Moving to the Future?

Comments on the Transit Technology Review and Recommendations

Citizens for Better Transit

www.bettertransit.ab.ca

Photos: K. Lo

Basic Trolley Facts

Trolley buses require higher capital investment than diesel buses because:

- they require power supply infrastructure

- vehicles cost more to buy

Operating costs can be competitive with diesel/hybrid when properly managed.

	DIESEL BUS (2005)			TROLLEYBUS (2005)		
	Operating & Mtce.	Revenue Hrs.	Cost per Hr.	Operating & Mtce.	Revenue Hrs.	Cost per Hr.
Dayton	$32,289,300	371,200	$86.99	$11,595,700	143,300	$80.92
San Francisco	$185,269,700	1,468,100	$126.20	$120,512,800	1,027,400	$117.30
Seattle	$293,776,800	2,441,700	$120.32	$50,869,400	440,000	$115.61
TOTAL/AVG.	$511,335,800	4,281,000	$119.44	$182,977,900	1,610,700	$113.60

TROLLEYBUS SAVINGS $5.84 per bus hour or 5%

Source: FTA National Transit Database, *APTA Fact Book 2007*

Recent U.S. data suggests trolley buses operate at less cost than diesel due to high oil prices.

Philadelphia (2008):

$2.76/mile for diesels

$2.54/mile for trolleys.

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Why do the Edmonton analyses show such high costs for trolleys?

- Underestimated km of trolley travel per year (⇧ km = ⇩ cost)
- Overestimated work needed for overhead capital upgrades
- Underestimated trolley life expectancy
- Loaded costs with unnecessary diesel back-up fleet (Checkel)

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Administrative report: "The estimated capital cost to upgrade the overhead and substations for the life of an 18-year trolley bus is $66.3 million"

Or is it?

- **The figure is an "estimate". The wide variation in recent "estimates" suggests this has been "overestimated"**

Estimates went from $350,000/year to avg. of $5 Million/yr in recent reports!

Comparison of Administration's Previous and Current Capital Cost Projections relating to the Trolley System (not adjusted for inflation)

Year	Report	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 2019-2024 2025-2029
2004	Booz Allen Hamilton	"On-going capital improvements to the trolley overhead system (including substation related costs) will average $350,000 per year in the long term." (p. 49)									
2004	Administration Report	"$2.4 million is projected from 2009 to 2013" (p. 3)					"Beyond 2010, major overhead infrastructure upgrades valued at $14 million" (p. 3)				
2005	Admin. Letter to ETC ($million)	$ 1.13	$ 10.40								
2006	Administration Report ($million)	$ 1.10	$ 9.16	$ 7.97	$ 0.60	$ 0.50	$ 0.50	$ 0.50			
2008	Checkel (per ETS/MES) ($million)	$ 8.74	$ 5.90	$ 4.00	$ 3.43	$ 3.67	$ 3.77	$ 8.29	$ 3.18	$ 3.18	$ 2.28 $ 14.74 $ 16.13

- **The life of these capital improvements is also <u>much longer</u> than the life of one generation of trolley buses (substations 35-40 years, overhead infrastructure 30-50 years).**

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Much infrastructure has recently been replaced!

2006 City of Edmonton Infrastructure Report: 70% of the trolley infra-structure is in good to very good condition with an asset life of 36 years

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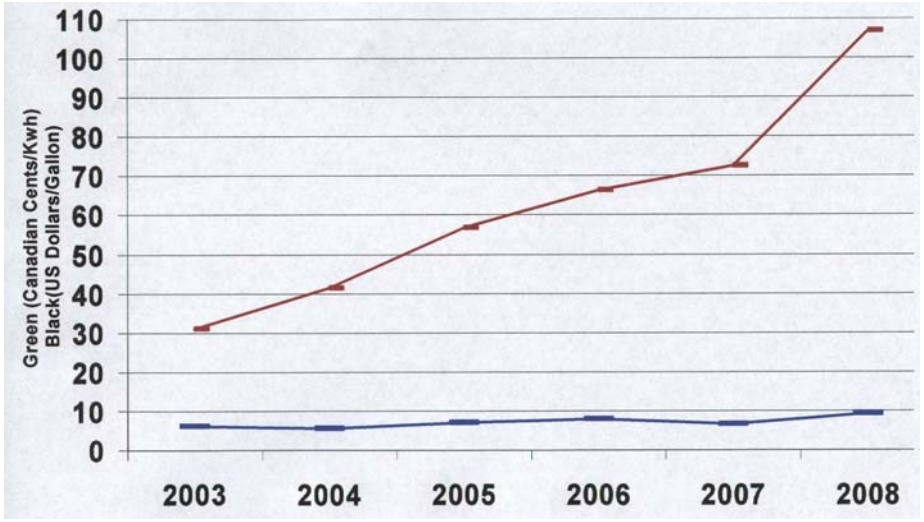
Analyses based on **unrealistic** petroleum prices:

$0.76/litre from 2010 to 2027 (Booz, Allen)
$0.82/litre from 2010 to 2027 (Checkel)

Oil prices have risen over 395% in past 5 years

Optimistic projections are $300 a barrel in five years (Simmons);
$400 a barrel in ten years (Gilbert)



Because of these flaws, the analyses must be deemed unreliable, particularly with respect to trolley buses.

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Most importantly, . . .

Operating costs like fuel or electricity are covered by municipal tax dollars

Capital expenditures for upgrades/renewal of the trolley system can be funded by Provincial/Federal Infrastructure dollars and would not impact municipal taxes

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The Edmonton Advantage

What happens when we invest capital dollars in the trolley system?

Infrastructure dollars are paid to Epcor for the upgrading and maintenance work. Epcor's earnings result in dividends that are returned to the City and fund other projects. There is no such benefit from investment in diesel or hybrid buses.

Federal/Provincial Dollars

(Infrastructure)

EPCOR

Photo: M. Parsons

Epcor Dividends =

Funding for City of Edmonton Projects/Programs

If the trolley system is eliminated, dividends may be reduced. This would impact programs/projects funded with dividend dollars.

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Administrative Report: "A large number of systems across North America are ordering [hybrid] vehicles as part of their environmental initiatives. According to the American Public Transit Association, over 4,000 of these buses have been delivered or are on order for 2008."

True enough, but these hybrids are largely replacements for diesel fleets. Cities with investments in trolley bus systems have replaced trolley bus fleets with new accessible trolley buses, despite higher purchase cost of trolleys:

City	Trolleys Purchased	Year
Mexico City	200	1997-1999
Dayton Ohio	57	1998-1999
San Francisco	270	2001-2003
Seattle	100	2001-2003
Boston	28	2004
Vancouver	228	2006-2008
Philadelphia	38	2008
Vancouver	20 more new trolleys **plus** **order for 14 hybrids changed to trolleys**	2008

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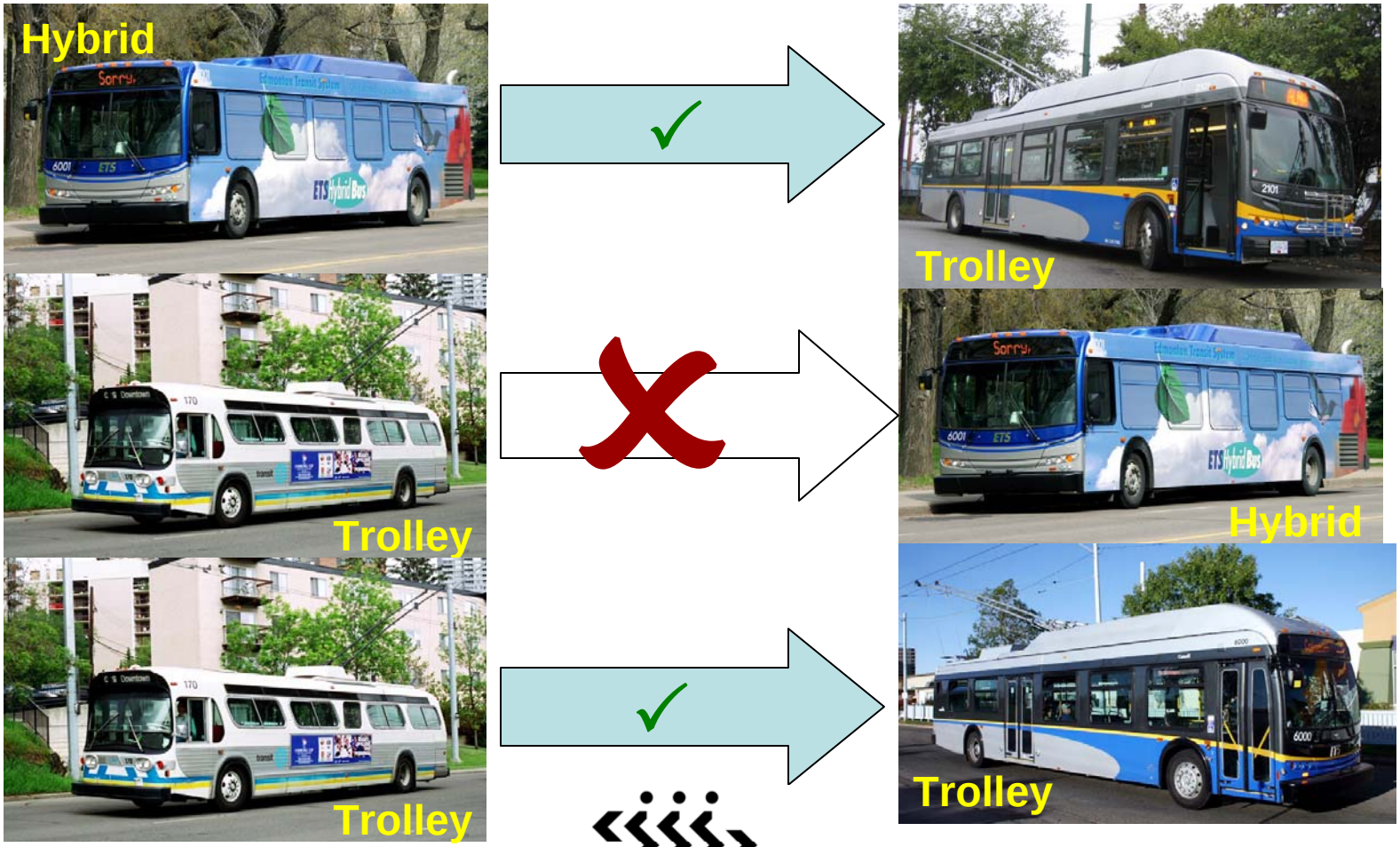
Why?

Hybrid buses are a “transitional technology” to electric vehicles – TTC Chair Adam Giambrone



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Photos K. Lo, D. Lam, M. Parsons

Administrative report: "The City is a member of the Canadian Federation of Municipalities Partners for Climate Change Program which requires that the greenhouse gases produced in the generation of electricity for City use be included in the City's greenhouse gas inventory."

What about the emissions from diesel and hybrid buses?

Greenhouse gases attributed to transit operations

1990	62,279 tonnes
2005	64,623 tonnes
2008	69,997 tonnes

Increase in greenhouse emissions is NOT due to trolley operations, but results from more and more diesel-based service.

(courtesy Edmonton CO2RE, May 2008)

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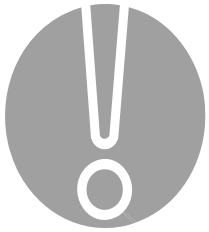
Adding diesel-fuelled hybrids to the fleet and scrapping trolleys barely addresses this problem, considering:

- the gain in fuel economy with hybrids is 10-15% (perhaps even less)

and



- the Booz, Allen, Hamilton report projects that the transit fleet will grow from 900 to over 1,500 vehicles within 18 years!

If this growth takes place with hybrids or diesels, the increase in greenhouse gas emission to transit's inventory is huge

2008 Sustainability Report Card gave Edmonton a <u>Failing grade</u> for public transit *(Edmonton Journal, June 5, 2008)*

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Administrative report: "The hybrid bus offers the best overall emission reduction opportunity."

This statement is false because there is no way to reduce emissions from the hybrid to zero.

(Even biodiesel would not accomplish this because biodiesel is comprised of 80-90% regular diesel.)

Fact: Trolley buses are fuel flexible and can use electricity from any power source, including 100% renewables like biomass and wind. Changing the power source for trolleys is simple.

Green power *is* available. Epcor offers the ENVEST program for commercial customers; private companies like Bullfrog Power would also sell green power to commercial customers like the City. The surcharge is 0.02 per kWh (adds ~$80,000 to ~$460,000 annual power bill)

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Purchasing green power (e.g. Epcor's Envest Green Tags) means that the emissions from the consumption of this power are removed from transit's emissions inventory.

If the Federation of Canadian Municipalities did not consider this an effective way to reduce greenhouse emissions, they would not have bestowed the FCM CH2M HILL award on Calgary Transit for its "Ride the Wind" wind powered LRT.

FCM

CH2M HILL

Award

Calgary Transit 2001

At the current number of scheduled trolley kms and with 47 new trolleys, Edmonton's trolley bus system could reduce up to 4,600 tonnes annually of greenhouse emissions from transit's inventory with green energy. (This amount would increase if service increases proposed in the Strategic Ridership Growth study are implemented.)

It would require 240 hybrid buses, at a total capital purchase cost of $156 million, to achieve this same reduction with hybrids, according to the emissions and cost data in the Booz Allen and Checkel reports!

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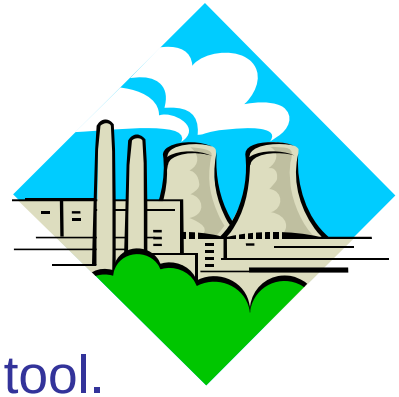
Federal initiatives requiring greenhouse gas reduction in the electricity industry will cause Alberta power plant emissions to drop dramatically in the next decade.

New regulations under the “Clear the Air” emissions regulatory framework would take effect in 2010, according to Federal Government Press releases of March 2008.



Carbon capture and storage is identified as a key tool.

This development would mean that trolleys using grid power would have many times the capacity to reduce greenhouse gases of hybrid buses.

To eliminate trolley buses today, only to have these developments take place tomorrow, would not only be short-sighted – but would be regretted

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