

TRANSIT TALK

VOL. 21

Sustainability Report Favors Electric Transit

A recently released study by Dr. Patrick Condon of the University of British Columbia points to investment in electric transit modes as having the greatest potential to ensure sustainability. The study, published in the September 7, 2008 issue of *Sustainability by Design* (Foundational Research Bulletin of the Design Centre for Sustainability) compares emissions, costs and overall sustainability for several modes of transportation: a modern streetcar (tram), trolleybus, Skytrain, LRT, articulated and regular diesel bus, a Toyota Prius and a Ford Explorer SUV.

The conclusions drawn are that the electric modes have significantly lower energy consumption, lower emissions and therefore a much smaller 'carbon footprint' than the petroleum fuelled modes, even if the power is drawn from coal fired power generation. Condon's data show, for instance, that diesel buses produce roughly three times the carbon emissions of electric trolleybuses, even if the latter are powered by coal-fired plants.

Condon further concludes that the electric modes not only have lower operating costs, but that they are far less susceptible to the energy cost increases that will occur with the peaking and decline of world petroleum supplies. In other words, the electric modes represent the best long term cost efficiency and investment because they create the kind of energy, cost and resource efficiencies that the future demands, as well as having positive impacts on land use.

The full report can be found online at http://www.sxd.sala.ubc.ca/8_research/sxd_FRB_07_cost.pdf

[Source: Design Centre for Sustainability, UBC]

Running on Empty - City admits Edmonton not prepared for Peak Oil!



For some years now, Geologists around the world have projected that world oil supplies would peak and begin declining within the next decade. "Peak Oil" is far from being a secret, and while there may be disagreement about exactly when the peak will occur, it is an accepted fact that it is going to occur.

The impacts of Peak Oil on life and society as we now know it will be far reaching, and potentially even devastating without proper preparation. Peak Oil will affect food supplies, it will affect health care, it will affect the economy and the job market, it will affect how and where we live, it will change the very essence of our society.

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Edmonton Slammed for Trolley Decision

Calling it a "serious error in judgment", renowned European Transport Consultant and columnist Andrew Braddock slammed Edmonton City Council's June 2008 decision to scrap the city's electric trolley system. In the August 2008 issue of *Buses*, a British Transport Publication with worldwide circulation, Braddock blames a lack of management support for the trolley system and shortsighted politicians as the key factors that led to the outcome of Council's vote. Examples of the former seem to abound. Braddock cites, for instance, the manner in which ETS management enthusiastically promoted hybrid vehicles, while allowing a low floor trolleybus demonstration vehicle only limited public exposure.

The column also cites the flawed technical evaluations that the City conducted, bolstered as they were by manufacturers' claims of wonderful fuel economy and emission reductions with hybrid vehicles while ignoring

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News Bulletin of the Edmonton Trolley Coalition
Sustainable Transit for Liveable Communities
www.trolleycoalition.org

Member of the Alberta Environmental Network and Electric Mobility Canada

Edited by Robert R. Clark, retired supervisor of transit planning

Edmonton Slammed for Trolley Decision

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the many advantages of the trolleybus with which hybrids cannot compete. Braddock refers to the reports' high cost estimates for trolley operation and overhead maintenance as "wild assertions", and points out the "ridiculous assumption" underlying the analyses "that the cost of diesel fuel relative to electric power would not change in coming years". He also notes that the studies underestimated the life expectancy of trolleybuses, thus loading trolley costs.

With the age of cheap oil coming to an end in the near future, and concerns for the urban environment turning against automobile use, Braddock terms trolley abandonment both tragic and careless. [Source: *Buses Magazine*, August 2008]

100 Years of Transit Celebrated

Despite the dark clouds cast by City Council's June decision to scrap the city's multi-million dollar investment in electric trolleybuses, 100 years of public transit service was celebrated in Edmonton throughout 2008. Celebrations began in June with events commemorating streetcar service, held in conjunction with the Edmonton Radial Railway Society at Fort Edmonton Park. A week-long transit history exhibit was featured in Churchill Square in September which featured entertainment, a vast array of fascinating historical displays, and a historical vehicle exhibit. Historical tours were offered aboard a vintage 1954 Brill trolleybus and a 1960 General Motors diesel bus, commented by Douglas Cowan, Kevin Brown and Ernest Bastide. Celebrations wrapped up with the "Very Important Transit Event" held at the Shaw Conference Centre in November. ETS is said to be working on a history book, due to be published sometime in 2009.

Public transit began when the Edmonton Radial Railway initiated the city's first streetcar route in the fall of 1908. Service began at Norwood Boulevard and traveled along 95 Street to Jasper Avenue. Today, the Edmonton Transit System's fleet encompasses over 900 buses and a growing fleet of LRT cars. About 16% of the city's population uses the service, with ridership steadily growing in recent years. An extension of the Light Rail system from the University (Health Sciences) to Heritage (Century Park) is under construction, with the section from Health Sciences to South Campus due to open at the end of April.



Testing of Edmonton's new Light Rail extension between Health Sciences and South Campus stations began in early March, in preparation for the start of service on April 25th. Here, a train of newly arrived Siemens SD 160 LRV's operates at slow speed over the line on March 5th. [Photo: M. Parsons]

Making Tracks – LRT Extension set to Open April 25th



Preparations for the opening of the Edmonton's South LRT extension between Health Sciences and South Campus are heading into the home stretch as dynamic testing begins. Test trains will operate intermittently over the new section, leading up to the Grand Opening on Saturday, April 25th.

To mark the opening of the new extension, LRT service will be provided free of charge on April 25th. The public is invited to join the "party train" to take part in dedication ceremonies to be held at Belgravia/McKernan Station, then head over to South Campus Station for more ceremonies and ETS' first ever "Community Fair". This day-long event will feature facility and SLRT construction tours, information and vehicle displays, presentations on major transit initiatives, music, light refreshments, street entertainers and activities for the whole family.

A order of 37 new, air-conditioned LRT cars is arriving in Edmonton, and the vehicles are slowly trickling into service. The existing LRT cars, some of which date back to 1977, will be sent away for a mid-life refurbishment.

The opening of this extension will increase the number of stations on the city's single LRT line to 13. Two more stations are to be added—at Southgate and Century Park (Heritage) as the line progresses southward.

[Source: South LRT Bulletin "Making Tracks", Winter 2009]

ETC Editorial

by Bob Clark
Retired ETS Supervisor of Transit Planning



Worldwide, progressive cities are embracing electric transit with the realization that they can no longer afford to rely upon the automobile as the principal mode of urban transport, and that grid-connected electric vehicles must take an ever-increasing share of passenger movement if transit is to become or remain viable in the light of current and impending world conditions, in particular where pollution and peak oil are concerned. Most are adapting or expanding their metro, light rail, streetcar and trolleybus systems according to existing and anticipated demands. Fiscally these cities and the political entities that govern them consider the infrastructure for these modes as responsible investments rather than expenses, and they take into consideration the long term benefits to their citizens that these systems provide.

In contrast Edmonton has been trying to relive the 1950's by purposely destroying our public transit system while investing hundreds of millions of dollars in freeways to try to make the automobile perform the way we imagine that it should.

A March 11th report on CBC Radio quoted several West End auto dealerships as proceeding with multi-million dollar expansion plans in spite of the current down-turn in car sales. Clearly, they have got the message from City Hall that the car will remain king in the eyes of our City Administration, whatever the facts of changing world conditions may be.

Our Mayor and City Council must take their heads out of the sand and act now before the brunt of the world crisis hits and our city becomes fiscally and politically unstable. It is not too late: action now would save a bundle of taxpayers' money this year, and in future it would avoid the need to go into debt, which some seem so eager to do.



The destruction of public transit in Edmonton: Petroleum burning diesel buses spew pollution into the air in this McCauley neighborhood amidst remnants of dismantled electric trolley infrastructure. Despite trolley system decommissioning being officially 'unfunded', city administrators are moving hastily to dismantle Edmonton's electric trolley system. [Photo: A.Wong]

EDMONTON EARTH DAY 2009

Sunday April 26th
Hawrelak Park
Noon to 6 pm
Free Admission

Edmonton not prepared for Peak Oil (continued from Page 1)

Initially, there will be the shock and repercussions of skyrocketing oil prices as the resource begins to decline, but then there is also the issue of how to create an orderly transition to other fuel sources and, in the area of transportation, to other means of propulsion.

A report that came before Edmonton City Council's Executive Committee on November 5th of 2008 looked at Peak Oil in response to an enquiry by Councillor Don Iveson. To anyone who witnessed the antics of city administrators last summer

as they pushed to get rid of electric trolleybuses in favor of more petroleum burning vehicles, it should come as no surprise that administration has no plan. The report says there is "global disagreement around the definition, timing and impacts of 'Peak Oil'", and because of this, "the City has not developed an official position on 'Peak Oil'". Any achievements made to date that could even remotely be considered preparation for Peak Oil have been limited to initiatives that address Climate Change, which—although there is some overlap—is a very different issue.

The administrative report seems to recognize that high energy prices have increased the cost of service delivery, meaning that more dollars now have to be collected in the form of taxes and user fees. And it also recognizes some of the possible impacts of high oil prices and a decline in supply: "Increased costs . . . may erode the standard of living of some Edmontonians". (Although affected citizens are unlikely to understate it quite in this way when it happens to them.)

The outcome of Council's November 5th meeting was a motion by Councillor Iveson, asking administration, in the preparation of its business plans, to conduct both short and long term analyses on the potential impacts of volatile energy prices. The motion also asks administration to prepare consumption reduction strategies to address potential budget impacts including vehicle fleet rationalization and building efficiency. A report is due on March 18th outlining how the administration will follow through with these requirements.

This is a long way from having an actual strategy to ensure Edmonton can successfully deal with Peak Oil, but at least the notion of Peak Oil is finally on the administration's radar.



"How Dry I am !"

International News Items



Beijing to spend \$190 Million on Transit, including more Electric Buses

Beijing Public Transport Holdings reports that it will be investing 1.3 billion Yuan (US \$190 million) in its public transit system this year to introduce upgrades to infrastructure and vehicles. Among 910 new buses to be added to the fleet will be another 50 electric trolley buses. Beijing hopes to have 1,000 alternative energy vehicles on the streets by the end of this year.

The Chinese Ministry of Science and Technology has a requirement that the ten biggest cities in the country must each have a minimum of 1,000 "new energy" buses on the road within three years.

[Source: Asia Pulse, February 11, 2009]

Craiova, Romania to Build Trolleybus Line

Another European city has embarked upon the introduction of electric trolleybuses. Craiova, Romania is a city of 300,000 population situated near the east bank of the river Jiu. A grant from the EU Program for Metropolitan Growth and Development will make possible the conversion of one of the city's busiest diesel bus routes to electric operation. The 18 km route connects the main railway station with the Romanesti centre to the south of the city, and passes through the University area. There, it intersects with the city's light rail line that opened in 1987.

A feasibility study for this 11 kilometre trolleybus route was carried out during 2007 and came to the conclusion that trolleybuses provided the best solution for modernizing and upgrading this diesel service. 10 trolleybuses will serve the route, operating at 4 minute intervals during peak hours and every 7-8 minutes for the rest of the day. Tenders will go out in spring of 2009 for the 7.6 million Euro project.

[Source: International Trolleybus News/R. C. DeArmond]

Elk Grove presses Lawsuit over Hybrid Buses

When the city of Elk Grove, California unveiled its new fleet of hybrid transit buses a few years ago, it laid claim to the only all-hybrid municipal fleet in the United States. Then came the 30-odd catastrophic engine failures, the noxious fumes inside the buses, the lack of speed, the rash of in-service failures, and the bus fires. All of the vehicles were removed from service after only 33 months; they were supposed to last 12 years.

In addition to pressing a lawsuit against the manufacturers of the vehicles and other agencies for breach of contract, Council members say they'll need to raise fares to cover the costs of the debacle, as well as increase scrutiny of the city's transit contracts.

The lawsuit names ISE Corporation, the maker of the hybrid drive system, as well as Complete Coach Works, the firm that installed the ISE equipment into its buses. Because of the litigation, spokespeople for the manufacturers declined comment. Both new and used buses have had to be purchased in order to replace the hybrids. The hybrid bus debacle was named as a factor leading to a \$21 million cost overrun in E-Tran's 2008 budget.

[Source: Sacramento Bee/Mass Transit, May 10/July 21, 2008]

California Cuts back on Diesel Exhaust

California's Air Resources Board approved tough new diesel emissions legislation in December to cut diesel emissions from trucks and buses operating in the state. The legislation came despite warnings that it could shut down many small trucking operations, and followed on the heels of sweeping legislation to cut greenhouse emissions.

The legislation takes effect in 2011 and will force the replacement of thousands of high polluting diesel trucks and buses that would otherwise have remained on the road for decades.

Air regulators estimate that the plan will cost businesses, school districts and transit agencies over \$5.5 billion in the next 16 years. But Air Resources Board Chair Mary Nichols emphasized that the State has a legal obligation to clean up pollution. The costs are outweighed by an estimated \$48 to 69 billion in health benefits for Californians affected by breathing diesel fumes, which are many times more toxic than emissions from gasoline engines.

Under the legislation, nearly a million vehicles will have to be either replaced or retrofitted with exhaust traps or supplanted by cleaner alternative technologies. [Source: Associated Press, December 12, 2008]

Bucharest Prepares for Peak Oil

With peak oil looming on the horizon and a future that may not look so rosy for petroleum fuels, Bucharest, the capital of Romania, is expanding its electric transit services beginning with a 4.3 km extension of its trolleybus system that opened on September 6th. This recent extension brings the size of Bucharest's trolley system to 71 kms of two-way track, or roughly the size of Edmonton's.

The extension creates a temporary shortage of trolleybuses in the Romanian capital until more vehicles arrive, as the operating authority does not presently have enough vehicles to provide service over the extended route at the frequencies advertised in the schedules.

The extension returns trolley service to an area of the city that had not seen trolleybuses for 22 years. A 6.2 km section of the trolley network in South Bucharest remains isolated from the rest of the network, but further extensions are planned to link this section into an expanded trolley operation.

[Source: International Trolleybus News/R.C. DeArmond, A. Ivanec; Sept. 19, 2008]



Two trolleybuses traverse the newly built extension in Bucharest on test prior to opening day. [Marian Andrei]



The High Wire Artists: Line crews install a switch on the new 4.3 km trolleybus extension in Bucharest, Romania. [Marian Andrei]

We get letters . . .

Dear Editor:

I am an old and good friend of the late Don MacDonald, and in fact visited Edmonton to help him with Light Rail at the Provincial level. It is with regret that I read the story in Volume 20 of *Transit Talk* about your Council's decision to eliminate trolley coaches.

The 2008 *APTA Transit Fact* book no longer provides cost data on individual systems, but it does show details for modes. Trolley coaches average 3,344 hours per year per coach with 15% spares, but diesel buses only 2,494. Trolley coach labor cost averages 40% higher than diesels not because they are trolleys, but because so many smaller cities have only diesel buses with lower wages and lower pensions. I have compared 2006 trolley coach costs with diesel buses adjusted to trolley coach hours and pay scales. *Trolley coaches cost less on the record.* A trolley coach fleet will cost \$411,535 per year per coach with 15% spares and 3,344 hours of operation. Diesel buses with the same pay scale and hours of operation will cost \$437,335 per year. *A peer approved paper I had published by the Transportation Research Board found that trolleys enjoyed 4% higher ridership than diesel buses* because (1) they smell better, (2) they accelerate faster [and therefore are more productive], (3) they are quieter, and (4) the wires tell people where they go. *With a 40% revenue-to-cost ratio, that adds \$6,400 per coach per year to the electric's advantage.*

Respectfully,
E. L. Tennyson
Registered Professional Engineer

Dear Editor:

Your city's recent tirade against trolleybuses doesn't make sense. Trolleybus technology is a modern, evolving technology and not a dead end.

Electric power can be generated in many ways, from solar power plants to hydroelectric dams to fossil fuels and nuclear plants. This means that if one primary source, like oil, is not available any more, it can be replaced by another. This stands in contrast to petroleum based fuels which are complicated to synthesize.

Electric motors have a very high efficiency of up to 98%, whereas diesel engines are 35% efficient under optimal conditions. In stop and go traffic, the diesel engine is about 15% efficient. That means the rest of the energy is wasted in heat and exhaust fumes. Powerful diesel engines are needed to make the bus accelerate quickly, but this power is then wasted when this big engine guzzles fuel while idling at stops.

Electric motors have much higher torque, thus trolleybuses can accelerate faster. They can also generate power when they slow down and save even more energy. Electric motors also require less maintenance and last much longer than their fuel burning counterparts.

For these reasons, rapid rail transit systems in the world are electrified; even the Trans-Siberian railroad is electric. Why stop using trolleybuses at a time when other seek to free themselves from oil dependency? Your city looks backwards compared to the rest of the world.

New state-of-the-art trolleybuses are in use in many cities. They have an auxiliary system and can operate off-wire. In some cities, they even run part of their journey on batteries. In these cities, they reconnect to the overhead wires automatically, without the driver having to leave his seat. With these new vehicles, construction of the overhead wire systems becomes much simpler; many expensive switches can be spared, depots [i.e. garages] are unwired.

Financially, an overhead wire network makes more sense as more buses use it. So replacing old diesel buses with new trolleybuses makes the overall transit system more efficient. Instead of scrapping your trolley system, your city should have sought ways to expand it for the future.

Matthias May
Germany