History of the Advanced Transit Association (ATRA) Year by Year

by J. Edward Anderson, first ATRA President.

2003 – The Twenty-Eighth Year.

The 2003 ATRA Annual Meeting was held on January 12 at the Hilton Hotel in Washington, D.C. between 8 and 10 pm. After the Minutes and the Treasurer's report the topics brought up were

- The Vice President (Bob Dunning) report
- Election results and Board elections (Jarold Kieffer)
- Executive Committee Assignments (Tom Richert)
- Report of the Education Committee (Jeral Poskey)

  The Education Committee drafted the statement shown on the next page for Board approval.
- Newsletter Agreement (Larry Fabian)

  The Board approved a 2002 agreement with Transit Pulse that established the publication as the regular newsletter for the Association.
- Denver Workshop (Larry Fabian)

  ATRA cooperated with the Transportation Planning Division of the American Planning Association to organize the conference in Denver on March 29.
- Membership and Dues Structure (Richert)

  A Recruitment Guide was presented to the Board by ATRA Intern and Stanford Graduate School of Business MBA candidate Patrick Molloy.
- Membership Campaign (Richert)

  Possible changes to the Association by-laws was presented to establish membership categories that would enhance the organization as a membership association and increase membership revenue.
- PRT State of the Art Report (Dunning)

  The Report will be presented to the Board for approval for publication.
- Member Progress Previews (Various Members)

After the meeting, the following progress updates were given:

- Transit 2000 Commuter System – Herman Pardees
- Taxi 2000 PRT Program – Ed Anderson
- ULTra PRT Program – Martin Lowson
- EDICT Program – Martin Lowson & Ingmar Andréasson
- Cities 21 Initiatives – Steve Raney
- Nassau Hub Study – George Haikalis
- Vision 42 Proposal for Manhattan – George Haikalis & Roxanne Warren

ATRA's Vision For Better Communities

DRAFT – ATRA education committee – 13 October 2003 – **LONGER VERSION**

We believe that it is possible to create clean, quiet, safe, and convenient communities where people and businesses can thrive. We believe that there are ways to solve the major urban problems of today, such as isolation, congestion, and pollution.

We believe that a major part of the needed improvement of urban conditions (but not the only part) is a series of improvements in the transportation system. A fundamental purpose of transportation systems is to provide people with easy and affordable access for them to carry out their activities. To that end, we envision a set of transportation systems that will:

- operate in a safe, clean, quiet, uncongested, and efficient manner
- interconnect conveniently and fit into the community character and with other existing systems
- have capacity sufficient for the demand
- serve all people equally, including those currently underserved, such as seniors and youth
- use much less energy than is currently used for transportation, and ultimately use sustainable renewable energy and materials
- be affordable and cost-effective
- be able to handle goods movement needs as well as moving people
- help build and maintain economic strength and resilience

We honor the efforts of all those groups who are working towards a better future, and we are promoting this vision as one aspect of the future that we cooperatively aspire to.

Detailed classification of transportation systems

We envision an integrated system that includes high-capacity corridors complemented by a well-connected mesh of intermediate and low capacity local systems. All of these services working together are a realistic way to meet our mobility needs.

Following is a classification system that can be used to distinguish the various scales at which transportation systems operate:

- **Local service to within one block of destination, within major activity centers.** *Typical trips of 0.1-5 km (~0.1-3 mi) at 25 kph (~15 mph). Personal service. May include service within buildings and door-to-door service.*

  Example: Personal Rapid Transit
- **District/city-wide service to within 1-2 blocks of destination.** *Typical trips of 2-25 km (~1-15 mi) at 50 kph (~30 mph). Personal or small-group service. May include door-to-door service.*

  Examples: Personal Rapid Transit, Group Rapid Transit, Dual mode
- **Regional service to within 2-3 km of destination.** *Typical trips of 10-100 km (~6-60 mi) at 115 kph (~70 mph). Personal or small-group service. May include door-to-door service.*

  Examples: Personal Rapid Transit (some concepts), Group Rapid Transit, Dual mode
- **High-speed corridors connecting regions.** *Typical trips of 50-5,000+ km (30-3,000+ mi), at 200+ kph (~125+ mph). Small or large group service.*

  Examples: High speed rail, Group Rapid Transit (some concepts), Evacuated Tube Transport

My work on PRT during 2003.

On January 19th I learned that Shef Lang died – he lost his years-long battle with prostate cancer. I immediately sat down and wrote the following eulogy to him.

A Eulogy to A. Scheffer Lang

I first met Shef on April 2, 1971 on a visit out East to sites of several new transit development projects in the company of the Transportation Development Committee of the Twin Cities Metropolitan Transportation Commission. I had been invited on this trip because I had been urging the MTC to consider personal rapid transit (PRT) as an important new alternative for applications in the Twin Cities. Our last visit was to Shef's office at M.I.T. where he was Professor of Transportation. In several positions in the U. S. Government including a term as Federal Railroad Administration, he had followed the federally sponsored studies on new transit systems including PRT. The one specific thing I recall from the meeting is that he told us that he and his colleagues had calculated that if Boston ripped up all their rail systems and replaced them with PRT with the same line and station locations it could handle the traffic carried by the rail system at substantially lower annual cost. This is an excellent example of Shef's forthright, honest statements of fact that many don't want to hear and are unpopular in some political circles.

The next time I met Shef was on March 14, 1995 at a Citizens League breakfast at the University Club in St. Paul, which I attended shortly after moving back to Minneapolis from Boston. Each of us looked familiar to the other. We talked after the meeting and agreed to meet for lunch the same day. I found that Shef was still a strong advocate for the development of PRT. In a lunch on April 13, 1995 he told the leaders of the Office of Technology Transfer at the University of Minnesota that deployment of PRT is the only way to reduce congestion in cities. We were looking for new Board members and Shef quickly agreed to serve. About six months later he agreed to be elected Chairman of our Board.

Without Shef's involvement with us over the past eight years, it is hard to see how we could have progressed as we have. A crucial action was that he knew the right lawyer, Jack Hoeschler, needed to negotiate with Raytheon lawyers to free us completely. But there is much more. We worked together almost daily in developing business plans, scheming and plotting next steps, finalizing various engineering details, and a variety of outreach activities. The fact that Shef was a prominent figure in national transportation circles gave us a degree of credibility within the transportation world that would otherwise have been beyond us. And his forthright, honest, tell-it-like-it-is publications have made him a standout among his peers.

A good example is an article he wrote for the Transportation Quarterly, published in the Fall 1999 issue: "A New Transportation Paradigm." The article can be found on Prof. Jerry Schneider's web page at http://faculty.washington.edu/~jbs/itrans/lang.htm. With straightforward prose

he cut through much mythology and fuzzy thinking to state the stark realities of the status of today's urban transportation. It is well worth the attention of every policy maker in the country.

Shef's acquaintance with many prominent people in government and private circles led to many suggestions that moved us along. By summer 2001 many individuals were asking how they could invest in Taxi 2000. Through a November 1999 article in the *Minneapolis Star Tribune* by Dr. David Morris, a friend of Shef's, we attracted the funds which have enabled us to finalize our designs and order subsystems. It is most regretful that Shef will not be able to witness our first operating hardware, which could not exist without his involvement. We miss him sorely.

Shef had handled the business and fund-raising aspects of our company, while I handled the engineering. Now I was saddled with both, which was too much for one person. But, for the time being our task was to finish and demonstrate our prototype. In addition to managing the construction, I was still accepting invitations to give presentations. The next one was on January 23rd to the St. Paul Optimists Club, then another on February 12th to the Richfield Optimists. A much more important presentation for me was on January 28, 2003 at the Honeywell High Tech Center. Considering the schedule given to me by Syracuse mall planners, I knew that we would need help with the control system we needed for our next phase, and Honeywell was the logical and fortunately nearby source. Honeywell was interested so I developed a detailed requirements document, giving references to all germane past work.

On January 31st the chassis was ready for delivery. I went to the Mechanical Engineering shop to watch it loaded on the back of a pick-up truck and took the picture shown here along with Robin Russell, the mechanic who built it.

There was a flurry of activity in the next two months and finally on Thursday, April 10th, we formally launched our system. About a half-dozen members of the Cincinnati Sky Loop Committee attended. Two articles in the press about our successful launch occupy the next two pages. On the next page, the two people in the vehicle on the right facing the picture are the Mayor of Fridley, and to the left partly hidden Representative Mark Olson, who said in a speech: "We now have something that can compete with the automobile." Below the news article are two pictures taken shortly after the opening ceremony.

Jerry Holt/Star Tribune

State Rep. Mark Olson, left, and Fridley Mayor Scott Lund checked out Taxi 2000's car at a demonstration Thursday. The car has been dubbed the "Microsoft of public transit."

Goodbye gridlock? Here's the plan

By Laurie Blake
Star Tribune Staff Writer

After 30 years of laboring to perfect and sell the world on his futuristic public transit system, Minnesota inventor J. Edward Anderson on Thursday presented a shiny red cab that moves people along a silver track.

Asked what he was feeling during the first public demonstration of his vision, Anderson, 75, a former University of Minnesota professor, responded with an engineer's reserve: "To me it's kind of like an afterthought. I knew it would work."

But his supporters did their best to inject the moment in a Fridley office complex with drama befitting the kind of transportation breakthrough they believe it will be.

Fridley Mayor Scott Lund said: "It's very exciting to have this here in good old Fridley. I feel like I'm George Jetson."

Rep. Mark Olson, R-Big Lake, said: "This is unprecedented in the world. It's a great day in Minnesota."

Anderson's invention, known as PRT (for personal rapid transit) and more formally named SkyWeb Express, continues the tradition of Post-it notes, pacemakers, Honeycrisp apples and other Minnesota inventions, Olson said. "The problem with clogged streets has never been solved but I believe there is hope for that today," he said.

Olson predicted that the privacy and convenience of PRT would compete with the car in a way that current forms of public transit do not.

TRANSIT continues on B9:
— Passengers would ride nonstop to their destinations.

University Start-Up Demonstrates its Jetson-like Solution to Gridlock

Taxi 2000 CEO Ed Anderson (right) with a prototype of a SkyWeb Express vehicle.

Taxi 2000, a University start-up company, unveiled a functional prototype of a SkyWeb Express vehicle and guideway section at a recent product launch ceremony. SkyWeb Express is an example of Personal Rapid Transit (PRT). PRT is a network of small, lightweight, electric-powered vehicles riding on raised rails. The small vehicle design allows each rider to have a private ride, or in the case of SkyWeb Express, share the cabin with two family members or friends—picture how George Jetson got to work.

According to Taxi 2000 officials, this system offers almost as much flexibility as an automobile and may be the only public transportation system capable of enticing large numbers of drivers away from their cars. Currently, conventional transit systems in the Twin Cities attracts three percent usage. **Ed Anderson**, designer of SkyWeb Express, CEO of Taxi 2000, and former University of Minnesota professor, estimates this PRT would attract at least 30 percent usage.

"There are several features that give SkyWeb Express its incredible flexibility," says Anderson. "First, its vehicles are guided by an automated control system. Second, its stations are offline, which means vehicles can stop at stations without blocking traffic behind them. And third, the privacy of its rides ensures that riders never have to stop to let strangers get on or off."

SkyWeb Express would provide nonstop service to your destination in a private, climate-controlled vehicle with little or no waiting. According to Anderson, benefits for communities installing SkyWeb Express include low-cost (possibly even profitable) operation, 1/640th land use compared to freeways, no need for public money, and energy efficiency. Construction of SkyWeb Express would cost roughly $9 million per mile compared to $40 million for light rail.

The product launch is the result of over 20 years of work and research by Anderson and others. In addition, Taxi 2000 generated nearly $1million from 68 individual investors to take SkyWeb Express from an intriguing computer simulation to a fully functional prototype running on 60 feet of track at their headquarters in Fridley.

City planners from Sweden, Korea, Chicago, and Cincinnati, among others, have shown interest in SkyWeb Express. But before the system can be built commercially, Taxi 2000 plans to build a half-mile track with one station and three vehicles to test safety and reliability. Possible test sites include the State Fair grounds and the Blaine Sports Facility complex.

Interior of SkyWeb Express vehicle

During the next few months, I spent most of my time on fund-raising activities. We were contacted by many people one could call "middle men." Many of them were certain they could raise the needed fund if only we would sign a contract; however, signing such contracts is risky so we worked with people who would try to seek funds without a contract, and there were several. During that period, I gave presentations to the following groups:

April 24th St. Paul Chamber of Commerce

May 1st Minneapolis Y's Men's Club

May 29th Planners at Meadowlands, New Jersey

June 10th New Brighton Rotary Club

June 25th Duluth Rotary Club

June 26th Women's Transportation Seminar

July 17th Duluth Rotary Club

July 21st Duluth City Council

August 7th Best Buy, Inc., Richfield, Minnesota

August 12th Minnesota Department of Transportation Commissioner

On June 2nd I received a call from the Minnesota High-Tech Association. The person calling said that MHTA was managing a series of exhibits at the Minnesota State Fair in the Wonders of Technology Building and they wanted us to exhibit our guideway, vehicle, and stations. Considering the size of our system it would be the center-point exhibit in the MHTA building. But that would cost us an upfront fee and the expenses of moving our system to the fair and back again. So, I contingently said that we were interested, but I would have to check on details, mainly on the costs. Fortunately, I very soon had a commitment from Knudson Construction Company to move our system to the Fair and back, and found other funds needed. This was a major big deal for us!

The Minnesota State Fair opened on Thursday, August 21st and closed on Labor Day, September 1st. On the 22nd the Governor of the Japanese Akaka Prefecture and six of his people visited us. We gave rides 12 hours a day for the 12 days of the Fair, so thousands of people visited our exhibit and rode in our little red car. While we intended redundancy in all the major components in an actual application, we ran the vehicle for these 144 hours with no redundancy and failures, except one: A cable that went from a pulley on the door-actuation motor to the door slipped off the pulley but was soon fixed.

We were of course visited by many people, some of whom were Legislators and other officials. Citizens for PRT had made several large posters that described how the system would work in a real application, and thousands of people signed a petition urging the State Legislature to provide the funds needed to build the full-sized test system or proving ground that we needed. I was particularly touched that John Jamison visited. Two decades before he was Director of

Transit Development at the Twin Cities Metropolitan Transit Commission. We had a good long chat, and clearly, he was impressed.

Here is one of the many pictures taken at the Fair. You can see the station platform designed by Ray MacDonald in the background.

On the next two pages are articles from the press. The first appeared in the *St. Paul Pioneer Press* and the next in the Minneapolis publication *Business Journal*. On Friday, September 5th, before our system was moved back to our office at 8050 University Avenue North in Fridley, Minneapolis Mayor Rybak, City Council Members Barbara Johnson and Dean Zimmerman, and several staff members visited us. The subject of their discussion was how to acquire and where to place our system, not anything about whether they were interested – all their comments indicated that they were extremely interested. Barbara Johnson recommended that we move our system close to downtown Minneapolis so that many more people could check it out. There was, however, no follow-up and they did not bring up involvement with us again. From strong evidence, consideration of PRT was a threat to planning for a light rail system down University Avenue between the two downtowns, which ended up costing around $100 million per mile, but which had much more political support.

STATE FAIR 2003

Fairgoers taken for a ride

But they enjoy and marvel at futuristic transit system.

BY BOB SHAW
Pioneer Press

She's only ridden 40 feet, but she's gushing as if she just landed a shuttle from outer space.

"It's absolutely delightful," said Phyllis Lartz of Shoreview, getting out of a gumdrop-shaped pod at the Minnesota State Fair. "It's more personal, and more comfortable, than a rail (car), cars or a bus."

Ed Anderson, standing beside her, beams. It's his invention she's raving about, the SkyWeb Express, which he thinks just might solve the traffic problems of the future.

It consists of a steady stream of three-passenger cars on a lightweight track. Commuters would step into one of them, just as Lartz did, and the car would take them directly to their stop.

Anderson, who has spent the past 35 years perfecting SkyWeb Express, brought his exhibit to the Fair's Wonders of Technology Building.

His dream? Using elevated rails to solve the

TRANSIT SYSTEM, 8A

SHERRI LAROSE, PIONEER PRESS

It's like the Jetsons. But it's not a cartoon. It's real technology that exists," an observer says of "personal rapid transit." One example of the technology is SkyWeb Express, which carried Ryan Ward, 17, of Woodbury, left, and Delores and Milt Ost of Albert Lea, Minn., during a demonstration ride at the Minnesota State Fair's Wonders of Technology Building.

The writer of the above article, Bob Shaw, became a good friend. *Minneapolis StarTribune* reporter Laurie Blake at one point asked me: "What was the most unusual thing about our demonstration?" I thought for a moment. Except for that pulley failure, it worked exactly as we planned that it would, which should be expected of a competent engineering team. I said that the most unexpected thing was the kick many people got out of riding only 40 feet. After reading our literature and riding in our vehicle again and again people asked why we can't have a system like this in the Twin Cities.

THE VISION > An entirely new form of transit, combining elements of both personal taxi service and high-tech monorail.

THE TECHNOLOGY > A self-guided rail system, called the SkyWeb, ferrying passengers in three-person cars nonstop to their destination. Hop in a waiting car, say "Radisson" and it takes you there. Keeping the parts small enables the whole system to be elevated. Watch *Minority Report* on DVD and you'll get the basic idea.

WHAT COULD GO WRONG > The concept flies in the face of about a half-century of increasing dependency on automobiles, coupled with a trend of skepticism against big transit projects (witness the opposition to the Hiawatha Light Rail line). Officials acknowledge that credibility is the main hurdle, but counter that the SkyWeb system is cheaper than mass transit (a city-scale project would cost $90 million) and will pay for itself.

THE IDEA MAN > Edward Anderson, a former University of Minnesota professor who's been pursuing the idea since he read government studies of the concept in 1968. He hasn't seen *Minority Report*, by the way.

TAXI 2000

It's a great dream: personal comfort in a rapid transit system

THE BUZZ > It's hard not to smile at the company's world-of-tomorrow optimism, which extends to the "Tara" theme that plays on Taxi 2000's promotional video. But after years of skepticism, the company has enjoyed some momentum this year, with a prominent display at the State Fair, increased investor attention and interest from Duluth in building a system there. Anderson is also a finalist at this year's Tekne Awards.

WHY IT MATTERS > Minnesota's highways are getting worse by the year. Officials say a city-scale SkyWeb system could carry 96 a day, lightening traffic on highways.

The answer to lack of Federal involvement in new transportation technology is explained in an article by Edward Weiner in a 1984 issue of the *Journal of Advanced Transportation.* The first page of the article is duplicated on page12. Unfortunately, I did not notice it until several years later. Mr. Weiner says that decisions about transit systems will be guided by the marketplace and that user fees will cover more of the costs. But what happened was that cities were told to consider only proven systems and no means was provided to prove any new system. The marketplace didn't have a chance. The result was overpowering pressure to get available federal money as soon as possible. In this environment new ideas were crushed. Chicago had been able to proceed only because, after investigation, they determined not to seek federal funds. A city as big as Chicago could do that, but almost all cities looked to the federal government and were not only willing but anxious to obtain federal funds for whatever system the federal bureaucracy would support. In 1980, Indianapolis was an exception because two of its Assemblymen, Richard Doyle

and Dr. Ned Lamkin, had studied my PRT system extensively for over five years before there was any possibility of federal involvement.

A serious problem with our promotion of PRT has been that, after the Raytheon debacle, no large industry has been willing to step forward with support. It is natural and responsible for city planners to look only at systems supported by companies with a sufficiently solid reputation that they could be confident that the system would be supported into the indefinite future. A small company like Taxi 2000 had not been able to establish such a record. Even with Shef Lang alive we looked weak, and without him weaker. I first met Dick Daly in 1974 when he was Director of Government Marketing for the Raytheon Company, and it took 19 years and a special circumstance before the Raytheon CEO decided to enter the market, and even then, for reasons I have discussed, the project failed. Getting a new large company involved, which means getting their engineers involved – engineers their top management would trust, but who would have had no experience in PRT – likely would mean another flop.

In 1971 Ford Motor Company CEO, Henry Ford II, having read about interest in PRT decided to enter the automated transit market. As would any similar CEO, he assigned a group of his engineers to the project, again engineers with no understanding of PRT technology. They designed an automated system they called ACT for Automatically Controlled Transportation.[1] It used 24-passenger vehicle riding on a wide, concrete-trough elevated roadway. Ford built a demonstration at the Fairlane Town Center near Dearborn, Michigan, and built the guideway for a second system at the Hartford, Connecticut, Airport. However, the operating-cost estimate was so high that the Connecticut Governor refused to fund the deficit, which required Ford, at great embarrassment, to tear it down. The basic problem was that the engineers involved were not given the time and resources to thoroughly understand the theory and practice of PRT before they started to design, and they violated basic rules of Engineering Design.[2]

Another example was McDonnell Douglas. They decided to enter the automated transit field by in 1974 by licensing a maglev system being developed by Krauss-Maffei of West Germany. There could have been no serious systems engineering in either McDonnell Douglas or Krauss-Maffei because, due to shockingly high operating energy, the German government stopped funding the project even after it was promised for a fair in Canada. I was visiting Krauss-Maffei in Munich the day the plug was pulled.

[1] *Personal Rapid Transit II*, University of Minnesota, 1974, pp 82-83.
[2] J. E. Anderson, "16 Rules of Engineering Design."

Journal of Advanced Transportation 18:2, pp. 113-124. *Copyright © 1984 by the Institute for Transportation*

Devolution of the Federal Role in Urban Transportation

Edward Weiner

Introduction

During the last few years, the federal role in urban transportation has been changing. The Administration is proceeding on a path to reduce the involvement of the federal government in urban transportation decision-making. This change is a departure from the trend over the previous two decades which was characterized by increasing federal responsibility and participation in the process and results of decisions related to urban transportation. The consequences of this change for other participants in urban transportation decision-making are already apparent and are likely to become more pronounced in the foreseeable future.

The new federal role is based upon two premises. First, the state and local governments and the private sector are closer to the problems and issues in urban transportation and, therefore, are in a better position to make local transportation decisions. Second, transportation decisions should be guided by the marketplace rather than governmental regulations and requirements. Moreover, the Administration believes that institutions for urban transportation decision-making have matured to the point that the federal government no longer need be involved to the degree it was while these institutions were in their infancy.

A number of steps have already been taken to bring about the shift in the federal role. These steps involved changes to policies, legislation, regulations and programs. Others will likely follow. This paper reviews the actions that have been taken and looks ahead to the dominant trends that are emerging for the coming decade.

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After the Chicago PRT project collapsed, it was difficult to see any other U. S. city taking the lead again anytime soon unless a significant number of its political leaders could become informed while inevitable flak from conventional rail supporters would try to shoot the new idea down. These leaders would need to understand why light rail, even with a federal construction grant, would be such a bad choice that they would be willing to investigate a new idea. For example, the average light rail system uses more energy per passenger-mile than any other mode of transportation.[3] We got Chicago interested because we were working with Raytheon, with the high expectation that, since one of their managers, Dick Daly, was involved, the company must have been involved. Decision makers don't seem to understand the freedom of initiative middle managers are often given in large corporations.

In at least one incidence, however, the U. S. government did the right thing. In 1990 Congress decided to fund a program to develop 300-mph magnetically levitated trains. As the first phase they awarded $28M of contracts to four maglev-concept systems. Instead of requiring these design studies to be led by large companies, the National Maglev Initiative Office gave each prime contract to the developer of a specific maglev concept with the large companies Raytheon, Grumman, Hughes, and Bechtel as subs. What a concept! If that had happened in Chicago, PRT would have been long-since running.

Dick Daly wrote to me shortly after the 2003 State Fair was over. Somehow, he had learned what we had done. The letter was most gracious and led me to recall that without his involvement with me for two decades, we likely could not have advanced anywhere near as far as we had, and likely would have had to give up long ago. The PRT field is full of people who have provided essential assistance for a time, then for one reason or another had to drop out or died. I have written eulogies to three of the most outstanding. The current state of PRT, with projects now in nine countries outside of the United States, is due to efforts of many people. For me, beyond the excellent team I had at the University of Minnesota, I think of my department head Dr. Richard Jordan, Conference Coordinator Gordon Amundson, Donn Fichter, Ed Haltom, The Aerospace Corporation under the outstanding leadership of Dr. Jack Irving, Dr. Jerry Kieffer, Dr. Larry Goldmuntz, Minnesota Senator Robert North, Dick Daly, Dr. Byron Johnson, Professor Catherine Burke, Mike Powells, Morse Wade, Indiana Assemblymen Dick Doyle and Dr. Ned Lamkin, Ray MacDonald, Tony Potami, Institute of Technology Dean Roger Staehle, Joe Schuster, Davy McKee President Bob Perry, Mike Loffel, Ike Glicker, Paul Hoffman, Professor Phil Lewis, my pro-bono attorney Bert Press, Dick Gehring, Jim Carley, Arthur G. B. Metcalf, Stuart Watson, Judd Berlin, Boston University President John Silber, Harvard Professor Charles Harris, Andy Euston, Raytheon Senior Vice Presidents Dr. George Sarney and Walter Stowell, Larry Jack, Jan Poot, George Billman, Gayle Franzen, Tom Riley, John David Mooney, Dr. Ingmar Andréasson, John Martinson, E.E. Professor Ray Warner, Bill Wilde, Professor Lonnie Haefner, Shef Lang, Dr. Charles Roth, Liz Sroufe, Roy Moore, Ed Porter, John Braff, Ed Rydell, Richard Broms, Kurt Allen, Dean Zimmerman, Representatives Mark Olson and Bruce Anderson, Scott Gaff, many individuals in Citizens

[3] www.templetons.com/brad/transit-myth.html

for PRT, many other individuals who have assisted in many ways, some of whom I have mentioned in this document, and by a supportive family including my three children and my wife, Cindy. One of the most recent initiatives was taken by Minnesota Department of Transportation Commissioner Tom Sorel, who organized a meeting on PRT in November 2009 in Rochester, Minnesota, and a workshop in August 2010 at a hotel on the main University of Minnesota Campus. Since then, however, I learned that pro-LRT Legislatures had him fired. It seems that PRT has little or no chance of gaining a foothold in the Twin Cities any time soon.

After the State Fair was over we needed to concentrate even more on raising money. A retired Microsoft software developer, Hans Spiller, joined us with an investment of $2,000,000, which of course has helped us a great deal, but it was not nearly enough to build our full-scale test system. Our Board of Directors had dwindled since Shef Lang died, and we needed augmentation. I had in mind Wendell Maddox, President if ION Corporation; Chuck Michael, a Principal at the firm SRF; Trevor Westrom, Knutson Construction Company; and Richard Ojard, an engineering manager at our Duluth structures company. All agree to serve. Then I was told that to represent the Lang family, since by this time Shef had acquired a substantial block of stock, Shef's daughter Sarah Sponheim, wanted to be on the Board. Her experience was not remotely close to our activity, but I hated to say no, so I added her to the list of potential Directors. Counting me, this would now be six board members, whereas it would be desirable to have an odd number of Directors. As a result, I also nominated Mike Lester. With this slate, I called a Stockholder's meeting in December 2003 to elect directors. All were elected, so we had a seven-person Board of Directors.