

**Factors Affecting Choice of Transit Technology:
What Has Changed Since the TTC's 1986 Subway Plan ('Network 2011')?**

Factor	Status, Expectations in 1986	Status Today	Consequences of Change
Population, density & location of development	Projections for 2011: <ul style="list-style-type: none"> • Significant population growth in Toronto (from 2.1 million to 2.5million) • Lower growth in rest of GTA • Very large forecast employment growth in Toronto (from 1.23million to 1.9million) • [employment near stations – single biggest effect on ridership] 	<ul style="list-style-type: none"> • Population forecast has been met (2.5million in 2011) • Employment growth has focused outside Toronto. • Manufacturing jobs have left Toronto • 1980's recession reduced central area employment • Toronto employment grew only to 1.30 million in 2011. • More growth in Mississauga, Brampton, Markham, Richmond Hill than in downtown or Scarborough, NY centres 	<ul style="list-style-type: none"> • Dispersed employment in areas not well-served by transit has increased road congestion throughout GTA • Growth in transit ridership lower than projected
Official Plan: location of growth	<ul style="list-style-type: none"> • Intensification should occur at stations, nodes, city centres 	<ul style="list-style-type: none"> • Development shifted away from stations and centres to 'Avenues' (arterial roads) • 'Avenue' development levels reduced (lower density, height, massing) • Protection of stable neighbourhoods (adjacent to avenues) 	<ul style="list-style-type: none"> • Reduction in employment, population forecasts in subway corridors • Less, slower development near existing stations • Lower passenger volumes than projected • Development densities on "Avenues" no longer adequate to support subways

**Factors Affecting Choice of Transit Technology:
What Has Changed Since the TTC's 1986 Subway Plan ('Network 2011')?**

Factor	Status, Expectations in 1986	Status Today	Consequences of Change
Official Plan: employment in centres	<ul style="list-style-type: none"> • North York (NY) Centre: employment forecast to grow from 29,400 in 1986 to 93,400 in 2011 • Scarborough Centre: employment forecast to grow from 14,400 in 1986 to 65,000 in 2011 • Kennedy/Sheppard: 10,000 employment 	<ul style="list-style-type: none"> • NY Centre: actual employment in 2006 = 30,200 – little employment growth – mostly residential • Scarborough Centre: actual employment in 2006 = 13,700 – can't compete for GTA jobs – mostly residential development • Kennedy/Sheppard: limited employment 	<ul style="list-style-type: none"> • Potential transit ridership much less because little or no growth in employment in key centres
Market forces for development	<ul style="list-style-type: none"> • Private developers will build major mixed-use developments at/on top of subway stations 	<ul style="list-style-type: none"> • Prime development sites on/at stations remain vacant for decades – e.g. – Eglinton/Yonge, York Mills/Yonge, Sheppard/Yonge, Sheppard/Allen (Downsview), Islington/Bloor, Wilson/Allen, Eglinton/Allen, Leslie/Sheppard 	<ul style="list-style-type: none"> • Limited current private-sector interest in developing on/at non-downtown subway stations • Lower passenger volume demand than projected

**Factors Affecting Choice of Transit Technology:
What Has Changed Since the TTC's 1986 Subway Plan ('Network 2011')?**

Factor	Status, Expectations in 1986	Status Today	Consequences of Change
<p>Acceptability of development in established, stable neighbourhoods</p>	<ul style="list-style-type: none"> • Development will proceed in designated development zones, consistent with Official Plan 	<ul style="list-style-type: none"> • Community opposition to development proposals at Eglinton/Yonge, Dundas/Bloor, Sheppard/Bayview, Sheppard/Allen, Sheppard/Don Mills, Finch/Warden • Official Plan designation to protect “stable neighbourhoods” • Major developments forced to scale back (e.g. - Minto Plaza) or give up (e.g. - Giraffe) • Higher buildings forced to locate along Highway 401 instead of on transit corridors (e.g. - Sheppard) 	<ul style="list-style-type: none"> • Reduced development potential (lower densities, heights) • Council down-zoning of properties on arterial roads • Lower projected passenger volumes, demand

**Factors Affecting Choice of Transit Technology:
What Has Changed Since the TTC's 1986 Subway Plan ('Network 2011')?**

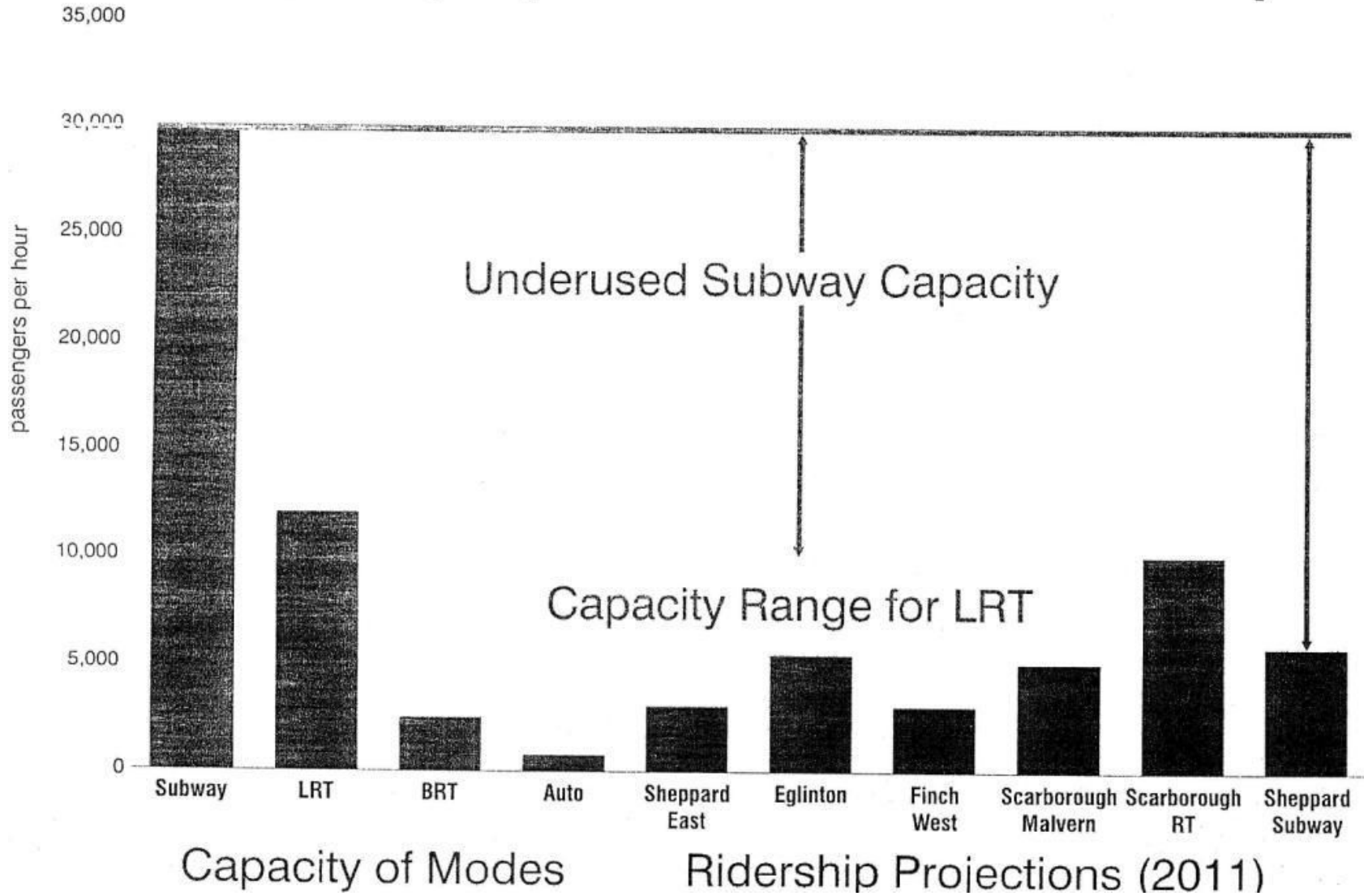
Factor	Status, Expectations in 1986	Status Today	Consequences of Change
Transit's share of travel market	<ul style="list-style-type: none"> • Transit market share will continue to increase, based on 19SO"s dramatic increase in transit ridership • NY centre: target 60% market share to transit • Scarborough Centre: target 55% market share to transit 	<ul style="list-style-type: none"> • Overall transit market share has stabilized/decreased over last 20 years (25%->22%) • Target market share for transit at centres not achieved, no longer considered realistic • Actual 2006 NY Centre: 34% market share to transit • Actual 2006 Scarborough Centre: 21% market share to transit 	<ul style="list-style-type: none"> • Reduction in projected passenger demand volumes
Public's travel patterns and behaviour	<ul style="list-style-type: none"> • Expectation of significant travel demand between centres (e.g. NY, Scarborough) because of major employment nodes • Projection of significant demand (20 million annually) from outside-Toronto via inter-regional connections (Leslie, Kennedy), onto Sheppard Subway • Concept to 'force' travelers from Finch corridor onto Sheppard Subway through changes to bus routes 	<ul style="list-style-type: none"> • Very limited travel demand between centres due to limited employment creation at centres • Extremely limited demand arriving from outside Toronto • People prefer to get seat (available at Finch/Yonge), and refuse to change to Sheppard Subway 	<ul style="list-style-type: none"> • Reduced passenger demand/volume in Sheppard corridor

**Factors Affecting Choice of Transit Technology:
What Has Changed Since the TTC's 1986 Subway Plan ('Network 2011')?**

Factor	Status, Expectations in 1986	Status Today	Consequences of Change
Other market-economy forces	<ul style="list-style-type: none"> • Price of gas will continue to increase and "force" larger percentage of people to take transit • Price of parking will continue to increase and "force" larger percentage of people to take transit 	<ul style="list-style-type: none"> • North American price of gas has not increased to European levels – i.e. – \$2/litre or higher • Parking is free in most suburban locations. Parking charges in central area have levelled off in past ten years 	<ul style="list-style-type: none"> • Projected shift of travel to transit has been less than projected • Lower passenger volumes, demands than projected
<p>Projected long-term demand for new subway lines – measured in people per hour per direction (pphd). This is the number used to gauge capacity requirements. [Subway warranted at demand of 15,000 pphpd or greater.]</p>	<p>Projections for 2011 :</p> <ul style="list-style-type: none"> • Sheppard Subway: 15,400 pphpd • Eglinton Subway: 17,600 pphpd • Downtown Relief Subway: 11,700 pphpd 	<ul style="list-style-type: none"> • Sheppard Subway (actual, existing line): 4500 pphpd • Sheppard Subway (projected – entire line): 6,000-10,000 pphpd • Eglinton. LRT (including fully-underground central section): 5,200 pphpd • Downtown Relief Subway: 12,000 pphpd 	<ul style="list-style-type: none"> • Current demand projections – based on updated land uses, official plan, market share, travel patterns are too low to justify subways. • Subways would provide excessive capacity and require unnecessary expenditures. (see following illustration of demand vs. capacity)

**Factors Affecting Choice of Transit Technology:
What Has Changed Since the TTC's 1986 Subway Plan ('Network 2011')?**

Capacity by Mode Versus Ridership



**Factors Affecting Choice of Transit Technology:
What Has Changed Since the TTC's 1986 Subway Plan ('Network 2011')?**

Factor	Status, Expectations in 1986	Status Today	Consequences of Change
Life-cycle cost break-even point for Sheppard Subway	<ul style="list-style-type: none"> • Capital cost. 30-year operating cost, net present value: used to determine demand level at which subway investment is justified, economical. • Calculated to be 15,000 pphpd or higher. Below 15,000 pphpd, light rail is most cost-effective 	<ul style="list-style-type: none"> • Current projected demand for entire (originally-projected) Sheppard Subway is 6,000-10,000 pphpd 	<ul style="list-style-type: none"> • Current projected demand – based on updated land uses, official plan, market share, and travel behaviour – results in subway not being warranted
Knowledge of long-term subway maintenance requirements and costs	<ul style="list-style-type: none"> • Toronto's subways were relatively new (Yonge – 30 years old. Bloor-Danforth – 20 years old), so long-term maintenance requirements and costs of subways were not fully known 	<ul style="list-style-type: none"> • Subway-accident in mid-90's revealed need for substantial sustained investment in renewal of signals, track, tunnels, and systems. • Current average annual maintenance-only costs of Toronto's subways: <ul style="list-style-type: none"> • capital: \$275 million/year • operating: \$230 million/year • Required funding never completely secured, with \$2.3 billion shortfall at present 	<ul style="list-style-type: none"> • Long-term risk and cost obligations of building and operating capital-intensive infrastructure such as subways

**Factors Affecting Choice of Transit Technology:
What Has Changed Since the TTC's 1986 Subway Plan ('Network 2011')?**

Factor	Status, Expectations in 1986	Status Today	Consequences of Change
Availability/probability of funding	<ul style="list-style-type: none"> • 1990 Provincial "Let's Move" program called for construction of six rapid transit lines, total of 58 kilometres, at a cost of \$10.8 Billion (2011 dollars) 	<ul style="list-style-type: none"> • Construction completed of 1.3km extension of Spadina subway to Downsview (1996), and 5.4 km Sheppard subway to Don Mills (2002). • Total of 6.7 km; total investment of \$1.3 billion (2011 dollars). • Due to financial constraints and competing demands, governments can rarely provide actual funding to match announcements and promises 	<ul style="list-style-type: none"> • TTC, City must be very vigilant and extra-careful to use tax dollars wisely. • Build only what is warranted, to get best value out of any transit investment
Global trends, best practices	<ul style="list-style-type: none"> • Subway was predominant form of rapid transit. • Only four modern light rail lines existed in North America. • Light rail was not well understood, and vehicle design was not fully evolved 	<ul style="list-style-type: none"> • Light rail is predominant form of rapid transit construction. • Twenty new light rail lines have/are being built in North America. • New light rail lines are opening in 115 major cities world-wide. • Examples include Paris, Edinburgh, Brisbane, Copenhagen, Dubai, Jerusalem, Buenos Aires, Rio de Janeiro, Honolulu, Hamburg, Madrid, Montreal, Washington, Los Angeles 	<ul style="list-style-type: none"> • Light rail has surpassed subway in current transit construction. • Meets all travel needs except those with extreme demands. • Can be delivered for 1/3-1/4 the cost of subways

**Factors Affecting Choice of Transit Technology:
What Has Changed Since the TTC's 1986 Subway Plan ('Network 2011')?**

Factor	Status, Expectations in 1986	Status Today	Consequences of Change
Ongoing advancements, improved knowledge of transit technologies and benefits	<ul style="list-style-type: none"> • Subway was predominant form of rapid-transit investment. • Little was known about the effectiveness of light rail 	<ul style="list-style-type: none"> • Light rail is predominant form of rapid-transit construction world-wide because of value and service: <ul style="list-style-type: none"> – high capacity, expandable – reliable, fast service – quiet, comfortable – attracts high ridership – environmentally-friendly – increases land values – attracts development – best community/local access 	<ul style="list-style-type: none"> • Benefits and cost-effectiveness of light rail should be carefully weighed against traffic operational benefits of subways before major investment decisions are made