

Transit Talk

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Photo: D. Lam

New Low Floor Trolley Bus

2006 Alberta Planning Conference: Planning for the Transition to a New Energy Regime

Municipal and provincial leaders, urban planners, and administrators gathered in Red Deer April 3-5 for the annual Alberta Planning Conference. The theme underlying this year's event was the need to develop a long-term focus for planning: Looking at the next 50 years in Alberta. Sessions focussed on designing more sustainable communities, tips for effective public consultation and dealing with NIMBYism, managing fiscal issues, and looking at appropriate technologies for the present and the future. Proper planning will allow Albertans to shape their destiny.

In the area of transportation, a session by Richard Gilbert of the *Centre for Sustainable Transportation* focussed on the need to prepare for the transition to a new energy regime in the planning of our transportation systems. Retaining and expanding electric trolleybus systems, building more electric light rail, and even electric high speed rail between Edmonton and Calgary are appropriate steps, says Gilbert.

The demand for oil as a resource is growing, and will continue to grow, primarily due to increased industrialization in Asia. But supplies are definitely shrinking. Despite increased oil and gas exploration, less and less conventional oil sources are being found. This includes within Alberta. Official OPEC reports of world oil reserves quote similar reserves year after year despite increasing consumption. Logic suggests these reports are far from being a reflection of reality.

Though difficult and costly to extract, Alberta's tar sands may be able to produce oil for some time as conventional sources decline. But taken in a global context, oil supplies in Alberta are nowhere near sufficient to even make a dent in the world supply. Peak oil is at hand, and prices will rise, says Gilbert, quoting from the U.S. National Energy Commission's Energy Policy document of June 2005. A global shortfall in supply of just 4% is sufficient to cause a 177% increase in the price of a barrel of oil. That would be an increase from the current \$70 to \$194 a barrel.

Based on figures of actual and estimated oil consumption and production from the IEA and Uppsala University (Sweden), a shortfall in oil production of about 50% is projected by 2031. By 2018, a shortfall of about 20% is likely, implying at least a six-fold increase in price over today's levels. Four dollar a litre gasoline represents a realistic, and in fact, an optimistic perspective. We need to prepare for life in an energy constrained world.

Q&A: Your trolley questions answered!

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**Running in the red:
Scrapping electric trolleys
would only make transit's
plight worse in the face of
rising oil prices**



Trolley Buses are an effective oil alternative !
CLEAN QUIET SMOOTH MORE RIDERS NO PETROLEUM FUELS
Trolley Buses make Better Communities !

(con't on page 4)



Answers to common Questions about Trolleybuses in Edmonton

By popular request, here are answers to some common questions that get asked every time the future of trolleybuses in Edmonton is discussed.

Why are trolleybuses important for Edmonton?

Trolleybuses are quiet and don't produce any urban air pollution; they contribute to quieter communities and cleaner air in our streets. In some areas, trolleybuses pass by several hundred times a day. Replacing them with diesel buses would add more noise and emissions to these areas. Because trolleys are used in the city core where the population density is greater, a lot of people benefit from their quiet and clean operation.

Trolleybuses are excellent performers: they carry full passenger loads with ease and work well on busy routes. Studies show trolleybuses attract more passengers than equivalent diesel bus service.¹ Some people also feel they give downtown a unique character.

Electric transit has a proven positive impact on revitalization. For example, Vancouver will use new trolleybuses as a key feature of its Main Street enhancement project.² New trolleys would make a tangible quality of life contribution to the revitalization of our downtown.

Trolleybuses do not use petroleum fuels. Oil prices have risen 200% over the past three years,³ and experts agree this trend will continue. High oil prices will eventually mean transit fare hikes, tax hikes, service cuts and transit staff layoffs. The city needs to retain and expand alternatives to diesel buses, not eliminate them. Diversification is the proper business approach in times of market instability. Trolleybuses are the only *proven* bus technology that is not petroleum dependent. Compared to oil, electricity prices have fluctuated within a relatively small margin of about 30% since 2001.⁴

What is the size, value and condition of our trolleybus system?

The trolleybus system uses about 140 km of overhead wire. This is the same distance as from Edmonton to Red Deer. It serves 46 neighborhoods.

The 2006 City of Edmonton Asset Inventory valued the trolley system at \$89 million and stated that 80% of the system is in good to fair condition.⁵

Are there really huge savings to be had by switching to an all-diesel bus fleet?

Extravagant savings claims need to be viewed with caution.

Abandoning trolleys would also have high costs. It would cost upwards of \$20 million to take down the trolley system and redesign the streetscapes⁶, and it would cost

a further \$20-23 million to buy diesel buses⁷ to replace the trolley fleet.

The higher purchase cost of new Canadian low floor trolleys would be offset by the fact trolleys have a longer economic life than diesel buses, and that new trolleys would require less maintenance than diesel buses.^{8,10} Trolleys also cost less to fuel.⁹

Trolleys do have the expense of maintaining overhead wires, but because they operate in busy, well established areas of the city, they also carry more passengers than diesel buses serving the suburbs. The revenue from the higher passenger volumes helps compensate for the cost of maintaining overhead lines.

Would replacing trolleys with diesels affect ridership?

Records from the U.S. Federal Transit Administration show that the replacement of trolleys with diesel buses in other cities resulted in a drop in ridership.¹⁰

Moreover, it has been demonstrated repeatedly that modern trolleybuses can attract more riders than diesel buses on the same route and schedule.^{1,10} The experience of cities in the U.S. and Europe shows trolleys draw from 5-20% more passengers, and retain riders better than diesel buses.¹¹ If purchased for Edmonton, modern low floor trolleybuses are certain to attract more passengers than equivalent diesel service.

Would Edmonton be better to invest in LRT as the only electric mode?

Tearing down the trolley system would be expensive, reducing contributions that could be made to LRT. Even if savings could be achieved by eliminating trolleys, they would contribute little to LRT expansion.

High oil prices suggest the city is better off with more electric transit rather than less. In times of price instability, a sound strategy is to diversify our fleet fuels.

The trolley system is about six times bigger than our one LRT line. Building one km of LRT in South Edmonton costs \$75 million; building one km of trolley line costs just \$1.2 million.¹² Because of the high cost of building LRT, trolleys offer an opportunity to operate a larger part of the transit system with non-petroleum fuels than would be possible if we only had LRT.

What are other cities with trolleybuses doing?

In North America, eight of nine cities operating trolleys have purchased new accessible trolley fleets.^{13, 14} Some cities have also recently extended their overhead wires. Edmonton is the only city without a future trolley commitment.

Are trolleybuses suitable technology for our climate?

Trolleybuses have operated successfully in Edmonton for over 60 years. Trolleybuses provide reliable service in cities with harsh winters around the world.

*Don't local transportation issues need local solutions?
Are trolleybuses an 'Edmonton solution'?*

The most logical approach to designing transportation systems is to employ proven technologies that have been successful elsewhere, with some tailoring to meet local conditions. Diesel buses, trolleybuses, and light rail are proven technologies in use in hundreds of cities around the world. While none are unique to Edmonton, all can be operated successfully in Edmonton conditions.

Electric transit offers business advantages for Edmonton because the city owns the power company. Each year, Epcor returns a dividend to the city based on its earnings.

Are trolleybuses difficult or costly to maintain?

Diesel buses are generally more maintenance intensive than trolleys. Diesels need to be refuelled each night. Their oil requires periodic checking and changing, and their engine cooling systems must be maintained. In its lifetime, each diesel bus goes through several engines and transmissions.

Trolleybuses have no oil or coolant to service, and don't need refuelling. The electric motors usually outlast the bus chassis. The controls in modern trolleys are electronic and require minimal attention. Trolleys generally have shorter 'down times' when in for repair, meaning less spare vehicles are required than is the case with a diesel fleet.^{10,15}

The current collection equipment on trolleys requires periodic attention. A carbon insert inside the 'shoe' at the end of each pole is what contacts the overhead wire. This carbon has a life varying from a day to several days, depending on weather conditions. In winter, metal 'shoes' are used. The carbons or shoes are quickly and easily changed; the procedure is less labour intensive than the refuelling of diesel buses.

Aren't the trolleybuses powered by 'coal fired' power plants?

Trolleybuses and LRT get their power from the Alberta power grid, which is supplied largely by coal-fired plants. However, it is important to note that the highest number of trolleybuses run in peak hours. Most of the extra power Epcor generates to supply peak loads is from natural gas.¹⁶

Power plants release their emissions outside of the city from high stacks; diesel tailpipes release their emissions in the streets in populated areas. Diesel emissions are carried into buildings through ventilation systems. Studies show the impact of urban diesel exhaust on our health is many times greater than rural power plant emissions.¹⁷ Moreover, it is easier to control emissions from a single source like a power plant, than from many mobile sources, like diesel buses. New high efficiency generating equipment and new emissions technologies for power plants can reduce emissions per unit of energy below levels possible with diesel technology.¹⁸

The world is entering a transition to a new energy regime in which energy sources other than oil will play a greater role.¹⁹ To maintain our standard of living and quality of life, society will need to adapt to these changes. Electricity will play a growing role in future. This includes electricity from many sources, including coal, gas,

biomass, wind. 'Green' power is available for the trolley fleet now.

In future, more of our oil will come from the tar sands. The tar sands is an energy intensive operation associated with considerable carbon and contaminant emissions.

Does the small size of the trolley system mean anything in terms of its viability?

Like LRT, trolleys comprise a small portion of the transit fleet, but they serve busy routes and carry many riders. Like most forms of public transit, the justification for investing in and operating trolleybuses and LRT is based on ridership, not system size. Trolleys also exhibit their optimal efficiency on the kind of busy routes that run in the downtown core. Edmonton's trolleybus routes serve areas with greater population density, so their quiet and emission-free operation benefits large numbers of people.

Should the city expand the trolley network?

The instability of oil prices makes expanding the trolley network in certain busy corridors a sensible approach. The Canadian Centre for Sustainable Transportation, as well as other organizations that have researched the impacts of rising oil prices, advocate investment in electric transit as a sound long-term strategy.¹⁹ Expansion would increase the environmental, noise and patronage benefits that trolleys offer, helping fulfill the goals of the *Transportation Master Plan, Plan Edmonton* and *Enviso* (city environmental policy).

Should trolleybuses be used everywhere?

Trolleybuses are viable in busy, stop-and-go service in core areas of the city where travel patterns are relatively stable. They offer better performance and energy efficiency than diesel buses under these conditions, and the investment in overhead lines can be justified on the basis of higher population density/higher ridership levels. Trolleys are not a logical choice for suburban routes with infrequent service or low ridership.

Can a crossing for LRT and trolleybuses be built at 114 Street and 76 Avenue?

Yes, trolleybus and LRT crossings are common in the world and provide for reliable operation of both systems.

Sources: 1. Booz, Allen and Hamilton, *Trolleybus Study for the RTD and LACTC*, 1991. 2. Translink (www.translink.bc.ca) 3. Crude prices from TheFinancials.com. 4. Electricity prices from Independent Power Producers of Alberta (www.ippsa.com). 5. City of Edmonton Asset Inventory, 2006. 6. Based on City of Edmonton data from Mar. 2004 Administrative Report, adjusted for inflation, plus streetscape redevelopment. 7. Equivalent sized diesel fleet @ \$450,000 each, est. 2007 pricing per Booz, Allen, Hamilton (2004), City of Edmonton Asset Management. 8. Booz, Allen and Hamilton, *Options for Electric vs. Diesel Bi-Modal Fleet, MVRTA Dayton*, 1991. 9. Based on fuel cost for 2 million kms of service at current contract electricity price of 0.11 per kWh with consumption of 3 kWh per km for trolleys and 0.80 per litre for diesel fuel with consumption of 0.8 l/km for diesel buses; consumption per ETS data. 10. E. L. Tennyson, *Economics of Trolley Coach Operation*, Transportation Research Record 1503, U.S. Federal Transit Administration, 1998. 11. Gunter Mackinger, General Manager, Stadtbuss Salzburg. 12. "Trolley Costs" – City of Edmonton Administrative Report to TPW Committee, May 17, 2006. 13. APTA 14. CUTA 15. C. Lythgo, *Bus Technology Review* (BC Transit, 1999) 16. Letters from Epcor, Mar. 25 and May 31, 2004. 17. Eyre, Ozdemiroglu and Steele, "Fuel location effects on the damage costs of transport emissions", *Journal of Transport Economics and Policy*, 1997. 18. Epcor – Genesse 3 News Release, March 2005. 19. R. Gilbert (Centre for Sustainable Transportation), *Technology for Transport – New Modes for a New Century*, Presented at the Alberta Planning Conference, April 2006.

Planning for Transition to a New Energy Regime – con't from page 1



There has been talk of the role of biofuels in filling the gap or shortfall in liquid fuels for transportation as oil supplies decline. But, says Gilbert, this is not likely to happen on any significant scale because of the vast amounts of energy needed to produce biofuels. For instance, the new Goldfield ethanol plant in Iowa requires about 600,000 tonnes of corn harvested from 1,000 square kms of land, processed using 100,000 tonnes of coal, to make 200 million litres of ethanol. The energy in the coal alone is 60% of the energy in the ethanol, and of course more energy is needed for farming and transporting the corn.

By the same token, fuel cell vehicles are too energy inefficient to be practical in a world of energy constraints. Grid connected electric vehicles, however, hold the key if we can rethink our transportation planning to incorporate more of them. Gilbert is talking about electric vehicles that get their energy from overhead wires or third rails rather than onboard sources. These vehicles are versatile in that the energy can be supplied by a variety of sources, including coal and renewables like wind, water and biomass. They can switch among these fuels without disrupting transportation. They are also extremely energy efficient in that 95% of the energy supplied is converted to motive power (high tractive efficiency). Most electric mobility today involves grid connected vehicles in public transport settings, like electric rail, electric trolleybuses and streetcars.

Greater dependence on electricity implies a shift toward greater use of public transport for mobility. We also need to design cities that are more conducive to transit use. But this does not require a total abandonment of the urban structures that exist today. Gilbert recommends: expanding light rail in Edmonton and Calgary, retaining and expanding electric trolleybuses in Edmonton and introducing them in Calgary, and installing a high speed electric rail link between Edmonton, Red Deer and Calgary.

The costs of expanding electric transit in Alberta's major cities are relatively trivial, says Gilbert, estimated at between \$1 and 2 billion to meet all needs over the next two decades. But it is almost guaranteed to be a huge money-maker down the road as energy use becomes more constrained due to high petroleum prices. Moreover, it would be a sound investment of present-day wealth in Alberta's future.

High speed rail links between major cities in Alberta would cost about \$7 billion to construct, but Gilbert maintains that Alberta can afford its share. A study by the Van Horne Institute projected that an Edmonton-Calgary high speed rail link would earn revenues of about \$200 million per year with today's energy prices and transportation choices. Such revenues would be sufficient to cover operating costs and about 75% of

capital costs. About 22% of trips between Edmonton and Calgary would be attracted by a high speed train given a reduction in travel time of about 50% (i.e. 1.5 hours to go from Edmonton to Calgary as opposed to current 3 hour trip by car). In an energy constrained future, says Gilbert, such a high speed rail link would become even more attractive and viable.

In addition to its role as a people mover, a high speed rail link would provide about \$6.1 billion in quantifiable benefits over 30 years, including a positive environmental impact, \$1.7 billion in tax revenues, 50,000 person years of construction work, and 4,000 continuing jobs. It would have huge business impacts for Edmonton, Calgary and Red Deer, plus it would forge Edmonton, Calgary and Red Deer into an economic unit that would allow these cities to continue to thrive despite future energy constraints.

[Summarized from a presentation by Richard Gilbert at the 2006 Alberta Planning Conference]

Wind Power Competitive with Natural Gas



The oft-heard claim about green energy sources being costly no longer holds true.

According to the National Energy Board, the cost of wind generated electricity has dropped about 80% in the last 20 years. It now costs between \$50 and \$100 per megawatt hour. If this current downtrend continues, costs will be under \$40 per MWh by 2020, making wind power a very attractive energy source.

With higher natural gas prices in recent years, wind power is already competitive with natural gas generated electricity in some regions. The NEB says that a number of other alternative power options, like small hydro, biomass and geothermal, already cost as little as \$40 per MWh today. In contrast, power from existing sources tends to vary between \$50 and \$100 per MWh, and current proposals for natural gas power plants in Ontario are priced around the \$80 per MWh mark. [Source: Saskatoon Star Phoenix, March 28, 2006]

In Memoriam Gordon Reid



The Edmonton Trolley Coalition mourns the recent passing of Gordon Reid. Gordon was well known to city council for his many years of untiring voluntary service at city hall and city events. He was a transit user and committed supporter of Edmonton's trolley and LRT systems. We would like to acknowledge Gordon's contributions. He will be dearly missed.

Local News Items

City Councillor Fussing over Trolley Costs

Citizens supporting the retention of trolleybuses in Edmonton were met with a battery of questions on May 17th when they addressed council's Transportation and Public Works (TPW) Committee regarding an administrative report on trolleybus costs. The report, which cited trolleybus costs in isolation, was prepared at the request of a city councillor who seeks to eliminate the community friendly and sustainable buses on the claim that they cost more to operate than diesel buses. Citizens who spoke in favour of the trolleys cited quality of life issues like low noise and absence of noxious fumes, as well as the greater sustainability of trolleys because of their non-dependence on oil and ability to use green fuels like wind generated electricity. Trolleys have also been found to attract more riders than diesel buses due to their relative route permanence, greater visibility and positive attributes, whereas the removal of trolleybuses in some cities was found to result in ridership losses and later regrets. The councillor's enquiry posed questions that did not allow a fair comparison of costs by taking into account factors like the greater longevity of trolleys and their potential for lower maintenance costs.

The TPW Committee voted to have the administration prepare a new report on the effectiveness of the current trolley system and other emerging technologies, including how they comply with national environmental standards and the city's Enviso (environmental management) program. The new report is to detail potential best practices and estimated costs for increased efficiency, environmental and safety management of the City's diesel transit fleet as well as evaluate the impact of suspending capital expenditures associated with trolley operations until 2008 other than those necessary for safety purposes. The new report will come before council's TPW Committee on September 19, 2006. [ETC Summary]

Pointing the Finger: Doctors cite Vehicle Exhaust for rise in Allergies

Calgary physicians Dr. Lisa Kleinert and Dr. Joel Doctor have been speaking out about spring allergies. And they're doing lots of finger pointing to draw attention to the causal factors. Kleinert moved from Saskatchewan to Calgary some years ago, and immediately noticed a much higher proportion of allergy sufferers. "In fact, it seems to get worse each year," she says. Airborne pollutants are to blame, mostly as a result of the growing number of vehicles on our roads, they say. The problem parallels that of asthma, which has gotten steadily worse over the past two decades. Statistics from the U.S. Centre for Disease Control in Atlanta show the number of asthma cases in the U.S. has tripled since 1980.



Lisa Strosher, an environmental health officer for the Calgary region, cites traffic as the major source of air pollution in Alberta's cities. "It's not just motor vehicles like passenger cars, you know, it's everything else [too]." Trucks, buses and diesel rail locomotives produce their share of harmful pollutants. In fact, figures from six years ago showed that diesel-powered transport makes up just 6% of all the miles driven in the United States, yet it produces 40% of all the smog-related chemicals and, in larger cities, up to half the airborne soot. British studies have linked higher incidence of childhood cancers and asthma with proximity to major transportation corridors, bus stations and diesel rail corridors. A 2002 conference in Montreal revealed that one in five Canadian children is borne with asthma, but less data is available on the growing incidence of allergies. [Sources: CBC News, Apr. 20, 2006; New York Times, Dec. 26, 2000 and E. Knox, *Journal of Epidemiology and Community Health* 2005 and 2006.]

Delegation from New York tours Edmonton's Electric Transit

The annual convention of the Electric Railroaders' Association was held at Edmonton's Westin Hotel over the Canada Day weekend. Delegates chartered one of the city's newly refurbished trolleybuses to tour all the electric routes in the city, including some that had not seen actual trolleybus service for years. They also rode the LRT and visited the MacDonald LRT Shops. As guests of the Edmonton Radial Railway Society, they travelled by electric streetcar over the High Level Bridge, and rode historic streetcars at Fort Edmonton Park as well. They were quite impressed by Edmonton's extensive electric investments, and many were also quite vocal in denouncing recent proposals to scrap these valuable assets as out of step with the times. The group was appreciative of the role played by ETS in having several red and cream historic trolleys brought out of storage and shined up for the occasion, expressing hope that they would see them operational for the centenary of public transit in Edmonton in 2008. [Source: R. Clark, ERRS]



*And you thought the 1950's were over!
Surprise - Public Transit under Attack Again*

Editorial

A week after all the fuss about trolley costs, public transit in Edmonton came under attack again when a city auditor's report portrayed transit as over-supported financially for the percentage of commuters using it. The report says the cost to the city of each transit ride is expected to rise from \$3.23 in 2005 to \$9.37 by 2020, while the cost of each car trip will drop over that same period from 0.71 to 0.56. It suggests more 'cost effective' management of transportation is necessary to balance the expenditure for roadways and transit.

This report typifies the type of anti-transit rhetoric used in many cities during the 1950's to justify the construction of large freeway systems and the decimation of viable light rail and trolleybus systems. Anti-transit rhetoric gets its punch from quoting selected figures in isolation as though they were the only significant facts, while leaving out other equally or more important parts of the equation. The parts left out are sometimes things that are more difficult to quantify in raw numbers, or involve information or projections not available at the time of the analysis.

On average, public transit in Edmonton removes close to 120,000 car trips from city streets daily according to ridership stats. Automobile use has been growing steadily, and adding more car trips to our streets might well be expected decrease the cost to the city per car; that's just simple math. But what about the huge capital expenses needed to upgrade roadways to accommodate all these cars, like 23rd Avenue? The current cost estimates for that one intersection are higher than the budget for the high speed transit network to the West, North and South combined! Increased car use requires more parking facilities, it increases lost commuting time due to traffic congestion as well as the toll on our health taken by additional pollutants, traffic noise and car accidents. Then there are the issues of growing insurance and policing costs. These less visible cost impacts of seemingly cheap car travel must all be borne by Edmontonians, too, even if there isn't a readily available figure in the city's books.

Public transit provides over 34% of trips to Downtown and 42% of trips to the University each weekday morning. Whittling away transit and forcing more people into cars will have a detrimental effect on both of these areas, not to mention the traffic arterials that feed them. Labour is one of transit's most significant costs – bus drivers, maintenance staff, inspectors, and the many other staff and management positions needed to run an effective system. Indeed, public transit provides a livelihood for many citizens. Is there not a benefit to employing our citizens?

Transit covers more than 40% of its costs through direct revenue—namely the fares paid by users. Roadways barely cover 5% of their costs through direct revenues. Over 95% of roadways costs are tax supported. A 1994 report on the *True Costs of Transporting People* showed that automobile use in Edmonton is subsidized by over \$700 million per year. This is a far cry from the expenditures to support transit. Looking at the full picture, attaining greater 'cost effectiveness' would appear to take us in an entirely different direction than that suggested by the auditor—namely toward transit improvements and away from building more and bigger roads.

Transit improvements that have the potential to attract riders—like more light rail, an improved and modernized trolleybus system, high speed transit ways—all would generate more revenue to help cover transit's costs. The positive financial impact of the transit improvements now under way in Edmonton, and of those yet to come, need to be factored into the long-term cost equation as well.

Reports that tell half the story for the past 25 years have given Edmontonians half an LRT system, half a trolleybus system, and a transit operation that attracts half as many riders as it could. Isn't it time we started dealing in wholes?

National and International Transit News

BC Ferries hike rates to cope with rising oil prices

Bus fares aren't the only public transportation costs going up as a result of high oil prices. BC Ferries CEO David Hahn announced in late April that major ferry runs from Vancouver to Victoria expect to be hit with a 3% rate hike, and minor routes like the Gulf Islands route will face a 7% increase. This is the second time the Ferry Commission has considered rate increases in 2006. In January the Commission approved a 1.5% hike on major routes and a 3% hike on minor routes as a result of the company's inability to continue to absorb oil price impacts from 2005. Hahn called high oil prices 'ridiculous' and said further increases are expected if fuel prices continue to climb. [Source: Victoria Times Colonist, April 28/06]

Coach USA shuts down New York operation over high Diesel Prices

Coach USA shut down its central New York state operations on June 30th, citing a 46% jump in diesel fuel prices in the past 12 months as the source of its financial woes. The regional charter service operated in Henrietta, Syracuse, Elmira and Oneida County, New York and employed 100 people. All have been offered severance packages. [Source: Gannett News Service, April 15, 2006]

Mexico City's Newest Trolley Route Extension a success

On September 27, 2005, Mexico City opened the latest extension to its growing electric trolleybus system. The 8.5 km circuit, called "Circuito Politécnico", serves a popular polytechnical institute in the northern part of the city. 6 trolleybuses are used to provide service at five minute intervals from 5:00 to 23:00 daily. Mexico City is one of nine North American cities operating trolleybuses and proudly markets its trolley service as "transportation without contaminants". [Source: STE (Servicio de Transportes Eléctricos), Mexico City]

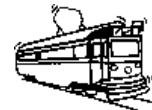
Another Venezuelan City to Build Trolleybus System

Merida Venezuela made headlines a few years ago with its announcement of plans for a trolleybus BRT (Bus Rapid Transit) system, now in the construction phase. Before it has even opened, a second Venezuelan city has jumped aboard the trolley bandwagon. The city of Barquisimeto has ordered 80 articulated trolleybuses for a 22 km (44 km round trip) trolleybus BRT line to be constructed there. The new trolleybuses will use an electric propulsion system by Bombardier Transportation known as the *MITRAC 500*--a system adaptable to both LRT cars and trolleybuses. The vehicles will be designed and assembled by Neoman (formerly Neoplan and MAN) GmbH of Mannheim, Germany. Delivery of the trolleybuses will be completed by 2008. [Source: Bombardier Transportation, www.bombardier.com]

Wellington Trolleybus Renewal Program gets another Green Light

Land Transport New Zealand, a Federal funding body, was reported to have reached an agreement June 22nd with Wellington Regional Council and transit service provider Stagecoach that will see full funding to renew Wellington's fleet of 60 trolleybuses and upgrade the overhead lines that power them. It is not the first obstacle that Wellington Council has had to overcome to bring the trolley renewal program to fruition. Wellington's renewal plan involved recycling some of the electrical components from the existing trolley fleet into new bus bodies. But according to Council Chair Ian Buchanan, the new vehicles will be larger, more comfortable and more reliable, with a new design of trolley pole that greatly reduces the chance of becoming disconnected with the wires, and auxiliary power. "The buses will have low floor and wheelchair access, more comfortable seating and improved electrical systems. Other benefits of keeping trolleybuses include no increase to diesel emissions on our main streets, and quieter running. Overseas experience also shows that replacing trolleybuses with diesels results in a drop in patronage." The agreement awaits approval of the Commerce Commission, which needs to ensure the contract with Stagecoach does not allow the service provider an unfair monopoly. [Source: Greater Wellington Regional Council, June 23, 2006]

Seattle prepares to Bring Back Electric Streetcars



Centre City in the heart of Seattle is rapidly becoming a place that people choose to live, work and socialize, according to Mayor Greg Nickels. As part of a plan to develop an integrated transit system that will assure the continued vibrancy of the area and provide viable alternatives to single occupancy vehicles, the Seattle Department of Transportation has put together a plan to reintroduce streetcars. By Fall 2007, the first part of the planned network, the South Lake Union line, will be operational and connect Lake Union with the Denny Triangle and Downtown.

At a total capital cost of \$50.5 million, the South Lake Union line will use modern, air-conditioned 140-passenger vehicles operating over 2.6 miles of track. According to the Seattle Department of Transportation, streetcars have been shown to attract 15-50% more riders than diesel buses. They also attract private investment and have a positive influence on property values. Streetcars are easily integrated into densely developed pedestrian-oriented neighborhoods, and, like electric trolleybuses, their operation is low impact. A Groundbreaking Party to kick-off construction of the South Lake Union line will be held at noon, Friday July 7, 2006 on Terry Ave. North between Harrison and Republican Streets. [Source: Seattle Department of Transportation, May 24, 2006]

National and International Transit News (con't)

Kaunas Lithuania to expand trolley system, buy new vehicles

Lithuania's second biggest city—Kaunas—a growing metropolis of 415,000 people, has announced plans to purchase 50 new low floor trolleybuses as part of a program to restructure its public transportation system. According to the Kaunas Trolleybus Company Autrolis, the new trolleybuses will help develop public transport alternatives to the privately operated, diesel transport vehicles known to locals as 'microbuses' that are blamed for polluting the downtown air. According to Kaunas' Public Transport Regulation and Restructuring Advice Program (PTRAP), the diesel microbus fleet does not meet the city's requirements for the use of ecologically friendly vehicles in the city centre. Autrolis also plans to extend the trolleybus system in order to further reduce air emissions and noise in the city centre. [Source: International Trolleybus News]

Zurich to order high capacity double articulated trolleybuses

Following the successful trial of an extra long, high capacity double articulated trolleybus demonstrator, the transport operator VBZ of Zurich Switzerland has announced an order for 17 such vehicles. The test vehicle filled all expectations and performed well in inclement winter weather, earning much praise from staff and passengers. Delivery of the vehicles is expected in the summer of 2007. The trolleys measure 24 metres long, are 100% low floor, have a passenger capacity of about 200 people, and will feature electrical equipment by Vossloh-Kiepe—the company providing the electrical equipment for Vancouver's new trolleybus fleet. The bus bodies will be manufactured by Hess Coachworks.

Double articulated trolleybuses are a new advancement on the transit scene. They carry higher passenger volumes than other bus-based vehicles on the market. The all-electric drivetrain allows a level of performance that would be difficult to achieve with a diesel engine in a such a large vehicle—weight and heavy loads are not a problem for the double artic trolley. The vehicles are ideally suited to BRT (Bus Rapid Transit) operations or very heavily patronized routes. Along with quiet and smooth acceleration, they offer the low maintenance features for which electric vehicles are widely known. [Source: *Tagesanzeiger*, March 30, 2006; www.proaktiva.ch; Hess Corporation]



More Bus, More Room, More Comfort declares the sign on the Hess Corporation's new Mega Trolleybus, a 24 metre super trolleybus designed with the capacity of two light rail cars. The vehicles are to be introduced in the Swiss cities of Geneva and Zurich.

[Photos: www.proaktiva.ch and Hess Corp.]