Call Your Councillor - (905)546-2712 | terry.whitehead@hamilton.ca

Hamilton's LRT

Rapid Ready

In 2013 Hamilton City Council received the Rapid Ready Report. The Rapid Ready Report laid out an aspirational plan to improve transit services for nearly every area of the city. It noted that the deficiencies in our present system must be fixed in order to move our transit system to the next level and take us to a point where we require higher order transit.

Economic Uplift

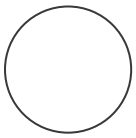
Ten Year Transit Strategy

In 2015 Council approved the 10 Year Transit Strategy which called for the addition of 100 new busses to be added to our network to fix the deficiencies in our system and begin the deployment of the full BLAST network that would provide enhanced transit services to the entire city. The plan also called for the construction of a new bus storage and maintenance facility to store the new busses as our present facility is at capacity. The 10 Year Transit Strategy was appended to the ask to Metrolinx for funding to build a rapid transit network to ensure that if the LRT were ever to be funded that we would have

LRT vs BRT Uplift

the conventional transportation network in place to support it. By fixing the deficiencies in our network we would serve more people, more often, add capacity to routes that were already experiencing strain and help increase ridership.

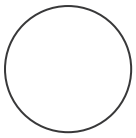
Hamilton has been looking at what would be needed to build an LRT and what we need to do to get ready for that day for over ten years. Our two former transit directors both told us that we need to build ridership and solve our deficincies before building any higher order transit.



Operating Costs

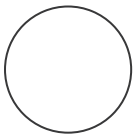
Hamilton's LRT

Last year Premiere Kathleen Wynne came to Hamilton to announce funding for two transit projects for Hamilton. A new GO Rail station was to be built at Centennial Rd and one billion dollars would be spent to build an LRT that would connect McMaster University to the Queenston traffic circle. This announcement caught many people off guard including many councillors like myself. Although funding was provided for the LRT component of Rapid Ready it ignored the greater need: funding the 10 Year Transit Strategy.



Ridership

Once the initial excitement had settled down, my office began looking at Hamilton's plan in greater detail. With a firm funding commitment the LRT project was no longer a "what if" scenario, but a potential sure thing. Many Councillors including myself never thought we would receive funding for the B-Line. After all, the purpose of the Big Move was to reduce congestion and help people move through the region faster by building better regional (GO) transportation.

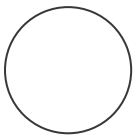


Proposed LRT Speed

The LRT plan as it stands now really doesn't address those concerns. How will we get people out of their cars and on to an LRT to reduce congestion?

LRT or Nothing?

LRT in Hamilton is nothing if not a politically charged issue. There are people for and against who are very passionate about the issue. Once the announcement was made from the province there were those in the community that worried that any questions or concerns or anything that might delay the project would cause Hamilton to lose out on a billion dollar investment. There were even fears that if Hamilton opted for a different transit project instead, that the City would lose out on any investment at all.



Hamilton Vs Ottawa LRT

The question was put to the Premiere herself who stated:

> *"It's never been LRT or nothing. I really want to hear what council's decision is."*

Premiere Kathleen Wynne
CBC Hamilton: May 25, 2016

Can Hamilton Put Forth a Better Plan?

As the Premiere stated, its never been LRT or nothing for Hamilton. Metrolinx simply approved part of a plan submitted to it by the City. We can just as easily submit a new plan to the province. We've seen people point to the City of Brampton as a cautionary tale. Some people state that when Brampton said no to the province for the LRT route it had selected that Brampton lost its opportunity to build higher order transit. This is patently untrue.

Our office reached out to a Brampton City Councillor to find out what happened when their council declined to deploy the LRT along its proposed route. He told us that they are submitting a new plan to the province, one that will work better for the residents of Brampton.

With this in mind, my office began an extensive research project into the implementation of LRT in Hamilton. We looked at every report issued by the City and every report submitted to the City by consultants. We even reviewed many reports that were issued to the City but never submitted to Council. This included two major studies by the McMaster Institute of Transportation & Logistics.

We also looked at LRT systems throughout North America to determine how to make Hamilton's LRT implementation a success. During the evaluation process we have heard glowing reports from systems in Portland, Oregon and Charlotte, North Carolina. We've looked at Canadian cities as well with most attention being paid to places like Edmonton, Calgary, and Ottawa to see what they did and what their outcomes were.

We also spent considerable time researching current transit technologies as well as looking at what technologies are on the horizon.

Why are we doing this?

Proponents for this project tell us that the deployment of an LRT system in our downtown will transform our city. It will kickstart development and cause

intensification all along its line. Property values will rise and tax revenue for the city will increase taking pressure off of the suburbs and the outlying areas. With this in mind we tried to get a handle on what the Land Value Uplift (LVU) would be for Hamilton by looking at the most recent and up to date studies on LVU that we could find.

Proponents of LRT tell us the operating costs for an LRT will be a fraction of a BRT and even our conventional bus service. The promise of providing a higher quality service for a better price would mean the savings could be spent elsewhere in Hamilton improving service to our under served areas.

Proponents of LRT tell us the service will be faster than our present bus system which will cause an increase in ridership. So we looked at other LRT systems to see how their ridership was affected when they went online.

Proponents of LRT tell us that congestion will be reduced, vehicle use will be reduced, and as a result pollution will be reduced by putting into place an LRT system. So we looked at congestion and vehicle trips in cities where LRTs were put in to place to see if they had any affect.

The reports submitted to the City provide glowing accounts of LRT in other places. Unfortunately they also leave out a lot of details. These details must be considered prior to beginning a project that if done wrong could cause problems for a generation. When LRT is done right like in places like Calgary it moves tens of thousands of people every day on an efficient system that runs from destination to destination. When an LRT is done wrong however, the costs go far above the loss of the initial capital investment. It leaves a legacy of operating costs and problems that can remain for a generation. It can also lead to a negative impact on land values and assessments.

As a City Councillor, it is my responsibility to weigh all of the pros and cons before making a decision. When it comes to something as important as a billion dollar system, I thought it prudent to go well beyond the staff supplied reports and really dig in to the empirical data. We looked at non-partisan empirical reports from: McMaster Institute of Transportation & Logistics, The US Federal Transportation Authority, The University of Utah, The US Federal Reserve, Harvard University, and many others. Wherever possible, we tried to focus entirely on empirical research done by a neutral party and not one produced by a conservative or progressive think tank organization. We also avoided any study that was funded by an LRT manufacturer.

At the request of my council colleagues and many many members of the public, I have had this new microsite created to provide a summary of the research we have done. We have cited our sources which you will be able to see on the right hand side of the page so that you can read the full report or study yourself.

We need to get this right!

The information within the microsite needs to be carefully weighed and measured against the claims being made by LRT proponents. Further to that, questions and concerns that have been raised on this site in many cases have already been put to City staff, and will be put to them again during public meetings in order to have the answers to many of the unanswered questions on the record.

If Hamilton is going to implement an LRT system, it needs to be done right. We need to learn from the best practices of cities around the world. We also need to learn from their mistakes. We need to make sure that the claims made in support of this project can be proven, and that any system we put into place will be successful and self sustaining for years to come.

Hamilton LRT – Economic Uplift

Land Value Uplift

The LRT proposed for Hamilton has long been touted as an economic development play. As many staff, Councillors, and even former Mayors have said, this is not a transit play, its an ec-dev play. Proponents say that LRT will transform our downtown, raise revenues for the City through increased property values lower the tax burden on the outlying areas like the Mountain.

> *Rapid Transit is more than just moving people from place to place. It is about providing a catalyst for the development of high quality, safe, sustainable and affordable transportation options for our citizens, connecting key destination points, stimulating economic development and revitalizing Hamilton.*
>
> *Rapid Ready Report*
> *City of Hamilton*
> *February 2013*

Sources

City of Hamilton

Rapid Ready 2013

The Rapid Ready Report which was received by Council back in 2013 makes the case for what needs to be done to get Hamilton "Rapid Ready". It outlines the steps that need to take place to grow our transit system to a point where it requires, and can ultimately sustain a rapid transit system.

Many proponents however are suggesting that by skipping the early steps of Rapid Ready and moving directly to the implementation phase of an LRT we will jump start Hamilton's economy and boost our economic fortunes by spurring development in our denser downtown. This would be on top of the already incredible new development projects we've seen in our downtown already over the past several years and would be in addition to those already planned.

IBI for the City of Hamilton

Economic Potential Study 2009

Population along the Route

One of the reasons the B-Line route was chosen was that it currently hosts the largest density of residents and employment of anywhere in the city. This of course should come as no surprise as this is where the bulk of our largest multi-residential and commercial properties are located. The potential economic uplift to the City of Hamilton was explored in a report commissioned by the City written by IBI.

> *"Approximately 17% of the City's population and 20% of the City's employment are within 800 m of the BLine corridor. Additionally, 80% of HSR's current routes connect to the B-Line corridor. This means that the probability of Hamilton residents benefiting from rapid transit is high. These benefits include travel time savings, increased travel time predictability and potentially reduced auto ownership and operating costs."*
>
> *Economic Potential Study*
> *IBI for the City of Hamilton 2009*

The IBI report uses the study area as across the entire B-Line which runs from University Plaza in the West to Eastgate Square in the east. With the shortening of the LRT from its originally proposed length my office requested updated figures to see what impact the shorter route would have on the proportion of residents and jobs along the line. As this new shorter route runs through a smaller portion of the city, it would be expected that the percentage of the population that live along this new shortened corridor would be smaller.

Our office requested the updated number from staff and were startled to discover that this percentage has grown from 17% to 20%. We have been trying to find out how this has happened, and to identify where the error took place. To put this into context, a 3% increase in Hamilton's population would

be nearly 16,000 people or roughly half the population of Ancaster. How numbers can be off by this much are concerning and lead to other questions about the accuracy of information that was previously presented.

Development Charges

IBI suggests the City would be able to generate significant revenue through new development charges. While this sounds good it is important to note that a portion of our downtown receives an 85% exemption on development charges in order to encourage development in our downtown.

Further to that, development charges, as per the Planning Act can only be used to fund growth related projects. These include the construction of new roads, parks, rec centres, etc that are growth related. With Hamilton's present $3.3 billion infrastructure debt and an infrastructure deficit of around $195 million a year there are those that are calling for these development charges to be spent to fix up our roads, sewers and also be spent on other projects to bring our infrastructure deficit under control. The Planning Act however does not allow for this.

For the City to benefit from new development charges as a result of LRT construction, we would have to end this highly successful rebate program that has seen our downtown explode over recent years with new condo and rental apartment construction.

Businesses Grow Faster along LRT Lines than BRT Lines

IBI makes an important claim in their report and it is this claim that has been used to discourage BRT in favour of LRT.

> *During the initial years of service, LRT is also projected to be about more expensive to operate than BRT, about 30% more on a cost per passenger basis, but the difference will diminish over time as ridership levels increase. However, it is generally accepted that LRT has a greater impact on investment decisions and economic growth than BRT, and the long term capacity of LRT is greater.*
>
> *Economic Potential Study*
> *IBI for the City of Hamilton 2009*

The implicit statement here is that: LRT will cause new construction to begin and new businesses to open. The IBI report does not cite any empirical studies on this however. It does point to statements made by LRT proponents as well as planners in cities that have LRT but there is no link to any empirical

IBI for the City of Hamilton

Economic Potential Study 2009

data. A decision of this magnitude and importance should not be made on anecdotal stories and ideas, but on empirical evidence. We need to employ an evidenced based policy going forward to ensure we get this right.

Looking Beyond the Tip of the Iceberg

The empirical data on Land Value Uplift as as result of rapid transit is now being looked at by some very accomplished transportation researchers and economists. Christopher Higgins Mark Ferguson and Pavlos Kanaroglou from the McMaster Institute for Transportation & Logistics have written a terrific paper that was published back in April of 2016 that casts doubts on the idea that rapid transit brings a guaranteed land value uplift.

Christopher Higgins Mark Ferguson and Pavlos Kanaroglou

Forty Years of Modelling Rapid Transit's Land Value Uplift in North America: Moving Beyond the Tip of the Iceberg

> *"...despite the general notion that rapid transit does confer positive LVU (land value uplift) benefits, our comprehensive and critical review of more than 40 years finds significant heterogeneity (diversity) in research outcomes, leaving many significant questions unanswered"*
>
> *Christopher D Higgins, Mark R Ferguson and Pavlos S Kanaroglou*
> *McMaster Institute of Transportation & Logistics*
> *As Published in: Transport Reviews Volume 36 issue 5, 2016*
> *April 22, 2016*

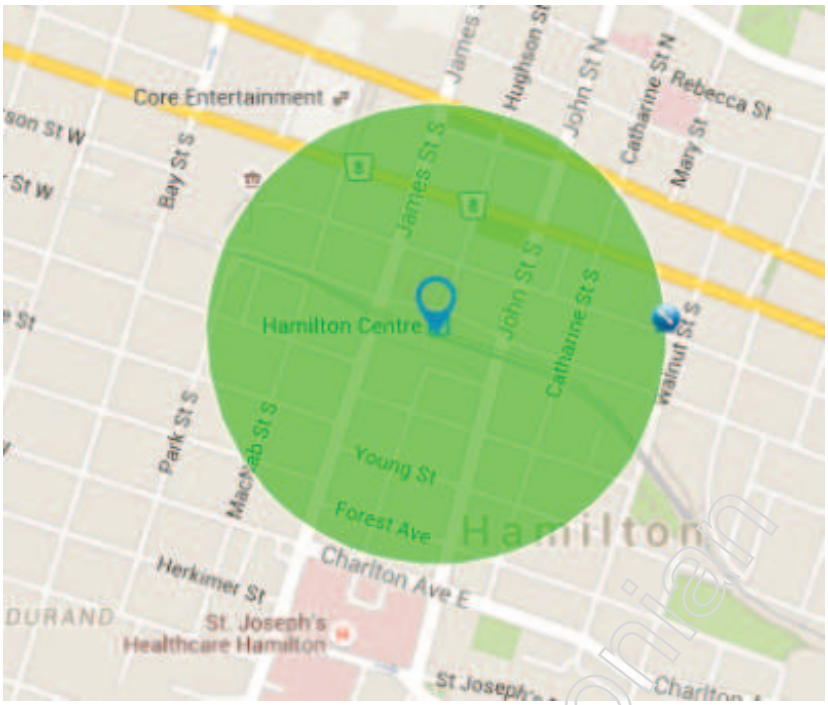
Higgins et al throw open a vast question as to whether or not rapid transit does lead to land value uplift. This is vital for the Hamilton project as it has already been shown that Hamilton does not have the ridership to support an LRT nor does it have the traffic congestion normally associated with the need to deploy higher order transit.

The report states that:

> *An argument is often made that rapid transit has generally produced a modest LVU impact of around 10% for homes close to stations, with the highest values seen for heavy rail transit (HRT) and commuter rail transit (CRT lines compared to light rail transit (LRT) and bus rapid transit (BRT).*
>
> *ibid*

Obviously no one can see the future, to know whether or not there will be additional LVU caused by proximity to a transit station but what we do have is historical data. In Hamilton we have a large condominium complex located

directly adjacent to the Hunter St GO station. Based on the above statement the condos located adjacent to, or within a reasonable walking distance (usually 400 – 800 meters as stated in other studies) properties located near the Hunter St GO Station should have experienced a higher increase in land values than similar properties not located next to the GO Station.



A 400 Meter radius from the Hunter St GO Station shows where the highest LVU in the City should be located

To calculate the land value uplift brought on by transit you must first take the growth an area is experiencing on its own and then compare that to the growth in values to the properties close the the rapid transit station. Staff have so far been unable to show us these numbers but they are apparently working on them. We will share them as soon as they are available so we can see if there has been any LVU as a result of the GO station at Hunter St. This should give us an idea as to the kind of uplift we should expect for a lower order rapid transit system like an LRT.

GO currently provides 4 trains during the morning rush hours to Union Station in Toronto and provide express bus service roughly every half hour during the day dropping to hourly busses after 10pm. There are also 4 return train trips during the evening rush hours and a similar express bus service.

We will continue to press for these numbers and will release them when they are finally provided. These numbers while not definitive, would provide a window on to how much value homeowners place on the proximity of transit to their homes. We will also be asking for a report on apartment rental rates within the catchment area of the station to be compared to similar apartments outside the catchment area to see what affect if any this higher order transit has on rental rates.

In regards to LVU studies that have taken place the report states:

> *"... we argue that previous research has suffered from a lack of empirical specificity that results in omitted variables related to drivers of LVU in station areas, such as relative accessibility and TOD. Essentially, the research design of previous studies means they have only estimated LVU in aggregate, capturing just the tip of the complex iceberg of factors that inform LVU in rapid transit station areas.*
>
> *ibid*

Empirical Studies on Land Value Uplift

Looking at current empirical studies on Land Value Uplift as a result of rapid transit implementations has cast a shadow over the idea that simply building LRT in Hamilton will lead to economic uplift.

> *"...in theory, rapid transit can potentially have both a 'generative' and 'redistributive' impact on land use and development. However, a growing body of scholarly research challenges the generative land use effects of rapid transit, arguing that rail transit on its own cannot generate new urban economic or population growth"*
>
> *ibid*

Higgins et al go on to point out that rapid transit can be used as a tool to guide growth that would have ocurred anyway along a particular corridor. This suggests that the economic uplift along a transit corridor is simply shifting growth from one place to another making this a zero-sum game. If the growth we are chasing is coming anyway, is it worth while spending a billion dollars to get it?

This has been referred to in other studies as well and was brought up again in a recent conference call that my office had with the economist Jenny Schuetz who studies transportation systems in the United States.

Christopher Higgins, Mark Ferguson and Pavlos Kanaroglou

Forty Years of Modelling Rapid Transit's Land Value Uplift in North America: Moving Beyond the Tip of the Iceberg

How much will LRT improve property values?

As has been pointed out the implementation of an LRT system is an economic development play. Rapid Ready states:

> *Rapid Transit is more than just moving people from place to place. It is about providing a catalyst for the development of high quality, safe, sustainable and affordable transportation options for our citizens, connecting key destination points, stimulating economic development and revitalizing Hamilton.*

Steer Davies Gleave for Metrolinx

Hamilton King-Main Benefits Case (2010)

According to the Metrolinx produced King-Main Benefits Case report, the estimated premium of being within 500 meters of any new LRT station will be between 4 and 6 percent over properties that fall outside of the catchment area. The estimated premium for BRT as a reference was between 1 and 7 percent within a 400 meter catchment area.

As numerous reports and studies are now coming out that show it is far harder to gauge potential increases (or decreases as the case can be) in land values around a station, these numbers should also be looked at very carefully before moving forward.

How much will LRT improve retail activity and jobs?

The report by Higgins et al raises red flags in terms of estimating a blanket percentage increase in land values as a result of implementing rapid transit, but their report isn't the only one that looked at this. Jenny Schuetz, an economist at the US Federal Reserve who studies Housing Markets and Urban and Regional Policy wrote a paper in 2014 entitled: Do Rail Transit Stations Encourage Neighborhood Retail Activity? The study looked specifically at retail growth at four separate mass transit stations in California.

Jenny Schuetz

Do Rail Transit Stations Encourage Neighborhood Retail Activity? (2014)

The study found that out of four stations studied, two stations experienced a significant loss of retail employment after the stations were opened. A third station saw an increase but found the increase to be statistically insignificant. The fourth station saw a growth in retail employment that was quite significant.

The study concluded that:

> *"In part, the difficulty lies in what the primary purpose of building transit stations and rail networks should be: is the goal of such investment to improve functioning of the transportation systems within a metropolitan area, or is it to*

> *spur economic development? Building rail stations in centrally located neighborhoods that already have a high density of residents or businesses seems likely to improve access to existing jobs, goods and services, but may not result in increased economic activity if these areas are congested or require costly redevelopment. By contrast, suburban stations will likely serve fewer potential passengers, but may offer greater potential for greenfields development projects, oriented around the station. The results raise questions about whether building new stations will be an effective economic development tool for underserved neighborhoods in central cities."*
>
> *Jenny Schuetz*
> *Do Rail Transit Stations Encourage Neighbourhood Retail Activity?*
> *Urban Studies volume 52 no. 14*

Schuetz's conclusions lend credence to the idea that building rapid transit out to more suburban areas to bring riders into a downtown maybe a better way to stimulate development as opposed to simply building a system in an urban setting to stimulate growth.

A Wide Variety of LVU Outcomes

In his PhD dissertation, the now Dr Christopher D. Higgins at the McMaster Institute for Transportation & Logistics demonstrates how difficult it can be to forecast LVU outcomes as a result of a rapid transit project. He also points out how difficult it can be to determine the outcome even after a project has been completed. His dissertation states that:

> *"In Dallas, Weinstein and Clower's (1999) comparisons of single detached homes within one-quarter mile of different stations ranged in value from +49% to -49%. In Phoenix, Kittrell (2012) found that prices of vacant land ranged from -12% to +1,639% at different METRO LRT stations. And in the case of Buffalo, Hess and Almeida (2007) found that across their sample of homes within one-half mile walk of any LRT station, prices increased by roughly $1 for every foot closer they were to a station. However, a separate model considering different stations individually found results ranged from +$27 to -$26 per foot. Even among four neighboring stations, the LVU impacts were determined to be -$26, +$5, -$23, and +$27 per foot closer to each respective station.*

Christopher D. Higgins

A Value Planning Framework for Predicting and Recapturing the Value of Rapid Transit Infrastructure (2015)

> *A Value Planning Framework for Predicting and Recapturing the Value of Rapid Transit Infrastructure (2015)*
> *Christopher D. Higgins*

This is deeply concerning as the primary purpose for the LRT system in Hamilton is to transform the city and grow the residential and nonresidential tax base by growing the value of properties along the line. With such stark differences in outcomes in even the same LRT system in other cities we need to better understand what the expectation is and how we are going to achieve it.

Hamilton LRT vs BRT

Why the B-Line

A feasibility study was done on both the A and B-Line corridors and it was determined that between the two corridors the B-Line had a higher opportunity for economic uplift than the A-Line. However no comparison was ever done to compare the economic development potential of a B-Line LRT vs an A and B line BRT.

B-Line LRT Uplift Area

The reports call for between a 400 and 800 meter sphere of influence for rapid transit economic uplift depending on which report is looked at. Chris Higgins Mark Ferguson and Pavlos Kanaroglou draw attention to numbers in the IBI report.

> *"The IBI group estimates that there are more than 500*

Sources

Economic Potential Study

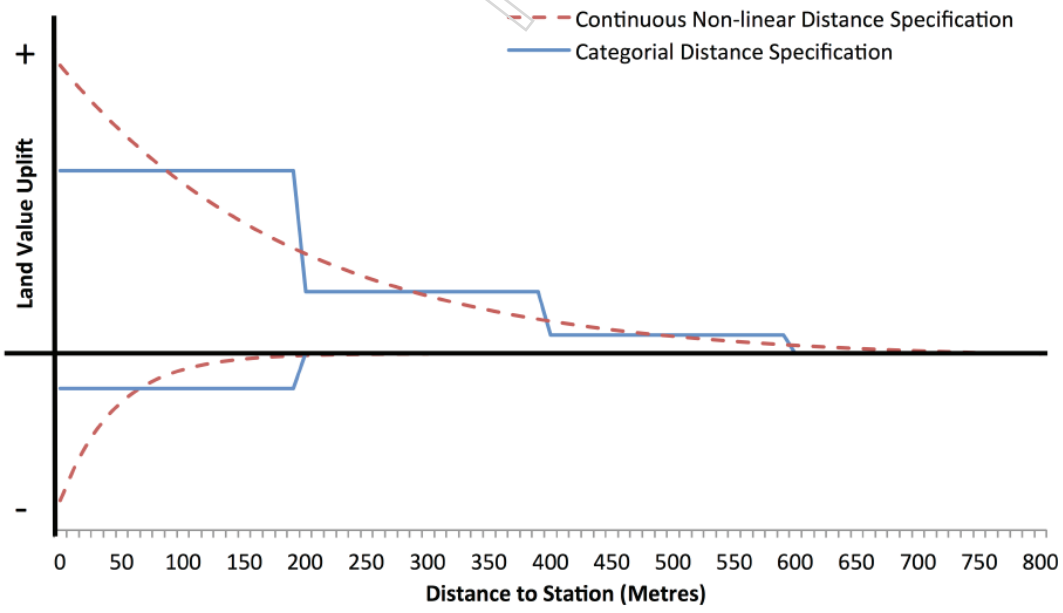
vacant parcels totaling 243 hectares located within a two-kilometre radius of the proposed line. Much of this consists of parking lots or vacant residential properties. This total includes a significant amount of industrial brownfield land (115 hectares), but these parcels are generally located far from the corridor in the city's industrial north end. Excluding brownfield sites, there are 128 hectares available for development."

Rethinking Light Rail Transit Planning in Hamilton, Ontario: A Comparative Review and Critical Assessment (2013) Christopher D. Higgins, Mark R. Ferguson, Pavlos S Kanaroglou

Higgins' et al raise an important consideration when looking at this potential economic growth that we should be mindful of drawing the spheres of potential development too far. It should be noted however that those numbers were for a route that ran from Dundas to Eastgate Square. The proposed route is now shorter. It should also be noted that a considerable amount of the uplift calculated was based on the redevelopment of the former Scott Park lands located near the Stadium. As those lands are now being developed by the school board there will be no increase in taxable assessment so those numbers must also be adjusted to reflect that.

In a separate study that now questions all land value uplift estimates Higgins and Kanaroglou provided a chart to show the theoretical land value uplift (and decrease).

Figure 1. Positive and Negative LVU Effects by Distance Specification



IBI (2009)

Rethinking Light Rail Transit Planning in Hamilton, Ontario

McMaster Institute of Transportation & Logistics (2013)

Forty years of modelling rapid transit's land value uplift in North

B-Line LRT Uplift Area

Proposed B-Line LRT

The currently proposed LRT running from McMaster University to the Queenston Traffic Circle with the A-Line spur to the waterfront drawn in as well.

On the City's website a map is drawn showing the proposed LRT. The Future stations have been cut off from the above picture as they are not presently planned as part of this project.

Using an online tool for Google Maps we have drawn 500 meter circles from

estimated stop locations based on the above map to show the projected economic uplift zones.

Current proposed LRT station stops along the B-Line and those along the A-Line north of King St. The radius for each station is approximately 500 meters.

The Metroxlinx King-Main Corridor study looked at an LRT or BRT along the B-Line. In terms of cost/benefit a BRT along the proposed B-Line route achieved a 27% advantage over LRT. The cost benefit ratio calculated for BRT was 1.4 while the cost benefit radio for LRT was calculated at 1.1.

It is important to note however that this cost benefit analysis was done on only one line with three options. A full LRT, an LRT stopping at Ottawa St, and a full BRT. It did not look at potential benefits on a full A and B line BRT inclusively vs the B-Line LRT only. Why was this not done?

Hamilton King - Main Benefits Case

Metrolinx (2010)

Hamilton BRT Economic Uplift Area

As the area of economic improvement is thought to be slightly lower for a BRT system vs an LRT system the consultant Steer Davies Gleave when they completed the A-Line Economic Potential Impact study used a 400 meter radius when studying BRT.

It was originally estimated by City Staff that the cost to build a full BRT on the

A - Line Economic Potential

A and B Line would be somewhere in the neighbourhood of $800 million.

A smaller 400 meter radius of potential economic uplift was used for stations along a potential BRT traveling from University Plaza to Eastgate Square.

Simply running a BRT instead of an LRT along our B-Line will actually provide service to more people and creates a greater total area of potential economic uplift.

Hamilton A-Line and B-Line BRT Economic Uplift

Finally we took a look at the SDG report and used the potential A-Line stops used in the report to estimate an area of economic influence for stations. Once again a radius of 400 meters is used.

A 400 meter radius was used to estimate areas of potential economic uplift as a result of a full A and B Line LRT. The Full B-Line runs from University Plaza in the West to Eastgate Square in the East. The A Line runs from the Airport in the South to the Waterfront in the North.

The stated purpose of rapid transit in Hamilton was to do more than just move people but to stimulate economic growth. Why then are we trying to stimulate only a small part of our city overall when we can have a similar effect over a much larger area while at the same time providing better transit service to more people?

Hamilton LRT Operating Costs

Will an LRT Be Cheaper to Operate Than Buses?

A key argument of proponents of LRT in Hamilton is that it is less costly to operate an LRT system than it is to operate a bus network of equivalent size. This is technically true, although the reality of Hamilton's situation is not quite as cut and dry.

LRT systems are both expensive to build (Capital Cost) as well as to operate and maintain (Operating and Lifecycle Costs). The savings come from ridership growth as an LRT car can grow into an LRT train towing multiple cars.

Savings are then seen through reduced energy cost, reduced staff cost, (you don't need as many drivers if the LRT is just pulling additional cars) and other costs are also reduced. This is often referred to as an economy of scale. These multiple cars can then carry more fare paying passengers, thus increasing revenue. Once a corridor reaches a certain ridership level, it can become less costly to operate higher order transit than traditional bus service on a per passenger basis.

Sources

McMaster Institute for Transportatio and Logistics

Rethinking Light Rail Transit Planning

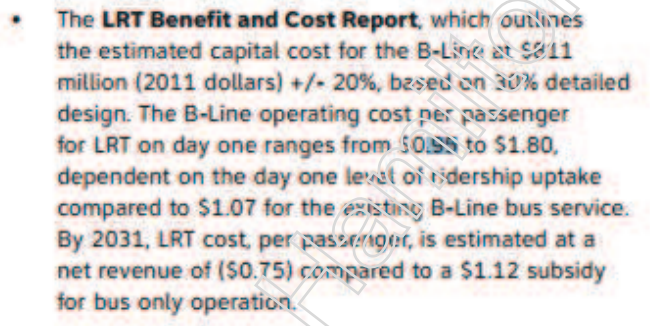
The McMaster Institute for Transportation & Logistics wrote a report entitled Rethinking Light Rail Transit Planning in Hamilton, Ontario: A Comparative Review and Critical Assessment in 2013. In the report the authors write:

in Hamilton, Ontario: A Comparative Review and Critical Assessment (2013)

> *"…light rail cannot be considered cost-effective or said to have had an impact on travel times or the environment without high levels of patronage."*
> *Rethinking Light Rail Transit Planning in Hamilton, Ontario: A Comparative Review and Critical Assessment (2013)*
> *Christopher Higgins, Mark Ferguson,Pavlos Kanaroglou*
> *McMaster Institute for Transportation & Logistics*

Operating Costs

City staff, researchers, consultants, transit experts and academics all agree the LRT must have sufficient ridership to be financial viable and less expensive per passenger than a bus. Rapid Ready estimates ridership of between 1000 (at the low end) and 2000 (at the high end) peak time peak direction riders. You can read more about LRT ridership and those projections here.



- The **LRT Benefit and Cost Report**, which outlines the estimated capital cost for the B-Line at $811 million (2011 dollars) +/- 20%, based on 30% detailed design. The B-Line operating cost per passenger for LRT on day one ranges from $0.55 to $1.80, dependent on the day one level of ridership uptake compared to $1.07 for the existing B-Line bus service. By 2031, LRT cost, per passenger, is estimated at a net revenue of ($0.75) compared to a $1.12 subsidy for bus only operation.

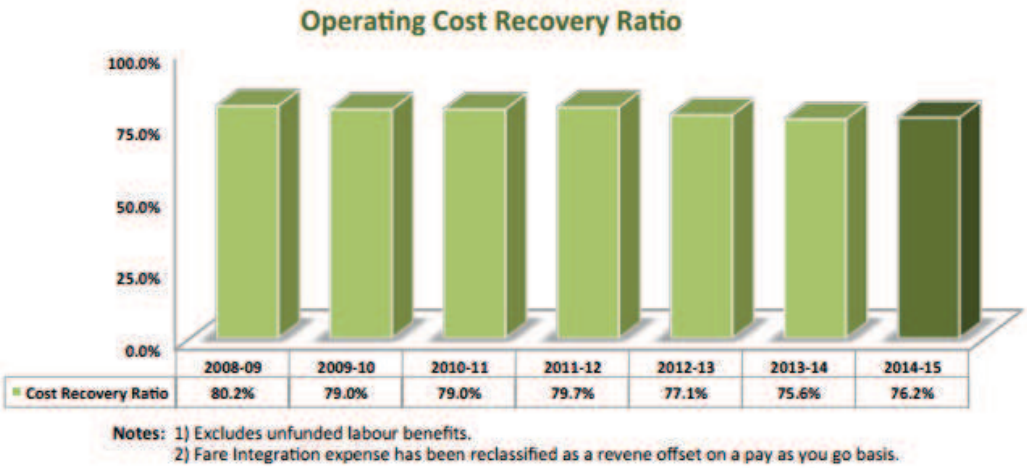
Excerpt from Rapid Ready Report (2013)

According to City Staff, the 95 cent figure is a typo. The correct cost per passenger as reported in Appendix A of the Rapid Ready Report is 45 cents. This cost per rider if achievable would make this system the least expensive system we have studied. It would appear however that staff are now distancing themselves from this number. According to staff, those numbers including the higher ridership figures are no longer believed to be accurate and are referred to as "overly optimistic" according to a recent call with our Acting Manager for Light Rail Transit.

New figures are expected to be provided sometime in August or September.

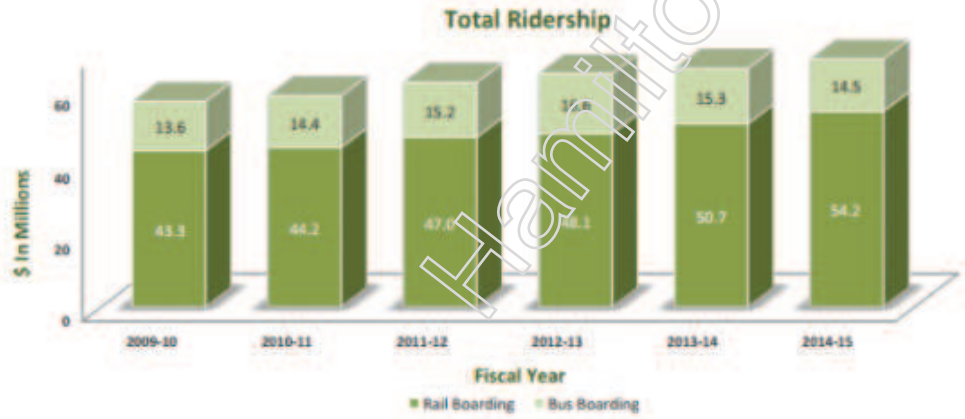
The highest fairbox recovery rate in Canada right now is GO Transit. GO operates at a 76.2% farebox recovery ratio. The fare box recovery ratio is the amount of money paid by fairs divided by the cost to operate a service. Capital costs are not included. The TTC which has the next highest rate is 73% (as of 2014). A quick survey down a list compiled by wikipedia users shows that GO

Transit actually has the highest farebox recovery rate in North America.



The operating cost ratio has been drifting downwards since 2008 according to the 2014-2015 Metrolinx Annual Report.

A closer look at GO Transit however shows that the farebox recovery or Operating Cost Recovery has actually fallen since 2008. This means that the subsidy required to maintain the service has increased. The subsidy has also been increasing at a time when ridership has also been increasing.



GO Transit has seen their total rail ridership grow while their bus ridership has started to fall. The above is also from the 2014-2015 Metrolinx Annual Report.

LRT vs Bus costs in Portland

It is often argued that Hamilton should look to cities like Portland, Oregon in the United States to see how a successful system can be implemented.

In 2001, Jonathan Richmond from Harvard University published a study entitled: A whole-system approach to evaluating urban transit investments. The study which draws heavily from the Pickrell study looks at the 1989 numbers and then moves forward in time to see how some of those systems matured over the next several years.

Table 11. Operating financial performance, Portland Light Rail and Bus, 1996.

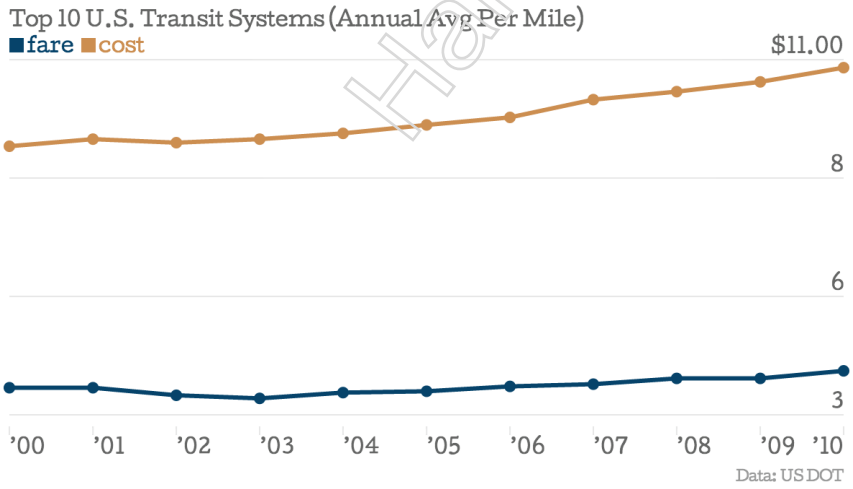
	Light rail	Bus
Cost per passenger ($)	1.83	1.87
Cost per passenger-mile ($)	0.38	0.50
Subsidy per passenger ($)	1.32	1.43
Subsidy per passenger-mile ($)	0.27	0.38
Farebox recovery (%)	27.8	23.8

Although LRT is frequently cited as being far less costly on the O&M side vs traditional bus service – The example in Portland shows the costs are nearly the same when broken down per passenger.

The costs in Portland have continued to climb over the past 16 years for both Bus and Rail passengers. This follows the trend for other transit systems in the United States and Canada. The cost per passenger has risen to $2.92 as of 2015. This is important as the Portland LRT is often referred to as an example for Hamilton to aspire to be. The costs that Portland has achieved even with their high level of ridership is nowhere near the 45 cent to $1.80 being suggested for Hamilton's system.

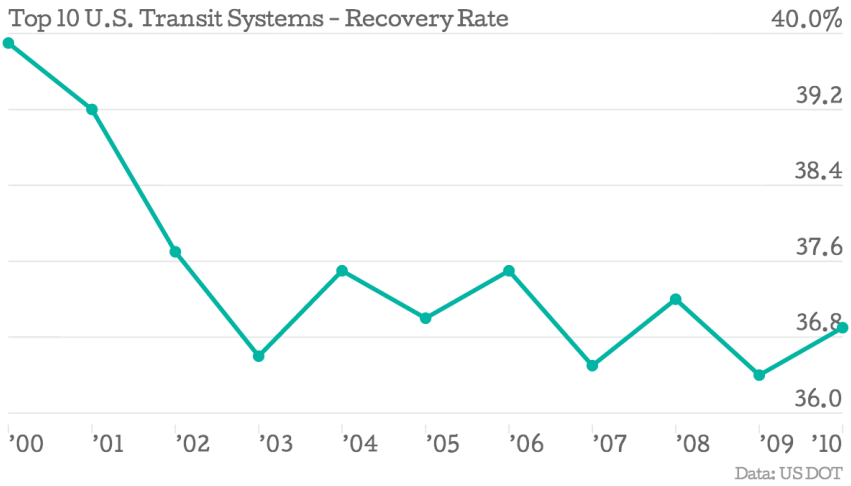
Operating Costs in the United States

CityLab has provided an excellent breakdown of a 2013 study released by United States Department of Transportation. The study noted that costs to operate mass transit lines for the ten largest systems in the United States jumped 19% between 2000 and 2010. They in fact grew at double the rate of fares.



A CityLab graph showing average cost per mile vs fares for the top 10 largest transit operators in the United States.

The same report shows that fare recovery in the United States is falling, meaning the balance of revenue is coming from *all tax payers* not just those using the transit service.



A CityLab graph showing farebox recovery rates have fallen in the United states over the past 10 years.

Although the subsidy rates (per passenger) for public transit are high in the United States, MITL points out that we do a much better job in cost recovery in Canada. This is clear when we compare the numbers for the TTC or GO Transit to these American numbers. Even Hamilton's HSR outperforms these results.

> *"...Canadian cities have shown markedly higher rates of cost recovery and cost effectiveness by all measures"*
> *Christopher Higgins*
> *McMaster Institute for Transportation & Logistics*
> *The North American Light Rail Experience: Insights for Hamilton*

HSR Farebox Recovery

STAGED FUNDING STRATEGY
Service & Operating

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	10 Year Total
		Deficiencies		Standards								
				Growth								
SERVICE												
Hours (000's)	814	16	34	34	14	111						209
Annual Operating (000's)	$88,000	$2,000	$4,000	$4,000	$2,400	$12,100						$24,500
Full Time Equivalents	644	16	34	26	10	80						166
Fleet	221	14	11	5	4	32						66
Fares	$2.00	$0.15	$0.15	$0.10	$0.10	TBD						
OPERATING												
Service Expenditures (000's)		$800	$3,500	$4,800	$2,400	$2,000	$2,000	$2,000	$2,000	$2,500	$2,500	
Fare Revenues (000's)		-$1,245	-$3,203	-$3,153	-$2,584	-$680	-$1,406	-$1,417	-$1,445	-$1,581	-$1,679	
Transfer to Reserve ($000's)		$445	$0	$0	$184	$0	$0	$0	$0	$0	$0	
Levy (000's)		$0	$297	$1,647	$0	$1,320	$594	$583	$555	$919	$821	
Annual Change to Levy		0.0%	0.0%	0.2%	0.0%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	
Revenu/Cost Ratio		46.4%	47.7%	46.6%	46.8%	44.2%	44.0%	43.6%	43.1%	43.0%	42.7%	

2016 Budget Presentation from HSR shows Hamilton does better than the average US City in farebox recovery. But that rate is slowly falling

The above chart is from the most recent (2016) Public Works budget presentation on transit. It shows an operating cost recovery of around 45% paid by the rider and 55% paid by the tax levy.

Loss of King/Main Corridor Revenue

The King/Main/Queenston corridor is often and accurately pointed to as the most profitable corridor on our transit line. In fact the line itself generates over a million dollars each year in revenue that goes back to the HSR to subsidize our less traveled routes.

The loss of this revenue will result in a budget shortfall that will have to be made up by either an increase in taxes, or a reduction in service elsewhere on the transit system or a cutback in other city services. Negotiations are underway with Metrolinx to try and alleviate this pressure.

Projected LRT Operating Costs in Hamilton

In the 2013 Rapid Ready report the estimated operating costs of an LRT were shown based on between 1000 and 2000 riders peak time peak direction on launch day. As has been shown however, those ridership numbers may not be achieved on day one. The IBI report on Hamilton's LRT suggested that we would only have ridership of 1800 (peak time peak direction) by 2031, a far cry from 2000 riders on launch day suggested as a possible high ridership number by Rapid Ready. As stated on the Hamilton LRT ridership analysis page, these numbers are currently being redone by a new consultant to compensate for the shorter distance of the proposed LRT but for the purposes of this page we'll use the figures from Rapid Ready (2013) until new numbers are available.

The cost of our B-Line bus service (per passenger) is $1.07). Based on these numbers alone, LRT will be more costly on a per passenger basis at the launch of the service. As stated on the ridership page, we would require an increase in ridership on the B-Line of over 450% to achieve the lowest projected passenger cost. This does not appear to be a realistic.

Projected Operating Costs vs Actuals in Other Systems

As shown on the ridership page, most rapid transit systems built in the 70s and 80s did not achieve their ridership estimates. In fact most projections were missed by very wide margins. These estimates improved for systems built in the 90s, but how did these systems do on projecting their operating costs?

Rapid Transit Projects 1975 – 1989

In 1989 the United States Federal Transportation Administration released a report that showed the performance of various heavy and light rail projects built during the late seventies through to the eighties. The results showed that in every case ridership projections were way off with all but one failing to even come close to their projected ridership. It also broke down the operating cost per passenger.

Table S-1.
FORECAST AND ACTUAL COST PER PASSENGER FOR RECENT RAIL TRANSIT PROJECTS

	Heavy Rail Transit Projects				Light Rail Transit Projects				DPM Projects	
	Washington	Atlanta	Baltimore	Miami	Buffalo	Pittsburgh	Portland	Sacramento	Miami	Detroit
Weekday Rail Passengers (thousands)										
Forecast	569.6	NF	103.0	239.9	92.0	50.5	42.5	50.0	41.0	67.7
Actual	411.6	184.5	42.6	35.4	29.2	30.6	19.7	14.4	10.8	11.3
% difference	-28%	--	-59%	-85%	-68%	-66%	-54%	-71%	-74%	-83%
Rail Project Capital Cost (millions of 1988 dollars)										
Forecast	4,352	1,723	804	1,008	478	699	172	165	84	144
Actual	7,968	2,720	1,289	1,341	722	622	266	388	175	215
% difference	83%	58%	60%	33%	51%	-11%	55%	135%	106%	50%
Annual Rail Operating Expense (millions of 1988 dollars)										
Forecast	66.3	13.2	NF	26.5	10.4	NF	3.8	7.7	2.5	7.4
Actual	199.9	40.3	21.7	37.5	11.6	8.1	5.8	6.9	4.6	10.9
% difference	202%	205%	--	42%	12%	--	45%	-10%	84%	47%
Total Cost per Rail Passenger[1] (1988 dollars)										
Forecast	3.04	NF	NF	1.73	2.15	NF	1.68	1.53	0.90	1.14
Actual	8.75	5.93	12.92	16.77	10.57	7.94	5.19	6.53	7.11	10.21
% difference	188%	--	--	872%	392%	--	209%	328%	693%	795%

[1] *Annual total cost of rail service divided by annual equivalent of "Weekday Rail Passengers," computed using numbers of average weekday equivalents per year derived from annual total and average weekday rail ridership reported by project operators. Annual total cost of rail service is the sum of (1) the annualized value of "Rail Project Capital Cost," computed assuming a 40-year project lifetime and a discount rate of 10% per year, and (2) "Annual Rail Operating Expense."*

NF indicates no forecast of a data item was obtainable from published sources.

An excerpt from the 1989 Report by the US Federal Transportation Administration showed that the forecast vs actual cost per passengers were off by 188-872%

The results from this report are startling when we see that the system that came closest to their estimated per passenger cost was off by 188%. The worst performing system was off by 872%. All numbers in the report were converted to 1988 dollars. For the Heavy Rail, Light Rail, and Downtown People Mover (DPM) systems built during this period, the per passenger cost was between 5.19

Rapid Transit Projects 1990 – 2002

After the startling numbers from the previous report (now referred to as the Pickrell Report) a second study was undertaken in 2007 to see the current state of transit projects in the US built with federal funds. The report found that among other things:

- > *Projections of operating costs, adjusted for general inflationary increases in the local costs of transit operations, are being achieved.*

- > *Experienced project sponsors have better O&M cost estimates. This probably reflects not only the ability to use local experience in developing unit costs but also greater realism in the assessment of efficiencies that can be achieved.*

- > *The quality of ridership forecasts has improved markedly since the 1980s.*

- > *While ridership forecasts have improved, several ridership forecasts reviewed in this study have proven to be optimistic.*
  > *US Federal Transit Administration*
  > *Contractor Performance Assessment (2007)*

The good news is that the actual operating costs of systems are drawing closer to their initial estimates. The bad news however is that a significant number are still costing more than estimated. The 2007 report found that estimates were better for projects that were extensions to existing transit lines as opposed to new lines. This was attributed to transit systems being more mature at the time of the extension being built, as well as planners having better local real world data to use when forecasting.

Table 6: Actual O&M Costs as Percent of Planning Estimates

City	Project	Mode	Actual O&M Costs as Percent of Estimates (Adjusted for Inflation)	
			AA/DEIS	FEIS
Atlanta	North Line Extension	HR	88.5%	70.1%
Baltimore	BWI, Hunt Valley, Penn Station Ext.	LR	60.0%	77.1%
Baltimore	Extension to Johns Hopkins[1]	HR	1.3%	2.2%
Chicago	SW Transitway	HR	69.6%	67.3%
Dallas	South Oak Cliff	LR	122.9%	122.9%
Denver	North I-25	Bus/HOV	76.7%	76.7%
Denver	Southwest	LRT	60.4%	59.3%
Jacksonville	Skyway Express	AGT	177.8%	177.8%
Los Angeles	Red Line	HR	61.7%	57.3%
Miami	Omni and Brickell Extensions	AGT	86.4%	84.4%
Pittsburgh	Airport Busway/ Wabash	Bus/HOV	121.3%	121.3%
Portland	Westside – Hillsboro	LRT	108.0%	116.2%
Salt Lake City	I-15/State Street	LRT	97.4%	76.3%
San Diego	El Cajon Extension	LRT	95.5%	95.5%
San Francisco	Colma BART Station	HR	138.8%	130.8%
San Jose	Guadalupe Corridor	LRT	176.1%	140.1%
San Jose	Tasman West	LRT	83.6%	124.4%
St. Clair Co.	MetroLink Extension	LRT	34.2%	68.9%
St. Louis	MetroLink	LRT	101.8%	115.0%
Average of 18 Projects (Baltimore Johns Hopkins excluded)			**97.8%**	**99.0%**

1. No valid comparison of actual and estimated operating costs is possible for the Baltimore Johns Hopkins Extension, and consequently, was excluded from the averages.

A table from the 2007 Contractor Performance Assessment Report showing 10 of 18 projects met or exceeded their operating and maintenance estimates while only 8 projects missed their estimates.

It is of course good news to see operating costs below forecasted numbers however a closer look reveals that many systems actually cut service levels from their forecasted levels in order to achieve these savings.

Table 7: Changes in Service Levels and O&M Costs

City	Project	Differences in Service Levels	Percent Error in AA/DEIS Estimates (Inflation Adjusted)
Atlanta	North Line Extension	Peak headway: DEIS 8 min vs. Actual 10 min.	-11.5%
Baltimore	BWI, Hunt Valley, Penn Station Ext.	No significant change.	-40.0%
Baltimore	Extension to Johns Hopkins	Peak Headway: FEIS 5 min; Actual 8 min.	-98.7%
Chicago	SW Transitway	Annual train-Hours: DEIS 43,000; Actual 39,000	-30.4%
Dallas	South Oak Cliff	DEIS Headway 4 min pk; 8 min mid-day, Actual 10 min pk; 15 min. mid-day	22.9%
Denver	North I-25	Peak Bus Trips: DEIS 114, Actual: 51	-23.3%
Denver	Southwest	No significant changes.	-39.6%
Houston	Southwest Transitway	Corridor Fleet Requirement DEIS 744; Actual 216	NA
Jacksonville	Skyway Express	Peak headway 2 min.; Actual 3 min.	77.8%
Los Angeles	Red Line	Peak Headway: DEIS 3-6 min. Actual: 5 min truck, 10 min branches	-38.3%
Miami	Omni and Brickell Extensions	No significant changes.	-13.6%
Pittsburgh	Airport Busway/ Wabash	Several routes proposed to use Busway are not operated or use other routes.	21.3%
Portland	Westside - Hillsboro	Peak Headway (Beaverton-Hillsboro) - DEIS 12 min.; Actual 6 min.	8.0%
Salt Lake City	I-15/State Street	Peak Headway - DEIS 10 min, Actual 15 min.	-2.6%
San Diego	El Cajon Ext.	No significant change.	-4.5%
San Francisco	Colma BART Station	Peak Headway: DEIS 4.5 min; Actual 7.5 min, Evening: DEIS 20 min; Actual 10 min.	38.8%
San Jose	Guadalupe Corridor	Not determined; apparently little change.	76.1%
San Jose	Tasman West	Peak Headway: DEIS 12 min; Actual 15 min.	-16.4%
Seattle	Downtown Project	Peak Hour Tunnel Bus Requirement - DEIS 360; Actual 236	-65.8%
St. Clair Co.	MetroLink Extension	No significant changes.	1.8%
St. Louis	MetroLink	No significant changes.	-11.5%

Variances from the projected operating costs and the annual operating costs can be explained in some instances by reductions in service from the proposed service levels.

We overlaid the Forecast vs Actuals with the chart showing whether or not service was reduced from the estimated numbers to see how many of the systems met or beat their O&M budgets by cutting back service.

City	Project	Service Reduced	Adjusted % O&M
Atlanta	North Line Extension	Yes	88.50%
Baltimore	BWI Hunt Valleu Penn Station Ext	No	60.00%
Chicago	SW Transit Way	Yes	69.60%
Dallas	South Oak Cliff	Yes	122.90%
Denver	North I-25	Yes	76.70%
Denver	Southwest	No	60.40%
Jacksonville	Skyway Express	Yes	177.80%
Los Angeles	Red Line	Yes	61.70%
Miami	Omni and Brickell Extensions	No	86.40%
Pittsburgh	Airport Busway / Wabash	No	121.30%
Portland	Westside - Hillsboro	No - Increased	108.00%
Salt Lake City	I-15/State St	Yes	97.40%
San Diego	El Cajon Ext	No	95.90%
San Francisco	Colma BART Station	Yes and No	138.80%
San Jose	Guadalupe Corridor	No	176.10%
San Jose	Tasman West	Yes	83.60%
St Clair Co	MetroLink Extension	No	34.20%
St Louis	MetrolLink	No	101.80%

The Baltimore Johns Hopkins extension was removed from the chart as there was was no comparison to estimated vs operating costs as per Table 6.

This table illustrates that of the 10 (Johns Hopkins Excluded) systems that met or exceeded their O&M budgets 6 systems provided less service than what was forecast which explains some of the savings.

It should be pointed out however that Portland actually increased service from their forecasted service level which would obviously result in a higher operating cost.

The FTA report also draws several conclusions about possible reasons for O&M costs being lower than forecast.

> *"To develop an estimate of the Operating & Maintenance (O&M) costs for the planned systems, it is necessary to describe the anticipated services. This planned service level is generally consistent with the project ridership. For most projects, the design year remains in the future and the ridership is still less than anticipated. The operated service levels reflect this fact.*
>
> *Another possible reason for deviations between projected O&M costs and those actually incurred is that the systems are still relatively new. The guideway, stations, electrical systems, etc., require only routine service and some portions may still be covered by warranties. As the systems age, the O&M costs may increase."*

> *US Federal Transit Administration*
> *Contractor Performance Assessment (2007)*

The FTA report has several lessons for Hamilton.

1. Forecasts on capital and operating costs while improving are still experience a high percentage of errors.
2. The average gap between forecast and actual figures for extensions to existing systems is 35%
3. The average gap between forecast and actual figures for new systems is 47%.

As Hamilton will likely be responsible for the operating costs for any future LRT these figures should be closely scrutinized and new high-low ranges presented.

LRT vs BRT – Operating Costs

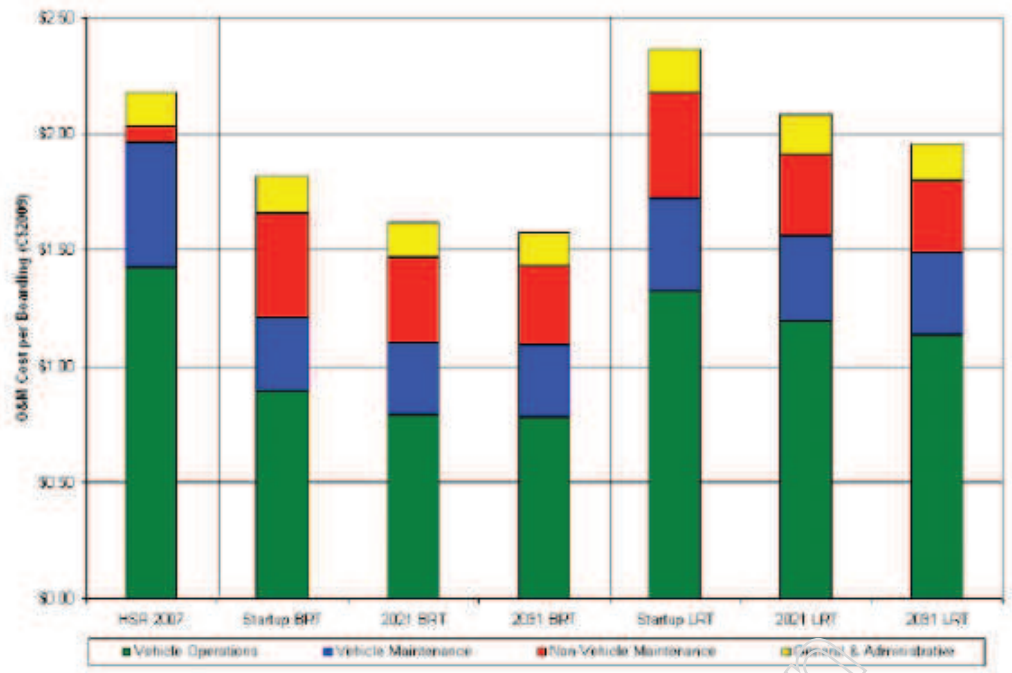
As we've seen, the operating cost for an LRT is not insignificant, and it requires economies of scale to make it the more economical option. In 2009 IBI presented their Economic Potential Study to the City of Hamilton where they state:

> *During the initial years of service, LRT is also projected to be about more expensive to operate than BRT, about 30% more on a cost per passenger basis, but the difference will diminish over time as ridership levels increase. However, it is generally accepted that LRT has a greater impact on investment decisions and economic growth than BRT, and the long term capacity of LRT is greater.*
>
> *Economic Potential Study*
> *IBI, 2009*

This was written within the first few pages of the report and it states what most already know. The capacity of LRT is higher and therefore your per passenger operating costs will be lower when you reach sufficient ridership.

IBI acknowledges that LRT will be more costly to operate than a bus system in the early days, although it does not define what the early days is at this point in the report. The question many people ask is: at what point does it become more cost effective to run LRT than BRT? How many passengers peak hour, peak direction do you need to be able to carry? IBI answers this question on the last pages of their report.

Figure 2: O&M Cost Comparison per Boarding



The IBI report showed that by 2031 Hamilton will still be paying more per passengers on an LRT than a Bus system.

> *It should be noted that these comparisons do not include in any way the significant increases in annualized capital cost that LRT will have over BRT, as driven by higher vehicle costs per unit of capacity, the need to invest substantially more 'up front' in trackwork and traction power supply (overhead contact system), and (not unimportantly) the costs of major periodic rehabilitation of the rail-related fixed infrastructure elements. Although a 'crossover' point in terms of O&M costs alone **might** be reached within the span of a 30-year economic analysis, inclusion of the fully allocated capital costs has been found to move the true 'crossover point' considerably further up, to perhaps 4,000-4,500 passengers per peak hour peak direction (pphpd). The RTFS results suggest that ridership will be about 1,800 in 2031.*
>
> *ibid*

The figures that IBI are using are suggesting that LRT does not hit the crossover point wherein putting in a dedicated BRT vs an LRT until the line hits 4000 – 4500 passengers peak time peak direction. This would represent a 900 – 1013% increase in our present B-Line ridership numbers.

These figures are based on the older longer alignment from McMaster University to Eastgate Square. We are presently awaiting more up to date figures from City Staff and will provide them when they are available. As this route is shorter than what was used to come up with these older numbers we can expect them

to be even lower.

Clip art graphic for WWW link
courtesy: http://www.clipartpanda.com/clipart_images/website-clipart-66519022
By: Leo Blanchette

Hamilton LRT Ridership

Current Ridership

The decision to build higher order transit like a BRT or LRT in Hamilton should typically be driven by one or both of two factors. Regularly exceeding available ridership capacity on a transit line and excessive congestion along a particular roadway. This page will look at the projected Hamilton LRT Ridership and compare it to other systems already in operation.

The number used to determine this is the Peak Time / Peak Direction number of riders. Obviously you try and build a system that can accommodate your riders during this time and will have excess capacity outside of this time period. This is not unlike road construction where we'll see a highway very lightly used at 4am but jam packed at 4pm.

The number of riders on Main King corridor now is around 1100 riders peak time peak direction. This number is often confused with the B-Line ridership numbers which are only a part of the total numbers. The numbers as of March 2016 (the most recent month where ridership was counted) for passengers on the B-Line was provided a short time ago. The chart itself is below.

HSR DATA

ServiceG	Weekday

Sum of On		Trip Time											
Route	Direction	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	Grand Total
10	Eastbound	181	260	222	169	171	142	188	237	444	434	424	295	3,167
	Westbound	116	247	358	164	179	176	172	128	208	297	186	197	2,428
Grand Total		297	507	580	333	350	318	360	365	652	731	610	492	5,595

A scan of a chart provided by David Dixon the City's Director of Transit shows the current ridership on the B-Line The chart shows the current peak ridership peak direction is 444 passengers.

While the current B-Line stops and the proposed LRT stops do not line up exactly in all places their proposed distance apart are similar. Stops on the B-Line (and the proposed LRT) are substantially farther apart than the current local bus service.

Riders are currently choosing to take the local bus service more often than the express B-Line service as there are more stops along the route which means people don't have to walk as far to get to a stop.

When Will The Time Be Right?

In the case of Hamilton's proposed LRT our Director of Transit provided a presentation during the 2015 budget process showing that we do not presently have the ridership that our transit department tells us we need to justify LRT.

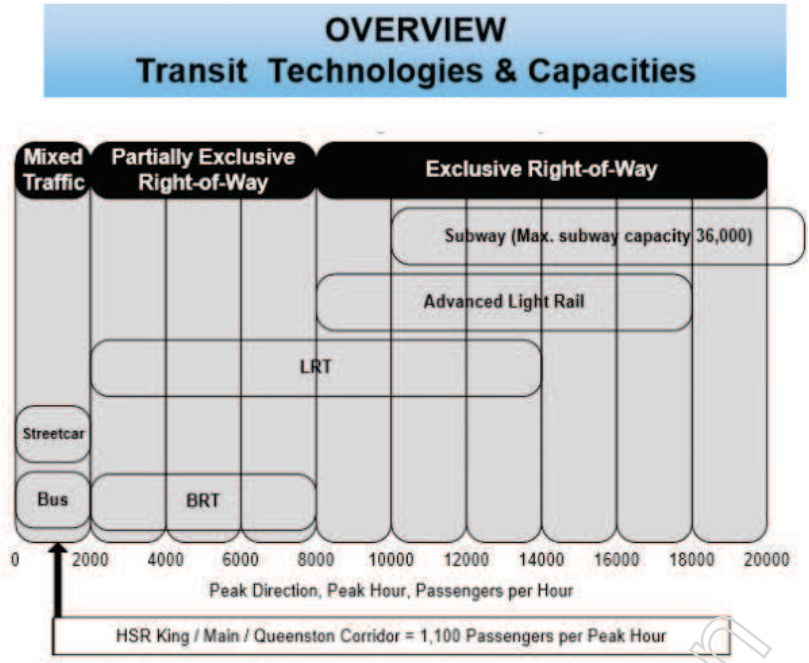
The chart indicates best practices about when to move transit into its own dedicated right-of-way suggesting that

Sources

City of Hamilton

10 Year Transit Plan (2015)

should occur around the 8000 passenger peak time peak direction mark. Hamilton is presently at 444 on the B-Line and around 1100 for the whole corridor including local buses. Regardless of the number you focus on we are still far below the threshold for higher order transit.



A slide from the 2015 Public Works budget presentation showing when various types of Higher Order Transit are warranted.

Source: Public Works Presentation February 6, 2015

The video below is from the 2015 budget presentation by David Dixon our then Director of Transit. On the question of when to move to higher order transit he states:

> *"When you look at when you initially move into higher order transit about the 2000 mark. If you think about a bus that holds roughly 50 people that means when you get around 2000 you've got 40 buses on the road that means you're running about a minute and a half headway. In actual fact you'd probably go to artic [sic] buses so you're down around a 2 minute headway and frankly you can't run a good efficient reliable service at a 2 minute headway and that's what forces you into a train like service."*
>
> *David Dixon*
> *Hamilton Director of Transit*
> *GIC Budget Meeting February 6, 2015*
> *Source: The Public Record*

Hamilton City Council 2015 Budget Debates: Transit and Public Works

Prior to David Dixon joining the City as Director of Transit our former Director Don Hull expressed similar statements stating the ridership on the corridor do not yet warrant higher order transit.

TRK Index

In the spring of 2012 the McMaster Institute for Transportation and Logistics provided a detailed study to the City of Hamilton entitled The North American Light Rail Experience. The study was authored by Christopher Higgins and Mark Ferguson and was submitted to the city April of 2012. The study, which will be referred to many times throughout this micro-site covered many areas of concern for the City of Hamilton and highlighted both best practices and demonstrated comparative systems throughout North America.

McMaster Institute for Transportation and Logistics

The North American Light Rail Experience (2012)

The study makes use a formula to calculate a statistic to help compare systems. The statistic is calculated as thousands of total weekday trips per route kilometre (TRK). Where TRK=1.0 = 1000 weekday trips per kilometre.

Using that formula we can estimate the TRK score for the City of Hamilton using the current B-Line ridership numbers. We will use only the 11 km route length and the current (as of March 2016) B-Line ridership numbers of 5595. This is both the eastbound and westbound number.

5595 (Weekday Riders) / 11 (KM proposed LRT = 509 (rounded up). So TRK for Hamilton's proposed LRT is .509. An interesting aside the TRK number would be slightly higher if the route did not take the King St detour which adds about 600 meters to the route length.

The study compared 26 systems throughout North America and displayed them in an easy to read table. Hamilton's proposed system was not listed in the table.

Table 2.3 Light Rail System Characteristics, Normalized Ridership, and Congestion Indices

City	Lines	Stat-ions	Km	Daily Riders (1,000s)	TRK Index	TTI RCI Index[a]
Boston	4	66	36	215	5.972	1.21
Calgary	3	36	49	266	5.429	N/A
Edmonton	1	15	21	94	4.476	N/A
Houston	1	16	12	35	2.917	1.15
San Francisco	6	33	59	158	2.678	1.32
Buffalo	1	15	10	22	2.200	0.73
Los Angeles	3	56	99	154	1.556	1.54
Portland (Max)	4	85	84	123	1.464	1.14
Salt Lake City	3	28	31	44	1.419	0.97
Minneapolis	1	19	20	27	1.350	1.10
Phoenix	1	32	32	42	1.313	1.24
Newark	2	20	16	20	1.250	1.10
Denver	5	36	56	69	1.232	1.13
Philadelphia	7	68	97	115	1.185	1.07
Tacoma	1	5	2.6	3	1.154	N/A
San Diego	4	53	86	98	1.140	1.32
Seattle	1	13	25	24	0.960	1.08
Jersey City	3	24	44	42	0.955	1.10
Charlotte	1	15	15	14	0.933	1.05
Sacramento	2	45	59	45	0.763	1.27
Baltimore	3	33	48	31	0.646	1.18
St. Louis	2	37	74	47	0.635	0.87
Pittsburgh	2	60	40	24	0.600	0.75
Dallas	3	55	116	69	0.595	1.17
San Jose	3	70	70	31	0.443	1.30
Cleveland	2	35	24	9	0.375	0.64

a: Source: TTI, 2011

If Hamilton's proposed LRT were included in this list of 26 Cities we would be in 25th place out of a total of 27 comparative cities. This information was never presented to Council nor was it included in Rapid Ready or the benefits case that was submitted to Metrolinx.

It is important to note that the number we are using is the CURRENT B-Line ridership number. We are excluding the local bus service numbers from this calculation as the local bus service is not being discontinued when the LRT is installed. The City does not currently have ridership projections for the LRT. These are expected to be delivered this summer. The page will be updated to include those numbers sometime after they are made available.

Ridership on other LRTs

IBI looked at other LRT systems built in several US cities to attempt to demonstrate jurisdictions where ridership exceeded expectations.

IBI for the City of Hamilton

Economic Potential Study (2009)

Exhibit 3-6: Recent LRT Projects that Have Exceeded Ridership Expectations

City	Year	Route(s)	Ridership Results
Dallas	2001	North Central and Northeast LRT extensions.	Ridership averages 10% higher than forecast. [Source: DART, 2000]
Denver	2000	Southwest line to Littleton	Ridership 67% above original weekday projections.
Minneapolis	2005	Hiawatha/Central LRT	Exceeded weekday 2020 projections within its first year of operation
Portland	1998	Westside	Exceeded 1st year forecasts by 22%, exceeded 2008 projections by 2005
Salt Lake City	1999	TRAX LRT	After 2 years, ridership exceeded forecasts by 43%.
St Louis	2001	MetroLink	First year ridership exceeded projections by 67%.

Source: Litman (2008) Evaluating Rail Transit Criticism.

This table however excluded a much larger list of projects that missed their ridership forecasts by a significant margin. This information was communicated to the City by Christopher Higgins a researcher at the McMaster Institute for Transportation & Logistics. In his report to the City he cautioned:

> *"...several previous studies have noted that the decision to build many light rail systems in the United States was based on overestimated levels of ridership that were subsequently not achieved after opening."*
> *Christopher Higgins*
> *McMaster Institute for Transportation & Logistics*

He goes on to say that Canadian models however have shown higher cost effectiveness. This page is about the ridership issue and details on costs will be covered on other pages.

Ridership – Forecast vs Actual in the United States

The United States Federal Transportation commissioned two studies. One was released October of 1989 and looked at both heavy and light rail projects in Washington, Atlanta, Baltimore, Buffalo, Pittsburgh, Portland, Sacramento, Miami and Detroit. The projects were built during the late seventies to the late eighties. Dollars have been adjusted (by the FTA) to 1988 dollars for comparison.

US Federal Transportation Administration

Urban Rail Transit Projects: Forecast Vs Actual Ridership and Costs (1989)

Table 2-1.
FORECAST AND ACTUAL RIDERSHIP FOR RECENT RAIL TRANSIT PROJECTS

	Heavy Rail Transit Projects				Light Rail Transit Projects				DPM Projects	
	Washington	Atlanta	Baltimore	Miami	Buffalo	Pittsburgh	Portland	Sacramento	Miami	Detroit
Year to Which Data Reported in this Table Apply[1]										
Forecast data	1977	1978	1980	1985	1995	1985	1990	2000	1985	1985
Actual Data	1986	1987	1987	1988	1989	1989	1989	1989	1988	1988
Weekday Rail Passengers (thousands)										
Forecast	569.6	NF	103.0	239.9	92.0	90.5[2]	42.5	50.0	41.0	67.7
Actual	411.6	184.5	42.6	35.4	29.2	30.6[2]	19.7	14.4	10.8	11.3
% difference	-28%	--	-59%	-85%	-68%	-66%	-54%	-71%	-74%	-83%
Weekday Systemwide Transit Trips After Completion of Rail Project[3] (thousands)										
Forecast	796.8	228.4	NF	650.9	184.0	93.7	264.0	112.0	--	--
Actual	697.7	247.0	302.5	169.7	93.2	45.9	126.9	43.3	--	--
% difference	-12%	8%	--	-74%	-49%	-51%	-52%	-61%		
Weekday Systemwide Ridership Impact of Rail Service[3] (thousands)										
Forecast	NF	99.1	NF	262.9	81.0	NF	51.3	13.0	--	--
Actual	281.3	36.9	37.3	-25.8	-0.4	6.3	11.5	-4.2	--	--
% difference	--	-63%	--	--	--	--	-78%	--		

[1] *Most "actual" data apply to transit operators' fiscal years ending during the calendar year indicated.*
[2] *Forecast ridership for Pittsburgh apply to "Stage I" light rail line only; actual ridership figure applies to combined total for "Stage I" and "Stage II" lines.*
[3] *Measured by "linked transit trips" or "originating passengers;" each corresponds to door-to-door trips. Pittsburgh data apply to South Hills corridor only.*

NF indicates that no published forecast of a data item was obtainable.

15

Urban Rail Transit Projects: Forecast Versus Actual Ridership and Costs
Prepared by: Transportation System Center – US Department of Transportation – Dr Don Pickrell
October 1989

The heavy rail project in Atlanta exceeded its forecasted ridership numbers by 8% with the next closest system being Washington which was off by 12%. The remaining systems however missed their forecasts by between 49 and 74%.

The Federal Transit Administration did a follow up to this report in 2007 looking at systems constructed in the 90s to the early 00s. It found that projects had improved both their ridership forecasting as well as their budgeting but stated:

> *"... analyses by FTA have documented the fact that the majority of rail transit projects have significantly underestimated their construction costs and overestimated the actual ridership...."*
> *Contractor Performance Assessment Report*
> *United States Federal Transit Administration*
> *September 2007*

US Federal Transit Authority

Contractor Performance Assessment Report (2007)

Table 8: Predicted and Actual Ridership - Forecast vs. 2002 Actual

Project	Forecast Year	Forecast Average Weekday Boardings		Actual Average Wkdy Boardings - 2002	Ratio	
		AA/DEIS	FEIS		Actual vs. AA/DEIS	Actual vs. FEIS
Atlanta North Line	2005	57,120	57,120	20,878	37%	37%
Baltimore Johns Hopkins	2005	13,600	13,600	10,128 *	74%	74%
Baltimore LRT Ext.	2005	11,804	12,230	8,272 *	70%	68%
BART Colma	2000	15,200	15,200	13,060	86%	86%
Chicago Orange Line	2000	118,760	118,760	54,986 *	46%	46%
Dallas South Oak Cliff	2005	34,170	34,170	26,884	79%	79%
Denver SW LRT	2015	22,000	22,000	19,083	87%	87%
Houston SW Transitway	2005	27,280	27,280	8,875	33%	33%
Jacksonville ASE	1995	42,472	42,472	2,627	6%	6%
LA Red Line	2000	295,721	297,733	134,555	46%	45%
Miami Omni/Brickell	2000	20,404	20,404	4,158	20%	20%
Pittsburgh West B'Way	2005	23,369	23,369	9,000	39%	39%
Portland Westside-Hillsboro	2005	60,314	49,448	43,876	73%	89%
Salt Lake South LRT	2010	26,500	23,000	22,100	83%	96%
San Diego El Cajon	2000	21,600	21,600	24,950	116%	116%
San Jose Guadalupe	1990	41,200	41,200	21,035	51%	51%
San Jose Tasman West	2005	14,875	13,845	8,244	55%	60%
St. Louis Initial System	1995	41,800	37,100	42,381 *	101%	114%
St. Louis St. Clair Ext.	2010	11,960	20,274	15,976	134%	79%

* Figures are for 2001 (2002 not available at time of preparation)

A chart showing forecast ridership vs actual achieved ridership on rapid transit projects that received federal funding in the US.

The above chart shows the only three projects met or exceeded their FEIS ridership forecasts. If we pay special attention to the St Louis St Clair extention we see that the ridership forecast was actually doubled between the initial DEIS phase and the FEIS phase. If we we use the FEIS numbers vs the DEIS numbers only two lines met or exceeded their ridership projections.

Nine of the nineteen studied transit lines were significantly off in their estimations by between 40 – 94%.

Loss of Ridership in Portland

Portland Oregon is often cited as an example for transit systems in North America but a closer look at the actual ridership in Oregon points to some disturbing trends in ridership. Trimet (Portland's Transit Agency) that operates both Bus and the MAX (Light Rail) service have provided ridership information showing that while Portland increased the size of their rail network between 2000 and 2015 the actual ridership numbers have been slipping.

209,200	207,400	205,700	207,600	215,300	190,900	190,300	193,800	194,000	194,800	202,800
97,000	99,800	104,200	107,400	107,600	117,000	126,700	130,000	121,000	118,400	116,800
NA	NA	NA	NA	1,175	1,200	1,449	1,639	1,739	2,008	1,869
306,200	**307,200**	**309,900**	**315,000**	**324,075**	**325,290**	**318,449**	**325,439**	**316,739**	**315,208**	**321,469**
3,476	3,570	3,677	3,786	3,685	3,647	3,612	3,606	3,556	3,566	3,587
309,676	310,770	313,577	318,786	327,760	328,843	322,061	329,045	320,295	318,774	325,056

TriMet Average Weekday Boarding Rides 2005 – 2015 – Note Top line is Bus, Second Line is LRT, Third line is Commuter Rail.

The drop in numbers is surprising as TriMet actually added three new LRT lines to this system between 2004 – 2015. This includes a total of 25 new stations covering a distance of 25.1 kilometres at a cost of over $2.4 billion USD. This seems to work counter to the argument that: "If you build it they will come".

TriMet

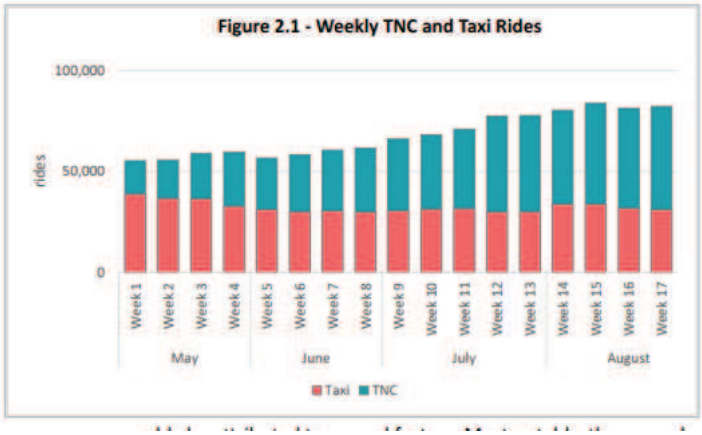
Service and Ridership Information (2015)

The Growth in Ride Sharing

The Portland Bureau of Transportation recently released a study showing the growth rate of Uber and Lyft. The report showed the ride sharing services growth rate of 125% between May and August 2015. This increase however only resulted in a 16% drop in traditional taxi passenger trips. The remaining passengers were switching from other modes of transportation and actually grew the overall personal shared transportation market.

Portland Bureau of Transportation

Portland's Private for-Hire Transportation Market: Summary Report of the PFHT Innovation Pilot Program (2015)



As TNC passengers increased traditional taxi rides saw a decrease, but the overall market has grown. This ocurred at the same time as transit ridership continues to drift downwards in Portland.

You can read the entire report by clicking here or on the link to the right, or you can read a summary of the report by a blogger here.

Proposed LRT Ridership

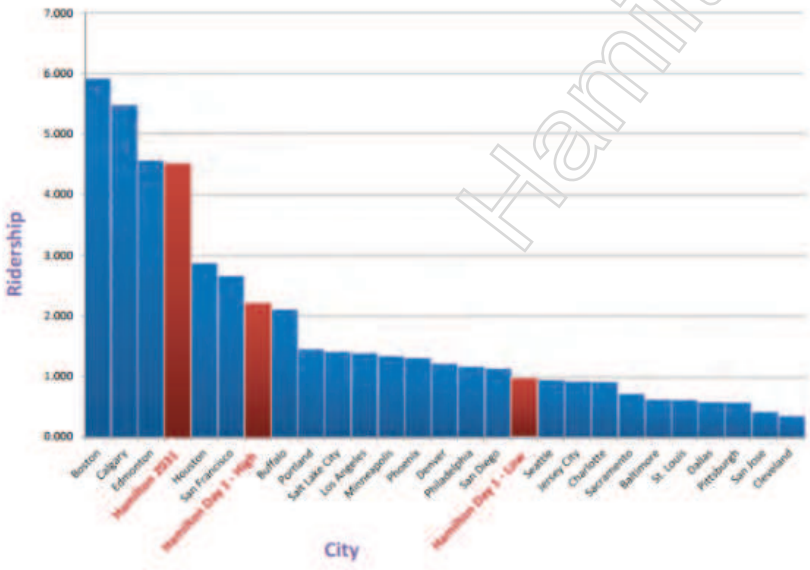
At the moment the only proposed numbers the City has are those contained in Rapid Ready suggesting an opening day ridership figure of between 1000 and 2000 peak direction peak riders. The 2000 number however stands in stark contrast from the forecasts that appeared in the IBI report.

Achieving a number of 1000 would represent about a **225%** increase in ridership from our present B-Line riders.

Achieving a number of 2000 would represent an increase of a little over **450%**. There is a curious and unattributed ridership estimate for 2031 putting potential ridership at 4500. This would represent an increase of over **1000%.** These numbers seem overly optimistic.

City of Hamilton

Rapid Ready (2013)



Rapid Ready 2013 Report
City of Hamilton

In 2009 the City contracted the firm of IBI to perform an Economic Potential Study on a possible LRT on the B-Line. IBI referenced the City's earlier Rapid Transit Feasibility Study by estimating ridership COULD rise to 1,800 passengers peak direction peak hour by 2031. (Page E-8) This is far from the 8,000 suggested by our transit staff of when a dedicated right of way might be needed and is still off by 200 peak passengers from Rapid Ready's 2000 launch day passenger estimate.

During a recent meeting between myself, a member of my staff and the LRT project team at the LRT offices I again asked the question about ridership. With the route now being shorter than the route proposed in Rapid Ready a new consultant has been hired to update the ridership projections. While they did not tell us what the new numbers would be, they did say they would be lower than those proposed in Rapid Ready.

A recent email from our LRT Project Manager informs my office that we should see these numbers in a report this summer. We'll post that here once we have those and update accordingly.

Hamilton LRT – Proposed Speed

Will an LRT Be Faster?

The Metrolinx Hamilton King-Main Rapid Transit Benefits Case states in its executive summary that the primary benefits Hamilton users will see from a proposed LRT would be from travel time savings over the current options available.

> *"... the majority of benefits are deriived from the travel time savings thus highlighting the importance of the operating speed of the rapid transit system to the success of the project."*
>
> *Metrolinx King-Main Rapid Transit Benefits Case*
> *February 2010*

The statement that the LRT will provide a faster and more comfortable ride has been touted since the projects inception. Estimated travel times have

Sources

Hamilton King - Main Benefits Case

Metrolinx (2010)

even been included in various reports including the Metrolinx King-Main Benefits Case. Table 4 of the report shows the LRT Average Speeds and Travel times.

TABLE 4 OPTION 2 – LRT AVERAGE SPEEDS AND TRAVEL TIMES

	Distance	Average Speed[7]	Station Spacing	Travel Time
East Section Eastgate to Ottawa Street	4.9 km	35 kph	≈900 m	9 min
Downtown Ottawa Street to Logwood Road South	7.2 km	33 kph	≈800 m	13 min
West Section Longwood Road South to University	2.1 km	35 kph	≈1,150 m	4 min
TOTAL ROUTE	**14.2 km**			**26 min**

An excerpt from the 2010 Metrolinx King-Main Benefits Case study.

But located on that very same page is an interesting footnote.

[7] Travel speeds vary along the length of the corridor with operating conditions. The average speed in the downtown section is shown as 33 kph however travel speeds in the downtown core are assumed to be somewhat slower in the range of 25 kph.

28

The footnote contradicts the speeds indicated on the above table.

If the actual vehicle speed is estimated to be 25kph then why is it shown as being higher on the very same page? This contradiction was in fact the very first thing that our office discovered when beginning this project. It is the fact that led us to question much of the other information that had been provided, and was in fact the genesis of the rest of the research that came after it.

Our office confused by this contradiction reached out to our Director of Transit Dave Dixon who told us in a phone call that the actual operating speed of the LRT was not known but that it was thought to be around 25kph . When pressed on what the travel time would be from end to end he stated that it should be about the same as the present B-Line bus service which is about 25 minutes.

Sent: May-26-16 8:17 AM
To: Whitehead, Terry
Cc: Dixon, David
Subject: LRT Runtime vs Current B-Line

Good Morning Councillor Whitehead, Please see our response that I am forwarding on Dave Dixon's behalf:

The current B Line running time, in the AM Peak Period, from Queenston Traffic Circle to Mac is 25 minutes. Please note that B Line buses do not stop at the Queenston Traffic Circle.

At the present time the LRT model is not entirely completed. As such, an estimated running time is not available.

Sincerely,
Rae

This was backed up in an email received from the LRT office on June 30th.

The previous Environmental Assessment (2011) identified that the LRT will travel from Eastgate Square to McMaster in 31 min., however, since the route has been revised and is currently within a design phase the average travel time has not yet been determined. We are expecting it to be around 25 minutes. An estimated speed will be available in September for the PICs but we won't know firm details until the final number of stop locations are confirmed after the EA process is completed.

Both LRTs and subway vehicles can achieve speeds of 80 km/hr, but actual speed is determined by the spacing between stops and the dwell time at stops. To give you a general idea, the average speed of the Eglinton Crosstown is 28km/hr; the Bloor-Danforth subway is 32km/hr.

Thanks
Kelly

Kelly Anderson, APR | Manager of Communications & Engagement
Light Rail Transit (LRT) | City of Hamilton
36 Hunter Street E. | Hamilton, Ontario L8N 3W8

We are awaiting updated projections that will tell us how quickly the trip from McMaster University to the Queenston Traffic Circle will take place on the proposed LRT vs our existing B-Line. It is expected however that they will not be dissimilar from the speed of our current B-Line bus system.

If the primary benefits Metrolinx believes Hamilton will receive from an LRT system is a reduction in travel times, why are we considering a system that has no travel time advantage over what we presently have?

Hamilton LRT Vs Ottawa's LRT

They City of Ottawa is in the process of converting their existing BRT system to an LRT. Some have tried to link Ottawa's decision to convert a BRT system into an LRT as proof of an LRT's superiority vs a BRT system. Ottawa made the decision to grow their ridership first before investing in LRT and opted for a BRT system first. The decision helped Ottawa grow its transit ridership and deferred the capital expense of construction until the system had reached a point of needing additional capacity.

A closer look at the conditions on the ground in Ottawa show many of the conditions that the McMaster Institute of Transportation & Logistics points to as contributing to a successful LRT system including: a high rate of congestion, substantial ridership, and limited parking along the route. It also connects many key destinations including: Parliament, The University of Ottawa, and makes significant connections to the suburbs.

Ottawa Congestion

The Ottawa Citizen wrote a story covering a TomTom study on traffic

Sources

congestion. The study ranked the most congested cities in North America. In 2014 Ottawa ranked 10th in North America just behind San Jose and Toronto. It measured the congestion level at 26% meaning the average commuter will spend an additional 31 minutes a day commuting due to congestion. That adds up to 119 hours a year or nearly 5 full days or nearly 14 working days. The highways and local roads had separate congestion levels with the highways at only 19% but the local roads at 28%. The stats have since been updated for 2015.

Although LRT systems have not been shown to reduce congestion Ottawa is currently running up to 180 busses per hour through their downtown. The removal of theses busses and the addition of their underground LRT will likely have an effect on the above ground congestion going forward.

Ottawa Citizen

Traffic jams: Ottawa is third most congested city in Canada, says survey

Hamilton Congestion

As a comparison, Hamilton ranked 11 out of 12 cities to be the second least congested city in the country. The TomTom study looked at the overall road network including the highways but did not break out the differences between the upper and lower city. Hamilton's Main/King corridor for example typically experiences very few traffic related delays even during peak hours.

TomTom

2015 Congestion Index

Ottawa LRT Proposed Ridership vs Hamilton LRT Proposed Ridership

Ottawa is presently carrying over 10,000 passengers peak hour peak direction. At this point their system is at capacity and needs to be upgraded. Their projections are also assuming a further 9% increase in ridership once the new LRT is in place as a result of the new capacity.

Hamilton on the other hand is currently running around 1100 passengers peak hour peak direction through the Main/King/Queenston corridor. That number drops to only 444 if you factor in only those travelling on the express B-Line service which runs similar stop distances as the proposed LRT.

CBC Hamilton

Hamilton has second lowest traffic congestion rate in country: study

HSR DATA

ServiceG	Weekday

Sum of On		Trip Time												
Route	Direction	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	Grand Total
10	Eastbound	181	260	222	169	171	142	188	237	444	434	424	295	3,167
	Westbound	116	247	358	164	179	176	172	128	208	297	186	197	2,428
Grand Total		297	507	580	333	350	318	360	365	652	731	610	492	5,595

A scan of a chart provided by David Dixon the City's Director of Transit shows the current ridership on the B-Line

Transitway

Transitway as of December 31, 2014

Weekday passenger volume	240,000
Peak hour one-way passenger volume	10,000
Buses per peak hour one-way through central area	180
Length of Transitway (km)	35.4
Number of stations	57
Bike & Ride locations	49

Ottawa's 2014 BRT Ridership along the Transitway Dedicated Right of Way

TomTom

2015 Hamilton Congestion Index

OC Transpo Reports

City of Ottawa (2014)

Park and Ride

Ottawa has built significant Park and Ride lots both near their LRT as well as near their feeder lines to get people from their cars to transit.

2014 Annual Performance Report

City of Ottawa OC Transpo

An Ottawa transit map showing the locations of their Park and Ride lots and their transit lots.

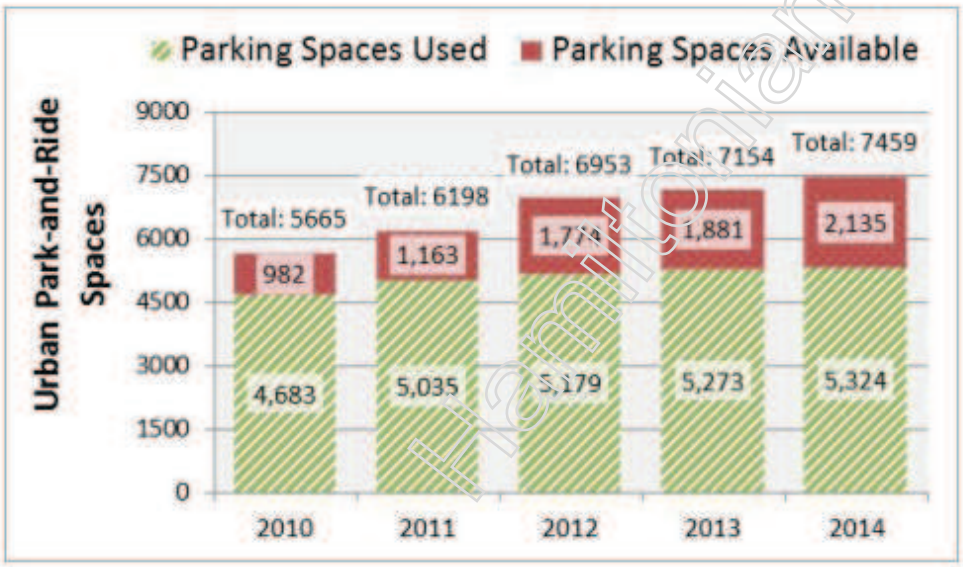


Figure 12: Urban Park and Ride Utilization and Available Spaces

Ottawa has invested significantly in their park and ride infrastructure, adding to the available parking spaces each year between 2010 and 2014.

The availability of parking along transit corridors allow for people to leave their cars behind and take transit.

Park & Ride Spaces

Baseline	276
Canadian Tire Centre	100
Eagleson	1,216
Fallowfield	1,665
Greenboro	678
Jeanne d'Arc	60
Leitrim	292
Millennium	151
Nepean Woods	343
Place d'Orléans	571
Ray Friel	30
Riverview	400
Strandherd	336
Telesat (Blair)	20
Terry Fox	515
Trim	1,094
Total	7,747

A station by station breakdown of park and ride spaces.

Concerns With Hamilton's LRT Project

As has been pointed out, I have previously been very supportive of the LRT project for Hamilton. I voted to receive each report even though I asked many tough questions along the way. I continue to support an LRT done properly, but at current there are too many unanswered questions inconsistencies and obvious deficiencies in this plan.

King vs Main

Main St is substantially wider than King St through the downtown and specifically at International Village. Main St was never properly looked at to see if the implementation of an LRT would have less of a negative impact during construction, as well as a less disruptive impact on traffic afterwards.

There are substantially more heritage properties on King than Main that may also present problems with either the LRT construction or with future redevelopment along the line.

In terms of any potential economic uplift, staff tell us King vs Main would result in a nearly identical uplift. There is no significant uplift reason to

choose one alignment over the other.

A King St alignment is also more expensive than a Main St alignment as the route is nearly 500 meters longer. It also requires the construction of a separate overpass bridge at the 403. Main St being wider would not require a new bridge to be built and would also be a shorter more direct route for passengers. The cost to build the bridge is estimated at between $30-35 million with an additional $25-30 million for the extra 500 meter length. Why are we spending $55 – 65 million extra on this alignment when we could spend that money instead on providing a longer route that could service more people either in the east or the west end?

Suburban Connections and Park and Ride Lots

Most if not all of the LRT systems that proponents point to as successful implementations connect their suburbs to their downtown and destinations beyond. The Edmonton LRT as an example experienced very low ridership until they provided connections to the suburbs and built the substantial park and ride system they have today. There are no such plans to do the same for Hamilton.

Metrolinx even questioned the City about why there were no Park and Rides planned for the system during the submission phase. Clearly they understand the need to provide people a place to leave their cars so they can board pubic transit.

Hamilton already has a commuter transit station in our downtown without parking facilities. The Hunter St GO station is so inconvenient for most people that they travel all the way to Aldershot to board the train where they can park.

City	Park and Ride Lots
Atlanta	Yes
Baltimore	Yes
(BART) San Francisco	Yes
Charlotte	Yes
Chicago	Yes
Dallas	Yes
Denver	Yes
Houston	Yes
Los Angeles	Yes
Miami	Yes
Pittsburgh	Yes
Portland	Yes* Many donated by churches - Weekday only
Salt Lake City	Yes
San Diego	Yes
San Jose	Yes
St Louis	Yes
Ottawa	Yes
Edmonton	Yes
Calgary	Yes

The Ten Year Transit Plan is Unfunded

The purpose of the ten year transit plan was to provide a roadmap to get Hamilton Rapid Ready. Its goal was to fix the deficiencies in our local transit system so that more people can use transit to get where they need to go. Although the plan was officially adopted by Council in 2015 the need for the 100 new busses and a storage facility were already present in Rapid Ready in 2013. It was clear then that we need to address the shortfalls in our current system to provide us with the ridership we need to sustain higher order transit.

The present plan has us skipping this step and going straight to an LRT.

20,000 Cars a Day

King St currently sees over 20,000 car trips a day. Where are those cars going

to drive? Even our most optimistic ridership projections don't assume those trips will simply stop. We need to develop a plan to deal with the car traffic that is presently on King St. That may be as simple as converting Cannon st to one way to allow for the efficient flow of traffic westbound or it could be more complicated.

A move like this however could also see many of those cars moved onto the local neighbourhood streets causing safety concerns for residents. Travel times will be heavily impacted by the loss of these westbound lanes and will likely create congestion. In the coming months our traffic studies will provide us with more information and we'll have to carefully weigh all of our options.

Hamilton Health Sciences is Leaving McMaster

Hamilton's largest employers used to be its steel companies. Now, in the 21st century we're developing a knowledge based economy based strongly on health care in Hamilton. Our largest employer, Hamilton Health Sciences just announced plans to close its McMaster campus and consolidate care at its other locations. None of those locations are covered by the LRT line. Does the potential loss of so many jobs along this corridor mean we need to revise our ridership projections again? What is the plan for the McMaster land once HHS moves out? Will the University expand into that space, or will another health care provider set up shop?

These are important questions that need to be answered.

Metrolinx Can't Even Get their LRVs

It's not a secret that Bombardier has experienced huge difficulties in delivering the light rail vehicles ordered by Metrolinx and the City of Toronto. Waterloo has even had to delay the opening of their LRT due to the shortage of vehicles. If Hamilton is going to proceed with an LRT is Bombardier the right vehicle? Can they even supply them? Will we end up with a rail system without any vehicles to run on them? What guarantees do we have that if we proceed we'll get our train cars when we need them?

What Does the Future Look Like?

The proposed LRT would not begin construction until 2018 and wouldn't open until 2024 or 2025. What will transportation look like in ten years? With electric autonomous busses being tested this summer in the United States and Scandanavia and GM hiring 1000 new engineers to work here in Ontario on autonomous vehicles the growth rate in this industry is about to become exponential.

With the rise in popularity of ride sharing services and the impending arrival of autonomous vehicles how long will it be before people don't even need to own their own car? How long until people can simply order a pickup from their home to drop them at work, school, or downtown where they want to shop? What effect will that have on our transportation and public transit planning?

These and many more questions need to be carefully considered before we move forward with any investment in our transit network. Once the LRT rails are installed, the line cannot be adaptive to the ever changing environment. The cost to redirect it elsewhere would be significant. We need to make sure that whatever system we install will be able to provide the service passengers will want not just today, but thirty years from now.

Further Reading

If you would like to read all of the original material we used to compile this microsite we're including all of the links below. Not all reports are available free and some must be purchased from the publisher, or requested directly from the author.

City of Hamilton and Metrolinx Reports

City of Hamilton – Rapid Ready (2013)

City of Hamilton – A-Line Economic Potential Impact Report (Steer Davies Gleave) (2012)

Metrolinx – Hamilton King-Main Benefits Case (2010)

City of Hamilton – IBI Report (2009)

City of Hamilton – Reports Submitted to Metrolinx

Metrolinx – The Big Move

Metrolinx – Costs of Road Congestion in the Greater Toronto and Hamilton Area: Impact and Cost Benefit Analysis of the Metrolinx Draft Regional Transportation Plan (December 2008)

McMaster Institute for Transportation & Logistics

Forty years of modelling rapid transit's land value uplift in North America: moving beyond the tip of the iceberg. (2016)

Benchmarking, Planning, and Promoting Transit-Oriented Intensification in Rapid Transit Station Areas (March 2016)

Rethinking Light Rail Transit Planning In Hamilton, Ontario: A Comparative Review and Critical Assessment (2013)

The North American Light Rail Experience: Insights for Hamilton (April 2012)

American Governmental and Agency Reports

Portland Bureau of Transportation – Portland's Private for-Hire Transportation Market: Summary Report of the PFHT Innovation Pilot Program (2015)

Federal Transit Administration – Contractor Performance Assessment Report (2007)

Federal Transportation Authority – Urban Rail Transit Projects: Forecast vs Actual Ridership and Costs (Pickrell Report) (1989)

Academic Studies

Christopher D. Higgins – A Value Planning Framework for Predicting and Recapturing the Value of Rapid Transit Infrastructure (2015) (Dissertation)

Jenny Schuetz – Price School of Public Policy – Do Rail Transit Stations Encourage Neighbourhood Retail Activity? (2014)

University of Utah – Effects of Light-Rail Transit on Traffic in a Travel Corridor

National Bureau of Economic Research – Subways, Strikes, and Slowdowns: The Impacts of Public Transit of Traffic Congestion (2013)

Journal of the American Planning Association – Cost of a Ride (2011)

University of California, Berkeley – To T or Not to T: A Ballpark Assessment of the Costs and Benefits of Urban Rail Transporation (2011)

Dr Kenneth Button – School of Public Policy George Mason University –

Transit Forecasting Accuracy: Ridership Forecasts and Capital Cost Estimates (2009)

Jonathan E.D. Richmond – Harvard University – A Whole System Approach to Evaluating Urban Transit Investments (1999)

Jonathan E.D. Richmond – University of Sydney – The Mythical Conception of Transit in Los Angeles (1996)

Federal Transportation Authority (Pickrell) – Urban Rail Transit Projects: Forecast vs Actual Ridership and Costs. (1989)