Light Rail Transit / Bus Rapid Transit Analysis

Presented to: Executive Policy Committee
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Presented by: Ken Klassen
58 Fulham Avenue
Winnipeg, MB R3N 0G2
Tel. 489-8103 or kenklassen@shaw.ca

Administrative Report

- Recommendation to endorse LRT as “preferred rapid transit option for City of Winnipeg” should be rejected
  - Analysis is deeply flawed and incomplete
  - Report is riddled with glaring errors and omissions
  - Key information lacks adequate context



Administrative Report

- Rapid transit should <u>not</u> be funded through federal P3 Canada Fund
  - Report ignores limitations and risks of P3 Canada Fund
  - Will result in further delays
  - Far better options exist for federal support



Definitions

- ‘Light rail transit’ (LRT) and ‘streetcar’ (tram)
  - Terms should not be used interchangeably
  - Cost and performance are different



Definitions

- Light rail transit (LRT)
  - "Metropolitan electric railway system characterized by its ability to operate single cars or short trains along exclusive rights-of-ways at ground level, on aerial structures, or occasionally streets".

Source: Transportation Research Board (Transit Capacity and Quality of Service Manual – 2nd Edition



C-Train (Calgary)

Definitions

- Streetcars (trams)
  - "A street transit system consisting of electrically powered rail vehicles operating in single or multiple unit, mostly on surface street with mixed traffic".

Source: Transportation Research Board (Transit Capacity and Quality of Service Manual – 2nd Edition

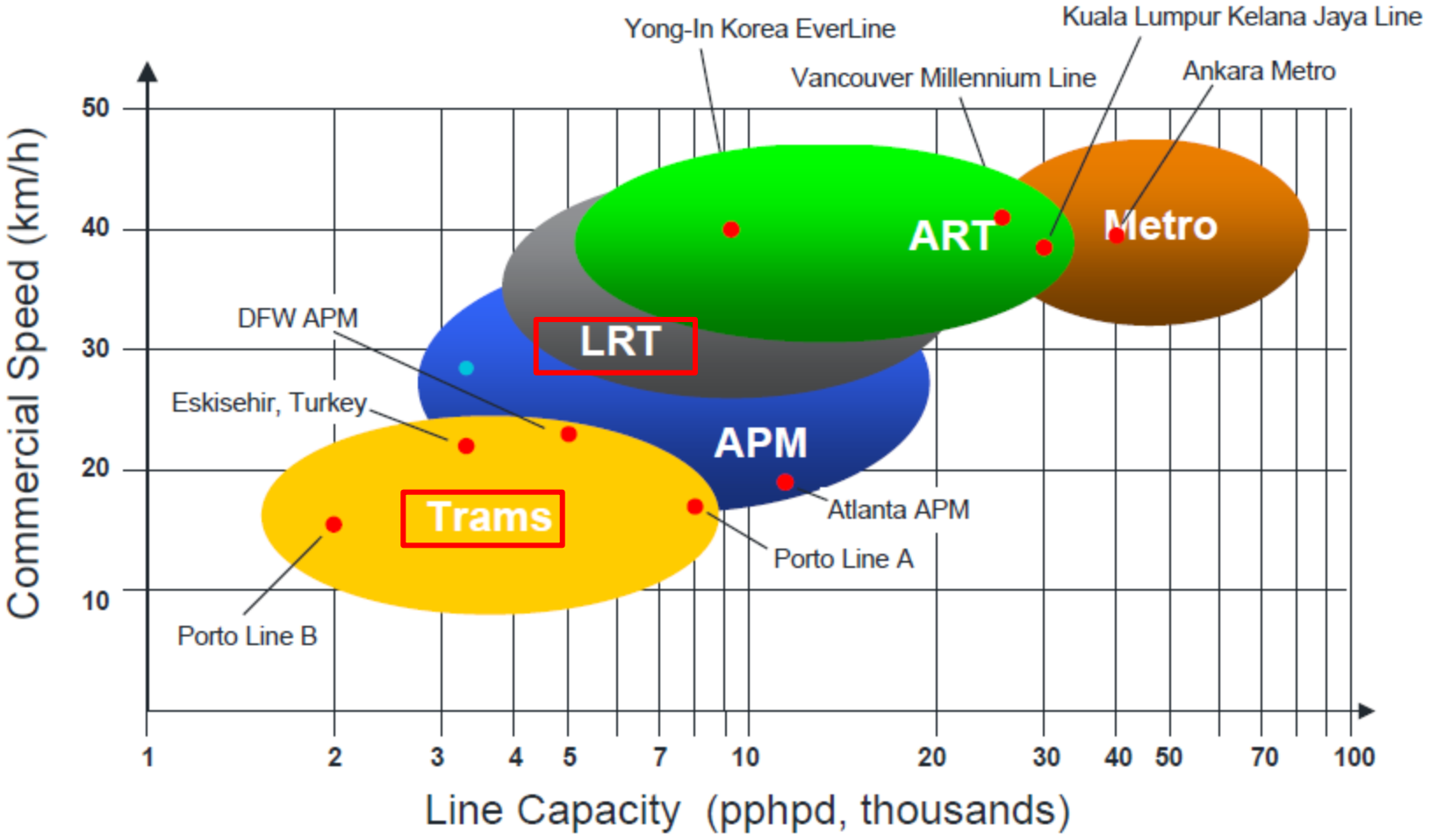


Verkehrsbetriebe Tram (Zurich)

Definitions

- Other key differences
  - Streetcars are the “lowest and slowest” (i.e. less expensive than LRT but have lower capacity and lower average speed)

Each technology has its own domain



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Definitions

- Other key differences
  - Streetcars typically used as ‘circulators’ (especially in downtown areas) and LRT for ‘line haul’ or ‘commuter’ service

Definitions

- Other key differences
  - Streetcars present more conflict and risk to pedestrians, cyclists and other vehicles



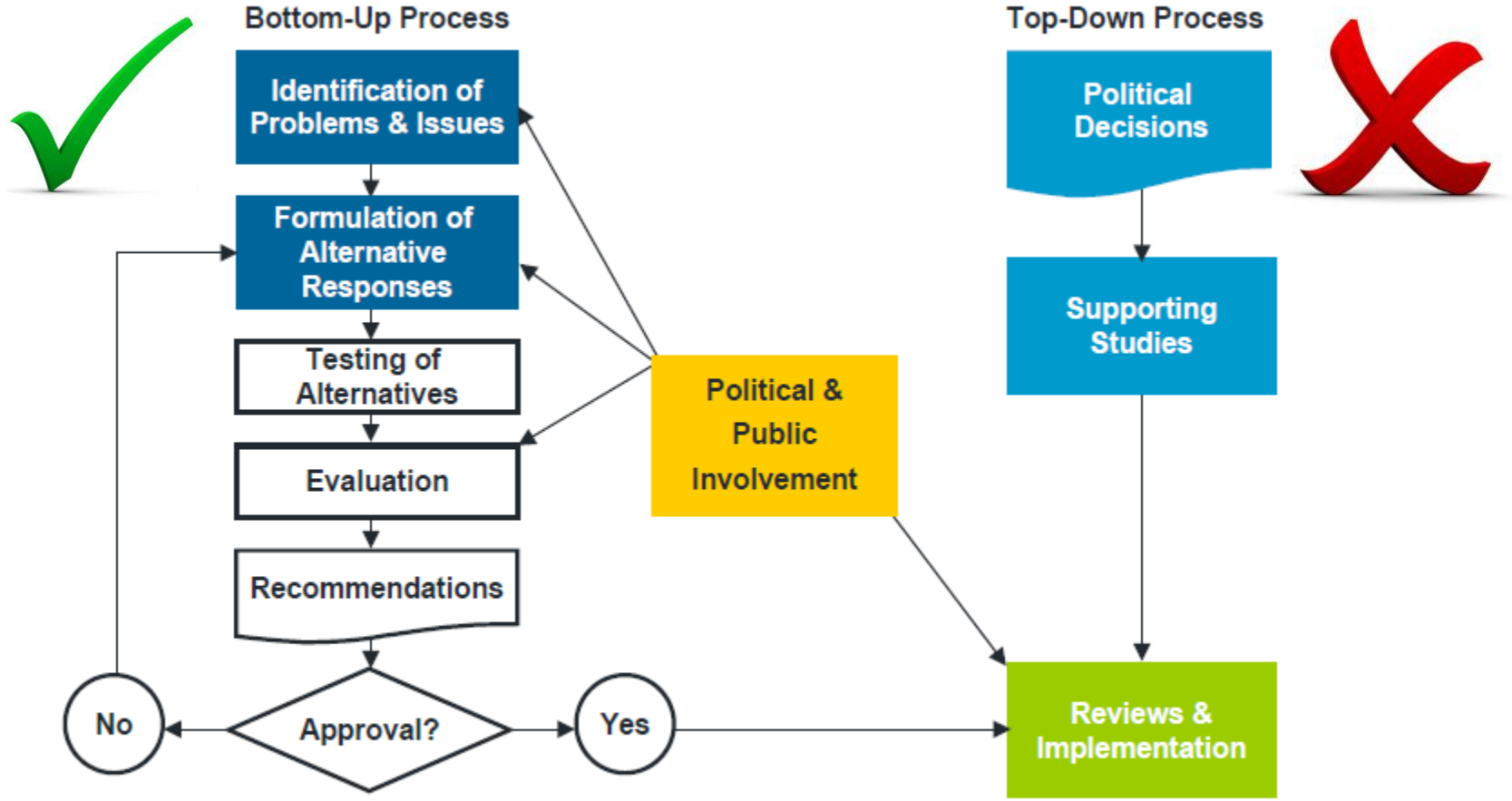


MVV Tram Crossings (Munich)

Technology Selection

- Poor public policy to endorse any specific technology (BRT, LRT or streetcar) as a “preferred rapid transit option for City of Winnipeg”
  - Contrary to approach recommended by transportation experts and process used in other leading jurisdiction
  - Technology for each corridor should be selected on its own merit
  - Selection process should be ‘bottom-up’, not ‘top down’

Technology Selection



SOURCE: Transportation Opportunities in the Greater Toronto Area: Building on Toronto City and MoveOntario 2020, by Richard M. Soberman. On behalf of the Residential and Civil Construction Alliance of Ontario

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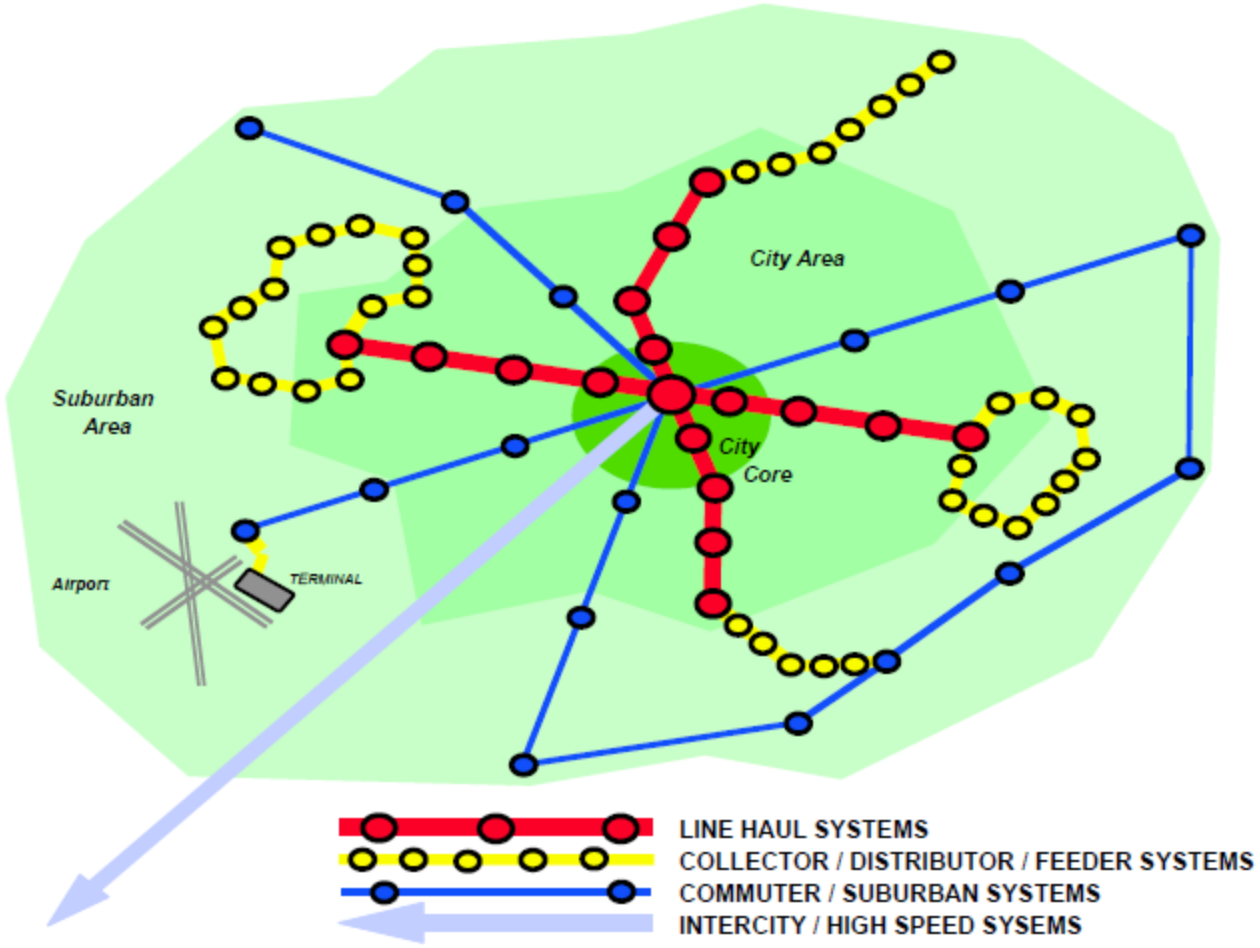
Different technologies for different transportation applications



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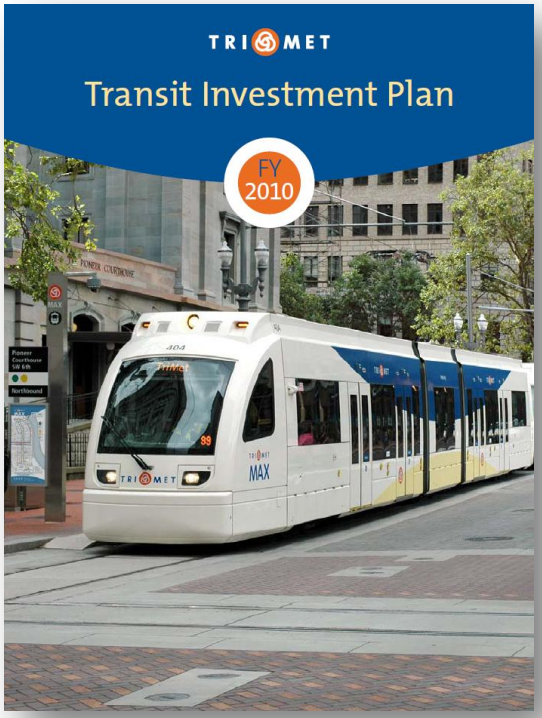
Technology Selection

- Example – Portland, Oregon
  - Region has chosen all three approaches (i.e. LRT, streetcar and BRT)



Previous Research

- Transportation Research Board report
  - *'Case Studies in Bus Rapid Transit'*
  - Sponsored by the U.S. Federal Transit Administration
  - Draws on experience of 26 urban areas in North America, South America, Europe and Asia
  - Most comprehensive report on BRT
  - Completely ignored in Administrative Report

Previous Research

- Transportation Research Board conclusion:

  "*The case studies summarized here demonstrate that BRT does work. It can attract new riders and induce transit-oriented developments. It can be more cost-effective and provide greater operating flexibility than rail transit.*"

Previous Research

- GAO (General Accounting Office)
  - *'Bus Rapid Transit Show Promise'* report (September 2001)
  - '*Bus Rapid Transit Offers Communities a Flexible Mass Transit Option' testimony to Congress* (June 2003)
  - Completely ignored in Administrative Report

Previous Research

- GAO conclusion
  - BRT costs much less to build than LRT yet compared favourably in terms of operating costs, speed and ridership
  - BRT systems average $17.2-million (CDN) per mile*
  - LRT systems average $44.4-million (CDN) per mile* (i.e. 2.6 times more)

    ** Adjusted to 2000 dollars*

Previous Research

- Capital cost comparison of Canadian BRT vs. LRT
  - Updated and expanded in May 2010
  - Examines eight of most recent LRT projects in Canada ($13.7-billion in cost and 123 km in length)
  - No projects come near $50-million per km cost cited in report by HDR Decision Economics
  - Completely ignored by Administrative Report

Recent Research

City	Type	Project Name	Status	Cost	System Length	Cost per Kilometer	Relative Cost to Winnipeg's BRT
Ottawa	LRT	DOTT Blair-Tunney's Pasture LRT	Design stage (2018 target completion)	$2.1-billion	12.5 km	$168-million	4.5x higher
Toronto	LRT	Eglinton Crosstown	Design stage (2016, 2018 & 2020 phased completion)	$4.6-billion	33 km	$139-million	3.7x higher
Toronto	LRT	Scarborough Rapid Transit Conversion and Extension	Design stage (2016 target completion)	$1.4-billion	11.6 km	$121-million	3.2x higher
Vancouver	LRT	Canada Line	Completed (opened August 2009)	$2.054-billion	19 km	$108-million	2.9x higher
Edmonton	LRT	South LRT Extension	Completed (opened April 2010)	$690-million	7.6 km	$90.8-million	2.4x higher
Calgary	LRT	West LRT	Under construction (opening December 2012)	$700-million	8.4 km	$83.3-million	2,2x higher
Toronto	LRT	Finch West LRT	Design stage (2015 target completion)	$1.2-billion	17 km	$70.6-million	1.9x higher
Toronto	LRT	Sheppard East LRT	Under construction (opening 2013)	$966-million	14 km	$69-million	1.8x higher
				$13.710-billion (total)	123.1 km (total)	**$111.4-million (average)**	**3.0x higher (average)**

Recent Research

- Administrative Report
  - Comparison and quantification of anticipated benefits of LRT vs. BRT is riddled with errors and omissions
  - Information favourable to BRT has been excluded
  - Makes reference to “documents from IBI Group” that have not been publically released

Recent Research

- Administrative Report
  - Only shows life-cycle benefits of LRT vs. BRT but not the costs
  - HDR report clearly shows gains in ridership, development or GHG emissions reductions from LRT do not offset its higher cost
  - Annual net benefit of BRT is projected to be twice that of LRT
  - BRT also offers substantially lower capital cost and risk

Summary Table 1: Equivalent Annual Annuity Comparison of the BRT, LRT and APM – Millions of 2009 Dollars

DESCRIPTION	MEAN	10th PERCENTILE	90th PERCENTILE
Equivalent Annual Annuity			
Bus Rapid Transit (BRT)	$2.30	$0.02	$4.73
Light Rail Transit (LRT)	$1.10	($2.00)	$4.37
Automated People Mover (APM)	$2.37	($1.88)	$6.74

Source: Business Case Analysis of Three Transit Alternatives in Southwest Corridor – Final Report by HDR (Sept. 9, 2009)

Recent Research

- Administrative Report
  - Fails to acknowledge previous two cost-benefit analysis of BRT for Southwest Rapid Transit Corridor
  - Project featured in January 2002 report '*Case Study: Cost Benefit Framework and Model for the Evaluation of Transit and Highway Investments – Final Report'* prepared for Transport Canada
  - Report found project has very positive benefit-cost ratio (2.1 to 1) and high probability of success

Recent Research

- Administrative Report
  - Also fails to acknowledge results from September 2004 report '*Benefit Cost Analysis of Winnipeg's Proposed BRT Phase 1 Project Final Report'* prepared for the City of Winnipeg by MKI
  - Most thorough and comprehensive cost-benefit analysis ever conducted for a transportation project in Winnipeg
  - Analysis showed project has very positive cost-benefit ratio, even using conservative projections for ridership increases

Recent Research

- Administrative Report
  - Impact on local economy ignored
  - BRT results in much larger fraction of goods and services being procured from Winnipeg-based businesses



Recent Research

- Administrative Report
  - Environmental benefit of LRT overstated
  - Electricity for LRT reduces exports of clean, hydro-generated electricity that displaces coal-fired generation in U.S.



Recent Research

- Administrative Report
  - Fails to consider that BRT is becoming progressively cleaner (e.g. clean diesel, biodiesel, hybrid, fuel cell)
  - Local company (New Flyer) is world leader in advanced BRT



Recent Research

- Administrative Report
  - Doesn't acknowledge that most benefit from rapid transit comes from shift away from single occupant vehicle use, not whether it is BRT or LRT



P3 Canada Fund

- Administrative Report fails to disclose risks and limitations of attempting to use this federal initiative



P3 Canada Fund

- Not a first choice by other cities to fund rapid transit
  - P3 Canada Fund has yet to announce support for any rapid transit projects
  - In contrast, Building Canada Fund is cost-sharing more than $6-billion in rapid transit projects across Canada (with several more pending signed agreements)
  - Canada Strategic Infrastructure Fund has also been tapped by other cities to build rapid transit (including several BRT projects)

P3 Canada Fund

- Poor choice to fund rapid transit
  - Much less money than Building Canada Fund ($8.8-billion vs. $1.25-billion)
  - Lower level of support than Building Canada Fund (“up to” 25% vs. 33% to 50%)



P3 Canada Fund

- Risky way to fund rapid transit
  - No guarantee of funding - projects must compete
  - No regional set aside
    (Building Canada Fund distributed on per capita basis)



P3 Canada Fund

- Must be more than ‘design-build’ to qualify
  - Mandatory that private sector must either finance or maintain/operate the project
  - See page 11 of Submission Guide

P3 Canada Fund

- Well result in more needless delay
  - City has missed Round 2 deadline (June 30) to submit proposal
  - Next call for projects is not for several months
  - Review and approval process is very slow (application indicates one year)
  - Could be well into 2012 before Round 3 results are known (even longer if there is a federal election)

P3 Canada Fund

- Industry doubts about public-private partnerships to build rapid transit
  - Major hurdle has been higher cost of borrowing for private sector
  - Interest rate spreads have increased as result of financial crisis
  - Difficult to pass required “Value for Money” test required by P3 Canada Fund

Public-Private Partnerships (P3s)

Bombardier CEO questions the viability of P3s

Canada Press, Tuesday, May 4, 2010

MONTREAL – Bombardier President and CEO Pierre Beaudoin, questions the validity of the public-private partnership (P3) model, noting that companies are not always in the best position to finance major transportation projects



Conclusions

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2. Finish what you started – complete Phase Two of Southwest Rapid Transit Corridor as soon as possible as BRT
3. Accept federal support already offered – don’t roll the dice and risk further delay with P3 Canada Fund
4. Be technology neutral on future rapid transit corridors – that’s what other leading cities do
5. Commit to an open and transparent ‘bottom up’ approach to planning – current ‘top down’ political approach isn’t working

