Light Rail Transit in London

Amanda Stratton

7 Reasons Businesses Support LRT

1. More Ridership = More People Downtown
2. Less Traffic Congestion
3. Better Air Quality
4. Less Stigma; More Customers
5. Doing it Right the First Time is Always Better
6. 30 Years of Benefits > A Few Months of Construction
7. It's Better Bang For Our Buck

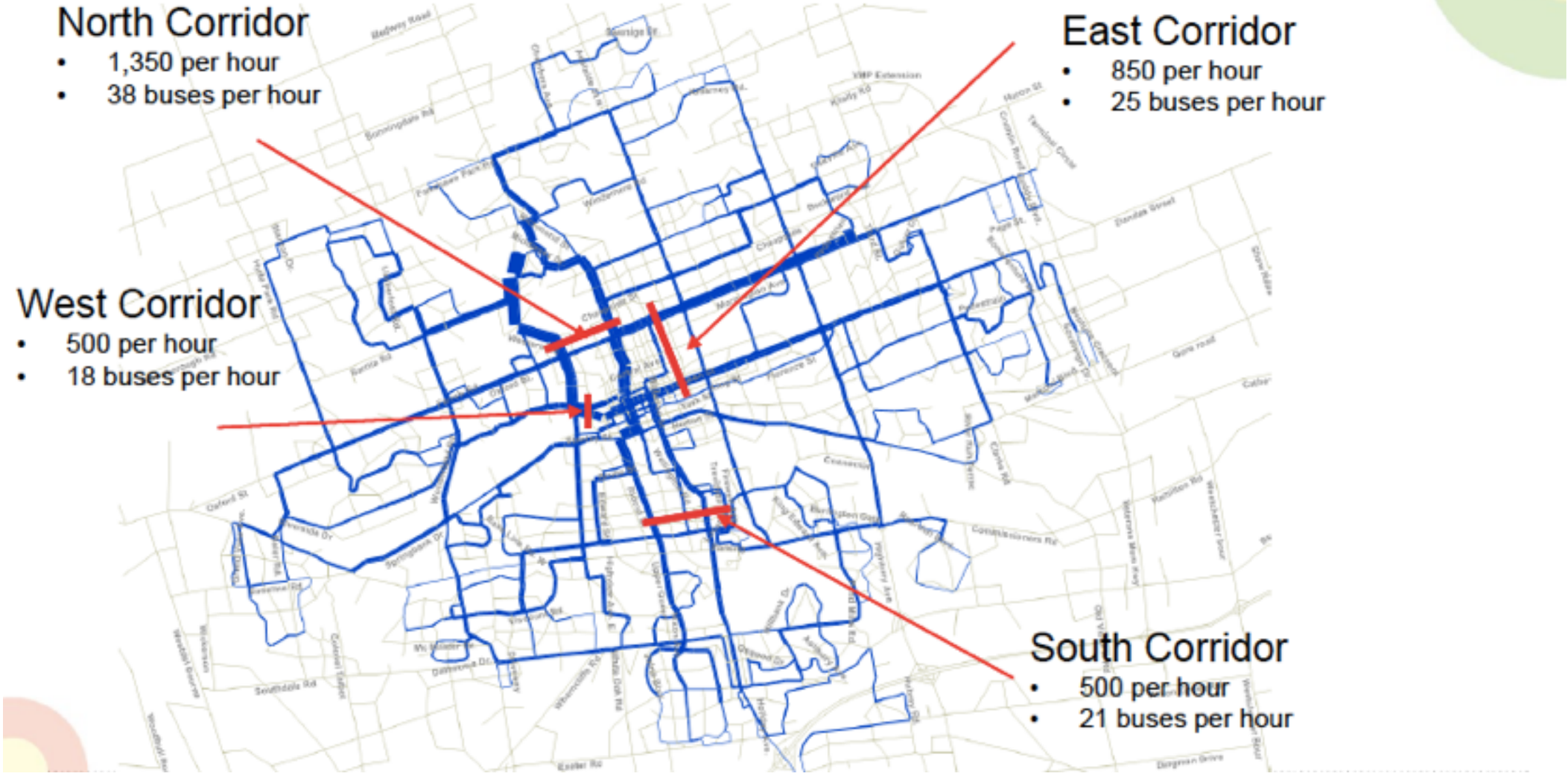
17 Downtown Businesses That Support LRT

1. Joel Adams and Amanda Stratton, **Hacker Studios** (252 Dundas Street)
2. Vanessa Brown and Jason Dickson, **Brown & Dickson** (211 King Street)
3. Gena Brumitt, **BRUMITT Management & PR Group** (151 Dundas Street)
4. Dave Cooke, **Fire Roasted Coffee** (105 King Street)
5. Jeff Crane, **POI Business Interiors** (201 Queen Street)
6. Titus Ferguson, **UnLondon Digital Media Association** (211 King Street)
7. Christine Gionet, **Renegade** (232 Dundas Street)
8. Felipe Gomes, **Aroma Mediterranean Restaurant & Cafe** (717 Richmond Street)
9. Milos Kral, **Milos' Craft Beer Emporium** (420 Talbot Street)
10. Chris McInnis, **Über Cool Stuff** (123 Carling Street)
11. Colin R. Nash, **Nash Jewellers** (182 Dundas Street)
12. Jodi Simpson, **CityMatch**
13. Howard and Suzanne Pennell, **Crabby Joe's Tap & Grill** (276 Dundas St.)
14. Mark A. Rayner, **Author**
15. Mark Serre, **The Morrissey House** (361 Dundas Street)
16. Kevin Wu, **Chil Frozen Yogurt Bar** (620 Richmond Street)
17. Mike Sherlock, **knighthunter.com**

capacity

Capacity - Current Peak Hour Ridership

Existing Ridership (Peak Hour)



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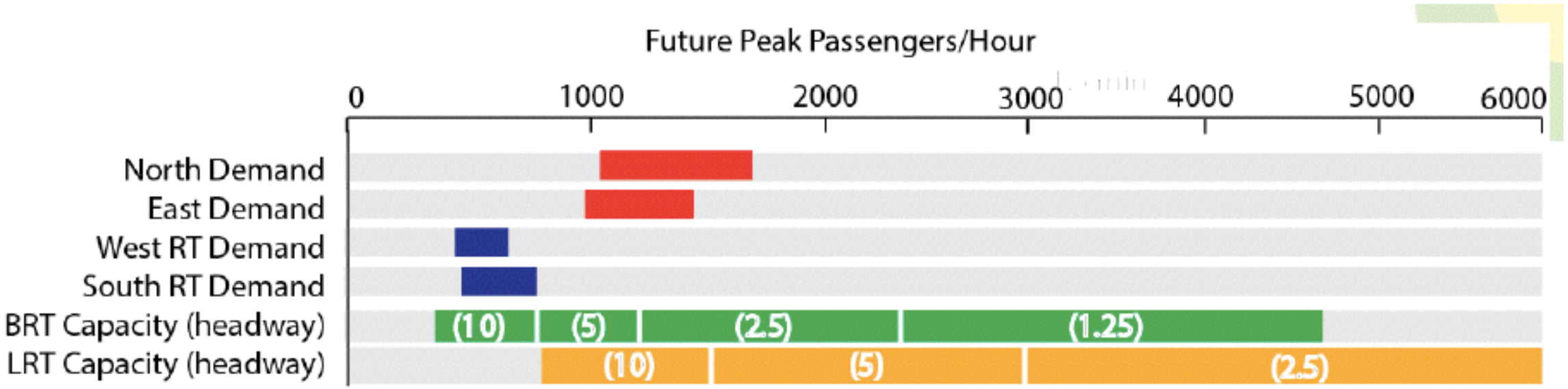

Exhibit 3-1: Assumed Service Levels

ATTRIBUTE		
	Bus Rapid Transit Alternatives	
Headway (min)	5	10
Capacity per vehicle	70	70
Capacity Provided (passengers/hr)	840	420
	Light Rail Transit Alternatives	
Headway (min)	7	10
Capacity per vehicle	170	170
Capacity Provided (passengers/hr)	1457	1020

Exhibit 3-2: Vehicle and Rolling Stock Requirements

ALTERNATIVE	PEAK BRT VEHICLES*	PEAK LRT VEHICLES*
Base BRT	33	-
Full BRT	30	-
Hybrid	11	15
Full LRT	-	26

*Includes spare vehicles

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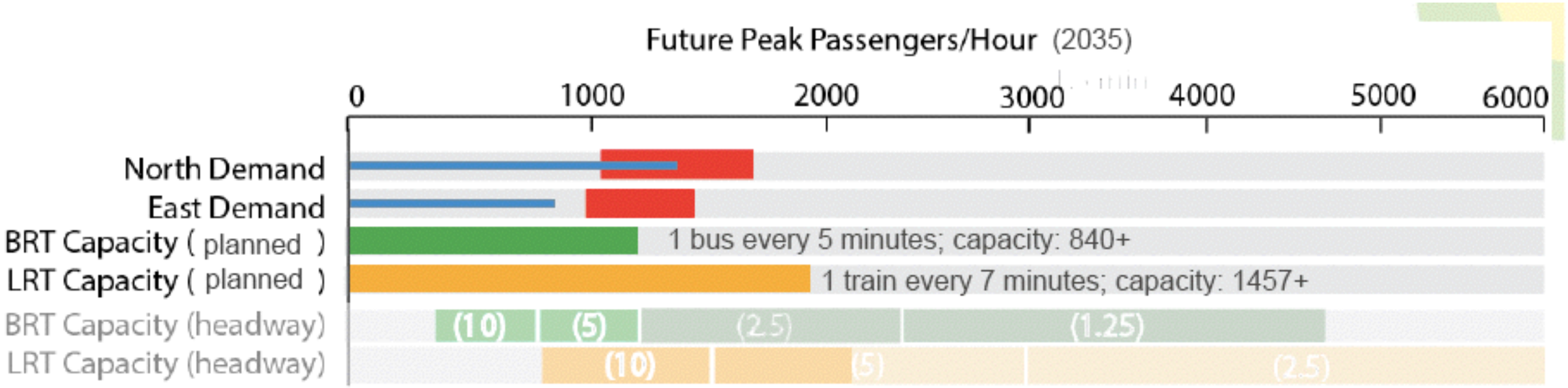

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Our current Hybrid plan provides adequate capacity, while the BRT plan may not.

“Smaller vehicles with more frequent service”

It may improve efficiency, but it may significantly decrease the quality of the ride.

This is a plan to maintain the status quo: crowded buses running frequently.

What about growth?

While the capital plans for the Hybrid system include room for growth, the BRT system does not.

Increased ridership on a BRT system will mean increased costs for the City of London that won't be shared with the province and federal government.

If we want to test and measure outcomes of promoting transit use, social pricing, or other programs, LRT is the best option to allow for that.

Capacity - Some Questions to Ask

Are there enough vehicles to meet immediate or 2035 demand?

If not, how much more will it cost to meet demand?

What will fleet growth cost the City of London over the project horizon?

Is there room to grow ridership sustainably and affordably?

environmental impact

Environmental Impact

GHG emissions based on assumed reduction in car usage:

Exhibit 4-9: Greenhouse Gas Emissions Reductions

CRITERIA	FULL BRT	HYBRID
Reduction in GHG Emissions (t)	194,649	221,320
Value of GHG Reduction ($M NPV*)	20.5	23.3

*These values represent the discounted benefits in NPV (2016$)

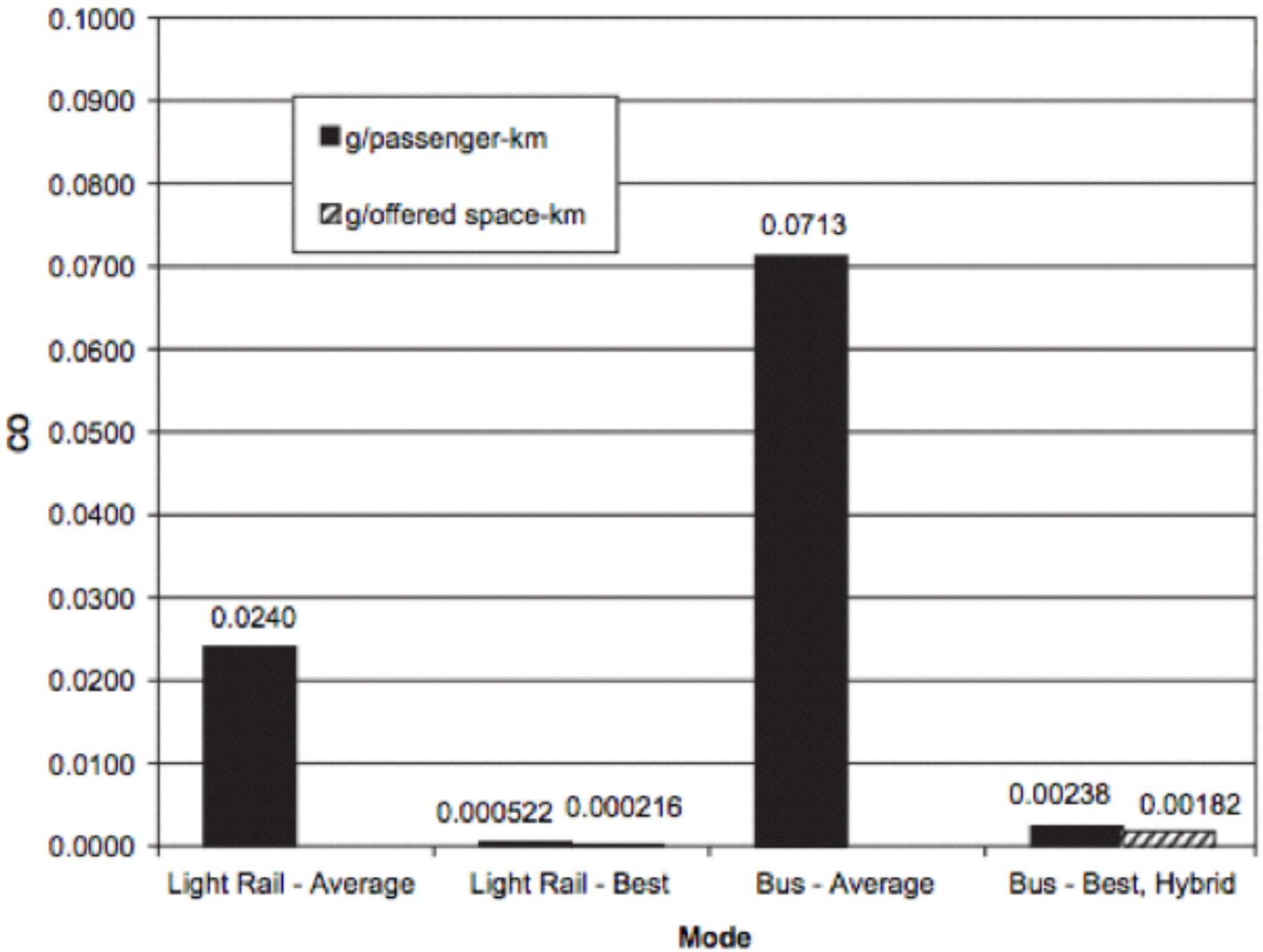
But **NOT** accounting for the difference in GHG emissions between buses and trains.

Environmental Impact

"All modern, urban light-rail systems are electrically powered and have no local emissions. Some cities have taken the extra step to power their LRT fleet with renewable energy to reduce total emissions to near-zero throughout the vehicle lifecycle."

- Shift Rapid Transit Business Case

Comparison of CO emissions for LRT and BRT systems in the United States.



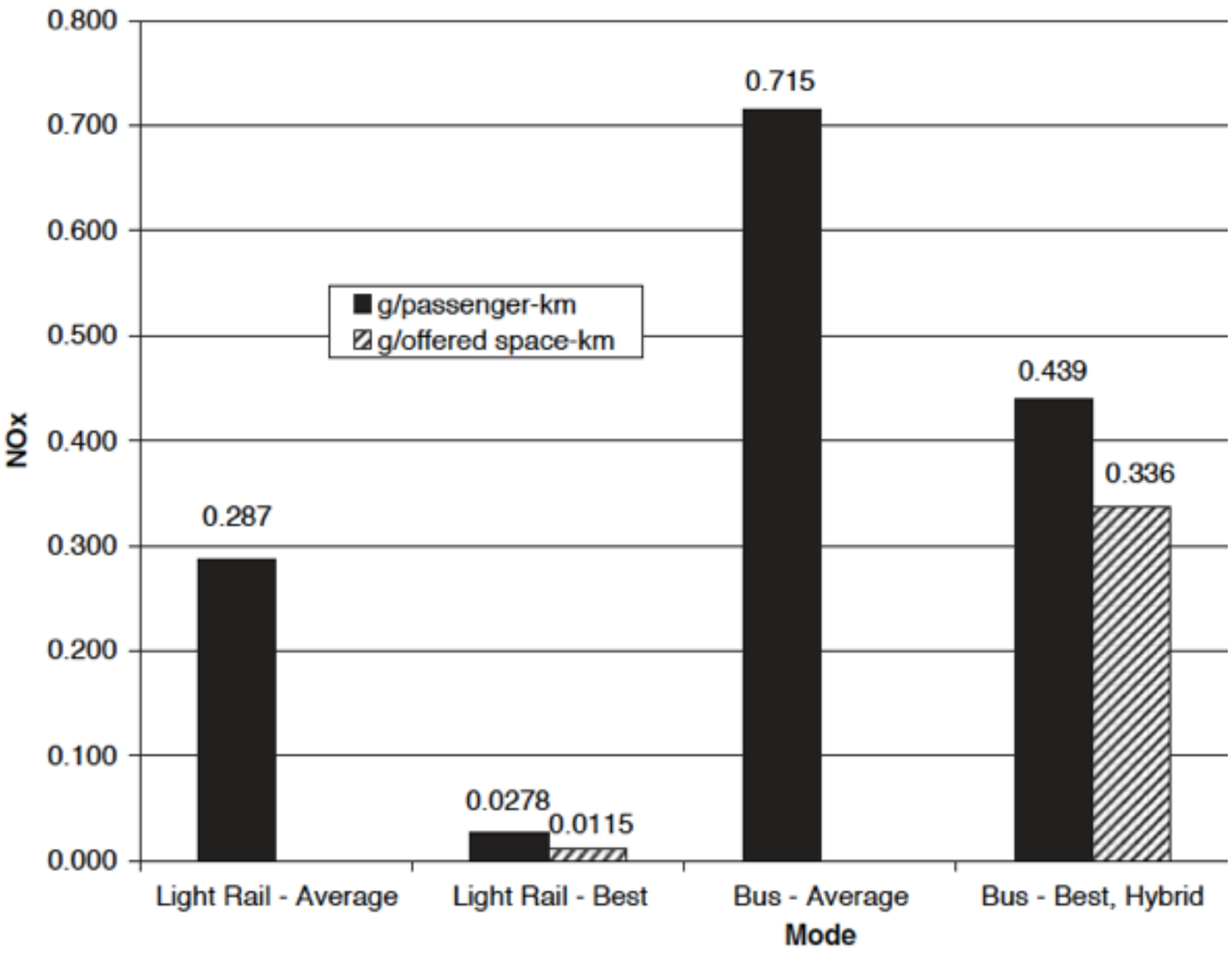
Diesel CO emissions are

136x

Light Rail CO emissions

Since electricity in Ontario is produced primarily through hydro-electric and nuclear power generation, our electric vehicle emissions would be on the low end.

Comparison of NOx emissions for LRT and BRT systems in the United States.



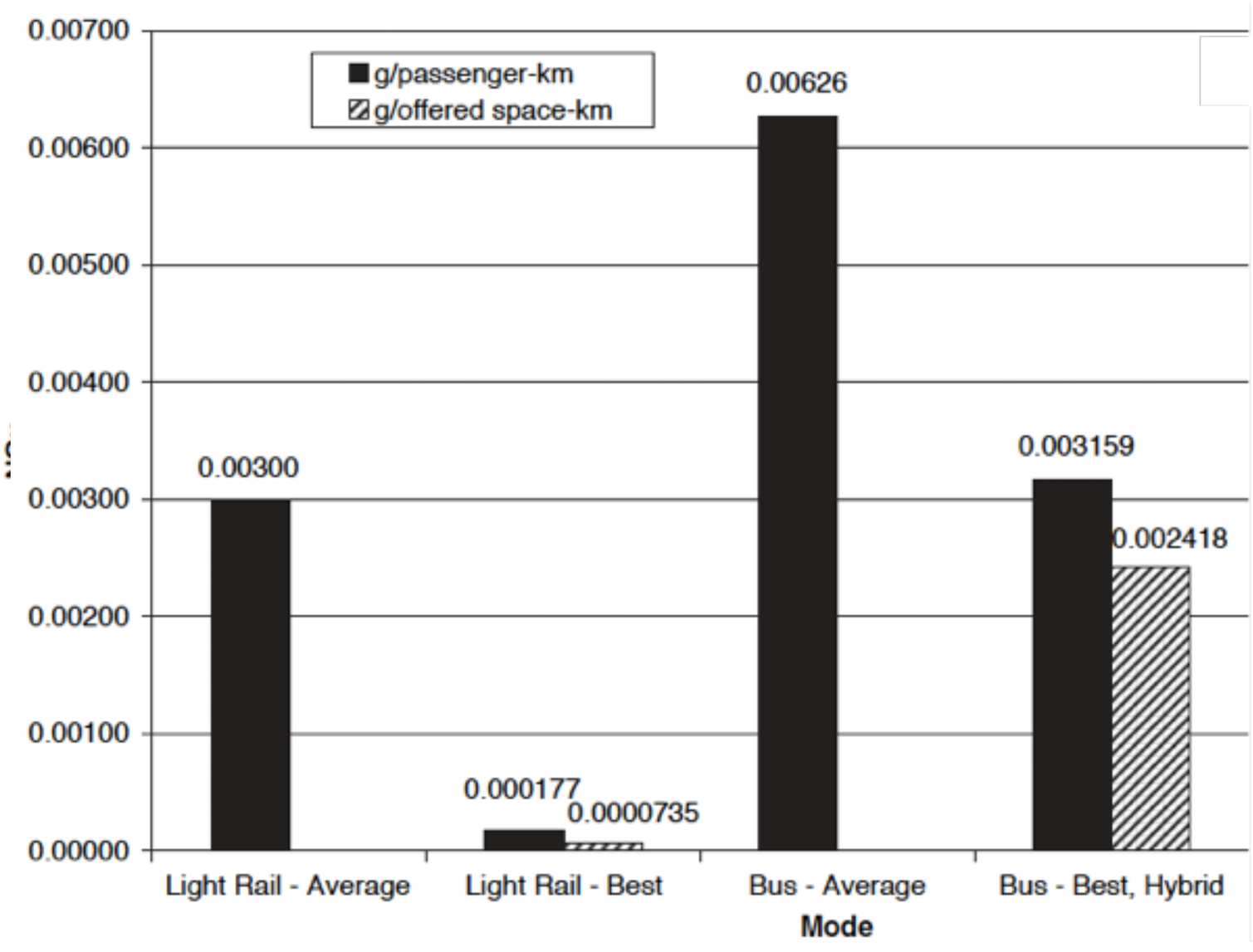
Diesel NOx emissions are

26x

Light Rail NOx emissions

Since electricity in Ontario is produced primarily through hydro-electric and nuclear power generation, our electric vehicle emissions would be on the low end.

Comparison of VOC emissions for LRT and BRT systems in the United States.



Diesel VOC emissions are

35x

Light Rail VOC emissions

Since electricity in Ontario is produced primarily through hydro-electric and nuclear power generation, our electric vehicle emissions would be on the low end.

Environmental Impact

"There are also **options** for reducing emissions and energy consumption in the BRT alternatives, through such design choices as hybrid or electric buses, clean diesel, or biofuel. "

- Shift Rapid Transit Business Case

These aren't options the BRT business case is built around pursuing.

Electric buses: some questions to ask

Increased capital costs?

- vehicles are $200,000 - $500,000 more each (and only shared the first time)

- charging infrastructure is not included in our plans

Effect on fleet size?
Unknown technology?
Political will to spend?

What are the potential costs if we don’t go electric?

sustainability of the system

Sustainability of the System

Exhibit 3-4: Rapid Transit Operating Costs between 2019 and 2030 (In 2016$)

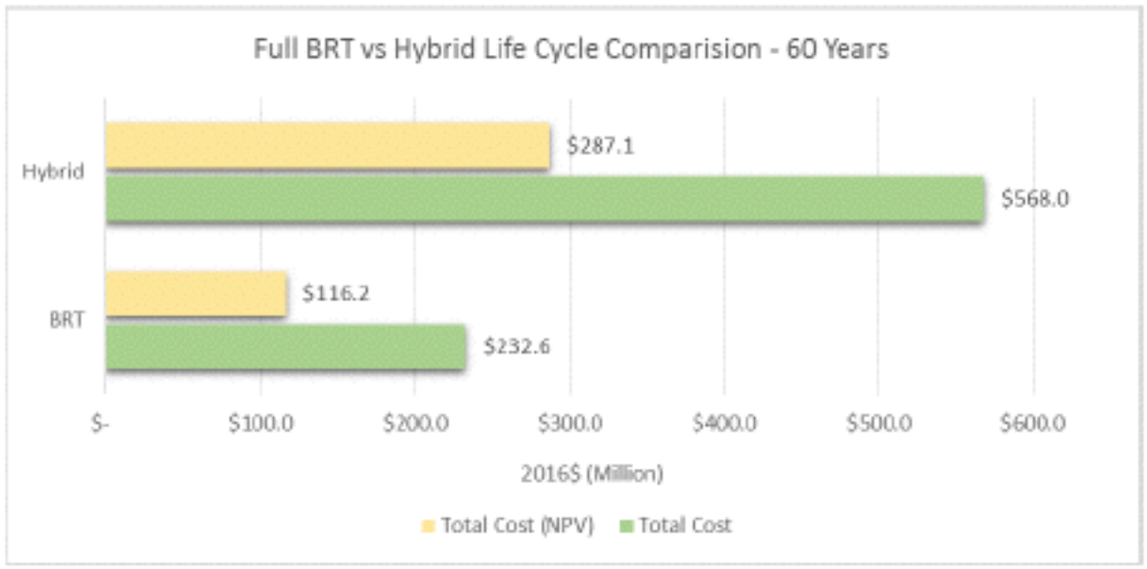
RAPID TRANSIT OPERATING COSTS BETWEEN 2018 AND 2030 (2016$)													
	BASE BRT			FULL BRT			HYBRID			FULL LRT			
Year	RT Operating Cost ($2015)	N-E	W-S	RT Operating Cost (2015 $)	N-E	W-S	RT Operating Cost (2015 $)	N-E	W-S	RT Operating Cost ($2015)	N-E	W-S	
2019	$860,000	Quick Start		$860,000	Quick Start		$860,000	Quick Start		$860,000	Quick Start		
2020	$860,000			$860,000			$860,000			$860,000			
2021	$860,000			$860,000			$860,000			$860,000			
2022	$860,000			$860,000			$860,000			$860,000			
2023	$6,040,349		W-S BASE BRT	$6,040,349		W-S BASE BRT	$6,040,349		W-S BASE BRT	$6,040,349			
2024	$6,040,349			$5,484,873		W-S FULL BRT	$5,484,873		W-S FULL BRT	$5,6			
2025	$6,040,349			$5,484,873			$5,484,873			$5,6			
2026	$6,040,349			$5,484,873			$5,484,873			$5,6			
2027	$13,799,000	N-E BASE BRT		$12,193,000	N-E FULL BRT		$11,082,000	N-E LRT		$11,5			
2028	$13,799,000			$12,193,000			$11,082,000			$11,5			
2029	$13,799,000			$12,193,000			$11,082,000			$11,5			
2030	$13,799,000			$12,193,000			$11,082,000			$11,5			
2031	$13,799,000			$12,193,000			$11,082,000			$11,5			

The one to one comparison of costs is as follows:

Operating Cost Component	Full BRT	Hybrid
Labour and Administration Costs	$ 4,933,000	$ 4,577,000
Fuel and Energy Costs	$ 1,986,000	$ 1,914,000
Vehicle and Plant Maintenance Costs	$ 4,089,000	$ 2,347,000
Line Maintenance Cost	$ 1,185,000	$ 2,244,000
Total O+M Cost (Rapid Transit)	$ 12,193,000	$ 11,082,000

Note that there are many factors that affect operating costs and a wide range of costs for other systems. The level of uncertainty is greater for LRT due to the fact that there is no base data for London.

Sustainability of the System



Financial Element	Full BRT (Million $)	Hybrid (Million $)
Capital Cost	$500	$880
Capital Cost (NPV)	$440.2	$781.5
City Allocation	$129	$129
Required Investment	$371	$751
Operating Cost Over 30 Years (NPV)	$234.9	$215.6
Operating Cost Per Year	$12.2	$11.1
Lifecycle Investment Required over 60 Years	$233	$568
Lifecycle Investment Required over 60 Years (NPV)	$116	$287

Questions to ask:

Does this include increasing the fleet size over the next 60 years?

How much more ridership do we need on the Hybrid system to pay for the difference?

Does each system's capacity allow for enough ridership growth to cover its own costs?

conclusions

Hybrid is the best option

Conclusions

A really great Bus Rapid Transit system is possible, but this isn't a plan for one. It would cost millions of dollars more than what's currently proposed, and includes a lot of cost uncertainty.

When we look at a great BRT system, the difference in capital is not worth the sacrifice of capacity, environmental savings, quality of experience, intensification ability, and city-building potential.

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