

Busways Through the Bushes

Has anyone stopped to shake their head and ask why we are building rapid transit lines in the middle of nowhere? This is a daft idea.

Almost any city I can think of builds them in their downtown area where they have problems with traffic congestion and parking. Then eventually they extend them out along their major arteries where there are reasonably large concentrations of people and businesses that need them. This is common sense.

In Winnipeg, we're doing the opposite. And it's leaving some pretty terrible bus service behind on Pembina.

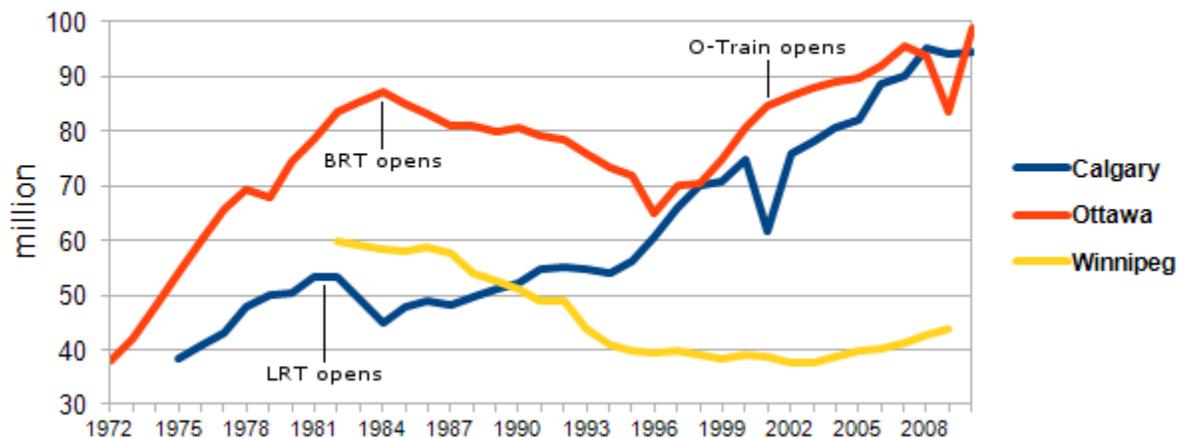
Bus service used to be a few minutes apart. Then Phase I of the busway opened. All the buses were diverted away from Pembina, and my wait for a bus became half an hour -- during rush hour! Later it became 20 minutes. I can drive home in that time.

The busway acts like a freeway. After all, physically it is just half a freeway. Both are great for getting through an area a bit faster, but neither serves the area they bypass, which promotes sprawl. The schedule says the busway saves 3 minutes, which is gained at the expense of not stopping to pick up passengers. Picking up passengers is the whole point of a transit system.

By the time Phase II is complete, we will have spent about half a billion dollars to make the bus service bad on Pembina, and to provide a half dozen stops to gophers in the middle of nowhere.

In Ottawa, the leading example of a busway city, BRT has serious problems that began just after the busway opened. Ottawa-wide ridership fell 25%. While some might blame the same forces that caused Winnipeg ridership to fall 33%, it certainly cannot be said that BRT caused ridership to grow. Calgary opened its LRT at the same time, when its ridership was half that of Ottawa. While Ottawa ridership slowly recovered, Calgary ridership exploded, and now both cities carry the same passenger loads. Calgary handles this load by adding an extra car to its trains. There is no need to replace anything.

Calgary, Ottawa, & Winnipeg Transit Ridership 1972-2010



Not so in Ottawa, where the main busway is overloaded. They tried longer 'bendy-buses', but they jack-knife and slide in winter, blocking traffic. Even in summer, the busways occasionally get so congested that passengers get out and walk the rest of the way into downtown. Even passing lanes at the bus stops haven't prevented congestion. BRT received less than 1% public support during a recent city consultation.



As a result, the most congested 12.5 km of BRT is to be torn up and replaced with LRT (which it was supposedly designed for). When Ottawa first built its busways, Calgary built its LRT for slightly lower cost. Today, Ottawa is paying for light rail three times: once, to build the original 'cost saving' busway; twice, to build the light rail upgrade; and a third time, to widen a freeway to handle the buses that have no place else to run during two years of highly disruptive busway upgrading. This is expensive madness.

While Ottawa is struggling with replacing its old lines and building temporary ones, Calgary is still putting new lines in and expanding service.

I went to a Winnipeg Phase II busway meeting, and incredibly the professional consultants claim to not be aware of the situation in Ottawa. They insist the busway is a great success and Ottawa has no plans to replace any of it. On December 5, 2012, SNC-Lavalin became the successful contractor to replace it. I guess they don't read Ottawa transit reports or news (or requests for tender). Ottawa city council voted 24-0 in favour.

Do Winnipeg planners live in an alternative universe? According to the 2007 "Moving Ottawa" report, "Transit demand is not being met, customer dissatisfaction is rising and costs are escalating. The downtown core is straining under a capacity load and more congestion appears to be inevitable under the current system."

We can easily avoid this path to failure.

I have travelled fairly extensively in North America and Asia, where I was introduced to their rail systems. They are far less awkward to use, and don't show any sign of Ottawa's or Winnipeg's problems.

For example, the San Jose LRT zips right down the boulevard in the middle of a street like Pembina or Portage, past all the traffic. Yet it lets you off almost anywhere you like, right on the main street where

everything conveniently is. This is true progress -- both the express traveller and the local traveller benefit! It's faster than their No. 522 bus rapid transit line. The trains have a bicycle area on board that gets heavy use.

The first Calgary LRT was built in a rail corridor next to a busy street like Pembina when the city was still slightly smaller than Winnipeg and had only 3/4 of the ridership. Calgarians are proud of their LRT.

Either system is very similar to the 195 km streetcar system that once ran in Winnipeg boulevards. So Winnipeg is suited to it and can afford it.



Rail investments tend to be very durable and long-lived. Generally, track lasts 50 years before rebuilding, and trains about 45 years. The tracks and trains outlast roads and buses by about 3 times before wearing out. Boston built the first North American subway in 1897, when the population was only 500,000. It diverted streetcars under the congested downtown streets. Unlike the Ottawa busway, 116 years later, the Boston Green Line LRT is still quick and convenient. Toronto has successfully run its subway for 59 years, and its streetcars for 152 years!

While I do not have the Ottawa busway maintenance costs, US freeway maintenance costs should be cause for concern. Buses are among the heaviest vehicles on our streets, and Winnipeg is already behind in repairing them. From US experience, repairs and physical maintenance of freeways run at 8% annually. In other words, the total cost of construction is duplicated every 12.5 years. The rebuilding life is about 20 years.

Similarly, the service life of a bus is commonly treated as 12 years. Winnipeg pushes its buses to 20 years, but you can push rail assets beyond 50 years too. New Orleans Perley Thomas streetcars are 90 years old, and San Francisco operates 67 year old PCC streetcars (as well as earlier pre-PCC cars and 107-120 year old cable cars).

Greater durability and higher capacity mean that converting existing street lanes to boulevard track can be both a cost saving measure and a technique for greatly increasing the total transportation capacity of a thoroughfare.

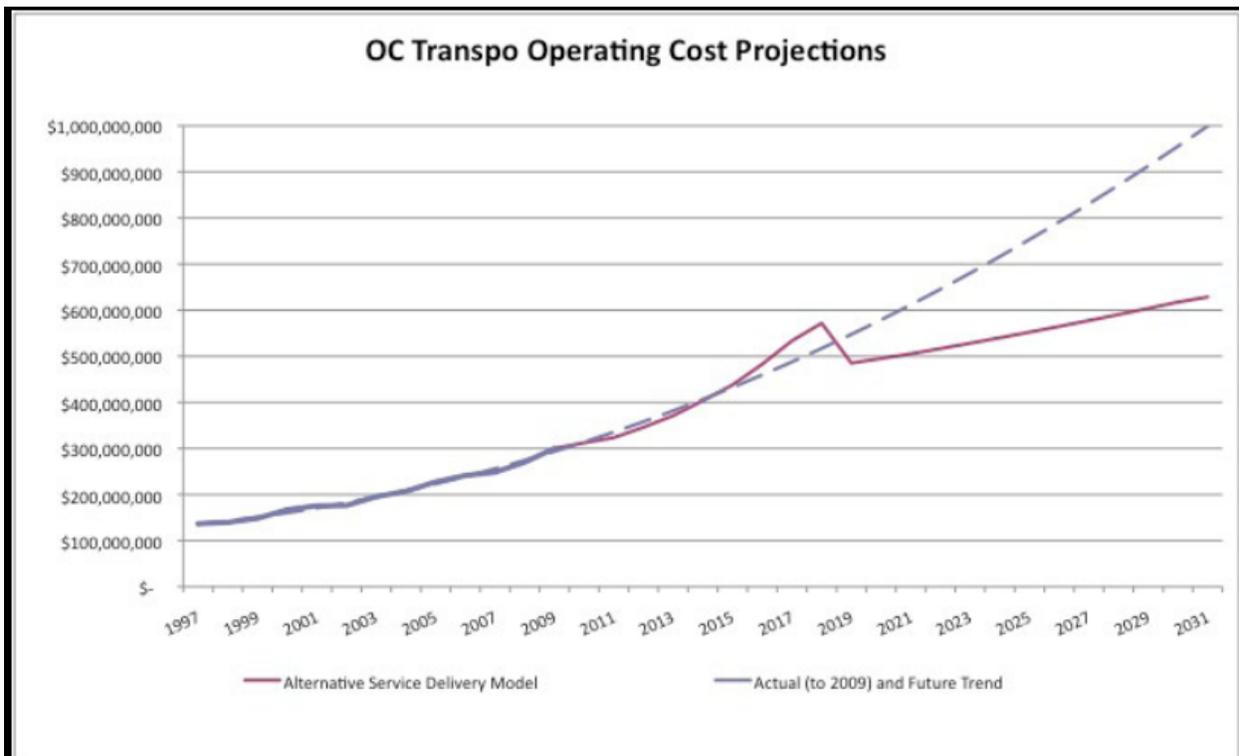
Buses plug up busways because the vehicles are too small, and they need a lot of space between each other. It's basic high school physics. It's the same reason buses cause less congestion than cars. Compare a 50 passenger bus to a 1000-or-more passenger train, and adding twenty times as many vehicles just bungs things up. Trains are an ingenious way of multiplying the capacity of a roadway without adding more vehicles or more roadway. Rail is so space efficient it can replace several busways or an entire multilane freeway. This avoids congestion.

Just for fun, I ran the numbers for the new stadium. To get 13,000 Bomber fans out by transit after the game, you need 260 buses, or half of the Winnipeg bus fleet. If you use Toronto's Transit City LRT, you only need 32 trains, or 38 San Jose trains, or 20 Calgary trains, which is manageable. A Toronto heavy rail subway (HRT) can empty the entire stadium in an hour.

Rail can come in any capacity from a single track, 20 passenger Toonerville trolley (once known as a 'Dinky' in Winnipeg) to a 4-track, 100,000 passenger per hour Manhattan subway. This versatility means it comes in a very broad array of costs, is customizable to almost any situation, and is relatively easy to upgrade in sections and increments. Buses are far more limited.

The way Winnipeg chose busway technology is a big part of the problems with it. We tricked ourselves into thinking it is always cheaper. We essentially compared system costs across unrelated examples of the two technologies. Buried in those comparisons were miles upon miles of existing streets and subway tunnels. Painting lines for low-capacity bus lanes on streets costs much less than building high-capacity rail tunnels under them. The different costs of wear and tear were ignored. The costs of buses were excluded, but the costs of trains were included. What could possibly go wrong?

Ottawa estimates replacing BRT with the new downtown LRT will save \$100 million in its first year, in bus driver salaries, diesel consumption, and right-of-way maintenance, paying for the project over time.



To continue with a "Business as Usual" approach to transit will result in unsustainable cost escalations. By converting to LRT, our redesigned transit system will save the City up to \$100 million in annual operating costs as of its first year of service. These savings will continue to grow over time, ensuring public transit remains affordable.

In 2005, the entire Winnipeg busway (Phases I & II) was only supposed to cost \$84 million, one sixth of what it is now. (Oops!) Once we limited our thinking to just one technology with this jiggery-pokery, we then selected the routes that fit it, and presto! Rapid transit for the busiest transit street, Portage, was dropped. Then we tried to cut corners by running it through the bush. Busways through the bushes are cheaper to build than rapid transit downtown.

What a surprise!

Our busway was built in the middle of nowhere to satisfy the arcane engineering needs of busway design. It needs both wide land and open land, where construction costs are lower. It needs to avoid urban settings with intersections and bus stops -- where it functions poorly -- and where the passengers just happen to be. Yet ironically, despite these sacrifices, its engineering shortcomings eventually doom it to be replaced with an out-of-the-way LRT that could have been built near Pembina (or Portage) at much lower cost in the first place. In Ottawa it took less than 25 years.

While this tendency is perhaps the most serious shortcoming of all, spending almost half a billion dollars to abandon dependable passengers from apartments and businesses on Pembina is just plain stupid. BRT is a short-sighted scheme with unintended consequences. Building nothing is a superior option. Unless of course, you happen to be a gopher!

Please don't worry about me, though. I have an economical car and am enjoying the drive to work near Pembina. Traffic is zooming along much faster without the buses.

Ed Innes
March 5, 2013

Credits:

Figure 1: Annual riderships as published by Calgary, Ottawa, and Winnipeg transit departments. The sharp spikes are years with transit strikes.

Figure 2: http://i156.photobucket.com/albums/t30/CortinaFan/Ottawa/OC_Buses_in_snow.jpg Photo from an Ottawa resident of jack-knifed articulated buses, sliding and blocking traffic in a light snowfall. Note tow truck in the background and transit emergency vehicle in foreground.

Figure 3: <http://www.flickr.com/photos/ottawabusgallery/2539616960/in/set-72157622487719950> Flickr account of a frustrated Ottawa BRT rider. Note the no pedestrians allowed 'beyond this point' sign.

Figure 4: Winnipeg post card circa 1910, showing Portage streetcar boulevard.

Figure 5: Paris, France LRT boulevard today (from Toronto Transit Commission presentation).

Figure 6: <http://www.ottawalightrail.ca/media/pdf/The%20Benefits%20of%20Light%20Rail%20-%20Web.pdf> City of Ottawa, 'The Benefits of Light Rail'

Post script:

Ottawa has often touted its BRT as a success by pointing to per-capita ridership, which as you can see below is the highest of four cities. Unfortunately, what they leave out is that even by this measure, per-capita ridership fell by 35% after the busway opened, which is a worse fall than the total ridership indicates above. Calgary, on the other hand, is the only city to approximately maintain its per-capita ridership, while Edmonton, which has a much smaller LRT network, also holds on to much more of its per-capita riders than Ottawa or Winnipeg. In fact, when comparing Ottawa and Winnipeg changes in per-capita ridership, there is almost no difference between having BRT and having nothing at all. Note that congestion is a function of total ridership, not per-capita ridership. Source: Calgary Transit.

Annual Transit Passenger Trips per Capita for Calgary and Selected Cities

