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PRT News & Views

Insights and Information on personal rapid transit (PRT) Summer 2010

Perfect City

Peter J. Muller, P.E.

It is finally time to take our cities back from the automobile and let them serve human needs once more.

The Problem

Automobiles have vastly improved personal mobility, yet they are now ruining the quality of city life. The road system devours real estate, with parking lots being the dominant land use in large shopping centers and road right-of ways consuming upwards of 20% of suburban developments. In 2007, 41,059 people were killed on U.S. highways[1] – this compares with 58,236 total US deaths in the Vietnam War and 2,973 killed on 9/11.[1] Transportation accounts for 34% of all greenhouse gases,[2]

passenger vehicle miles are growing three times faster than the population,[1] while time wasted due to congestion is increasing nine times faster.[1] This is clearly not sustainable, nor is there a solution in sight. Current forms of transit do not attract riders. From 1989 to 2007 public transport's share of transportation to work rose a mere 0.3% from 4.6% to 4.9%.[3] Transit, street cars, hybrid and electric cars do little or nothing to address most of these issues. Automating our highways is many years away and is likely to do little to relieve congestion.

[1]Wikipedia

[2]US Environmental Protection Agency

[3]National Transportation Statistics, USDOT Bureau of Transportation Statistics, 2009

What if there was a transit solution that was extremely safe, required little or no waiting and provided non-stop, seated travel? Would it be well used? Could it mitigate many of the above problems?

A Solution

Personal rapid transit (PRT) is a form of driverless transport that uses small vehicles captive to guideways. It uses many automobile-sized vehicles and can provide capacities similar to a freeway lane. Stations are off-line and journeys are thus non-stop. Since there are numerous vehicles, waiting times are short (typically less than a minute). There is no need to share a ride and everyone is guaranteed a seat.

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PRT Consulting 1340 Deerpath Trail · Suite 200 Franktown CO 80116-9459
PHONE 303.532.1855 FAX 303.309.1913
WEB www.prtconsulting.com TWITTER PRTGuru

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The resulting level of service is much more like that of a car than a bus, and numerous studies have shown PRT can attract significant numbers of drivers from their cars. Since the guideways are restricted to small vehicles (unlike roads which must support large trucks in addition to automobiles), the required infrastructure is light and relatively inexpensive. Guideways can be above-, at- or below-grade. Above- or below-grade guideways would take up essentially no space.

Recognizing the potential benefits of PRT, cities like San Jose, CA and Ithaca, NY are studying PRT applications. However, the true benefits of PRT will never be realized in cities designed and built around the automobile. They can only be realized in a city designed to leverage this exciting form of transportation from the beginning. Such a city could embody the dreams of many urban planners and be a truly delightful place to live.

A Car-Free City

Imagine a city designed to be free of cars, trucks and buses, yet to include a transportation system that will whisk its residents to any destination, quickly and quietly, without stopping. Children, the elderly, disabled and poor would have mobility similar to that currently available to the rest of the population. The buildings could be much closer together, allowing easier walking, and/or they could accommodate more open space. The lack of accidents (PRT is two orders of magnitude safer than current forms of transportation[4]) would bring significant social benefits and greatly reduce the need for emergency services. Crime would be deterred, since the PRT stations and vehicles would be under constant video surveillance.

[4] Muller, P., Personal Rapid Transit Safety and Security on a University Campus, Transportation Research Board Paper No. 07-0907, January, 2007

Some would argue that such a city would still need roads for emergency response, maintenance, refuse removal and large delivery vehicles. However, there are probably other (potentially better) ways of providing these services. Buildings could be sprinkled for fire suppression and equipped to facilitate emergency evacuation. Emergency personnel could utilize the PRT system, which would provide faster access than any present road system, and bring their personal gear with them. Special PRT vehicles could be equipped to accommodate gurneys and function as ambulances, while others could be equipped to support fire fighting. PRT freight vehicles could remove trash and deliver goods. Low-impact vehicles could deliver large goods by slowly driving down the pedestrian walkways, linking the buildings to each other and the PRT system. Some of the infrastructure savings could be used to fund helicopter services for extreme emergencies or exceptionally difficult movement

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of large items. All of these concepts need to be refined and incorporated in the new city's building and planning codes, but none seem insurmountable.

Such a city could incorporate numerous additional low energy/emissions/waste technologies and yet be built for less than the cost to build a conventional city, since it would require less transportation infrastructure. Fewer PRT vehicles (and vehicle storage spaces) would be needed than the cars they replace, because each vehicle would make 50 to 100 trips per day. Even though the city cost less to build, its value would likely be higher than a conventional city. Studies have shown that the value of housing served by a good transit system is increased 6% to 45%, and commercial land values have been shown to increase 24% to 103% .[5] Residents would be able to purchase homes at a reduced cost and to reduce their automobile ownership.

They would leave any cars they did own in parking facilities at the perimeter of the new city. Recreational vehicles would also be stored at the perimeter. Those with jobs in the new city would seldom use automobiles and thus lead much safer lives with reduced waste of time. Opportunities to use technology for improving many aspects of life, beyond just transportation, could help keep the new city almost free of crime and allow the residents to have a truly wonderful standard of living - perhaps almost perfect!

It is finally time to take our cities back from the automobile and let them serve human needs once more.

[5]Cervero, R., Transit-Oriented Development in the United States, TCRP Report 102

Website Updates

In addition to news updates (which now occur almost daily) our website has recently been updated with the following additions and/or changes:

- Prof. Ingmar Andréasson, consultant, added to key staff
- Move PRT system added to picture and video galleries
- New podcast, "Sustainability of Personal Rapid Transit"
- New podcast discussing Fort Carson PRT

Additional pictures and information at www.prtconsulting.com.

UPCOMING CONFERENCES

MnDOT PRT Conference
Aug 2010 • Minneapolis, MN
http://www.advancedtransit.net/content/minnesota-dot-prt-conference-0

ACT International Conference
Aug 2010 • Indian Wells, CA
http://www.actweb.org/

ACI-NA Conference & Exhibition
Sept 2010 • Pittsburg, PA
http://www.aci-na.org/pitt2010/index.html (visit PRT booth #211)

PRT@LHR 2010
Sept 2010 • Heathrow Airport, London
http://prtconference.com/

Podcar City 2010
Oct 2010 • San José, CA
http://podcarcity.org/sanjose/ (visit PRT booth E)