Is Transit in Trouble?

by Larry Plachno

Showing what was undoubtedly a milestone for the transit industry, AC Transit in the Esat Bay began operating hydrogen fuel cell buses in 2003. They acquired three Van Hool transit buses and equipped them with hydrogen fuel cell equpiment to operate in regular service. The program helped make this type of power more popular in both the United States and Europe. AC TRANSIT.

One of the more interesting developments to come from the pandemic has been increased attention to various bus operations and statistics to find opportunities to increased sales and help bring the industry back to normal. However, what has interested several researchers is a decline in transit usage in recent years. Some of those who go back to 2014 suggest ride sharing companies as the cause while others who go back a century come up with a different answer.

Historically, our friends on the transit side of the bus business have put in a heroic effort promoting public transit over the past century in spite of the fact that their biggest competitor has been the private automobile. It has been an uphill battle for them dealing with American's love for their cars while trying to reduce traffic and pollution by getting people on buses and trains. Current numbers suggest that the cars are winning and transit may have to either coax people away from their automobiles or rethink current operations. If you will bear with me, I will try to explain some of the history, what happened when the pandemic arrived and look at possible alternatives for the future.

Looking Back in History

Most public transportation originated with horsecars for no other reason than the technology and power were readily available. Moving to something better required new technology. The most successful early replacement for horsecars was the cable car, developed in 1873 by Andrew Hallidie to climb the hills of San Francisco. Eventually, cable car lines were built in many American cities, but they were expensive to build and not much faster than the horsecars.

The solution came in 1888 when Frank Sprague, a former naval officer, developed a reliable electric motor and means of current collection for a new street railway in Richmond, Virginia. Acceptance was quick and complete; within three years 200 streetcar systems were built or ordered. By 1902 some 97 percent of street railway mileage was electrically operated. Records from the U.S. Census Bureau and the Federal Highway Administration indicate that in 1902, about 80 percent of all city transportation was handled by streetcars. The other alternatives included walking, bicycle, motorcycle and horses.

What some researchers have called "The Great Vehicle Motor Transportation Transformation" took place in the next two decades. By 1922, these same sources say that passenger cars took over more than 90 percent of transit trips while streetcar usage dwindled to less than 10 percent. Buses eventually took over from the streetcars as the predominant transit vehicle, but their victory was brief and ephemeral. By 1930, 98.7 percent of all vehicular motorized transportation was from automobiles. This figure continued to rise over time and reached the even higher proportion of 99.86 percent by 1980. This brings up three interesting points that come to mind.

- Anyone who has read the history of transportation during this 1902-1922 period is well aware of the animosities between railroads, interurbans, streetcars and buses. Many railroads refused to allow the interur-

bans to cross their tracks and the bus operators called the streetcars "old fashioned." This is interesting because electric power is looked upon favorably today. What has become obvious over time is that while each of these modes of public transportation were fighting one or more of the others, the real enemy of all of them was the private automobile.

• I and other transportation historians might question the year 1922 as being very early for the dominance of the private automobile since paved roads outside of cities were still rare at this time. While the Ford Model T introduced reasonably-priced cars to Americans in 1908, how did they achieve such popularity in so few years? Since most of us do not remember back to 1922, I would suggest a book titled *American Road* by Pete Davies. It tells the story of an army convoy, known as the First Continental Motor Train, that set off from the White House in 1917 for San Francisco. Their mission was to look at and evaluate existing roads in the United States. Included in the staff was a young officer named Dwight Eisenhower. The trip took two months and involved primarily dirt and unimproved roads with a lot of digging vehicles out of the mud. Hence, America's love affair with their private autos got started even before we had paved highways between cities.

• What these figures show is that in a span of about 20 years, most Americans moved from depending on public transportation to depending on their private automobile. As a result, transit usage fell to as little as one or two percent of all motorized passenger trips. These figures tend to show that essentially all of the passengers that stopped using public transportation moved to using private automobiles.

In many cities trolley buses replaced the streetcars. They required two overhead wires but continued to use the same power as the streetcars. Although uncommented at that time, they operated with zero emissions. This Brill trolley bus operated in Vancouver, British Columbia. ANGUS MCINTYRE.

Reasons for Switching Modes

The obvious question is what prompts people to switch transportation modes? Expectedly there have been numerous lists of reasons and many of them are very similar. Let me suggest what was put forward by Boris Pushkarev and Jeffrey Zupan in their 1977 book *Public Transportation and Land Use Policy* since it has become somewhat of a classic.

Pushkarev and Zupan suggest that the individuals involved make their decision based on four "price" factors. These include: 1. Price in Money. 2. Price in Travel Time. 3. Price in Access Time and Effort. And, 4. Price in Discomfort and Disamenity. It should be noted that not every individual puts the same value on each of these four items. Some individuals are willing to spend more money to save time while others may be willing to spend more time to save money.

What is noteworthy is that the first item, price in money, could favor public transportation. But the other three criteria probably do not. One of the more obvious questions would be what do you need to do and how much do you need to spend to attract people back to public transportation from their private automobiles? There are numerous trade-offs, and each may affect people differently. For example, both interurbans and bus companies tried to save money by reducing frequency of service. As service declined, so did the number of riders. Hence you get into a situation where you have to weigh various options by their cost and positive impact. We will talk more about this later.

In the early days, streetcars carried the bulk of transit riders. However, Americans fell in love with their new automobiles and they soon took over as the most popular means of local transportation. Shown here are a pair of streetcars crossing the Franklin Bridge in Johnstown, Pennsylvania. Note that a second overhead wire is already in place for replacement trolley buses. NBT ARCHIVES.

Recent Ridership Reductions

The researchers who only looked at recent numbers point out that if things were not already bad enough, transit ridership began to seriously decline in 2014. While the annual percentage of decline has been relatively small (figures from the American Public Transportation Association suggest 1.4, 1.9 and 2.9 percent fewer riders annually), the overall decline is substantial in numbers. From 2014 to 2017 it looks like U.S. transit ridership declined by 650 million passen-

gers. That is more than enough people to fill a huge number of buses.

Reports covering the declining passengers were interesting. Every city, regardless of size, showed a drop in ridership. As a result, the highest decline in numbers was noted in the larger urban areas. What was equally noteworthy is that approximately 90 percent of the declining passengers were from bus operations but less than ten percent from rail transit.

Some of the researchers suggested that at least a part of this decline could be attributable to taxis, Uber, Lyft and other ride sharing operations. It was noted that ride sharing operations and taxis in New York City already account for 15 percent of local trips. However, others noted that it would be difficult for ride sharing to have this kind of impact in smaller cities.

Those concerned with emissions and pollution make an interesting observation. The primary concern with transit vehicles is not reducing their own pollution since they represent such a tiny percentage of vehicles on the road. Rather, the concern should be directed to getting individuals to park their automobiles and ride the bus or train instead. Reducing the number of private autos on the road will make a much bigger impact on emissions and pollution than efforts to clean up transit buses.

Pandemic Problems

As we all know, the pandemic caused major ridership declines for public transportation. In 2014, public agencies reported 10.7 billion unlinked passenger trips. By 2019 the number of unlinked passenger trips dropped to 9.9 billion. After the pandemic hit, the National Transit Database figure of unlinked passenger trips for 2020 was only 4.7 billion.

Even prior to the pandemic, transit operations had been heavily subsidized. Revenues from the fare boxes in many cases covered less than one-third of the cost of operation. Some cities have already given up collecting fares, and others say that it costs more to collect the fares than what they bring in. Many systems were able to continue to run almost-empty buses because of the $69.5 billion in federal funds provided to transit agencies in three relief packages. Some people have observed that it was unfortunate that PPP money to help companies retain staff who could ride the buses was discontinued.

The current situation is that the actual funding for transit has gotten way out of step given the actual number of riders. At one point transit was getting a third of combined federal highway and transit funding but only providing 2.5 percent of person trips nationwide. The big question is whether our economy can afford these huge subsidies for transit? Can we find a way to get more people to park their automobiles and get back on the buses? Or, should we be looking at ways to redesign transit to reduce costs or make it more appealing to passengers?

Several of the researchers suggest that a measurable number of transit riders have switched to taxis, Uber, Lyft as well as other TNCs. Statistics support this since something like 15 percent of local trips in New York City use taxis and TNCs. One has to ask whether the TNCs have an advantage because they come to the passengers instead of asking the passengers to come to the buses. VICTOR LAZLO.

Where Did the Riders Go?

One of the more obvious possible solutions for transit is to find ways to get people to park their automobiles and get back on buses. In order to do this we need to figure out why the passengers left and see if we can reverse their thinking and their actions. Here is a list of some of the more likely causes that may be worth exploring.

Some people suggest that part of the decline in transit riders is because more people are now working from home. While this may be partially true, the researchers behind the statistics suggest that this is a relatively tiny part of the ridership decline.

Others suggest that the higher price of fuel should result in increased transit ridership. Again the people working with the numbers

The General Motors modular RTS (Rapid Transit Series) model was originally planned as a short-term replacement between the "New Look" models and the proposed new TransBus. Since the TransBus never went into production, the RTS lingered on for many years as one of the most popular high-floor transit buses before the industry started going to low-floor models. After General Motors sold, MCI acquired this line and moved production to Roswell, New Mexico. This example was photographed in Brooklyn, New York on January 1, 2000. J.C. REBIS JR.

shake their head. Any positive transit ridership change based on increased fuel costs has been minimal. However, this fact might suggest that costs may be a lesser important factor in transportation mode changes.

My own suspicion is that a major factor in transportation mode changes is whether the buses go where the passenger wants to go. Historically, if we go back 100 years we will find that a substantial number of passenger trips were similar with trains, rapid transit and streetcars bringing people to downtown to work or shop. As families and businesses moved to the suburbs, the trips got to be more and more scattered with almost infinite differences between starting and ending points. Hence, it became very difficult for fixed route buses to serve this multiplicity of transportation needs and people had no choice but to depend on their private automobile.

One variation on this is the increasing concern over what is known as "first mile, last mile" trips. In order to get people on commuter trains or commuter buses you need to get them from home to the train station or bus stop. Then, you need to get them from the downtown terminal to their place of employment. This could explain some of the increased use of Uber, Lyft and taxis to provide this first and last mile.

Let me take this one step further. Years ago I was involved in creating shuttle bus service to railroad stations in Chicago's southwest suburbs. Meeting with the commuters, I learned that many were unhappy to change from bus to train to bus to get to work. As a result, we started a new company called Executive Commuter Coach to operate motorcoaches from suburban corners to downtown Chicago and north on Michigan Avenue. Passengers gave up the advantage of the train but in turn got a one-seat ride to work as well as a restroom, reclining seats and reading lights. It worked well. Hence, I would suggest that for many commuters, a one-seat ride is more important than cost. There are some companies in Silicon Valley that do this same thing for their staff. They are picked up near their homes and get a one-seat coach ride to work.

Another factor to consider is that a substantial decline in ridership was caused by the pandemic. Some people retired early while others simply left the work force. I am also aware of several people who either changed jobs, became self-employed or devoted their time to family members. You might be able to get some of these people back on the buses if the programs were in place to help companies retain current staff and increase staff to pre-pandemic levels.

The roofline gives this away as a CNG-powered bus, another move to alternative fuels. It is a 2001 Orion 07 operated by MTA New York City Transit and was photographed on Bedford Park Boulevard in Bronx, New York on January 29, 2002. J.C. REBIS JR.

It is interesting that some passengers simply do not want to ride with others. Some of this may be social distancing, but others fear unsavory passengers including the unemployed. In this case the cities may be their own worst enemy. Recently, there was a mass exodus of people moving out of larger cities. Statistically, it is the larger cities that have the most violence and murders. Solving this problem might be more the responsibility of the cities and not the transit operators. An interesting statistic would be to determine how many bus drivers in your city ride the bus to work and how many drive their car to work.

Re-Thinking Transit

What can we do to help the transit industry? With increasing costs and declining riders it may well be time to step back and look at options and alternatives. A good place to start would be to set aside past traditions and look at what the passengers really want or other innovations that have some merit.

While some passengers are concerned with cost, others place a higher priority elsewhere. My own experience is that some passengers prefer a one-seat ride over cost. This is undoubtedly why Uber, Lyft and taxis have become more popular. What can the transit industry do to provide a more personalized service?

Going back more than 100 years to the streetcar era, public transit has involved larger vehicles on fixed routes. Streetcars had to follow fixed routes because they need tracks and an overhead trolley wire. Buses require neither. Would smaller buses on more personalized routes help increase ridership?

To their credit, the transit industry quickly moved to alternative fuels when they become available. Shown here is a 1999 Orion equipped with hybrid power. It was photographed at Orchard Beach in Bronx, New York on May 20, 2001. J.R. REBIS JR.

The state-of-the-art in transit operations today is the battery-electric transit bus. New Flyer offers several variations in its popular Xcelsior CHARGE line as well as other-zero-emission power choices. This Xcelsior CHARGE articulated bus was photographed while recharging from an overhead charge station. NEW FLYER.

Maybe there are alternatives to big vehicles. People movers can provide more of a personalized service that would most likely be more acceptable to passengers. The disadvantage is that people movers are expensive to build and would probably be unworkable on a large scale.

Would non-standard operating schemes help? I know that Seattle had articulated buses bringing in commuters in the morning and back home at night. Many were driven by commuters who made this one round trip each day.

Finally, would it help to ask the commuters and passengers what they want? Instead of defining transit by the needs of streetcars, maybe we should define transit by the needs of the passengers. My own experience suggests that a one-seat ride or at least fewer vehicle changes would be at the top of the list. This most likely is not going to work with big buses on fixed routes. What other alternatives can we come up with? ❑

One of the more successful and interesting developments in transit has been contracted service in Silicon Valley to transport employees to work at leading companies from the San Francisco area. Shown here is a Temsa TS 30 coach used in this service by Loop Transportation. Note the area for parking employee bicycles to the rear. The company transports more than 10,000 commuters daily who take advantage of this one-seat ride. LOOP TRANSPORTATION.

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