical that they wanted some increased service.

The major categories for which the market research provided direction were:

- What are customer expectations?
- What we need to do to maintain and retain ridership?
- What we need to do to capture non-riders?

*Customer Expectations:* The WTA in the early 1980s had a ridership of approximately 2.5 million riders per year. However, throughout the 1980s ridership continually to decline until 1989. Market research helped to direct the WTA's efforts to reverse the trend. Items of high importance included:

- personal safety at the Downtown Bellingham Transit Center;
- travel time; and
- time between buses.

The analysis also indicated what WTA was working well. We are doing a good job with safe bus operations, mechanical dependability, on-time performance, personal safety while riding the bus, clarity of timetables, and phone information.

In looking at the market research, our primary focus was what it will take to retain existing riders and gain new riders. In the development of the WTA's Public Transportation Plan, these three major issues, as well as others warranting attention, were addressed through specific service changes and facility improvements.

*Personal Safety:* Bellingham has a very low crime rate. It is a very safe area, but there was a city plaza adjacent to the transit center where a group of kids was hanging out. It was intimidating for people to walk through the area. There was occasional information in the news concerning the kids and it was always referred to as "a problem at the bus terminal."

Our market research found that elderly people and people with children did not want to ride the bus because of that perception of lack of safety. We worked with the City of Bellingham to lease the plaza at no cost. We removed the public seating—which probably goes against the grain of anything you hear about livable cities—and converted the area into a paratransit drop-off zone where we could have more integration between our fixed-route and paratransit services. And we built a large brick planter, in which we maintain seasonal decorative plants. We got rid of the problem and beautified the area.

*System Safety:* We received high marks for safety on WTA buses. Even though we are a small system, we stress safety to the point that we have dedicated 1.5 full-time equivalents for operator training and retraining. We continue to focus on maintaining appropriate behavior on WTA buses and at WTA facilities. We work very closely with local law enforcement to ban persons who fail to act appropriately at WTA facilities or on buses. These were all areas our market research indicated as important for market retention.

*Improving Service - Travel Time Between Buses, Night Service:* The market research identified a number of service issues, including direct service, decreased travel time, and having better connections. We have seen growing traffic, growing ridership, (which is a nice problem), and more traffic lights. All of these have led to developing on-time performance problems. We are also looking into solving our on-time performance problems and providing more opportunities for riders to travel to their primary employment and retail locations without having to go through downtown Bellingham. We are considering increasing frequency along major corridors and developing bi-directional loop routes that serve major trip generators. We are looking at ways that we can work with our customers to facilitate more rapid boardings and alightings—including having the fare ready at the time of boarding—and save time for our riders. We are currently going through a major systems analysis and hope to implement needed changes very soon.

Another thing that we have found through the market research work was the importance of evening service to our customers. So we implemented evening service through our “Nightline” route. We have extended our evening service until 11:20 p.m. on a primary corridor that serves major concentrations of population and retail areas in Bellingham.

*Service Reliability:* The WTA has a long tradition of high mechanical dependability. We have not missed a scheduled run due to an equipment failure. We place a lot of effort into maintenance. Additional equipment is also stationed at the Transit Center in the event an operator needs to make an equipment swap. We also have terminal expeditors and supervisory staff that are able to make a vehicle swap en route if there is a mechanical failure and cover the next departing run. This reliability is important to customers.

*Bus Passes:* Market research also revealed a need for a monthly bus pass. The 25 cents fare had been in place since 1980 so we did not see a need for a bus pass. In April of 1995, our fares went to 35 cents, and we implemented a \$10 a month bus pass. In May of 1995, our ridership was up 16 percent from May 1994. Our customers had spoken, and they said, “Give us a bus pass, we’ll use the bus more.”

#### **Market Niches**

We also looked at opportunities to increase ridership. We used this information to target promotions where should we put our efforts to increase ridership. This is very important given our limited marketing budget.

We have worked extensively with Western Washington University, one of our major market segments, to develop a student bus pass and with targeted marketing at the university. The University has a number of characteristics which make it a good transit market, including dense student housing located on and adjacent to the campus and 12,000 students and staff with limited parking. This year we also have an agreement with the University to provide additional bus service. Though it is only a \$100,000 contract at this time, we hope to eventually establish a universal bus pass and develop more programs.

We have also found, in our market research, that we get high marks for the clarity of information on our schedules. Since we operate on a radial pulse system with clock-face timetables, it is easy for people to remember schedules. Recently, though, we have found that, with the on-time performance problems, we may have to move off that clock-face system. So this year we are developing a system route map and timetable booklet with individual route maps. We conducted customer and non-rider surveys to determine which format would be easier to understand and read. The surveys involved an intercept interview with people on the street.

Given that 49 percent of our individuals are transit dependent, we have looked at how can we meet that market better. One thing we do in our marketing and promotions program is that twice a year we have a transit dependent free-ride coupon where we work very closely with social and health service agencies. The caseworkers of those organizations appreciate getting those free ride coupons and we were wanting to increase ridership in that market. Also, through our ADA outreach specialist we meet on a quarterly basis with social and health services providers to better coordinate our services for fixed-route and specialized transportation.

#### **Focus Groups**

We discovered the benefit of focus groups in the public involvement process. We use focus groups to try to get a more balanced view of the public's perception than that received at poorly attended public meetings. Focus groups were used by the WTA to:

- develop transportation plans;

- develop standards for specialized transportation services for the elderly and disabled; and
- establishment local service corridors and areas for paratransit services.

WTA used to provide "ADA level service" throughout the county but we were finding that we just couldn't do that anymore with increasing demand, so we have developed levels-of-service standards that vary by population densities. We had to define what our corridor service levels were for that service. We have used focus groups and fare policy analysis and facility sitings, and so forth. We find those to be very effective means of getting information from our customers and the public about what type of needs they have.

#### **Summary**

WTA spent approximately \$20,000 on market research efforts when we developed our Public Transportation Plan in 1992. It was a bargain for all the benefit received. We have been able to use that information effectively in the development of service planning and marketing and promoting our programs, and we also picked up techniques that have assisted us in public involvement.

I close with one statement, "There is nothing more rotten than a bus seat that goes unfilled." Seat by seat, we want to fill our buses, and we feel that market research can assist us in that effort.

## OPPORTUNITY AND FEASIBILITY OF CHANGING TRANSIT MANAGEMENT

**Moderator, Patricia V. McLaughlin**  
*Los Angeles County  
Metropolitan Transportation Authority  
Los Angeles, CA*

This session explores opportunities for changing the culture and management practices of transit organizations. The basis for such change is the well-known, but not universally understood, approach called total quality management (TQM). The first presentation reports on the progress of TCRP Project F-3, "Total Quality Management in Public Transportation." Project researchers worked with a number of transit properties to introduce and apply TQM. Each agency was unique in its characteristics, providing an opportunity to assess the effectiveness of TQM concepts in many different settings.

Three case studies follow this presentation, each further illustrating the application of TQM to change their organizations. Specifically, these case studies explore:

*Satisfying Customers and Employees:* Salt Lake City's Utah Transit Authority employs TQM concepts of putting customers first, recognizing and incenting well-performing employees, and streamlining administrative tasks.

*Visioning and Cultural Change:* Employees at Cincinnati's METRO formed teams to develop an organizational vision statement and implement programs and procedures consistent with that vision.

*Management/Labor Teamwork:* Employees and management at the Spokane Transit Authority agreed to participate in TCRP Project F-3. The ATU Local President reports on the teamwork and employee ownership resulting from TQM.

## RETHINKING THE MANAGEMENT OF TRANSIT

*Littleton (Mac) MacDorman  
MacDorman & Associates  
McLean, VA*

In 1989, the American Public Transit Association's Transit 2000 Task Force prepared a report, *Managing Mobility: A New Generation of National Policies for the 21st Century*, which stated in part:

. . . we are bound by a traditional preoccupation with accommodating vehicles and inattention to accommodating people. . . . Public transportation is dominated by its human resource and human service character. The performance and success of public transit hinges on how human factors are managed. There are two dimensions of concern — riders and work force. . . .

These statements are still valid, and still not enough has been accomplished by the industry in the six years since the report was published.

### The Transit TQM Research Project

More than two years ago, Transit Cooperative Research Program (TCRP) project F-3, *Total Quality Management in Public Transportation*, was started. The objectives of the project were to identify, evaluate, and recommend applications of potentially successful methods of implementing total quality management (TQM) in public transportation to increase ridership through improved customer satisfaction, to increase productivity, and to reduce costs.

The project was essentially conducted in three parts: research, pilot initiatives, and products. We spent the first year of the project researching TQM both within and outside the transit industry, conducting surveys of transit chief executive officers (CEOs) and of transit agencies about their quality initiatives, preparing case studies of TQM both within and outside the transit industry, and selecting four pilot transit systems to assist and/or monitor in the next year. These transit systems were:

*Chicago Transit Authority:* one of the largest rail and bus transit systems in the U.S.;

*Pee Dee Regional Transportation Authority:* a multicounty, mostly rural, southeastern U.S. system, which largely provides paratransit services;

*Southwest Ohio Regional Transit Authority:* a mid-to-large-size bus service in the mid-west; and

*Spokane Transit Authority:* a mid-size, west-coast bus and paratransit system.

Each of the agencies was at a different stage in its thinking and progress toward change. Today, each of these agencies is at a different place and perhaps on a different pathway in their continuing journey of change. All of the agencies, however, continue to focus on customer satisfaction, employee involvement and empowerment, and culture transformation.

### What Is TQM?

As part of the project work scope, we were asked to develop principles that could be used to guide and assist transit organizations to better understand TQM and what is required to successfully launch a quality initiative.

TQM is a business concept concerned with people and work processes that focuses on customer satisfaction and improves organizational performance. TQM requires an enterprise to systematically energize, manage, coordinate, and improve all business activities to satisfy customers. The following seven principles should be pursued by public transportation agencies interested in TQM.

*1. Put Customers First.* "Putting customers first" is the basis for all quality management. TQM requires organizations to adopt the belief that service and product quality should meet, if not exceed, customers' expectations. All people and processes of an organization should be directed to this goal. The success of public transportation depends on customers — and retaining customers to use and/or support its services.

*2. Manage and Improve Processes.* By improving operations, organizations can raise the quality of their services, products, and delivery. They can also increase productivity, improve operational efficiency, and eliminate waste. Process management involves all activities required to provide a product or service, including all support activities.

*3. Manage by Fact.* TQM is a management philosophy that requires the use of facts and data, such as market research and process documentation, to satisfy customers and improve performance. Measurements serve the dual role of: 1) setting the direction for operational and strategic planning; and 2) providing feedback on whether organizational goals and objectives are being achieved.

*4. Cultivate Organizational Learning.* Continuous improvement in customer satisfaction and operational performance requires commitment to learning. Without learning, organizations and their members repeat old behaviors and practices. Solving problems, changing procedures to meet customers' changing needs, understanding the importance of satisfying customers, and designing or reengineering processes all require learning that work can be performed in different and better ways.

*5. Train, Empower, and Recognize Employees.* Employees are a transit system's most important asset. Their value must be protected and enhanced. This means training employees to identify and solve problems that cause customer dissatisfaction, empowering employees to take actions that satisfy customers, and recognizing employees for efforts and contributions that improve performance.

*6. Improve Labor/Management Teamwork.* A continuous and lasting TQM program is not possible without the involvement of employees. In organizations with represented employees, this means involvement by union officials in quality policy decision-making and participation by represented employees to improve performance and satisfy customers. Employee teams with represented and non-represented members must solve problems to increase customer satisfaction.

*7. Lead the Change in Organizational Culture.* The success of TQM is largely determined by leadership and organizational culture. Leaders must be committed to TQM to sustain a long-term effort to improve performance. They must change the organizational culture and provide increased opportunity for everyone to meet or exceed customer expectations.

### Project Findings

In observing the transit agencies that participated in this project, it is clear that real progress has been achieved in their TQM initiatives. The employee

surveys that were conducted before launching the initiatives and after one year provide clear evidence things had changed in a relatively short period of time. Management and labor leadership deserve much of the credit for assuming the risks that accompany a commitment to bring change to their organizations.

*Foundation-Building:* Early in the pilot initiatives, much of the energy expended by the leaders — management and labor, boss and worker — was consumed in building the foundation for making progress. Because past experiences had engendered feelings of mistrust and suspicion, trust and mutual respect was not automatic. Unions and management had been at odds, perhaps, because being at odds had become a way of life. Adversarial relationships were the norm rather than the exception. Lack of candor and a reluctance to express feeling became the first obstacle to overcome in each agency's initiative. With patience, all of the pilot agencies worked their way through this critical leadership phase of activity. Perhaps the "crisis" of declining ridership and the potential funding shortfall throughout the public transportation industry played a role in building a cooperative effort among agency leaders.

*Communicating Quality:* Beyond the commitment of the leadership groups to move ahead and organize future activities, communicating with employees about the intent to pursue a quality change initiative became an important issue. Rumors of what was happening behind closed doors quickly spread throughout the organizations. Each leadership group developed a different approach to informing employees about the initiative. One agency's leadership briefed employees in groups during off-hours, allowing for personal interchanges and discussion. Another agency's leaders held group meetings with their reporting employees or talked one-on-one to key members of their staff. In addition, relevant information was posted on special bulletin boards throughout the organization. Yet another agency's leaders held special meetings with middle managers and supervisors to inform them of the initiative. In all cases, many employees were not convinced by what they heard or read. This was to be expected since many were aware of other organizations that had "downsized" leaving substantial numbers of people without employment.

*From Plans to Action:* In each agency, committees or task forces were formed to further the plan developed by the leadership group. Depending on the pilot transit agency, committees established their particular goals

and objectives, ground rules, and schedules of activities. Committee membership often included one or two members of the leadership group but was universally expanded to include other volunteer participants. These committees focused on improving customer input, employee input, communications, training and education, and labor/management relations. Typical committee activities included designing and conducting customer surveys; formulating ways to solicit, receive, and quickly act on employee suggestions; and improving the communications throughout the organization. Most of the committees produced good results with plans and recommendations that were generally accepted for implementation by the leadership group.

*Quality Improvement Teams:* In three of the pilot agencies, quality improvement teams (QITs) were formed to address a single problem or issue that would improve customer satisfaction and organizational performance. The volunteer membership of the teams was usually composed of six to eight employees from relevant organizational functions and at all levels. In some cases, teams were supported in their efforts by a sponsor from the leadership group. The primary role of the leadership sponsor was to remove barriers and provide the necessary resources for team members to succeed in their work. Generally, teams met weekly for a half-day and sessions were often facilitated by a trained staff member. The average duration of an improvement team's activities lasted about eight weeks. To date, the results of QITs have been well-accepted throughout the organizations, showing that employees have excellent and workable ideas. At one agency, teams are often created informally. Approval by a division head is the only prerequisite for a team to proceed on solving a problem.

Leadership groups continue to meet, on average, once a month. Their continued involvement is critical because they establish direction and remove obstacles for continued progress. They are actively involved in temporary or permanent committee activities and/or serve as sponsors for QITs. On the whole, their participation has been the key to the progress shown at this early stage of their respective initiatives.

*The Journey Toward Quality:* At this time, the pilot agency leadership groups remain intact and are committed to their quality journey. It is too soon to conclude that organizational cultures have changed, although statistics from employee surveys indicate positive movement in the directions proposed by the

leadership groups. Employees of the pilot transit agencies seem to feel that their organizations are changing for the better, but there is long way to go. TQM is not yet a way of life.

As we concluded in the research report, there is no tangible proof that the initiatives significantly increased ridership, improved customer satisfaction, increased productivity, or reduced costs. But then, TQM is not an immediate solution to the problems that currently abound in the transit industry; it is a long-term undertaking that seeks to improve customer satisfaction and organizational performance by focusing on people and work processes. TQM is about changing the way business has been conducted since the beginnings of the industry. TQM is not a silver bullet. There is no instant pudding!

#### SATISFYING THE (INTERNAL AND EXTERNAL) CUSTOMER

*John C. Pingree*  
*Utah Transit Authority*  
*Salt Lake City, UT*

##### Operator Excellence Program

The Utah Transit Authority's journey into labor/management cooperation really started when we asked ourselves two questions: (1) "Why do people ride us?;" and (2) "How important is the bus driver to that decision-making process?" We thought the operator was a critical part, but we really did not know, nor did we know what was important to the customer.

The most important factor we found was how we deal with people who have disabilities or have a particular limitation. Fortunately, our operators do a great job in helping people with special needs. On the negative side, respondents noted many near misses with cars. That was very disconcerting.

*The Silent Observers:* How are we doing in those areas? We have about 700 operators. We knew when they were in trouble but not much else. The good operators were invisible to us because they never caused a problem. We hired silent observers, that is, people who went out into the system to observe operator behavior. Based on their reports, we realized that the many positive things our operators do were going unnoticed. We were always operating and responding to the deviants and the sycophants. We

did not know the first thing about the person who was doing the job well, day in and day out.

As a result of this realization, we started to change our attitude and our procedures. Here is just one example: Malcolm Toohey is an operator who does his job every day absolutely perfectly. Until now, we did not even know his name. As a result of this process, we made him the operator of the decade. He even appears in our literature as "Operator of the Decade."

*"Catching" People Doing Good:* We expanded on this by developing a program for catching people doing the right thing. Traditionally, the supervisor was out there to catch an operator doing something wrong. If he or she saw something wrong, the operator was written up, and we would give the operator time off. Really, very little beneficial comes by kicking people off the job for awhile. It hurts the employee and it hurts the agency. We needed to find out who our good operators were. Then we needed to look at them psychologically and behaviorally to find out if we could come up with a model. We wanted to pick out the best people based on selection criteria that would allow us to choose people whose profiles fit the profiles of our excellent operators.

*Psychology and Job Screening:* We now use two psychological tests that allow us to predict very accurately what applicants are going to be like when they come on the job. We want them to:

- be very high on customer relations;
- be very high on being friendly;
- be of service to people; and
- have very high ethics.

We also match up applicants with our best operators and then give them good training.

*Operator Excellence:* Thus, we started into a program called operator excellence. An excellence award is presented to operators for achieving the uppermost standards of excellence. We give them a hundred bucks, when we find them doing it, in cash: a \$100 bill. We give them a watch that has the logo, "Operator Excellence" on it. We give them patches that they wear on their shoulder. All this is done in a brief ceremony in front of their peers. We have recognized 104 operators. Four of them are three-time winners. Every time we are out there observing, the operator can get an Operator Excellence award if he or she is doing 90 percent of the things on our list of criteria.

We are not out there playing cop. We are out there recording the good things that our operators do. Then we are recognizing them in tangible ways.

*A Positive Supervisor-Operator Relationship:* In our organization, each supervisor has direct managerial responsibility for about 20 operators. The supervisor is their advocate in the organization. The supervisor is not out there finding things wrong. He is there to help them. If they have a death in the family, the supervisor is there supporting. If they have some kind of a problem with a child in school, the supervisor is there to help them, for example, get time off. The relationship is not adversarial, it is more cooperative. As a result, our operators improved. We are down to about 9.2 complaints per 100,000 riders. This took a lot of time and we worked very hard at that.

### **Moving Toward Total Quality Management**

In our total quality management (TQM), we are trying to introduce a complete paradigm — whole different way of doing things. In this TQM training we asked our whole organization to ask themselves, “Who is your customer?”

*Satisfying the Operator:* For example, who is the maintenance department’s customer? It is the operator and the people who use the system and yet they had never thought of themselves as having a customer called the operator. Then the maintenance department started asking, “What’s the biggest problem you have here?” the operators responded, “Why don’t you ever fix the buses? We fill out maintenance repair report cards every evening saying what’s wrong with the bus and you guys never fix the bus.” The new manager came up with an idea. He said, “I’ll tell you what we’ll do. Every night we will list all of the cards that come in with what’s listed as wrong. By tomorrow morning when you come in for your bus, we’ll list what we did by the bus number.” Simple, just put it up on the board every day. It helped a lot to communicate to the bus driver what was happening to fix the problems he or she had reported the day before. A very simple kind of feedback device. A TQM project does not have to be elaborate to be effective. Often the simpler the better.

*Responding to Customer Complaints in the Past:* We used to have all customer complaints come in through the telephone, and we would fill out an elaborate form as the person told us what happened to them. We would promise to get back to them or get the

information for them. We would send the form over to operations. Operations would ignore it. They did not have time to mess around with all those complaints. So the stack of forms would build up and someone would say, “We never hear back on the complaints.” Then a second complaint would come in asking, “Why didn’t you respond the first time I complained?” In a word, the customer was not satisfied because operations did not feel that following up with the operator was a good use of their resources. We then evolved a plan where we would force operations to respond to the complaints. No one liked this process because it required the supervisor to be a cop and required the operator to self-indict. We were not improving our organization by the input from customers.

*Responding to Customer Complaints Today:* We determined that we could solve 70 percent of our customer complaints immediately. Now, the call is sorted and if it is a complaint it goes to people who can agree with the complaint quickly and say, “You’ve got a problem. We understand.” They then send the customer a letter with bus tokens or some other small reward. In other words, they solve the issue at that point. We have got two people who do this in our organization. They are called Solomon. They solve 75 percent of the problems immediately on the phone and the customer goes away feeling satisfied. For the other 25 percent we have to do something more elaborate. For operations, Solomon notifies the operator about the problem in writing. It is not a negative kind of experience any more. As a result, we have gone a long way towards solving some of our problems at the input stage without making the operator feel harassed.

*Maintenance has Customers Too:* In maintenance job classifications we have Cs, Bs, As, and journeyists. What we find is that many of our Cs are more competent than our journeyists, but we cannot pay them as journeyists. That is a big problem for our maintenance organization.

We have now come up with a program that we are slowly starting to implement, whereby we will pay people based on skills. In a given garage we may have everybody operating at a much higher pay level because they are much more competent and have demonstrated skills. It is costing us money, but we decided we have to be fair to our employees that have the skills. The pay system will be performance based. Those who can demonstrate performance will get the higher pay.

We also give people team control. This was really pioneered in Ann Arbor by Mike Bolton. We got the idea from there. We say to somebody, these ten buses are yours. You take care of them, you schedule them, you do everything with them. All this is coming about as a result of the question, "Who's the customer for the maintenance department management?" The answer is, "The mechanics." Management needs to respond to the mechanics and understand what their needs are.

### Conclusions

We have one basic philosophy, which is: How we treat our employees is how they are going to treat the public. In other words, what goes around, comes around.

Paradigm shifts really take a long time to implement, and the results come very slowly. It is not the quick fix for this week and then next week we have got another one. But as we put these paradigm shifts into practice, we will not only improve in terms of our cost performance, but we will improve dramatically what we are trying to sell to the public, which is quality service.

### LABOR/MANAGEMENT COOPERATION

*William Spraul*  
*METRO*  
*Cincinnati, OH*

METRO has been in existence since 1973 as a public transit authority. For the first 15 or 16 years we developed into one of the best bureaucracies you have ever seen. We were very much a top-down organization, with command structures that were very traditional for transit authorities. We had one basic operational motto, which went something like, "If it wasn't for customers, this would be a great job."

In 1990, we decided that we needed to make some changes. Our general manager wanted us to develop a corporate mission statement.

#### Development of the Vision Statement

Over a two-year period of time, more than 900 employees in our organization participated in one-day sessions to develop that vision statement. We had over 93 percent of our employees participate voluntarily. During those one-day sessions we put together cross-

functional teams. They were not only across the organizational functions but they were also across the organizational levels. The general manager, the janitors, the bus operators, professional staff, union leadership — including the union president — everybody was the same.

Each team did three things during their meeting day:

1. they listed current reality at METRO, not only the strengths but also the weaknesses of our existing organization.
2. they defined what a perfect METRO would be. If we were the best organization we could be, what would we look like?
3. they wrote down their own vision statement.

At the end of that process, we had 45 different team statements, so we had 45 different versions of a METRO vision statement. Team representatives continued to meet, consolidating these proposals into one that read:

*1) We make Cincinnati a great place to live; 2) Customers are why we're here; 3) Outstanding service is our commitment; and 4) Employees are METRO; we are a team.*

Nine-hundred employees have ownership in this statement. By doing so, they have reengineered our organization in a way that I do not think any of us ever envisioned five years ago.

#### Alignment and Cultural Change

We challenge every employee to challenge every other employee, to challenge every manager, to challenge the general manager, and even challenge the board to make sure every decision we make in our organization is aligned with what we said we wanted to be in that vision statement. We now have 900 employees who have all bought into the same corporate values, bought into the same goals for our entire organization.

We now have operating divisions, rather than a director of transportation and a director of maintenance in two separate departments. We have got one management team and one employee team in each operating division that is completely responsible for all the service that comes out of that division. Facility

maintenance, fleet maintenance, and operations staff are all together on one team focused on the same set of goals.

One of the realities about cultural change is there will be people who cannot make the change. As an organization we realize that this is not only in the management ranks, but also in the rank and file, the front lines. We have had some people who have had to walk away from the process. We said, "Take the opportunity, move aside or move out if this isn't something you can do," because we decided this was going to be a fundamental change in our organization. We have had some turnover, particularly in the management ranks, people who were unable to shift from our previous entrenched bureaucracy.

We involved union leadership in our deliberations right up front. Explaining to them exactly how we wanted this process to work and exactly what it was going to entail. Once this process got going and employees started participating, the pressure was on management as well as union leadership to change. Confrontation was not good enough anymore. We now are in a much more cooperative effort, trying to align everybody and every piece of the organization in the same direction.

#### **True Teamwork**

The final element is teamwork. We have made incredible strides there. Employee work teams permeate everything that we do. We deploy employee work teams for major purchases of equipment, for policy decisions, for everything that we do. For example, if you want to be hired into our organization, if you want to be promoted in our organization, an employee team is going to make that decision. We use operators, managers, and union officials to hire employees into mechanic ranks as well as operations. If you want to be promoted in our organization, you are going to have to go in front of not only who you think you are going to be working for but who your peer is going to be. We also allow employees to hire their own supervisors by involving subordinates in the interview process.

#### **The Differences Made**

We have had a lot of changes, and it has made a difference. We have seen some significant performance and quality improvements. My division, the Bond Hill operating division, has gone the furthest with this concept. We have made the most radical

changes to the way we do business. We were able to reduce preventable accidents by 38 percent in one year. Miles between road calls increased by 28 percent. Customer service complaints were reduced by 10 percent and, at the same time, commendations for operators were up 10 percent. We reduced early service operation by 24 percent, and customer-satisfaction on-board surveys conducted by employees have seen significant improvements in every area that we ask about. Finally, our ridership increased by seven percent in one year. I believe that, because of the significant improvements that our operators and mechanics are making, our riders not only are staying with us, they are telling their friends, and they are riding more.

#### **TQM AND TEAMWORK IN SPOKANE**

*George Kettenton  
ATU Local 1015  
Spokane, WA*

We had our first touch with TQM when Mac MacDorman came on to the Spokane Transit Authority (STA) and asked for a total commitment from senior staff and labor in order for us to participate in a pilot program.

When the initial leadership team began to form, I had an opportunity to ask some pretty tough questions of senior staff. We had two previous programs fail because of a lack of commitment of time and finances from senior staff. These experiments left a lot of people with a bad taste in their mouth and a lot of people with hurt feelings. I frankly put their feet to the fire and asked them just what they wanted out of this program and why they wanted it. Our morale was at an all-time low. I realized we were at the point that we had to do something or we were going to be in all out warfare.

Total quality management is something that I saw as an opportunity to improve working conditions for my members outside the collective bargaining process. I believe in the collective bargaining process, but there are other ways to improve working conditions, and that is what I saw in TQM.

One of the first things we saw as a success was a new, revised, more effective customer service complaint and compliment policy and program. This new program is much more streamlined than our old, burdensome one.

The customer service representatives are empowered to solve the problem at their level. If they cannot, they can move the complaint up. It is working so far.

There are several other examples. In general, labor, and especially labor representatives, have nothing to lose and everything to gain. We have just made some drastic realignments in our system. We are opening up a new transit plaza in the downtown area and we are going from a hub-and-spoke system to a pulse system. Employee teams were completely responsible for new and revised customer schedules, for realignment of scheduling on the different routes, for training programs for the employees, and also for training and information programs for the public. We had employee team members downtown, wearing special hats and badges and carrying brochures. People have been involved and now have an ownership in part of this company.

A year ago we would never have heard a comment like that, "Let's have a team take care of it." TQM, or whatever one might call that concept, is a success in my eyes when it is a way of life, when you no longer have to refer to it by any particular term. We have had a commitment from senior staff and management that has seen us through some difficult times, but we have made some significant changes on the property. We have also made some small changes that probably mean more to the front-line employees than the significant changes because they are seeing a difference.

**ADDRESSING OUR CHALLENGES:  
SOLUTIONS "OUTSIDE THE BOX"**

**Moderator, Lynn Ritter Otte**

*N.E. Illinois Regional Transportation Authority  
Chicago, IL*

The goal of this session is to look at some examples of specific solutions. We start with a summary of experiences in changing the service provision structure. The presentation covers some of the initial findings of the TCRP project B-6, "Improving Transit Connections by Enhanced Suburban Mobility." Through a comprehensive mail and phone survey, the researchers have compiled the experiences of a vast number of innovative suburban services, and have been able to identify characteristics that are common to successful efforts.

Three other presentations highlight service aspects of planning and operation, funding strategies, and the opportunities for the application of technology. The first illustrates experiences of Montgomery County, Maryland, in the provision of transit services. The Montgomery County Division of Transit Services' main focus is providing mobility to the people within the region. When transit providers begin to think in terms of providing mobility, not just providing service, non-traditional service ideas become possible and often open up partnerships that may bring new funding to the table. The second presentation covers such innovative funding options, highlighting the Los Angeles area's experiences.

The final presentation in this session focuses on technology applications. The main message is that technology for technology's sake is not useful. On the other hand, technology used to significantly change the functioning of an area or to provide information that will affect the outcomes is an appropriate way to do things. The key is to use technology as a tool to support improved and innovative practices that either lead to efficiencies in the provision of service or open new opportunities to address mobility needs through non-traditional services.

**EXPERIENCES IN CHANGING THE SERVICE  
PROVISION STRUCTURE**

*David J. Sampson*

*Urbitran*

*New York, NY*

This presentation draws from the TCRP B-6 project, "Improving Transit Connections by Enhanced Suburban Mobility." The project began December 1994 and is scheduled to end in early 1996. The primary project objective is to develop a guidebook that shares the experiences of others in serving the suburban travel market. It will identify and provide insight into actions that have been successful. The guidebook will be structured to assist others in following and understanding the successful examples so they can enhance suburban mobility in their own communities and service areas.

**Project Methodology**

The project looks at four areas and focuses on details of service delivery and types of services:

- Traditional Services
- Non-Traditional Services
- Fare Policy Coordination
- Land Use and Regulation

The emphasis is on the first two elements, as there are other TCRP projects examining the latter two in greater detail. Of course, issues of fares and land use are important to understanding the conditions under which services function.

The survey of current practices has sought answers to a number of questions including:

- What is the range of services being provided in the suburbs?
- How are transit operators meeting the challenges of suburban mobility?
- How is demand response service being used?
- What types of suburban areas are services being provided in?

The project researchers sought to identify linkages between the types of services and the location that they are operating in and identify what creates success and what creates failure. Among the issues being explored are how the services got started and

how are the projects being evaluated for success and continuation.

The survey was conducted by phone to enable a full and complete discussion of all elements of a project. Over 60 in-depth discussions were conducted.

### Preliminary Findings

The survey has led to the following seven planning steps:

1. *Clearly identify the problem or need that you are trying to address.* If you do not have an identified problem or market opportunity, and just have a solution, success will elude you. A realistic chance for market share must exist at the outset. The successful operator is the one who thinks in terms of mobility and does not just think transit. Often a problem or need is something that someone else in the community identifies. Successful transit operators capitalize on these types of opportunities. The opportunities arise through talking to the community at large and doing considerable research. They are operating based on feedback that a service is needed.

2. *Evaluate local conditions carefully.* Go out and learn about your suburb. In what kind of environment are you thinking about providing service, or where is there a problem?

The urban hierarchy goes from residential to commercial, and in the middle we have a balance. Residential suburbs, whether low density or more densely developed with mixed housing, are generally feeder communities. There is a larger work force in the community than there are jobs, and they are feeding out. The balanced mixed-use suburb really is a two-way community with residents and jobs. In some sense it is a small edge city.

There are two types of edge city to consider. Irvine, Metro Park, and Texas Medical Center are considered the classic new edge cities, where suddenly office development comes into an area because of the confluence of roadways, the need for more space for businesses to move out of center city, etc. And then you have cities that have reinvented themselves — Rockville, Maryland; Stamford, Connecticut; White Plains, New York — older urban areas that are now within greater metropolitan areas. They possess rebuilt downtowns or rapidly developing fringes, the same

kind of buildings on pads, large scale parking, etc. that are in the new edge cities.

And finally, there are three cases of pure commercial, non-residential suburban development — suburban corridors, suburban campuses, and exurban corporate enclaves. These include: Bishop Ranch in the San Francisco Bay area; Hoffman Estates, in the Chicago area; and Plano, Texas.

These areas are defined, for our purposes, to see how transit operates in each environment. For the work trip, services succeed when there is at least a set of concentrated trip ends. Long work trips work very well for most applications. Short work trips do not. This is because transit can almost never compete with the auto over a short trip.

Short nonwork trips and midday trips appear to be more conducive to success in suburban areas. Services that are effective are community circulators, serving community-based trips and feeder trips to long-haul services.

3. *Creative management is important.* Do you have a creative management in place or can you develop creative management? Do you have people who are willing to look at the big picture, to look at mobility, to try non-traditional approaches, and to use new tools? There are a lot of new tools out there. Or does the transit agency have a history of being a bus operator? Do they see themselves only as a bus operator, not as a mobility provider? Are there people who are saying they want to do things the way they have always been done and, if so, are they the kinds of people who have said, "We're the transit operator, we've been doing it for 50 years, we know best where to put the routes. We don't have to do market research. We don't have to know it, we just know, because we're the experts and we've been doing it...?" Creative management approaches are common among the successful agencies surveyed. These are people who are being creative thinking "outside the box."

4. *Seek private sector involvement.* Private sector involvement cannot be emphasized too much. It is very difficult to maintain a service without the private sector's support, whether it be financial, marketing, or sales assistance.

Also, Congestion Mitigation and Air Quality Improvement Program (CMAQ) grants give you the opportunity to leverage money, to go to the private

sector and say, "We've got a grant for 40 percent, if you could support 20 percent of the cost of our service and the farebox can do 40 percent. This can initiate demonstration projects and start-up service.

On the other hand, some people seem to say, "Oh, we've got CMAQ money available, let's do it. Let's try it, what the heck." And sometimes having that grant money fosters bad planning or no planning. It also makes it too easy for people not to think about the long-term commitment they are making, that is, not to think about the larger mobility commitment.

*5. Identify appropriate activities.* Once you know your conditions, you need to select something that is appropriate to your organization. You have to get the commitment of the organization. Will they go and do something other than fixed route? How restrictive are your labor agreements going to be? Do labor and management work together on this? You have to be realistic in picking out something that will work within your organization. And then, of course, you have to have it work within the community on the streets.

Researchers have observed several service activities. Internal circulation needs are met by: 1) general public dial-a-rides; 2) fixed route circulators; or 3) some kind of taxi-based services. Largely it is within residential communities, but in some cases it is edge downtowns. For external trips, most are feeder services, which are being done fixed route or demand response.

There is also the overall operating concept. Some agencies operate suburb-to-suburb or crosstown fixed routes, others operate only traditional radial routes. Some are using multiple transit centers with hub-and-spoke services; suburb-to-suburb express buses as opposed to local services; and limited stop services; and some have park-and-ride suburb expresses. A lot of the all-suburban operators base service on multiple timed transfer centers. Many use radial routes to connect suburban services to downtown via express buses.

Finally, transit operators are really getting into a lot of ridesharing. This is something you probably would not have heard much about ten or fifteen years ago. Now, these transit operators who seem to have the most success are becoming mobility managers. They are looking for mobility solutions, including ridesharing, which once-upon-a-time was looked at as the bane of a transit operator.

The key to what agencies choose is based on the type of movement people are trying to make, the volume of the movement, and how much flexibility they need.

*6. Plan and design.* For internal trips in low density residential areas, virtually everybody uses the taxi-based or demand response circulators, if they are doing anything at all. In middle density areas, people are moving up from the demand response to fixed-route. In mixed-use development or edge cities, there is less flexible services and more fixed-route services and connections to the regional network. Today, some of these edge cities contain as much employment as some of the older, traditional central business districts that people have been serving for years with these same kinds of services. The mind set now has to be that the larger suburban areas are becoming as big as some urban areas.

Finally, whatever the type of service, you have to have reasonable objectives: integrate with a regional service; make existing services more effective; meet employer requests; respond to suburban needs, regulation, and policy; and satisfy political concerns. And always remember your bottom line, because somebody, sooner or later, is going to say, "Why in hell are you spending so much money to move ten people?"

*7. Develop and maintain the services.* Once you select a concept plan and design it carefully, the goal is to try to be as competitive as possible to the car. Here, evaluation criteria become critical to measuring success. Agencies using the traditional measures (total trips, cost recovery, and productivity) tend to report a lot of failures. It is very important to look at a broader societal perspective, not just to look at direct benefits but also to look at the livable communities, development objectives, air quality objectives, and to get all of the benefits into assessing a project. This includes contributing to regional transportation and land use plans and policies; Clean Air Act compliance efforts, congestion management, or other regulation; and overall cost savings with the Americans with Disabilities Act.

## ALTERNATIVE SERVICE PROVISION

*Carolyn Biggins*

*Montgomery County Department of Transportation*

*Rockville, MD*

### Transit In Montgomery County

Montgomery County's Ride On system is operated by the Division of Transit Services in the Department of Transportation, a major operating agency of the Montgomery County government. Montgomery County is a general purpose local government in the State of Maryland.

The central thrust of the Division of Transit Services is mobility in general, not a particular brand of service. As such, mobility in Montgomery County is characterized as an interrelated combination of services — Metrorail, Metrobus, commuter rail, Ride On, private shuttles, ridesharing, and the taxi industry.

Transit in Montgomery County is very extensive. It has been determined that about 80 percent of county population lives — and 95 percent of county employment opportunities are located — within one-half mile of a bus stop or rail station. Ride On connects neighborhoods to Metrorail and other transit centers. At these locations, passengers can access the radially oriented rail system and other buses for the purpose of suburb-to-suburb and intra-county trips.

### Ride On's Origins

Ride On is essentially an experiment that has turned into a \$34 million annual commitment. Ride On started in April 1975. At that time, the regional transit operator, WMATA, had been established and had taken over the private services that had operated in the region. The County determined that certain transit needs existed that needed to be addressed over and above the regional service. The County decided to take charge of its own destiny to fill the identified gaps in service.

### A Clear Service Concept

Ride On serves both downtown and suburb-to-suburb trips in the region. The service was designed to provide feeder service to the radially-oriented Metrorail system operated by WMATA. As such, Ride On connects neighborhoods to the rail stations as a primary objective. However, the Ride On System and the bus

service in the County exploits the formidable transit centers provided by the Metrorail system, which serve as focal points for the service.

The Ride On service provides the shorter transit trips, operates on less major streets, serves somewhat lower ridership routes, and operates in the less densely populated areas of the County than WMATA's Metrobus.

### Ride On's Service

The Ride On system operates from 5:00 a.m. to 1:00 a.m. seven days per week. However, the number of routes operating at any given time varies by time of day and day of week. Peak Ride On service includes 68 routes served with a fleet of 208 county owned and operated buses and 30 contractor owned and operated buses. Ride On provides about 430,000 annual vehicle hours of revenue service and about 7.2 million vehicle miles of revenue service.

Montgomery County has established a policy that the maximum headway in the Ride On system will be 30 minutes. The tightest headway in the system is five minutes.

Montgomery County owns and operates 230 mid-city transit coaches of either 30 or 35 feet in length. The County's contractor owns and operates forty 20-passenger, body on chassis buses. Metrobus owns and operates 180 full size transit coaches, including 12 articulated buses. In addition to rolling stock used in Montgomery County, the County's Ride On system has two operations centers that house both operations and maintenance elements, one in the lower county and one in the upper county.

Other capital elements of the transit system in Montgomery County include 5000 bus stops, 230 shelters and 14 park and ride lots in two major transportation corridors in the County with a total capacity of 3,400 vehicles. Transit centers are located at each of the County's 13 Metrorail stations, and at Montgomery Mall and Lakeforest Mall.

### Responding To New Challenges

Over the last four years our transit planning has been tested as revenues have flattened. In order to simply maintain the same level of transit service, many unique moves have been made. In addition to continuing reliance on contracting, we began to look almost

annually to routes or portions of routes that could be shifted to other operators.

Until the fiscal situation became difficult, we had considered shifting whole Ride On routes from a directly operated mode to our small bus contractor or whole Metrobus routes to Ride On operation. When revenues dried up, we began to look within routes by time of day to determine if a smaller vehicle could handle weekend service, midday service, or late evening service.

The shifting of service started within the Ride On system, where problems, such as vehicle identification and fare structure, were not so complex. However, we were ultimately forced to shift portions of Metrobus routes to Ride On.

The primary thrust has been to identify instances in which a smaller bus could be substituted on a one-for-one basis based on the average ridership. However, there are a few unique exceptions. We have looked carefully at the on/off character of routes to identify instances in which a smaller bus could be used in spite of fairly heavy ridership. The best example of this is a major collector/distributor route along a major arterial in Montgomery County. In spite of very heavy ridership on this line, the loads are not so high as to require a 40-foot bus. Therefore, we were able to shift this major Metrobus route to Ride On. Another change we made in the route was to truncate it at a natural break point along the route. While this became a minor inconvenience for a few passengers who relied on the route for a long distance trip, it allowed us to operate the route very reliably since each of the two segments was significantly shorter. Therefore, in the aggregate cost savings and reliability have offset the inconvenience.

### **Ride On's Riders**

From our triennial on-board survey, we have a good idea who our current riders are. We know that the typical Ride On rider is much more likely to be female (59.5 percent) than male (40.5 percent). We also know that our typical rider is somewhat more likely to be African American (38.0 percent) than Caucasian (32.9 percent). We also have a large number of Hispanic/Latino riders (18.3 percent). Finally, five percent of our riders are Native American and 5.7 percent are Asian.

Over 60 percent of our riders are under the age of 35. Of these, 8.8 percent are under the age of 18, and 27.1 percent are between 18 and 24 years of age. At the other end of the age range, 10.2 percent of our riders are 55 or over. That leaves 17.6 percent of our riders in the 35-to-44 age cohort and 8.5 percent between the ages of 45 and 54.

When Ride On service began, there were 900 passengers per day in Silver Spring and 300 passengers per day in the upper county service. Currently, Ride On's weekday passenger trips stand at 58,400. Total transit ridership (Metrorail, Metrobus and Ride On) in the area is 239,000 per weekday. Metrorail carries 127,000 passenger trips daily and Metrobus serves about 54,000.

### **Measuring Performance**

Montgomery County uses a set of productivity standards as a guide to determine the appropriate operator and to make service enhancement or curtailment decisions. For peak-period service, the County standard is an average of 15 passengers per hour; for service outside the peak, we use 10 passengers per hour as the guideline. Finally, we use a standard of 12 passengers per platform hour for the service operated by our contractor using smaller vehicles. Overall, Ride On passengers per platform hour was 29 in 1994. This was up from 27 passengers per platform hour in 1989.

Another rough productivity indicator is the cost per rider. We track Mass Transit Facilities Fund expenditures against ridership to calculate a more traditional productivity indicator. Cost per rider in 1989 dollars has fallen \$.05, or four percent over the last four years, from \$1.26 per rider to \$1.21.

There are a number of other ways that we measure performance in Montgomery County. They include monthly schedule adherence reviews, weekly tracking of complaints and compliments regarding each operator, other customer feedback mechanisms, and on-board surveys.

The Service Development and Promotion Section of the Division recently developed and implemented a new and very effective innovation in service monitoring. We established a Service Monitoring Group that meets weekly for about one-half hour. The group reviews the complaints and service interruptions of the last week with key managers at headquarters,

transit information personnel, representatives of central dispatch, and operations personnel.

Prior to the weekly meeting, data are summarized and preliminary investigations are accomplished if particularly hot items or troublesome trends have emerged. Since it was established last fall, the group has also spearheaded the development of a paperless complaint resolution process connecting all four key locations of the division. The group first undertook the task of making the complaint categories more meaningful and reducing their number. Then the group guided the development of the new system that allows instant communication and follow up of complaints that formerly were resolved in an average of two weeks.

### **Ride On's Fiscal Situation**

The Mass Transit Facilities Fund (MTFF) includes expenditures for all transit for which the County had obligations. Total MTFF expenditures by the County in 1994 were estimated at \$99.2 million. The MTFF includes the County's obligations to WMATA for Metrorail and Metrobus operating subsidies. The fund also includes expenditures for debt service associated with both county and WMATA capital improvements.

The MTFF revenues include state aid, mass transit tax revenue, fare revenue, federal aid, and several other miscellaneous sources. Total MTFF revenues for 1994 were estimated to be \$107.1 million, including unappropriated surplus.

Total expenditures for the Division of Transit Services in 1994 were \$44.7 million. This amount included expenditures for bus replacement, ridesharing, taxi regulation, and some other expenditures in addition to Ride On costs. Of the \$44.7 million, costs attributable to Ride On operations were \$34.0 million in 1994.

Ride On is funded through state aid at \$9.7 million, fare revenue at \$8.5 million and the Mass Transit Tax at \$15.8 million. Ride On uses a 30 percent cost recovery against direct costs criterion as a guide. In fiscal year 1994 Ride On cost recovery stood at 27 percent. The mass transit tax rate in Montgomery County is applied essentially to the same tax base as the general property tax.

### **Recent Legislative Factors**

The legislative issue that is most interesting at present provides state funding for transit in Maryland. The State has long funded a large portion of the WMATA operating deficit attributable to Montgomery County Metro service. Beginning in 1976, the State provided funding for local bus services only for certain bus services that Montgomery County took over from the regional operator.

In 1984, the County was planning a major bus service expansion in connection with the opening of the Shady Grove end of the Metro Red Line, and legislation was passed to provide for funding of new service to the extent that the secretary of transportation approved. The State recognized that the total cost of the service would be much higher if the service was to be provided by the regional provider. As a result the State was motivated to hold down expenditures.

In 1992, state legislation was amended to provide additional funding for Metrorail, Metrobus, and Ride On. Now the County receives support for 100 percent of the eligible service subject to the Secretary's approval. However, with the additional support has come a much higher degree of state interest in the level of funding, if not service, in Montgomery County.

### **The Unions And Ride On**

Local union problems have not been terribly difficult in the recent past. The County bus operators are represented by one union. The employees in two contracts are represented by two other unions. The contractor has had no large union problems.

However, as the County gets more and more creative out of necessity to identify the most efficient operator and the most appropriate vehicle size, the labor relations landscape is changing. The union representing the regional operator has become increasingly active as we have taken over more and more service, indicating that such an approach throughout the region would doom the regional transit operator.

### **Ride On And Contracting**

Initially, Ride On was a directly operated system. Then, in the mid-1980s, the County was attempting to limit the growth in the County work force. In response, contracting for government services gathered

momentum. A study was done of the feasibility of contracting for transit services and it was determined that the best opportunity for contracting was on the lower ridership routes on which smaller vehicles could be used.

From annual contract expenditures of \$1.1 million in 1987, the annual expenditures for contract bus service have grown to \$4.1 million in fiscal year 1994. Contracting has played a central role in connection with our recent innovations in the delivery of transit services in the County. In a way, the increase in the use of contracting is a return to the earlier days of Ride On when smaller vehicles were needed to address transit needs and hold down costs.

### **Community Support And Involvement**

Ride On enjoys extraordinary political support, especially considering that the taxpayers provide through the Mass Transit Tax almost half of the funding for Ride On. The political support has always been there since the early days when the County went out on its own to make a significant commitment to local bus systems.

Montgomery County employs many means through which the community can become involved. Since the transit division is part of the general purpose local government, the transit budget and transit policy gets a fair amount of scrutiny from within the county government through the budget process. The executive branch scrutiny is in the form of reviews by the director of transportation, the office of management and budget, and the county executive. The transit budget is published within the executive's recommended budget, which is transmitted to the county council.

In addition to the community involvement in the formal budget process, the County often holds public forums. The issues are typically service changes and changes in the fare structure. Perhaps the frequency is higher than would be required under federal regulations.

The County also has other formal mechanisms for the community to become involved. Several committees have been established to advise the director of transportation on transit and related issues. One key committee is the Keep Montgomery County Moving Committee (KMCM) that meets about eight times per year. The KMCM Committee is comprised of

members of the business community, the education community, the government sector, and other interested parties. The committee brings diverse views to the field of transit and transportation.

Another important advisory body was created when the Silver Spring Transportation Systems Management District was formed. Montgomery County Code requires that the advisory committee advise the director of transportation on issues related to transportation systems management in Silver Spring, including progress toward modal split goals, parking policy, transit policy, transportation improvements, and other related issues.

There also exists a private advisory group called the Transportation Action Partnership, Inc. (TAP) in the North Bethesda area. This public/private partnership was undertaken to guide the direction of transportation, transit, and development in the North Bethesda area. Under recently passed legislation concerning development in Metro station policy areas the TAP may become a more formal actor in transportation in the North Bethesda area.

### **Lessons Taught and Lessons Learned**

If anything has been learned from the County's experience with Ride On over the last twenty years, it is that flexibility is essential. Ride On is an ever evolving service. And we see even more significant changes on the horizon. Many surprises and problems have been encountered. Perhaps more importantly, they have been overcome.

It is this inherent flexibility and resiliency that has served the community well and keeps the community happy. Any similarly situated community and many others could replicate the success Ride On has experienced. All it takes is the same sort of commitment to transit that Montgomery County has made.

## INNOVATIVE FUNDING

*James F. McLaughlin  
Mayor Riordan's Office  
Los Angeles, CA*

This session presents three program concepts that were designed to improve mobility options at lower cost: coordinating with the U.S. Department of Health and Human Services transportation services; developing a Mobility Allowance to fund alternative service delivery options in areas of lower transit demand; and implementing Smart Shuttles, which would combine flexible use of vehicles with technological improvements.

### Partnering with HHS

Each year the U.S. Department of Health and Human Services (HHS) spends more than \$1 billion on transportation services for its programs, primarily related to Medicaid. To date, coordination with public transportation has been minimal in most areas of the country, resulting in many duplicative services, some of which have high costs.

Since the Americans with Disabilities Act (ADA) requires the development of a complementary paratransit service for each fixed route, it appears that there may be some opportunities to use that paratransit system, including the expertise to plan and operate that system. The public transit operator would, under this concept, become the broker, or mobility manager, of the HHS transportation service. Given the experience of high costs and poor service in some areas in Los Angeles, there should be potential for significant cost reduction and service improvement.

The Metropolitan Transportation Authority (MTA) staff in Los Angeles found a similar interest from the Metropolitan Transportation Commission (MTC) staff in the San Francisco Bay Area and joined forces in proposing a Department of Transportation (DOT) demonstration program to the Federal Transit Administration (FTA) to compare ADA paratransit costs and service delivery with Medicaid transportation costs and service delivery and to determine what options were viable if cost savings were achievable. FTA supported the idea and brought it forward for discussion at the DOT/HHS Coordination Council.

An FTA grant of \$50,000 was ultimately awarded to both agencies for an independent evaluation of the

demonstration program. The program has not yet been implemented due to a variety of concerns raised by the California State Department of Health Services. These concerns are currently being addressed by the grantees.

In order to continue to raise issues like increased public transportation and HHS coordination at the national level, MTC took the lead in forming the Coalition for ADA Paratransit Solutions, which includes representatives from many transit providers around the country as well as participation from HHS client groups and other government associations.

Clearly, the implementation of the ADA will raise many institutional, funding, and operational concerns. However, it appears there are proactive ways to approach these concerns — instead of simply bemoaning another unfunded mandate — and improve mobility for the young, the old, the disabled, and the poor.

### Mobility Allowance

Mobility Allowance is a term that was coined during the development of the Long Range Transportation Plan by MTA staff. Modeling work based on demands in a twenty-year horizon suggested that service, which today is spread fairly homogeneously throughout the MTA service area, would more logically become concentrated on the high demand corridors, possibly calling for the use of higher capacity vehicles.

In areas of lower demand, it appeared logical to recommend that the subsidies that had been available for MTA fixed-route service operation might be more effectively used by providing them to the local jurisdiction, which would then determine the appropriate service option to match demand and supply. The Mobility Allowance would, therefore, have financial, coordination, and planning advantages compared to the existing system.

From a financial perspective, since the MTA has historically been the highest cost operator in the county — approximately 10 percent to 40 percent higher than local and municipal operators — alternative service delivery options would make the dollars go farther. In addition, these funds would provide an opportunity for local government to leverage their funds or developer fees.

Coordination would also be improved by a joint process to better integrate the services funded by the

Mobility Allowance and the corridor services and rail programs. In the past, local governments have not actively coordinated with the MTA, since they have not believed their input would result in service changes by the MTA and they did not want their local service decisions questioned by MTA staff. A more joint decision-making process should lead to significant service coordination improvements.

Finally, as indicated previously, there would be innovative planning opportunities to match supply and demand, ranging from flexible destination service using smaller vehicles to more traditional fixed-route service. Providers could include contracting with the MTA at a lower contract rate using existing local and municipal operators, or contracting with private companies using any combination of buses, shuttles, and taxis.

The MTA staff will be bringing forward a report to the MTA Board in October more fully defining the concept and requesting proposals from local jurisdictions for demonstration services. These services would be determined by a thorough analysis of the MTA system by line segment, day of week, and time of day. This is another example of a concept that should both stretch existing resources and improve mobility. The Mayor of Los Angeles has also recommended that the service savings that should occur be reinvested to improve service for the transit dependent.

### Smart Shuttle

Another concept that the Mayor has strongly endorsed is Smart Shuttle. The Smart Shuttle idea was proposed to our metropolitan planning organization as a third tier in the regional transportation system, which would improve transit use by making available a significant number of smaller vehicles operating on an expansive network of arterial and freeway high-occupancy vehicle lanes, with service efficiency and user access maximized through state-of-the-art "smart" technology. Although it appeared that a full rollout would only pencil out favorably assuming some hefty pricing fees on auto users, the potential to test the idea of multiple uses of smaller vehicles linked by existing technology seemed to have merit.

For example, multiple use could mean peak-period connections to rail services or relieving overcrowding on bus lines, midday use for nutrition or medical trips, and fixed-route service replacement for night and owl

operation. If the Smart Shuttle public transit operation could generate additional revenue during the peak and operate more efficiently at night, then the cost would be minimized. Similarly, if the Smart Shuttle cost for providing Medicaid trips was less than existing costs, that portion of Smart Shuttle operation would also be an improvement. The goal would be to find as many revenue generating uses as possible to bring down the paratransit cost, which has typically substantially exceeded fixed-route cost. Smart Shuttle demonstration programs will likely be managed initially by firms with either contract transportation or taxi experience. However, it appears that these ersatz franchises have the potential for community based or owner/operator management in the longer term.

### Summary

These three nontraditional transit service ideas — co-venturing with Health and Human Services programs, providing fixed-route subsidies for alternative service delivery options, and using more flexible services for a variety of trip purposes — indicate that there are opportunities to use new partnerships to improve mobility. There is a definite need for public transit to get "out of the box." We cannot afford, either literally or figuratively, to do business as usual. Let us recognize that our focus should be in using our skills as mobility managers, not necessarily as service providers, to improve mobility and efficiency.

### TECHNOLOGY APPLICATIONS

*Michael P. Bolton  
Capital Metropolitan Transportation Authority  
Austin, TX*

This presentation discusses transit vehicles, communication and technology. This is a hefty subject, because of both the many needs of transit and the many opportunities modern technology affords. This sounds like a perfect match, and it should be. But transit management's applications of technology to date have lagged woefully behind its potential.

This is not entirely unique to transit. When I lived and worked in Ann Arbor, Michigan, I chaired the education committee of the local Chamber of Commerce. I found myself in a very interesting situation. Within a community, which is home to a university, there were people that wanted to get down to basics. Their concept of basics was a 1950s factory

style education system because that is what they had grown up with and were comfortable with. They failed to recognize that the world fundamentally changed in 1973. Why 1973? Because 1973 was the introduction of the personal computer, which put a tremendous amount of knowledge in the hands of the common person.

### **I'll Take "Buses, Fareboxes And Electronics" For \$1 Million**

It is important, of course, to give credit to and highlight those agencies that have done some interesting things. Let us start with vehicles. Los Angeles, for example, is taking the lead in designing buses of the future — advanced transit, ATTB, and the like. These will be lightweight, low-floored, potentially alternatively fueled vehicles. Of course, they are spending millions of dollars to develop what already exists in Europe. Unfortunately, they are not permitted to go out and purchase this existing, but foreign, technology, so they are going to spend millions to develop an "American" bus of the future.

Utah Transit Authority often operates "outside the box." UTA had need for an upgraded radio system, but did not want to spend a great deal of money in acquiring one. By doing some research, they discovered something quite interesting: There are basic rules on communications that are covered in some rule book written by some scientists over the years relating to radio. They discovered that a radio is a radio is a radio. So instead of paying hundreds of thousands of dollars for a radio system, they built their own. Through a normal procurement process an agency could expect to pay \$5,000 to \$10,000 per unit. UTA's cost was much less.

In Phoenix, transit managers think outside the box occasionally, too. They were looking for a fare collection system. They did not want to spend a great deal of money either. So they purchased their own magnetic card reader and their own cards and sold the cards themselves. It was so successful that now they are working on being able to take Visa or Mastercard. They can take it through the same farebox system because they found somebody to act as their clearinghouse.

Speaking of fareboxes, buses tend to have huge fareboxes. They are so big that passengers using wheelchairs have great difficulty in negotiating around them. The transit system I run in Austin does not take

in a lot of money; only 14 percent of our money comes through the farebox. But we have got these huge, old, expensive fareboxes, which only collect about a \$100 per day. Why? Because everybody has always done it this way.

Incidentally, why did transit start using fareboxes in the first place? When I was a bus driver, we still made change. Somewhere, someone came up with the idea that we could no longer trust the driver to make change. So we developed a system that does not make change. (The other reason was that they were being robbed.) Now transit agencies expect people to come to the bus stop, if they can find it, with the exact fare in change or a pass of some sort. And we wonder why our users are less than thrilled with this. There has to be a different way. We should find other ways to collect fares.

Regarding vehicles and planning, technology can provide all sorts of valuable information. About 10 years ago Flint, Michigan, and Syracuse, New York, rewired the buses and were able to analyze performance. This is similar to the old Volkswagen that could be taken in for a simple plug-in diagnostic check. When this concept was applied to transit buses in New York City, it was a terrible disaster. But Flint and Syracuse tried it, and it worked. Flint now has a tremendously effective maintenance program that gets to things before they fail. Yet that system is still not a part of most transit fleets today.

An interesting application relates to road call diagnostics. Electrical failures are one of the most frequent causes of road calls. Transit is finally using "multiplexing," by which we can diagnose electrical failures. This was developed by someone else for another purpose and finally brought to the transit market — about a decade later.

### **Communications — Smart Cards And Self-Actualized Buses**

Toronto Transit Commission (TTC) has been a leader in communications with an outstanding integrated system. And Kansas City has an excellent passenger counting system, using data to plan their routes. What a radical concept. They use data for something other than a report to their Board of Directors!

ROI is a strange term in public transit. For those of you not familiar with ROI, it stands for Return on

Investment. In transit we always think of cost and expense. Never about investment.

Abraham Lincoln said, "The dogmas of the quiet past are inadequate for the stormy present and future. As our circumstances are new, we must think anew and act anew." So let me suggest what is real and what is new.

*Smart Cards.* I have a four-year old Smart Card, which is, in fact, already relatively dumb. This particular card only has 64K on it. About 300,000 of them will be issued by Visa for the Atlanta Olympics. The most interesting thing about this is that Visa is not doing this as a pure marketing ploy to showcase cutting-edge technology. Rather, it is a sensible business move, because the people in Europe and the Far East are already using this technology and want to be able to use it when they visit the Olympics.

Moreover, Visa has found that Smart Card technology is fairly secure. This is especially important to a company that loses \$1 billion each year through theft and fraud of current magnetic strip technology. How secure is it? The best and brightest students at the University of Michigan have been trying to break Smart Cards for over three-and-a-half years, without success. If they have not found a way, it must be a pretty safe technology.

The cards to be issued at Atlanta will still have the magnetic strip on them, because the current ATM machines are not fully capable of using all the capabilities of the Smart Card. This too will come.

In transit, Smart Cards are being used in Dayton. Houston is using them, too, for food stamps of all things. This "high-tech" item is saving a large amount of money. The federal government currently spends \$250 million annually to batch and burn food stamps that are used once. The biggest opponent to greater Smart Card use is the sole producer of paper food stamps.

Washington, D.C., Metro is doing Smart Card testing on its Cubic Western proximity reader cards. This system will allow transit patrons to go through the turnstile with a Smart Card in their wallet or purse. It can be read without actually taking it out.

As people start to understand new technologies, they become systems thinkers. They no longer think just about products, but rather about systems.

*GPS & GIS.* Global Positioning Satellite (GPS) technology can now locate objects within three meters. And geographic information systems (GIS) allow us to keep complex databases. The SMART bus system, when it was introduced in Denver, helped us discover something very interesting. The maintenance department had one way of recording for a bus stop, the operations department had another way of recording for a bus stop, and the planning department had still another way. The vendor tried to build a database, only to find that one of the fields was alphabetical, one was alpha-numeric, and the other was numeric. This echoes Churchill's line about the English people being divided by a common language. Transit is like that. We all gather our own pieces of data, but we seldom put it together. We need to learn how to bring data together into information systems.

Montgomery County, Maryland, is measuring things transit agencies have traditionally not considered. Transit always talks about ridership. The question is, ridership relative to what? It is important to identify what the other variables are, then find a way to measure them. GPS and GIS become fairly critical in this endeavor. To assist, the federal government has standardized the mapping protocols. The U.S. Geological Survey is doing a special database. Another effort has resulted in a special databases related to transit. This system is going to benefit all of us for many years to come.

*SMART Bus.* In talking about SMART buses, it is not only a question of "Do we know where the bus is?," but also, "Does the bus know where it is?" Putting data terminals on board buses is a big step toward better communications. Some leaders in the industry, like the Chicago Transit Authority, took a real hit when they bought existing European technology. They did not feel the need to reinvent the wheel.

With these systems up and running, CTA will be able to tell people the headways are 30 to 40 seconds going south on State Street, or Archer Avenue, or someplace else. They will also help control the banana effect during peak hours. The banana effect occurs when buses get so close together that they begin to come in bunches. In between, there are huge gaps in service. People stand there waiting a long time for the bus and getting upset. When the bus finally does come, it comes with one or two others right behind. Now the riders have their bus, but they are even more upset.

SMART buses can help spread out service and eliminate the banana effect.

In Austin, we are working on advanced signal timing. Our highest productivity route is the north Lamar route and yet it has only a 78 percent on-time rate. A major contributing factor is that it has the highest boarding of wheelchairs in the entire system. Almost every single trip has at least one, possibly two. We are looking at signal timing to help restore buses to schedule. We have a partner in 3M, using their Opticom system in order to be able to test it. They are learning some interesting things about it as well.

*The Black Box For Buses.* The black box for buses is like the flight data recorders common in the airline industry. We do have accidents in the transit industry, although looking at the national data one would never know we do. With black box data recorders, we can learn some things to apply to designing buses and teaching our drivers. I have a slightly different perspective on this, having once experienced a 180° turn on slick tires on a slick street while driving a bus near Midway Airport in Chicago.

*Dispatch Radios.* While presenting this paper, I received a message on my pager from my secretary in Austin, giving me the phone number of the General Manager at BC Transit in Victoria, British Columbia, Canada. At my fingertips, I had his home, cellular, and office phone numbers. With this, my notebook computer, and my cellular telephone, I have complete digital cellular communications. Now imagine that in a supervisor's car — even a radio system. In Austin we intend to close down our radio center in our building and shift all our radio dispatching to our supervisors' vehicles.

*Fuel Cells.* The Ballard Corporation in Victoria has developed fuel cells for bus operations. I have discussed retrofitting five of our vehicles from diesel engines to fuel cells. They originally came to us in Austin and asked if we wanted to buy a \$1 million bus. Capital Metro does not need a whole new bus (it already has a hundred of them). We plan to spend \$100,000 to replace engines, because we never took adequate care of the old ones. Perhaps we can test fuel cells.

We are interested in fuel cells, particularly, because we already have compressed natural gas (CNG). We have a mandate that required us to go to CNG. I have lots of buses running on CNG. Out of 30 CNG engines, we have lost 18 due to problems of constant burn within a cylinder. So, we are looking for a different technology. Why fuel cells? Because we can reformulate the hydrogen used in the fuel cell at a \$2.5 million CNG fuel station we already have.

### Summary

My primary message is that much of the technology transit can and should use is already here. We simply have to figure out a way to get out of our traditional way of thinking and do some basic thinking about other solutions and partnerships we can use. We need to think outside the box. I believe we have a lot of people who, once they are unfettered, really become creative. I think we can come up with a tremendous set of transportation solutions for our communities.

## **PUBLIC TRANSPORTATION: CHALLENGES AND OPPORTUNITIES**

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Public transportation systems throughout the country continue to be confronted with numerous challenges and opportunities. Some of the major issues facing transit agencies today include reduced funding, responding to changing demographics and travel markets, managing and operating high quality services within tight budget constraints, responding to federal and state mandates, and many other concerns. At the same time, transit systems are being looked toward to help reduce traffic congestion, air pollution, and energy consumption, while at the same time meeting the mobility needs of diverse segments of society. Although these issues, many of which are not new, present numerous difficulties for transit agencies and operators, they also provide the opportunity for transit systems to play an ever increasing role in addressing the critical issues of concern in major metropolitan areas, small communities, and rural areas.

How transit agencies throughout the country respond to these challenges and opportunities will have a significant impact on the social and economic vitality of all areas. Transit can play a critical role in developing sustainable transportation systems that assist in enhancing the quality of life for all residents, that provide needed mobility and accessibility for all segments of society, and that assist in the development of more livable communities. Accomplishing these goals will not be an easy process, however. The combined efforts of transit and transportation professionals, policy makers, private businesses, public interest groups, and the public will all be needed to meet these goals.

This resource paper was prepared for the Transportation Research Board (TRB) *Workshop on Public Transportation Management and Planning in a Rapidly Changing Environment: Strategies for Survival*, held in Irvine, California, July 27 to July 29, 1995. The paper is intended to help facilitate the discussion of the challenges and opportunities facing public transit today, and to assist in the identification of approaches to address these critical issues. To accomplish these objectives, the paper is divided into seven sections following this

introduction. The major issues and opportunities associated with funding, changing demographics and travel markets, service applications, management, advanced technologies, and institutional arrangements are described next. The paper concludes with a summary of the major challenges and opportunities facing public transportation and the identification of areas for further discussion in the breakout sessions.

### **Funding**

Ensuring that adequate funding is available for both transit capital and operating needs continues to be a major priority for transit agencies throughout the country. Recent Congressional actions indicate that reductions in federal funding for transit are likely. In addition, fiscal pressures at the state and local levels have resulted in declining support for public transportation in some areas. These trends are changing the nature of funding for transit. On a more positive note, the flexible funding provisions of the Intermodal Surface Transportation Efficiency Act (ISTEA) provide opportunities for new sources of funding for transit projects. There are potential concerns with the uncertainties associated with the flexible funding approach, however.

Transit agencies will need to continue to explore a wide range of funding sources to survive in this environment. The issues and opportunities associated with different funding sources are briefly described in this section.

*Current Status of Federal Funding.* Congress is currently working on the Fiscal Year (FY) 1996 budgets for all transportation modes. Although final action has not yet been taken on the FY 1996 appropriations, actions to date have not been favorable toward transit. Early discussions in both the House and Senate focused on major cutbacks or the total elimination of various transit capital and operating programs, as well as transit research and development initiatives, and other related projects. Although the current proposals are slightly more favorable, it still appears that federal funding for transit formal grants and operating assistance will be reduced (1).

*ISTEA Flexible Funding Opportunities.* The ISTEA provided new programs and greater flexibility in the use of funds from different programs to address local transportation problems and needs. The National Highway System (NHS), the Surface Transportation Program (STP), the Congestion Mitigation and Air

Quality Improvement Program (CMAQ), and other programs all provide greater flexibility in the use of federal funds for highway, transit, and multimodal projects (2). These provisions provide the opportunity for additional funding for transit projects. In 1992, approximately \$30 million was authorized for transit projects from the flexible funding programs. In 1994, this figure increased to some \$609 million, and the 1995 projections are for \$1.7 billion to be transferred to transit projects (3,4).

*Future Federal Funding — ISTEA.* The ISTEA provides programs and funding authorization for federal highway, highway safety, and public transportation programs for the six-year period from 1992 through 1997. Thus, 1995 represents the halfway point in the life of the ISTEA. The Administration, Congress, transit and transportation organizations, and other groups are initiating discussions on the next federal re-authorization bill. Many key issues that will be considered in the re-authorization process will affect transit. These may include the reorganization of the U.S. Department of Transportation, the specific programs and funding levels, the flexibility to transfer funds among programs, and the planning and project selection requirements.

*State and Local Funding.* Federal funding represents the largest share of funding for capital requirements in most areas, and provides an important component of ongoing transit operating expenses. In most cases, however, state and local resources comprise a larger share of operating assistance. State and local funds are also used to match both federal capital and operating funds. Thus, state and local resources represent a critical source of funds for most transit agencies. A wide range of funding sources are used at the state and local levels. These include general revenues, sales taxes, gasoline taxes, property taxes, lottery proceeds, and other sources. In many areas, transit agencies must compete with other governmental services and programs for limited funds. In other areas, the link to property or sales tax revenues, which are influenced by recessions and other economic factors, may result in reduced funding for transit, transportation, and other public services. Further, voters in some areas have recently turned down referendums for various major public transportation projects and programs.

*Innovative Funding Techniques.* Innovative funding techniques have been used in many areas to finance both transit capital and operating expenses. Approaches that have been used include various joint

development strategies, private sector subsidies of services or transit fares, multiple agency coordination, and other nontraditional approaches. The use of these techniques is not a easy process, however, as they require additional efforts to plan, implement, and operate.

Maintaining adequate funding for transit capital and operating needs will continue to be a critical issue for public transportation systems. A combination of funding sources will likely continue to be used in most areas. Topics for further discussion in the breakout sessions include identifying the appropriate mix of funding sources, the advantages and disadvantages of flexible funding provisions, and how transit agencies can utilize flexible funds, techniques to maximize private involvement, approaches to enhance coordination among all transit agencies and social service providers, and ways to obtain greater state and local support for public transit.

### Changing Demographics And Travel Markets

The changes in demographics, socioeconomic characteristics, and travel behavior that have occurred over the last 30 years are well known. The three major trends that have influenced travel behavior over this time period are the worker boom, the suburban commuting boom, and the automobile commuting boom (5). An additional trend is that low income and transit dependent groups continue to reside primarily in the central city areas or older first ring suburbs. Many of these trends have had a negative impact on transit. Each of these trends is briefly highlighted in this section.

*Worker Boom.* Approximately 24 million new workers were added to the labor force in the United States between 1980 and 1990. About 10 million of this increase was due to population growth, while 14 million was due to the changing nature of the population. Further, approximately 60 percent of these new workers were women (4). The increase in workers means an increase in commuting trips. Although this trend would be good for transit if the new jobs were located in areas served by transit, as discussed next, they often are not. Further, the addition of significant numbers of women into the work force has resulted in more two-worker families and single parent households. As a result, two cars are often used per household for work trips and many work trips also must accommodate dropping off and picking up children at school or day care, grocery shopping, and

other errands. Recent studies have indicated that women have different commuting patterns, partly as a result of child care and other responsibilities (6). All of these trends tend to limit the potential use of transit.

*Suburban Commuting Boom.* Since World War II, there has been a steady trend toward the movement of both housing and jobs from central city areas to the suburbs. This has resulted in major changes in commuting patterns in most metropolitan areas. In the past, the suburb-to-downtown work trip represented the major commute pattern in most metropolitan areas. On a national basis this is no longer the case. The development of suburban office parks and edge cities has resulted in the suburb-to-suburb work trip being the dominant commute pattern in most metropolitan areas today. This trend has resulted in significant levels of traffic congestion on many suburban freeways and arterial streets. This travel pattern, which focuses on dispersed origins and destinations, is difficult to serve with public transportation. It is important to note, however, that the suburb-to-central business district (CBD) trip still represents an important — and in some areas growing — commute pattern that is usually well served by transit.

*Automobile Commuting Boom.* Automobile ownership, vehicle miles of travel (VMT), and the use of the single occupant automobiles all continue to increase. In 1990, the majority of households in the United States owned two automobiles. Only 13 percent of the households in the country did not have an automobile available, and 20 percent of these were in New York City (7). Thus, there are major trends toward higher automobile ownership and increased use of those vehicles. These trends have resulted in an increase in the use of the automobile — by a single driver — for commuting. According to the 1990 Census, the number of employed Americans who drive alone to work increased by some 9 percent between 1980 and 1990, while the number of carpoolers declined, and the use of public transit remained relatively constant (7).

*Transit Dependent Groups.* Many of the groups that tend to rely heavily on transit as their main method of transportation — low income individuals, the elderly, and individuals without access to an automobile — still reside in central cities or first ring suburbs in many areas. Meeting the travel needs of these groups, and providing access to jobs, social services, and recreation activities — which are often located in the suburbs — will continue to be a priority for public transit. In addition, meeting the mobility needs of transit

dependent groups in rural areas and small communities will continue to be an important role for transit services.

The demographic, socioeconomic, and travel trends described in this section all offer serious challenges to public transportation. As discussed in the next section, planning and operating cost-effective and efficient transit services to meet these travel markets will not be easy. Issues for further discussion in the breakout sessions include allocating limited resources among suburban and central city services, the social service role of transit in meeting the basic mobility needs of individuals, and how the transit, land use, and transportation planning and decision making process can be better integrated and coordinated.

### Transit Service Applications

Meeting the diverse travel needs of all segments of society is a challenge for public transit, especially in light of the trends described in the previous section. Identifying the traditional and the new markets for transit, developing services that meet the needs of these markets, and operating cost-effective services is not an easy process. Many transit systems throughout the country have tried different approaches for addressing these new travel markets, with varying degrees of success.

In addition to the regular or fixed-route services, other approaches that have been tried or are being used include paratransit and demand responsive services, premium express services, reverse commute routes, timed-transfer systems, suburban shuttle services, suburban crosstown routes, downtown and major activity center circulation systems, point deviation service, jitneys, and rural alternate day service. A few examples of these types of services are presented next.

*Premium Express Service — Houston METRO.* The Metropolitan Transit Authority of Harris County (METRO) operates premium express bus services out of a number of park-and-ride lots in the Houston area. Over-the-road coaches are used and the service operates on the high-occupancy-vehicle (HOV) lanes, providing significant travel time savings and travel time reliability. In addition, frequent service — with peak-hour headways averaging 2 to 3 minutes — is provided.

*Multidestination Express Service: Community Transit.* Community Transit in Snohomish County operates

express service from Everett, Washington and the surrounding areas to downtown Seattle, the University of Washington, and North Seattle Community College. The service, which originates from both neighborhoods and park-and-ride lots, uses the I-5 North HOV lanes to provide travel time savings and more reliable trip times.

*Reverse Commute Services — Southwest Metro, Minneapolis, Minnesota, and Wheels Bus Service, New Jersey Transit.* Southwest Metro operates express service into downtown Minneapolis and reverse commute service providing inner-city residents of Minneapolis with access to jobs in three southwestern suburbs. The Wheels Bus Service is oriented towards residents of Bergen and Passaic Counties who work in Newark. This is just one element of a program to increase nontraditional transit services. Other elements include providing more direct service to major suburban activity centers and linking shuttle services to major rail stations.

*Suburban Circulator — Roseville Area Transit.* This service, which is operated in the communities to the north of St. Paul, provides circulation service within suburban areas. The service is focused on Rosedale, a major suburban shopping center. This facility acts as a transit hub; it is both a major destination for many trips and provides riders with access to express bus service to both downtown Minneapolis and St. Paul. The system also provides connection to the University of Minnesota.

*Crosstown Routes — DART.* The Dallas Area Rapid Transit District (DART) has implemented a number of crosstown routes, many focusing on suburban areas. DART is currently reviewing its route structure to provide additional crosstown routes and feeder routes to the new light rail transit (LRT) line.

*Point Deviation Service — Hamilton, Ohio.* The Hamilton transit system provides fixed-route point deviation services. Buses operating on fixed route deviate to pick up passengers when requests are made.

*Jitneys — Houston METRO.* METRO has recently implemented a program using jitneys to provide service in some areas of Houston. Possible areas for the service were identified through a collaborative process between METRO and potential operators. METRO then issued a request for proposal (RFP) and selected operators for various areas. METRO sets the

fare levels and subsidizes the operators. The program has been in operation since the spring of 1995.

These represent just a few examples of the innovative approaches being used by transit agencies to meet changing travel patterns. Sharing the experience with these and other new services will be an important part of the breakout discussions. Generating new ideas for service applications, identifying areas for further research, and identifying ways to maintain existing low ridership routes that serve transit dependent groups represent other possible topics for discussion.

### Management

Managing public transportation systems continues to be a challenging occupation. Transit managers and senior staff are faced with numerous issues today including those focusing on providing quality service in a time of budget austerity, dealing with a diverse work force and union-management concerns, meeting the requirements of federal and state regulations, and promoting a customer-oriented service approach. Further, these and other issues must be addressed in a political environment and often include working with other local, state, and federal agencies and policy groups. A few of the more pressing issues associated with transit management are highlighted next.

*Doing More with Less.* Like many other public agencies, as well as private companies, most transit systems are faced with pressures to maintain or reduce budgets. Maintaining high quality services in this fiscal environment is difficult. Transit agencies and operators are utilizing numerous techniques to deal with budget reductions. These include downsizing, contracting for various services, trimming unproductive service, and numerous other techniques. Downsizing and eliminating unproductive services are often hard to do because of union contracts and political and community pressure to maintain service.

*Dealing with a Diverse Work Force and Union/Management Concerns.* Transit managers must deal with a diverse work force that includes operators, maintenance personnel, and office staff. Developing and maintaining personnel policies, salary structures, and other management programs for these groups can be difficult. Further, in many cases, transit systems include a mix of union and nonunion personnel. Developing and maintaining good union-management relations is an ongoing challenge, as noted by some of

the recent strikes by unionized operators at a few transit systems.

*Federal and State Requirements.* Transit managers must address numerous federal and state laws and regulations. Examples of a few of these include the Americans with Disabilities Act (ADA) of 1990, the various purchasing, reporting, and contracting requirements of the Federal Transit Administration (FTA), the provisions of the Clean Air Act Amendments of 1991, and various state requirements.

*Customer Service Orientation.* Transit management also requires a customer-oriented focus. This approach includes not only defining the various markets and providing the appropriate services, but also ensuring that all operating and support personnel are customer oriented. One rude bus operator or telephone information representative can negatively impact the whole system.

One of the sessions at the workshop will focus on a more detailed discussion of labor-management cooperation and other management concerns. The panelists in this session will help identify additional issues and opportunities related to transit management for further discussion in the breakout groups.

### **Intelligent Transportation Systems (ITS) And Advanced Technologies**

A major focus of recent transportation research and development activities has been on a variety of technologies being examined under the general heading of intelligent transportation systems (ITS). Intelligent transportation systems include the application of a wide range of advanced technologies that share the common goal of improving the efficiency of the overall surface transportation system. More specifically, ITS technologies are directed at improving mobility and transportation productivity, enhancing safety, maximizing current transportation facilities, and enhancing the environment. These efforts are being supported by federal and state policy directives, private industry groups, university research institutes, and others.

Many of these technologies are being utilized with public transportation systems. Additional applications are being considered and research and development activities are examining the use of new and emerging technologies with all types of transit services. These efforts are focusing on enhancing customer

information, improving the delivery of transit services, and enhancing the efficient provision of these services through ITS technologies.

Two different classification schemes are being used to describe ITS technologies. The first divides ITS into six broad categories focusing on general applications and the second considers a user perspective (8). Advanced Public Transportation Systems (APTS), which focus on the use of advanced technologies to improve the delivery of transit services and to enhance the cost-effective and efficient provision of these services, is one of the six ITS categories. Transit systems may benefit from the Advanced Traffic Management Systems (ATMS), which include the development and operation of advanced transportation surveillance and monitoring systems to provide detection, communications, and control functions in major travel corridors. Transit can also benefit from the Advanced Traveler Information Systems (ATIS), which includes the provision of pretrip and in-vehicle information to motorists on current traffic and other conditions and real-time guidance on route information. A number of the user services also relate to public transportation, including pretrip travel information, traveler services information, ride matching and reservation, travel demand management, public transportation management, personalized public transit, and public travel security. A few examples of transit ITS projects underway throughout the country are summarized next.

*Transit Integration with Advanced Transportation Management Systems (ATMS).* Starting in the 1960s, many metropolitan areas began developing traffic management systems and centers. The intent of these systems was to increase the roadway capacity, maintain travel speeds, reduce accidents, and improve air quality levels. Over the years, existing and newly developed transportation management systems have become much more complex and sophisticated. First, ITS and other advanced technologies are being used to expand the monitoring, detection, and response capabilities of these systems. Second, some systems encompass not only freeways, but also entrance ramps and adjacent roadways. Third, the inclusion of other modes — such as transit and emergency services — is occurring.

Transit agencies in Montgomery County, Maryland, Houston, San Antonio, Minneapolis, Seattle, and numerous other cities are currently involved in various ways with the development and operation of ATMS

and ITMS (9). Transit systems can benefit from inclusion in ITMS through the provision of real-time information on roadway conditions, travel times, incidents and accidents, and any other special conditions. This information can be used to better manage all types of transit services by diverting vehicles around trouble spots, and thus improving on-time performance, schedule adherence, and service efficiency. In addition, transit vehicles equipped with automatic vehicle location (AVL) or advanced radio systems can provide information on traffic conditions on arterial streets to the ITMS. Further, providing the real-time traffic and transit information generated by these systems to commuters may help encourage greater use of transit modes.

*Fare Payment Systems.* Enhancing and simplifying fare payment methods has long been a priority of transit systems. A number of transit agencies are developing, implementing, and considering Smart card fare payments systems, which utilize a prepaid electronic card. Smart cards could be used with one system, with multiple transit systems, and the potential also exists to use these cards for other purposes, such as banking or consumer purchases, as well as for airline or railroad tickets. Ultimately travelers may be able to use one Smart card to pay for taxi or transit service to the airport, their airline ticket, connecting ground transportation at their destination, dinner, and local transit services.

Currently, the Washington Metropolitan Area Transit Authority (WMATA) has implemented a Uniform Fare Technology Demonstration Program called the *Go-Card System*. The demonstration is using a proximity card technology for prepaid fare transactions. Riders are able to use the *Go-Card* for fare payment on the Metrorail system, Metrobus service, and WMATA park-and-ride lots. Currently, the *Go Cards* can only be used at selected rail stations, park-and-ride lots, and bus routes (10). GO Transit in Toronto, Ontario, and Mississauga Transit are developing a contactless Smart card system for deployment in the metropolitan Toronto area. The initial test of the *Combo Cards* is scheduled for the summer of 1995. The prepaid electronic fare cards can be used on multiple transit systems in the Toronto area (11).

*Automatic Vehicle Location (AVL) Systems.* Automatic vehicle location (AVL) systems provide a method for monitoring the movement and location of transit vehicles. AVL systems, which include both

ground-based and satellite-based systems, provide a number of benefits for transit operators and transit passengers. AVL systems generate a great deal of information that can be used for a variety of purposes. For example, information obtained from AVL systems may enhance transit safety and management, produce energy savings and greater fuel efficiency, improve on-time performance, upgrade customer information capabilities, and improve route planning and scheduling. Further, AVL systems can assist in providing real-time traffic and travel time information to agencies and to the general public in congested corridors. Currently, AVL systems are in use or in development by transit agencies in Baltimore, Milwaukee, Denver, San Antonio, Houston, Dallas, Kansas City, Seattle, Minneapolis, and other areas (12).

*Enhanced Information Systems.* A number of transit systems are testing and using a wide range of technologies to provide enhanced information to transit riders and potential customers. These include interactive kiosks, electronic maps, cable television, and the World Wide Web and Internet system. For example, *Riderlink* is an electronic information system developed through the cooperative efforts of King County Metro and the Overland Transportation Management Association. *Riderlink* provides information on Metro bus routes and schedules, rideshare services, ferry schedules and freeway traffic conditions on the Internet World Wide Web. Individuals in the Seattle area — and throughout the world — can access *Riderlink* through personal computers, including those at the Seattle Public Library. Planned expansions to the system include adding information on Community Transit, Pierce Transit, and other operators (13). The Houston *Smart Commuter* Operational Test is examining the potential for increasing the utilization of high-occupancy commute modes, shifts in travel routes, and changes in trip departure times through the use of advanced technologies. One element of the Operational Test will provide real-time traffic and transit information to commuters in the I-45 North Freeway corridor to enhance commute mode decisions. ITS technologies are being utilized to collect and disseminate the real-time information to commuters (14).

These represent just a few examples of the application of ITS technologies to enhance the cost-effective and efficient delivery of transit services. The experience with these and other projects, as well as the appropriate role for advanced technologies with public

transportation systems can be discussed further in the breakout sessions.

### **Institutional Arrangements**

Transit agencies do not operate in a vacuum. Rather, transit systems must interact with numerous agencies, private business, and groups at the federal, state, and local levels. The institutional arrangements and the working relationships with these groups have always been important for transit. The ISTEA and other factors have made establishing even stronger cooperative relationships with these groups more important, however. A few of the issues and challenges associated with institutional arrangements are highlighted next. These include the metropolitan transportation planning process, enhanced cooperation with social service agencies, public/private initiatives, transit organizational structures, and the potential federal reorganization.

*Metropolitan Transportation Planning Process.* The metropolitan transportation planning process has historically included transit agencies and transit planning issues. The ISTEA provided metropolitan planning organizations (MPOs) with new roles and responsibilities, however, and strengthened the inclusion of transit within the transportation planning process. How transit agencies, MPOs, state departments of transportation, and other groups work together to accomplish these new responsibilities will be a critical element in meeting the transportation needs of urban areas. Ensuring that transit agencies are represented on MPO boards and committees will be a critical factor in the planning and project selection process. MPOs can also serve as a forum for the ongoing discussion of issues associated with enhancing coordination among land use and transit and transportation planning, addressing the mobility needs of all groups, and improving the ongoing coordination with state departments of transportation, local governments, and other groups.

*Social Service Agency Coordination.* Developing closer working relationships with health and human service organizations may be an important approach to dealing with funding reductions and specialized service concerns. Coordinating the provision of services and sharing funding may help maximize the resources of all groups and ensure that duplication of service does not exist.

*Public/Private Partnerships.* Different types of partnerships have been used between transit agencies and private businesses and developers in a number of areas. These partnerships have focused on joint developments, business subsidization of transit passes, private sector support for new services, and other projects and programs. There continues to be a good deal of interest in establishing public/private partnerships to help support a wide range of transit initiatives. In addition to the types of projects noted previously, private sector involvement is viewed as one of the key components of the ITS program. Given the budget and financial limitations described previously, exploring innovative public/private partnerships should continue to be a high priority among transit personnel.

*Transit Organizational Structures.* A variety of transit organizational structures are used throughout the country. Further, the roles and responsibilities of these agencies vary. Although previous TRB conferences have examined transit organizational arrangements, it may be appropriate to reexamine the various advantages and limitations of different organizational approaches given the changes that have occurred over the past few years in areas such as Minneapolis-St. Paul, Los Angeles, and Seattle. In addition, consideration could be given to broadening the functions and services that transit agencies provide. For example, a current Transit Cooperative Research Program (TCRP) research project is examining the role of transit agencies as mobility managers.

*Potential Federal Reorganization and the Reauthorization of the ISTEA.* Discussions have already been initiated on the reauthorization of the ISTEA, which expires in 1997. Further, the Administration presented a plan for reorganizing the U.S. Department of Transportation earlier this year. Although Congress did not act on the Administration's plan, it appears likely that reorganization of the Department will be considered further as part of the reauthorization process. The involvement of transit agencies and transit organizations will be important in both the reauthorization process and in any discussion of reorganizing the Department.

There appear to be numerous opportunities for transit agencies to establish new partnerships and to develop new institutional arrangements to enhance public transportation services. For example, the ISTEA has broadened the metropolitan transportation planning process and has provided greater opportunities for the

involvement by all groups, including transit agencies and operators. Further, the flexible funding provisions of the ISTEA give more authority to local areas to implement priority transportation projects. The various ITS activities will also require greater cooperation between public agencies, as well as with private sector groups. Further opportunities for partnerships with private businesses will be needed to address increasing levels of traffic congestion and environmental concerns.

### Conclusions

This resource paper has described some of the challenges and the opportunities facing public transit agencies today. Issues were described in the six general areas of funding, changing demographics and travel markets, service applications, management, advanced technologies, and institutional arrangements. Additional information on these issues and other concerns will be presented by speakers in the various sessions and panels.

Although there are significant concerns in each of the three areas of management, planning, and funding, there are also major opportunities for transit. As noted in this paper, the ISTEA provides numerous opportunities for transit agencies and operators to become more active in the metropolitan transportation planning process, in the development and operation of ITS projects, and with other programs. Further, many transit systems are taking on new roles and responsibilities, broadening the types of services offered to better meet the needs of diverse markets, and exploring innovative partnerships with other public agencies and with private sector groups. Meeting these diverse challenges will continue to be an exciting time for transit agencies and other groups committed to maintaining vital transportation alternatives for all segments of society, as well as prompting sustainable transportation systems and livable communities.

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