



Yonge subway extension

Transit project assessment

Councillors Briefing
January 22, 2009

VIVA

 York Region

 TORONTO



inter-regional connectivity is the key to success



VIVA
Viva Rapid Transit

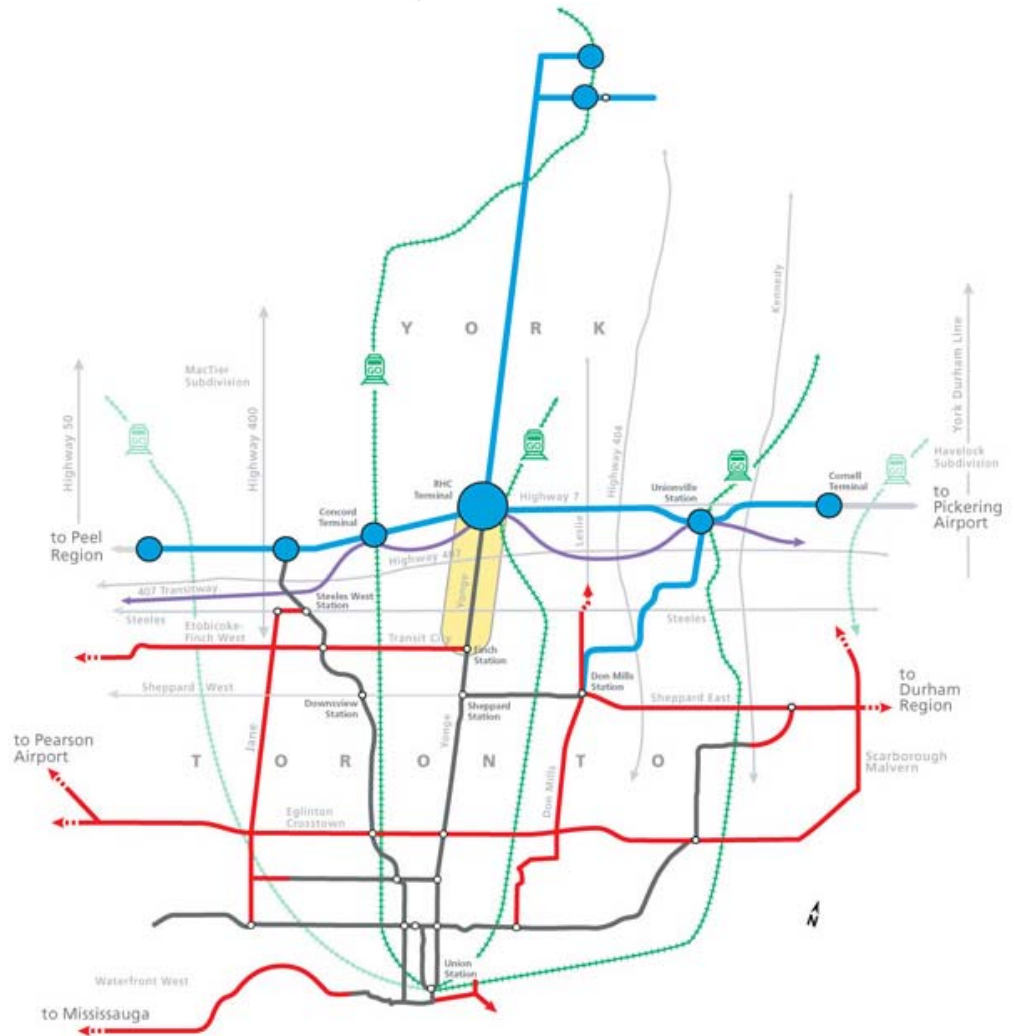
TORONTO
Toronto Transit City
Light Rail Plan

GO
GO Transit

BRAMPTON
Brampton Transit

YORK REGION
York Region Transit

DURHAM REGION
Durham Region Transit



metrolinx: 15 top priorities

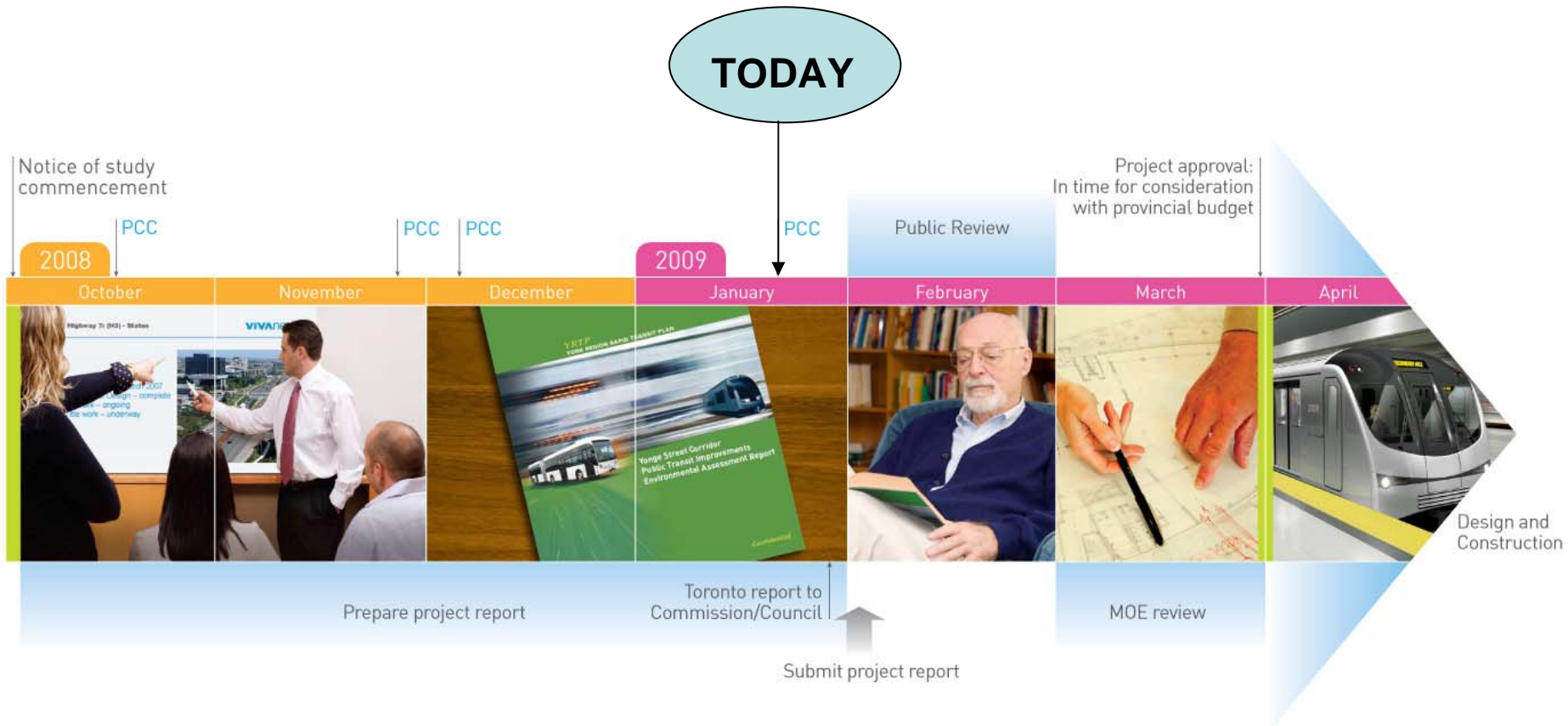
- On November 28, 2008 Regional Transportation Plan approved by Metrolinx Board
- Top 15 priorities for early implementation include:
 - Viva Highway 7 and Yonge Street through York Region
 - Spadina Subway extension to Vaughan Corporate Centre
 - Yonge Subway extension to Richmond Hill Centre
 - Sheppard/Finch LRT
 - Scarborough RT replacement
 - Eglinton Crosstown LRT



...transit city LRT plan



yonge subway – next steps



what's important when planning this subway extension?



You told us your top three priorities were:

1. Connections to other transit
2. Careful planning of existing neighbourhoods and future growth
3. Destinations, places to go and sensitivity to the local environment were tied for the third priority

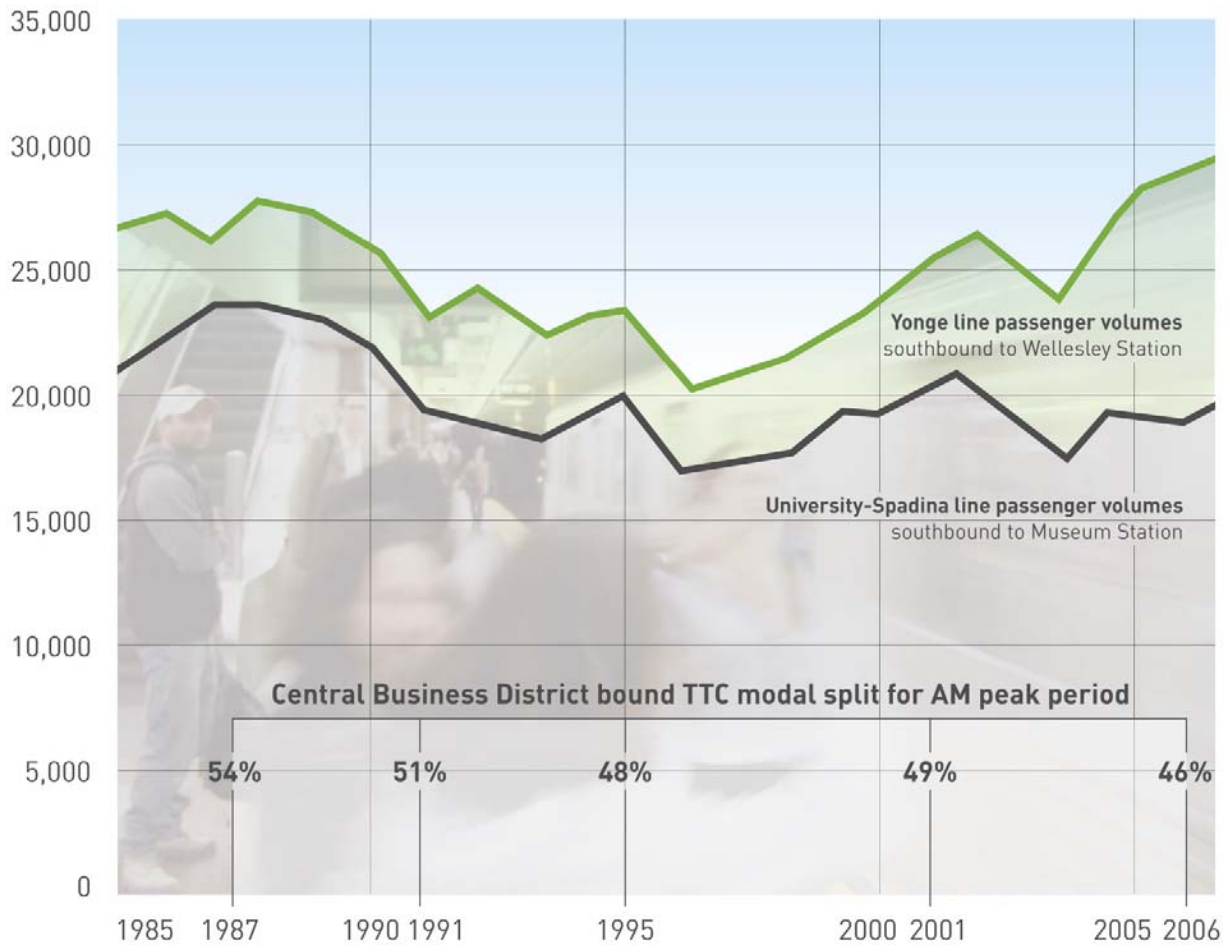
In addition, we need to address all the technical and operational requirements and costs

yonge subway at a crossroads

- The Yonge Subway is TTC's most important asset
- Must preserve and protect existing Yonge line ridership
- Capacity of Yonge line to accommodate ridership growth a growing issue
- Extension of Yonge/Spadina lines matched by downstream capacity
- Three major issues:
 1. Capacity of Yonge Subway line
 2. Capacity of Yonge-Bloor Station
 3. Sequence of events for expansion

yonge-university-spadina subway – peak hour volumes

1985 – 2007, with selected modal splits

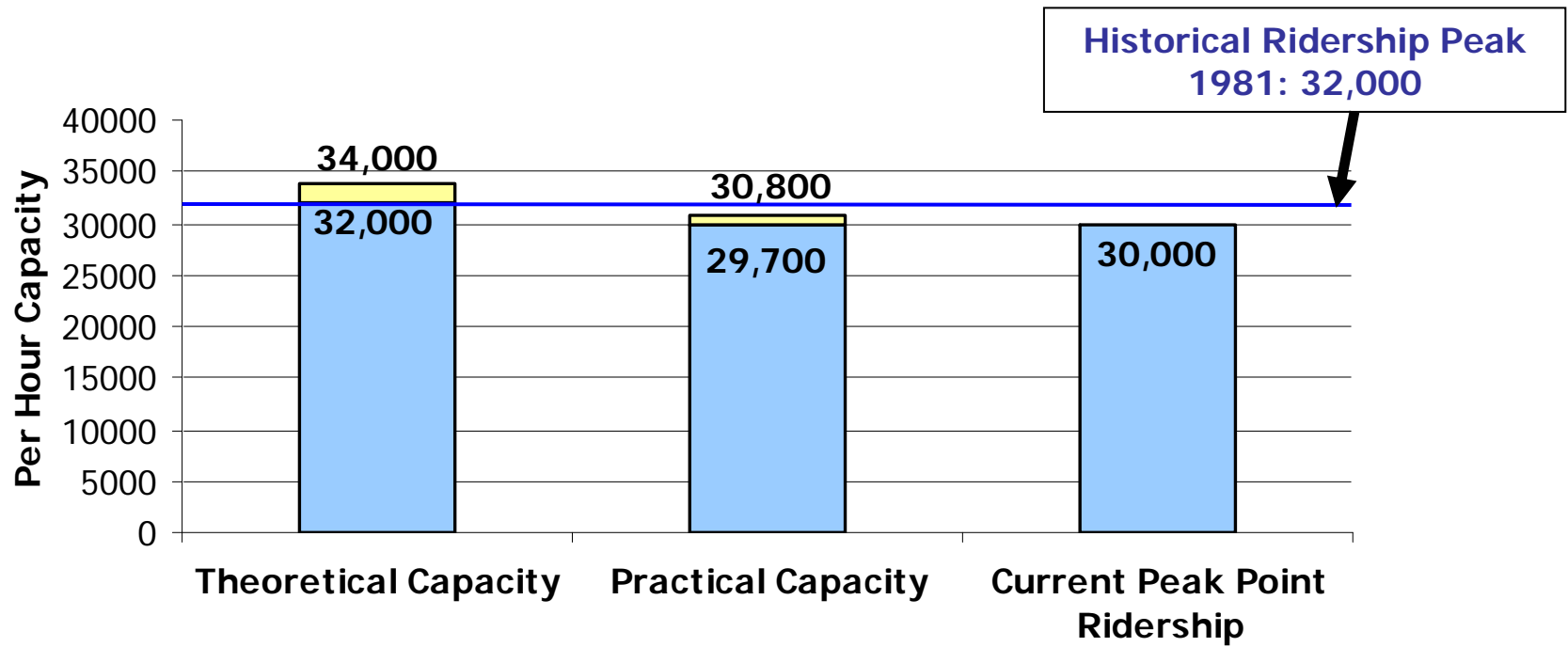


Sources: TTC subway count surveys, Cordon Count surveys

yonge subway capacity: history

- Capacity of Yonge line an issue since early 1980s
- RTES study conclusions (2001)
 - Implement new signalling system (ATO/ATC)
 - Allows closer spacing of trains
 - Add a train platform at Yonge-Bloor
 - Construct another line in the downtown core
 - Looping of Yonge/Spadina lines not required with ATO/ATC
- Led to Spadina/Yonge radial extensions to Highway 7

yonge subway capacity



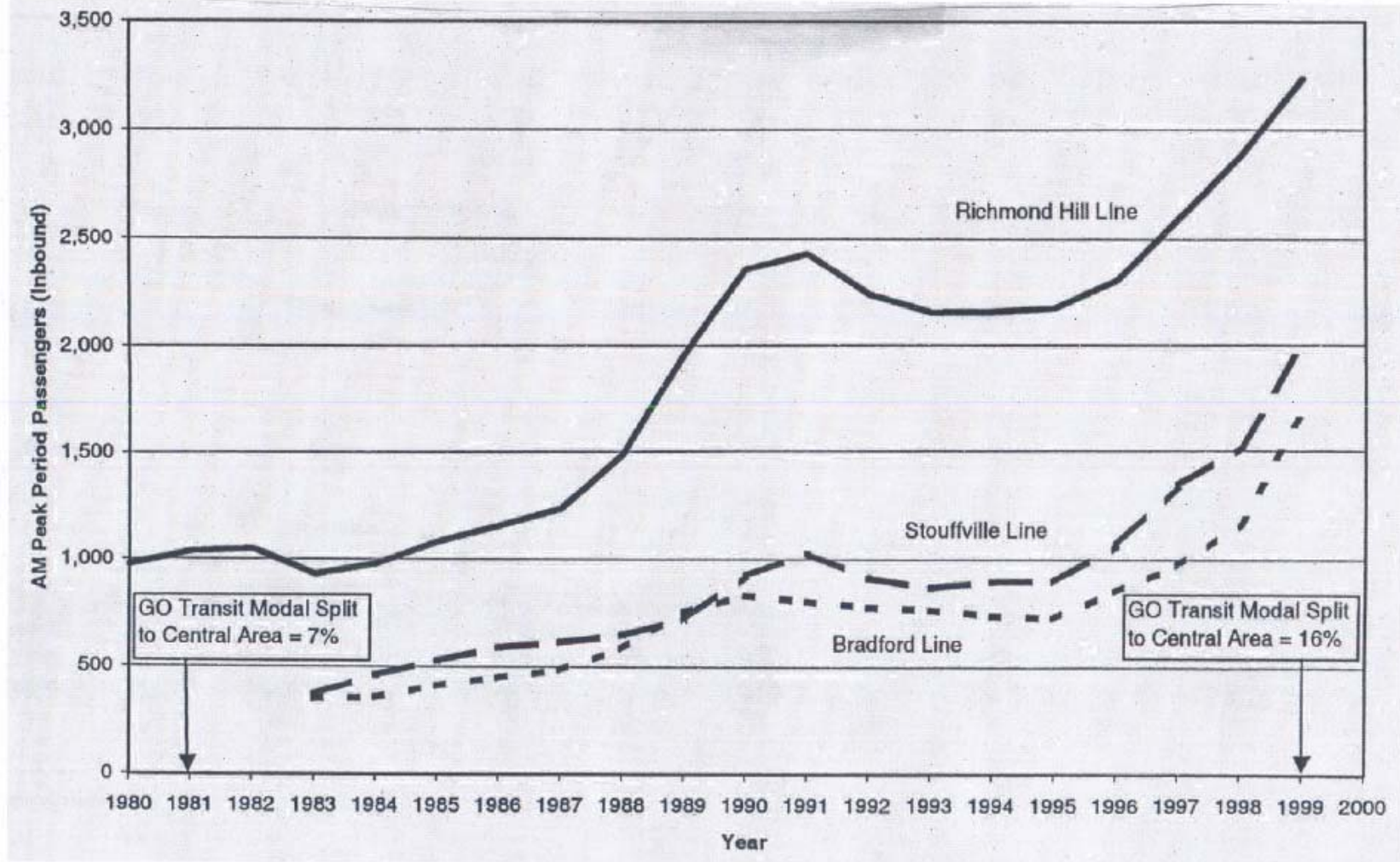
yonge subway quality of service

- Significant operational problems; at practical capacity
- Reduced reliability of service
- Passengers left at platforms, especially Yonge-Bloor
- Platform congestion during delays
- Increased passenger complaints
- Recovery from delays more difficult

yonge subway / GO rail ridership

- Relationship between the two an important future growth issue
- People make choices for travel downtown:
 - Speed/frequency of service
 - Fare levels
 - Availability /cost of parking
- Other ridership growth issues:
 - Population growth in 905
 - Growth in downtown employment levels
 - Overall economic/ridership trends
 - Congestion levels on Yonge line

GO rail am peak period ridership – north lines (1980-1999)

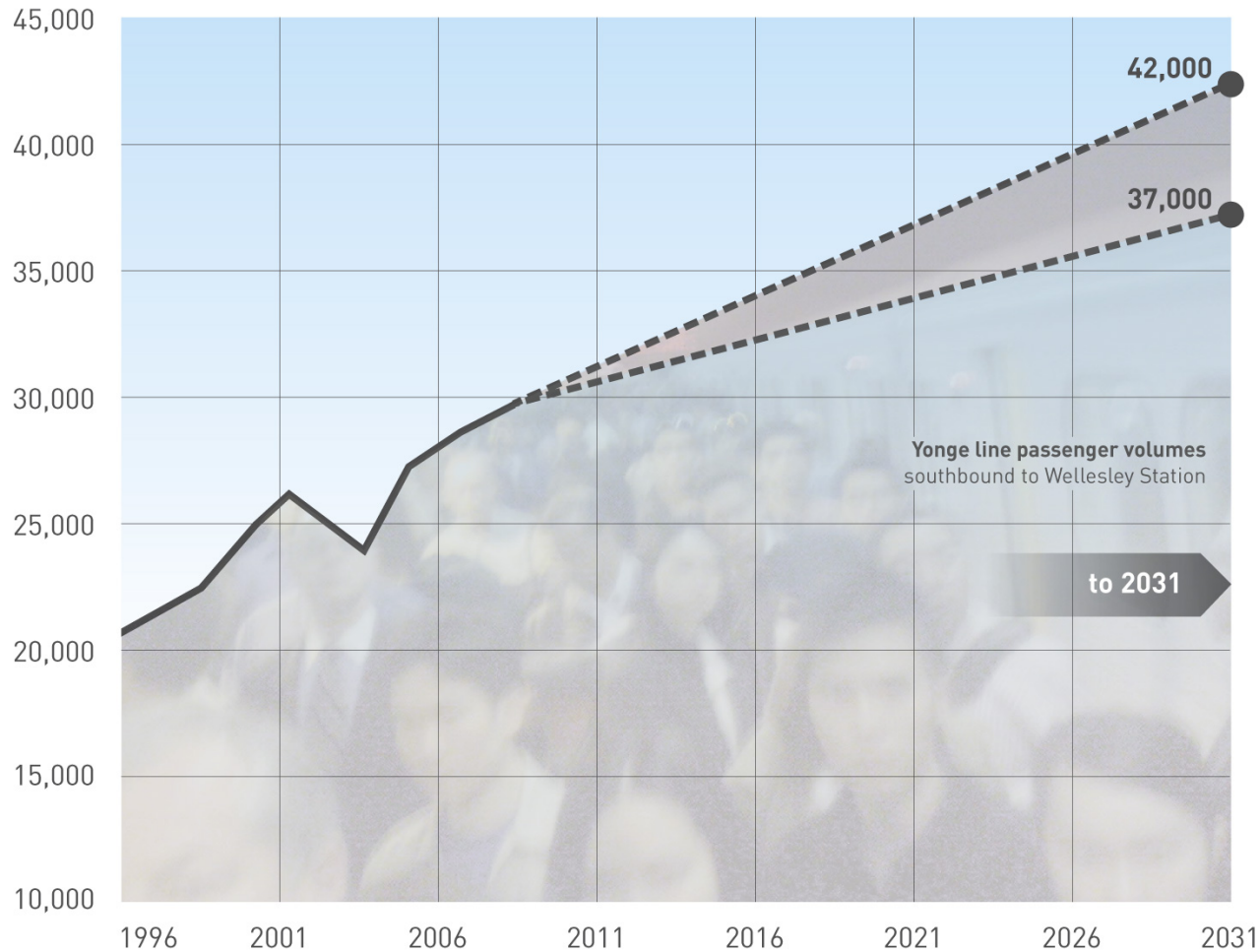


future growth in yonge subway ridership

- Modelling of future ridership growth a science/art
- To be used with caution for planning purposes
 - Current peak hour ridership: 30,000 per hour
 - 2031 projection (low): 37,000 per hour
 - 2031 projection (high): 42,000 per hour
 - Net change: +7,000-12,000 per hour
- How can we accommodate this growth?

yonge subway am peak hour / peak direction volumes

1996 – 2007, projected to 2031



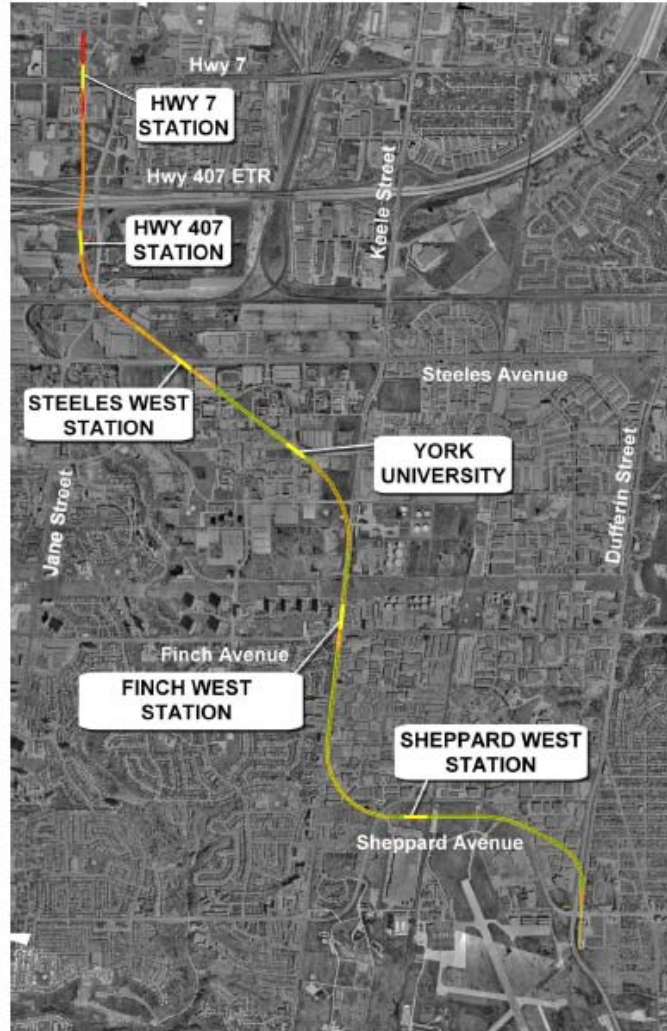
factors contributing to yonge subway growth

- 10% attributable to Transit City Network
- 20% attributable to Yonge Subway extension
- 70% due to:
 - General population/employment growth
 - Other service/network improvements
- A network issue of importance to the whole GTA
- Impact of many factors, not one factor

TTC/City response to growth and capacity

- Short to Medium Term
 1. Spadina Subway must open before Yonge Subway extension to divert riders
 2. New signalling system must be funded/implemented to improve capacity
 3. Capacity of Yonge-Bloor station must be addressed
 4. New Toronto Rocket Cars to increase capacity of trains
 5. Operate Finch/Richmond Hill service to service York/Toronto riders
- Long Term
 6. Downtown Relief Line
 7. 7th car added to subway trains

1: spadina subway extension



1: effect of spadina subway extension

- Spadina Subway extension must open before Yonge Subway extension
- Connects to:
 - Barrie GO line (Sheppard West Station)
 - Finch LRT (Finch West Station)
 - Jane LRT (Steeles West Station)
 - Highway 407 Transitway (407 Station)
 - Viva/YRT (Vaughan Corporate Centre)
- Will help “dilute” the ridership on Yonge Subway for people from north/west destined to downtown
- 1,300 peak hour riders diverted to Spadina Subway (4% diversion)

2: new signalling system

- Capacity improvements to existing line are urgently needed prior to operating the extension
- Funding commitment to re-signal YUS subway line (\$350 million)
- Will significantly increase capacity with closer spacing between trains:

Current: 142 seconds

With new signal system: 105 seconds (35% increase)

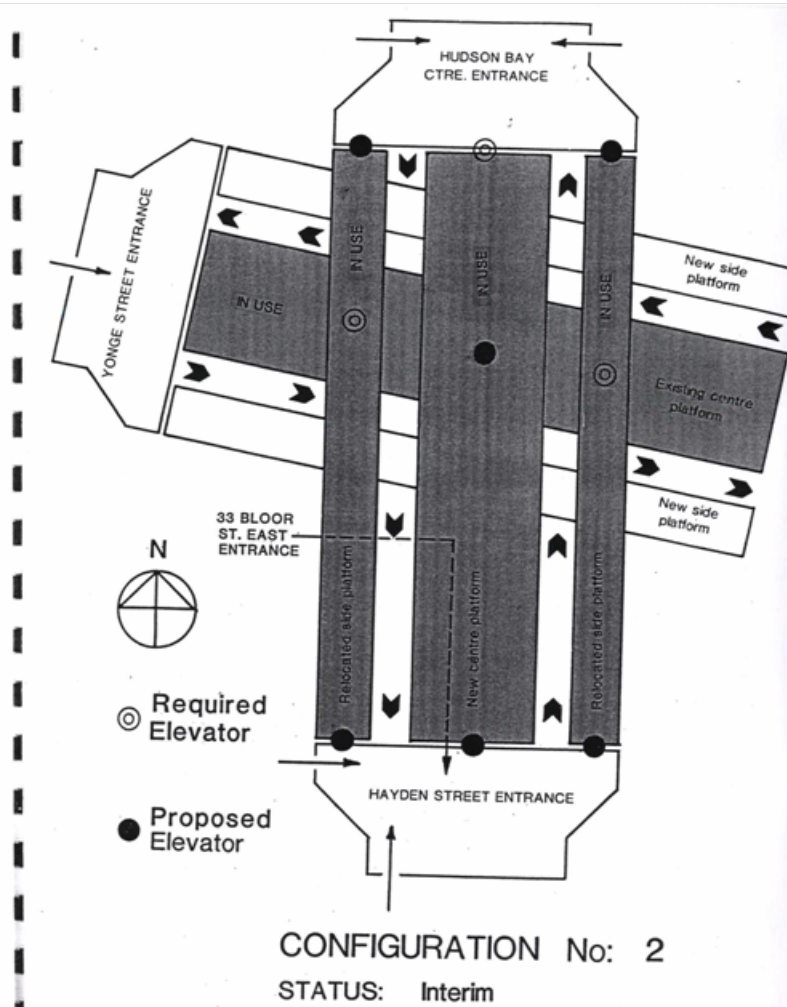
3: yonge-bloor station

- Key to improving Yonge Subway capacity
- Bottleneck to adding more trains, with existing or new signalling system
- Must cut train 'dwell' time in half
- Add a third platform at Yonge Subway level:
 - Train doors will open on **both** sides
 - Unload to new centre platform
 - Load from relocated side platform
 - Unloading/loading at the same time!
 - Will cut theoretical dwell time by 50%
- Could also add platforms on BD level

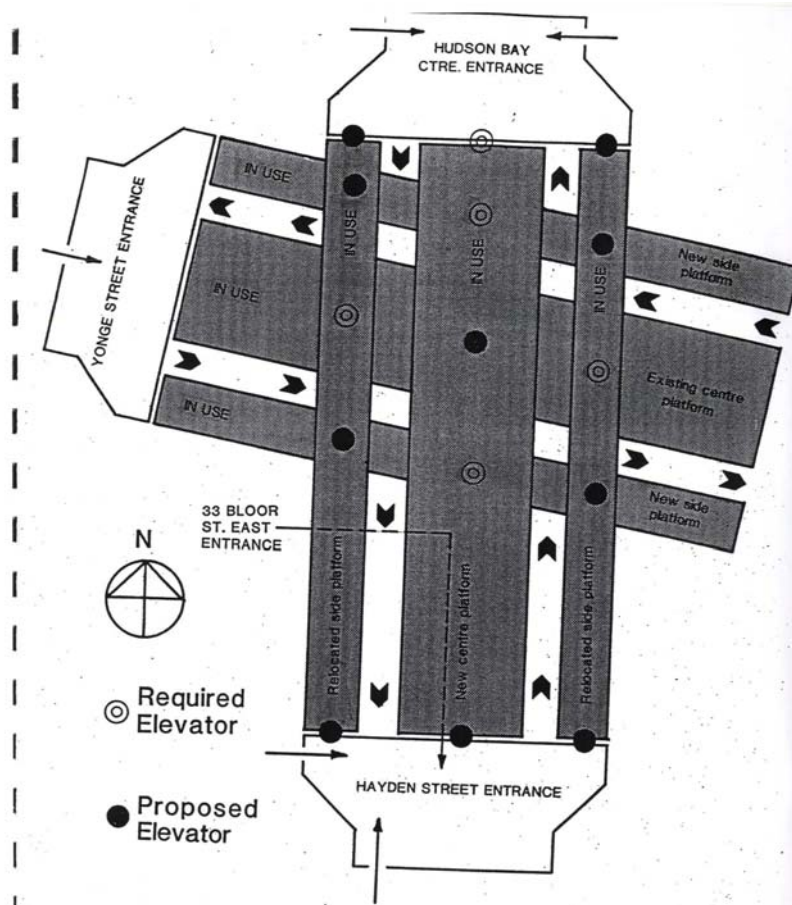
congestion at yonge-bloor station



yonge-bloor station: third platform concept (interim)



yonge-bloor station: third platform concept (ultimate)



CONFIGURATION No: 3
STATUS: Ultimate

3: yonge-bloor capacity study

- Initiated in January 2009
- To be completed by Fall 2009
- Confirm previous concepts for expansion
- Identify other operational strategies to increase capacity
- \$450 million project
- Currently not funded
- 2-3 years to design
- 4-5 years to construct
- Station will be operational throughout construction

4: new toronto rocket cars

- New trains will allow riders to walk/stand in between each car:
 - 10% increase in train capacity
 - Better distribution of passengers along train length
- Currently on order for delivery by 2012
 - Prior to opening of Spadina or Yonge Subway extensions

4: interior of new toronto rocket car



5: yonge subway extension: planned service levels

AM Rush Hour

Downsview – Finch: 2 minutes 21 seconds

Downsview - Richmond Hill Centre: 4 minutes 42 seconds

PM Rush – Initially

Downsview - Richmond Hill Centre: 2 minutes 21 seconds

5: yonge subway: initial service levels

- Every second northbound train will short-turn at Finch station
- These trains will be empty for southbound departures at Finch station
 - For local Finch riders with extension
- Every other train will start at Richmond Hill Centre station
 - Will capture ridership north of Finch Station
- Helps to increase seat availability south of Finch in AM Rush

6: downtown relief line

- Long-term option (Pape to Queen)
- Diverts 40% of Yonge riders to new line (Metrolinx estimate)
- Yonge peak hour ridership reduced to 25,000 per hour (Metrolinx estimate)
- A last resort after maximizing capacity of existing system
- \$2.1 billion project

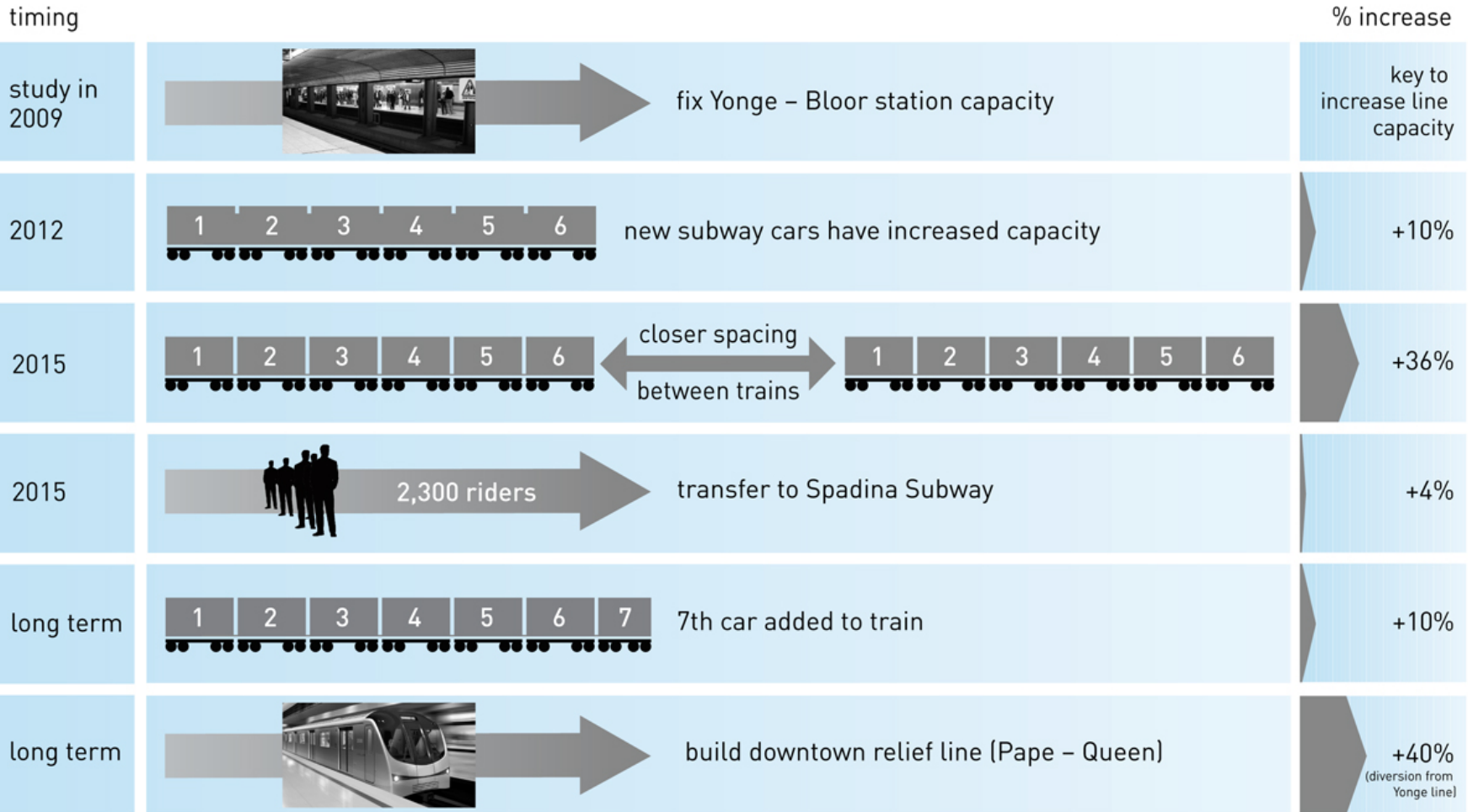
7: longer subway trains

- Existing platforms are 500 feet long
- Existing trains are 450 feet long
- 50 foot allowance for drivers to manually stop the train
- With new signal system, computer will stop the train
- One foot stopping allowance with ATO/ATC
- Allows the operation of longer trains
- 10% improvement in capacity
- Significant operational impacts to implement
- A long term option

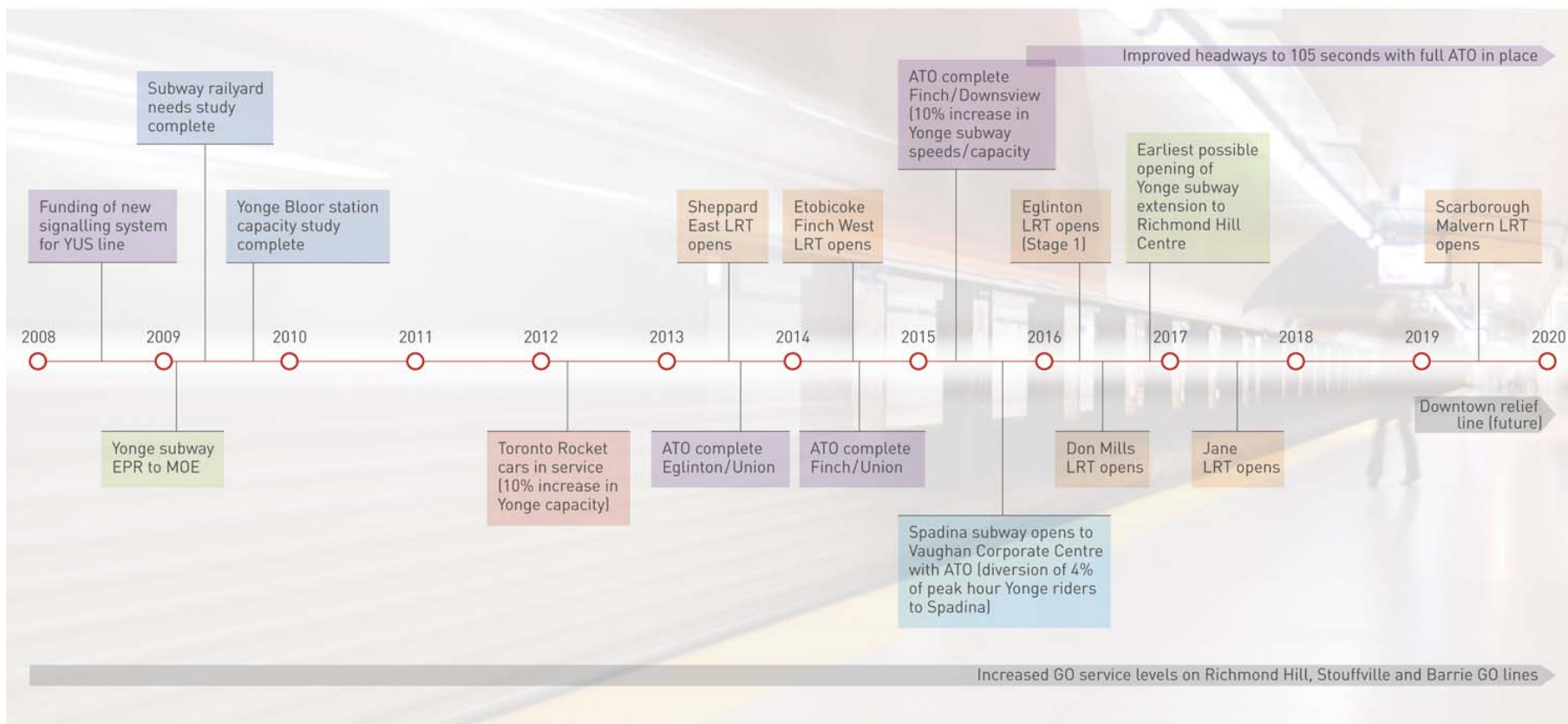
improved GO service levels

- Increased service levels in GO rail corridors essential
 - Especially Richmond Hill GO corridor
- Potential to offload Yonge ridership
- Both GO service improvements and Yonge extension are required
- Each serves a different travel market
- Need both improvements, not one or the other

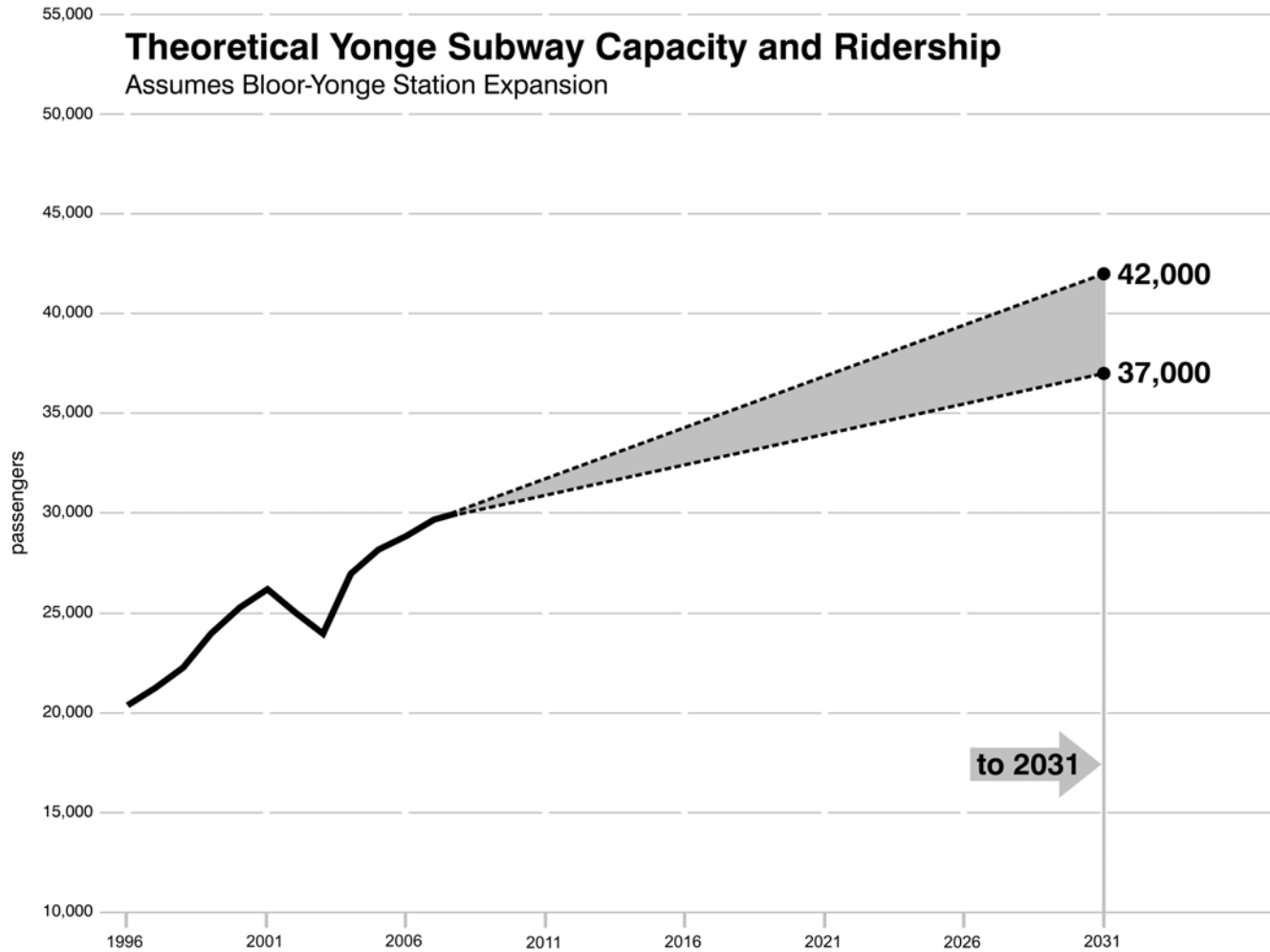
capacity improvements to the yonge line



timeline for yonge subway capacity / ridership milestones



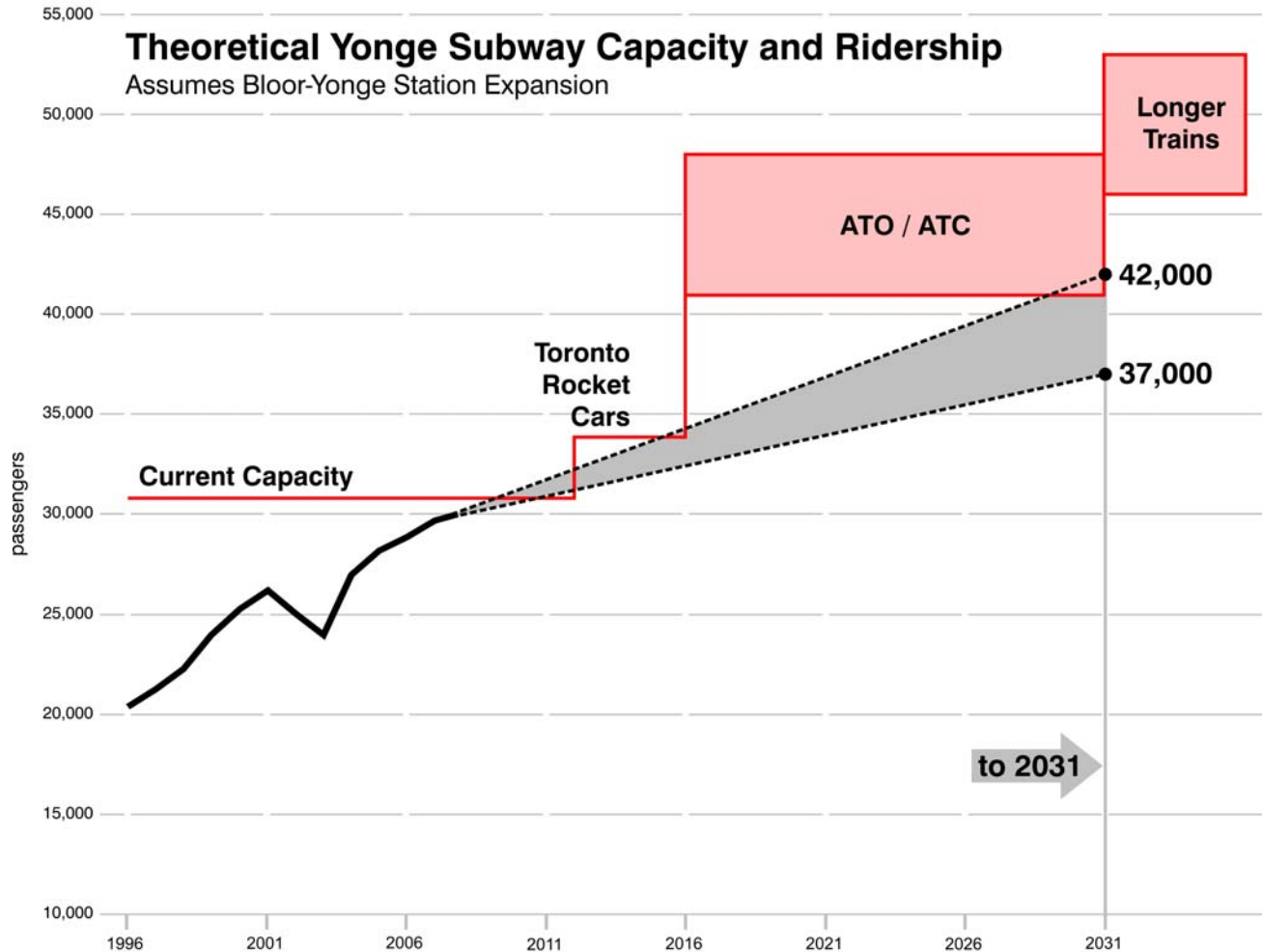
theoretical capacity and ridership



Sources: TTC subway count surveys, Cordon Count surveys

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theoretical capacity and ridership



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theoretical capacity and ridership

