

TRANSIT

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Is removal of multi-modal bus system to blame for Edmonton's dirty air?

On March 27th, Alberta Health Services issued a precautionary air-quality advisory for the city of Edmonton and surrounding communities. The city recorded a rating of 7 on Environment Canada's Air Quality Index, which indicates a high risk. A condition known as an "inversion" trapped airborne pollutants, and the public was urged to limit outdoor activities that require exertion. Children and the elderly were considered most at risk and were advised to stay indoors. The air quality advisory lasted until March 31st.

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In commenting on a report in the Edmonton Journal, a number of members of the public cited the elimination of fume-free electric buses in the downtown area in connection with the smog incident. A multi-modal transit system utilizing electric trolleybuses on busy inner city routes is a strategy many cities employ to improve air quality in core communities. But a 2008 City Council decision eliminated the electrics in favor of polluting diesel buses, known for emitting harmful particulates in their exhaust.

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A 2012 report on air quality in Edmonton indicates that the quality of air in the city has been in a state of decline since 2008, and the amount of particulate matter has reached harmful levels. The level of particulate matter, in fact, exceeded the national average on some days. (continued on Page 2)

VOL. 29

Spokane progresses with multi-modal system

Trolleybuses to be installed downtown

The Spokane Transit Authority (STA) says that there is a dire need for a more modern and efficient transit system in Spokane to cope with ballooning ridership, especially on heavily used routes.

In early April, the STA unveiled its 21st century plan. The multi-modal plan contains something for everybody. New park-and-ride lots will be created on the urban fringe to make it easy for long distance commuters to take transit into the city centre. Busy routes will get more bus shelters. But the highlight of the improvement plan will be a high performance transit line erected through downtown using modern electric trolleybuses, called METs by local planners. (See Page 2)

Key European Organizations seek Electrification of Transport

The European Commission's Transport White Paper, released about two years ago, lays out two main issues that the transport sector must address: It is an industry that depends on oil and oil products for 96% of its energy needs, and it has contributed negatively, so far, to climate policy goals.

In weighing these challenges and recognizing the importance of competitiveness in the industry, a number of leading European transport organizations were convinced that the mass electrification of transport systems is the solution. Earlier this year, they banded together in hopes to spur movement towards that goal, and are calling upon public authorities to support the further electrification (See Page 2)



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

Editor: Robert R. Clark, retired supervisor of transit planning

Edmonton's Dirty Air (con't from Page 1)

"Particulates are one twentieth the size of a human hair. They're very small. You can breathe them into your lungs, and they are a potential human health concern," said Alberta Environment's air policy manager, Bob Myrick. Diesel exhaust is a common source of particulate matter.

The report was based on two monitoring stations in downtown and east Edmonton and was published in August 2012, but the public was not told of its findings. "It's important that the public knows about air quality, and I think as part of the management plan process we have a real opportunity to improve communications with the public and the fact that they can actually do things to improve air quality," said Myrick.

While there may be steps the public can take to reduce particulates, such as reducing vehicle idling, no mention was made of what steps the City of Edmonton could take as operator of approximately 1,000 diesel buses.

[Information sources: Edmonton Journal, March 27th and March 31st, 2013; Edmonton Journal, October 22, 2012]

Spokane: Building for the 21st Century (con't from Page 1)

Ultimately, authorities envision the trolleybuses on a number of heavily used routes, but initially one 3 mile route has been chosen through downtown. The line will be distinguished from existing transit services. It will feature increased frequencies, faster loading, and dedicated transit lanes. A federal start-up grant is being sought to help fund the project, which will cost approximately \$36 million.

According to Susan Meyer, STA's chief officer, the project, called the Central City Line or CCL for short, is in the planning stages, and STA is currently working with communities on a plan to move forward and make the trolleybus line a reality. Doing the planning work will also enable Spokane to take advantage of further national efforts to make public transit a priority, explains Meyer. "We think we can get the bang from both a transportation and an economic perspective from the trolley bus," she said. The plan was approved in a 6 to 1 vote by the STA Board back in July of 2011. The STA not only believes that the trolley bus would have the potential to spur economic development because of its permanence, but it would also allow Spokane to become a leader by setting an example that other cities could follow in the adoption of green technology.

[Sources: International Trolleybus News, R. C. DeArmond/P. Shalit, April 30, 2013; STA Moving Forward - Central City Line Project Update at <http://www.stamovingforward.com/routes/central-city-line/> accessed April 30, 2013]

Europeans Push for Electrification (con't from Page 1)

of surface transport on the basis of a multi-modal approach.

The White Paper sets a 60% greenhouse gas emissions reduction target for 2050 over 1990 levels. Electrified transport holds the best potential for reaching this target, say members. Widely available and produced all over the EU, greater use of electricity in transport can, while reducing greenhouse gas emissions, simultaneously help to promote fuel diversification, strengthen energy security and improve both air and noise quality in urban areas. This in turn will enhance human health and quality of life in the Union.

Electrification of surface transport is achievable with existing technologies, say members. In the urban and sub-urban context, an expansion of electrified public transport services, including light rail, metro, and trolleybuses, and the successful deployment of light-duty electric road vehicles, buses and other captive fleets as well as electric two-wheelers are within reach now. Compared to other alternative road transport fuels, the infrastructural hurdles for providing for grid connected electric vehicles and for charging non-grid connected electric road vehicles are considerably lower because the electricity distribution grid is already in place.

The organizations support the Transport White Paper's Goal to phase out conventional cars and light duty trucks in cities by 2050. They say that in order to improve air and noise quality levels and lower urban

European Electrification

(con't from Page 2)

congestion, an optimal mix of means and modes of transport needs to emerge in which sustainable public transport should play a major role in combination with private vehicles, walking and cycling.

The organizations add that the European Union's electricity sector has made considerable progress in terms of efficiency and sustainability. According to the International Energy Agency, total CO2 emissions from power generation fell by 13% from 1990 to 2010. Better still, the CO2 intensity of power generation fell by 32% over the same period (1).

As fair competition and clear price signals are essential for efficient and competitive transport systems, taxation and pricing should be based primarily on carbon emissions, while also taking noise and air pollution into account. Therefore, the organizations support initiatives to align transport taxation with Europe's sustainability goals and to proceed with the further internalisation of external costs. They support the introduction of *binding economic instruments* to ensure that the emissions reduction target for the transport sector is actually met and call upon the Commission to prepare legislative proposals for that purpose.

[Source: Media Release - Common Statement - Platform for the Electrification of Public Transit, 13th January, 2013]

New Technology helps Subways save Energy

The large, multinational firm Alstom was recently awarded a contract by UK Power Networks Services to supply its innovative Harmonic and Energy Saving Optimiser (HESOP) energy recovery system for the Victoria Line of the London Underground.

The contract, worth about €1 million, is for a trial of inverting substation technology that will run until 2014 at the Cloudesley Road substation. This will help make the Underground more energy efficient and will also help control tunnel temperatures, says an Alstom spokesperson.

Moving Forward: Turkey to Replace Hybrids with Trolleybuses

Turkey's Phileas diesel hybrid buses – chosen for some of the busiest routes in Istanbul - have not fared well. Reports indicate that already by the summer of 2009, most of these brand new buses had to be taken out of service with problems. The hybrid propulsion system failed to provide the vehicles with sufficient hill climbing ability, and there were also issues with the suspension system. Broken down hybrids would cause congestion on the single-track transit right-of-ways, blocking them and delaying other buses that were unable to pass. The matter is so serious that it has even been discussed in the local Parliament, and plans to buy 50 more of the hybrids have been put on hold indefinitely.

The buses were designed to climb a 2.5% gradient at 40km/h, but in practice this has not worked. The vehicles are also overcrowded. The local government is proposing a better solution.

A tender went out on April 22nd for 10 double-articulated trolleybuses, electric substations and catenary system for a route of 20 km at a cost of 19 Million Euro. The bid was won by a Turkish company, the Bozankaya group, who are working closely with Neoplan and Viseon. The vehicles will have an auxiliary power system.

Istanbul feels that the modern trolleybus is an ideal solution to this issue because of its ability to draw unlimited power from the overhead wires allowing the vehicle to carry heavy passenger loads and negotiate steep hills without problems. [Source: TBus Group, May 23, 2013.]

The HESOP system works by converting and transferring any unused power generated by the trains during braking to accelerating trains elsewhere on the line or to the grid. The HESOP control system ensures that the energy is recovered via the most efficient route that the infrastructure will permit. It enables the recovery of more than 99 percent of the traction energy generated during braking, thereby reducing CO2 emissions through reduced energy consumption.

London Underground already makes good use of regenerative braking but, by adding HESOP to the power supply arrangements, the residual energy that is currently wasted in braking resistors can be made use of.

[Source: Alstom Transport, May 2, 2013]

KISS returns to Hangzhou

Its route number spells KISS and made it famous. The K155 trolleybus service is back in Hangzhou, China with a new fleet. Hangzhou's transport company acknowledges that the trolleybus represents a transit mode with many advantages, particularly in the 21st century.

Citizens had to wait seven years for the trolleys' return after a report recommending investment in the trolley system went forward. A 2009 newspaper article from the Hangzhou Daily impatiently remarks: "Trolley buses are being re-introduced worldwide as a solution to environmental and energy issues. Many people in Hangzhou are also waiting for the revitalization of electric buses in hopes of a better environment."

With the completion of work on its Metro system, the time has come for Hangzhou to turn attention to the trolleybus portion of its multi-modal network. [From: Int'l Trolleybus News, R.C. DeArmond, May 10, 2013]

Electric Trolleybus Hailed as Superhero

Condensed from an article in the Vancouver Observer, April 3, 2013

If someone asked what existing technologies have the greatest potential to reduce the carbon pollution that is destabilizing our climate, what would pop into your head first? Many would mention wind turbines, solar panels, electric cars, and perhaps bicycles lanes or light rail. But there is a potential climate superhero quietly patrolling the streets of Vancouver, Burnaby and about 350 other world cities: the electric trolleybus.

Part of what makes the trolleybus such a potential game changer is that it is not a new and unproven invention. But rather its basic design has been refined gradually for over a century to become a highly sophisticated form of transportation with a solid track record. Today's largest carry up to 200 people and have three sections.

In the late 1970s Zurich, Switzerland started creating a network of exclusive transit lanes and signal priority for both streetcars and trolleybuses. Every year the Zurich transit authority gets closer to its goal of never having transit passengers delayed by automobiles. And Zurich now has the highest transit ridership in Europe--with just streetcars and trolleybuses. High capacity lines use streetcars, and medium capacity lines use trolleybuses. In 1995 the city of Quito, Ecuador started using trolleybuses in a slightly different way than Zurich – by building a trolleybus rapid transit line or BRT line with enclosed transit stations.

Recently there has been considerable hype about battery buses with wireless inductive charging stations, and there are even a few pilot projects. However, the laws of physics tell us that changing energy from one form to another always results in a loss. Changing electricity to chemical form in a battery and then back into electricity results in a loss ranging from 10 to 30%, according to Richard Gilbert in his book *Transport Revolutions: Moving People & Freight Without Oil*. The inductive charging systems result in a further loss of around 10%, and carrying heavy batteries produces another penalty. Hydrogen fuel cell buses are even less efficient. Nothing else has ever approached the efficiency of grid-connected electric vehicles such as trolleybuses, light rail vehicles and electric trains. Efficiency is extremely important in reducing greenhouse gas emissions and other environmental impacts. An *inefficient* renewable energy economy is not much of an advantage. While battery buses may have a role to play on less busy routes, on main transit corridors the efficiency of a direct electrical connection can't be beat.

There is a case to be made in favor of the big investment required for light rail on very busy transit corridors. However, on moderately busy corridors, high-capacity trolleybuses seem to be the logical way of quickly providing high quality transit. Trolleybus transit is the logical next step on thousands of busy bus routes across North America.

There is now **renewed interest** in the trolley bus in Europe as a way to quickly reduce carbon emissions, noise, and local pollution. It is time for Canada to also rediscover this tried and true climate hero.



A double articulated trolleybus in operation in Switzerland (Photo courtesy of manufacturer).

Quebec goes Hybrid and Electric

BAE Systems will provide its hybrid propulsion system for 475 Nova LFS hybrid diesel-electric buses for the Association du transport urbain du Quebec (ATUQ), a consortium of nine public transit agencies in Quebec.

BAE Systems' HybriDrive Series propulsion powers nearly 4,000 buses worldwide today and is the most successful series hybrid system in operation. The series configuration eliminates the mechanical connection between the diesel engine and the wheels. The engine turns a generator, and the power flows in series from the generator to power control electronics, to batteries, to an electric traction motor, and then to the wheels. The BAE hybrid is supposed to offer lower fuel consumption than a regular diesel powered bus.

Quebec transit agencies are moving forward with plans for cleaner, greener fleets. The city of Montreal has plans to convert its entire transit fleet to electric operation by 2025 and has plans for the conversion of busy main lines to electric trolleybuses. Montreal envisions battery-electric vehicles on less busy suburban lines.

[Information sources: Business Wire, April 24, 2013 (www.businesswire.com); Trolleybuses – a Key Element of STM's Electrification Plan, presentation at Leipzig, Germany, October 23, 2012]

Chinese to Open Electric Bus Factory in North America

On a recent visit to a new bus manufacturing company in China, California Governor Jerry Brown announced that the company would open a factory in Lancaster, California, and it would be the first Chinese-owned vehicle plant on American soil. The firm, Build Your Dreams, or BYD, will assemble 10 new plug-in battery electric buses for Long Beach at the facility next year. Opening ceremonies at the Lancaster plant were set for May 1.

The new buses, says BYD, can run up to 150 miles on a single charge. With increasingly strict air-quality rules and plenty of government subsidies available, the potential market for electric buses is sizable. As existing fleets age and buses with diesel engines are scrapped, public transit agencies will be shopping for more eco-friendly vehicles. Electric ones are projected to play a central role in the shift to cleaner vehicles, both in grid connected and rechargeable form. "I think it's very important that we start replacing our bus fleets with electric buses," said Governor Brown.

More than a third of city transit buses in the United States are now powered by fuels other than diesel. That's up from fewer than 10% a decade ago, according to the American Public Transportation Association's January 2011 data. Transit agencies, spurred by federal incentives for buying and using greener vehicles and by the potential advantages of switching from diesel, are investing in buses that run on electricity, compressed natural gas, propane and biodiesel. [Information: LA Times, April 17, 2013; USA Today, April 26, 2013]

Electric Light Rail to Connect Minneapolis and Brooklyn Park

A 13-mile light rail line has been approved to connect Minneapolis and Brooklyn Park, passing through Golden Valley, Robbinsdale and Crystal along the way. Deciding the mode for the corridor, known as the Bottineau Transitway, is an important toward developing a regional transit system for the area.

"Bottineau is key to the region's future development and continued economic success," said area Metropolitan Council Chair Susan Haigh. "As the Metropolitan Council works to build a 21st century transit system, Bottineau LRT will provide residents and employees of the corridor greater access to major destinations in the metro area through links to other major transit corridors."

Bottineau LRT is projected to provide approximately 27,000 rides a day by 2030. The project is estimated to cost \$1 billion in year 2017 dollars. At this time, it is anticipated that funds for capital costs will come from four sources: a transit sales tax in the metro area, the Hennepin County Regional Railroad Authority, the State of Minnesota and the U.S. Federal Transit Administration (FTA). [Source: Targeted News Service, May 9, 2013]

Charlotte, NC Pushes Forward with Streetcar Line

In order to advance Charlotte's streetcar plan, City Manager Ron Carlee recently rebranded the electric tram line the CityLynx Gold Line and presented City Council a new plan to pay for a 2.5-mile extension.

Charlotte has already begun construction of the \$37 million 1.5-mile starter line from Time Warner Cable Arena to Presbyterian Hospital. Carlee's new plan calls for the city to seek a second grant from the U.S. Federal Transit Administration (FTA) to help fund construction of the extension. In addition, he proposed that money currently used to pay for the Gold Rush free bus on Trade Street be used to fund operation of the line instead of using property taxes. The streetcar — or CityLynx Gold Line — would cover most of the Gold Rush route. [Source: Charlotte Observer, May 13, 2013]

Transit Advocacy News

Bus Rates in Ohio may Triple

Bus fares for Greene County transit riders in Ohio could triple this summer. Aside from rising costs and skyrocketing diesel fuel prices, the hike is needed to generate matching dollars for funds provided by operating grants. Such grants currently only provide for 60% of the total cost. There is no regular stable funding source for making the local match except for fares.

Transportation systems around the state are struggling to cope with flat federal and state funding, said Mark Donaghy, Executive Director of the Greater Dayton Regional Transit Authority. Testifying before the Ohio Senate Finance General Government Subcommittee on May 8th, Donaghy encouraged legislators to increase the transportation portion of the state budget, citing the important role transit plays in maintaining economic health. "People need access to jobs, especially entry level jobs," Donaghy said. "And that access is public transit." [Source: Dayton Daily News, May 8, 2013]

Citizens Rally for transit in Pittsburgh

A coalition of transit advocates gathered in Pittsburgh to urge Pennsylvania state lawmakers and Gov. Tom Corbett to provide more funding for public transit. Nearly 40 organizations signed a letter calling for "stable, long-term state funding for transportation" with an emphasis on public transit.

"Public transit benefits everyone, not just those who ride it. By getting more cars off the streets, it reduces traffic, parking congestion and oil consumption," said the letter prepared by rally organizers. "We believe a strong transit system promotes a growing economy and a positive quality of life in Western Pennsylvania," it said. Attendees praised legislation introduced by state Sen. John Rafferty that would raise an estimated \$2.5 billion in new funding by changing the way gasoline taxes are levied and increasing driver fees and fines. Rafferty estimated that the bill would add \$128 million in transit funding in the first year and \$510 million by year five in Pennsylvania.

Steve Palonis, president of the Amalgamated Transit Union Local 53, said it would enable fiscally troubled agencies to add needed transit service. [Source: Pittsburgh Post-Gazette, April 18, 2013]

Hard Times for Philadelphia

According to a recent study, Philadelphia's Southeastern Pennsylvania Transit Authority (SEPTA) supports 26,000 jobs, contributes \$3.21 billion in economic output, and generates \$62.5 million in tax revenue. It also showed that SEPTA provides more bang for the buck than other transit agencies in Pennsylvania, yet gets less than its share of state funding based on ridership.

The large transit authority is financially strapped and recently sought a fare increase while at the same time lobbying government officials for more funding. "Over the long term, SEPTA will be forced to eliminate services to make ends meet; the region will gradually experience a dramatic erosion of jobs, tax revenues, and property values as its dense, economically productive urban core becomes unattractive to business and residents; and the commonwealth will suffer from the losses in its most economically productive region as residents and businesses generate less tax revenue and re-locate elsewhere," so the study says.

Consultants Wray and Voith cited SEPTA's relatively paltry capital budget (\$304 million this year compared to Washington's \$1 billion, NJ Transit's \$1.1 billion, Boston's \$800 million, and Chicago's \$950 million) as especially worrisome. It was recommended that state lawmakers should give local governments more power to raise money for transit through taxes, road tolls and the like. This would establish reliable and steady sources of funding for large capital projects. [Sources: Philadelphia Enquirer, April 29, 2013, APTA]

Fort Lauderdale, Florida accepts for Downtown Tax to fund Streetcars

Fort Lauderdale's planned streetcar has been named the Wave, and it is very much desired. So much so that downtown property owners are willing to accept a tax to help pay for it.

The \$142.6 million downtown electric streetcar project has been heralded as a catalyst for the city's growth. Downtown property owners will be paying \$20.6 million toward the total cost of the 2.7-mile project. Residential property owners would pay \$99 a year for 25 years under the plan, and commercial space would be billed at 9 cents per square foot.

At a public hearing, most of the speakers were focused on the promise the new mode offers the city, calling it a transformative opportunity. "I can't wait for this to happen," resident Phil Bernstein said. "One of the things that brought me to Fort Lauderdale was the promise of the Wave. My hope is this is only Phase 1 of developing a state-of-the-art mass-transit system."

The initial line -- a 1.4-mile, \$83 million stretch -- is expected to begin operation in 2016. [Source: Sun Sentinel, June 5, 2013]