

# TRANSIT

VOLUME 37

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## Seattle voted one of Best Cities for Public Transit 48% Increase in Transit Use in past Seven Years

While San Francisco, Boston and New York continue to top the list of the 10 best cities for public transit in the U.S. according to updated Transit Score rankings by Redfin, the city of Seattle has moved way up on the list to seventh place.

"Seattle is not only the coolest city in the country – we are now one of the most transit-friendly cities," said Seattle Mayor Jenny Durkan. "For our visitors, commuters and residents, public transit is safe, affordable, and a vital component in making sure our city is accessible to all. With the opening of new light rail stations and one of the highest bus riderships in the country, Seattle is making significant strides towards becoming a world-class transit city."

Transit use in Seattle has increased by a whopping 48% in the past seven years. Among other factors, much credit goes to the development of an efficient light rail system and a movement towards modernization and electrification of the surface fleet. Seattle recently renewed its large electric trolleybus fleet with new state-of-the-art vehicles, has constructed electric streetcar lines with more in the works, and King County also placed a large order for battery buses in 2017. According to General Manager Rob Gannon, King County Metro has a vision for the complete electrification of its bus fleet by 2034. [Sources: RedFin, February 22, 2018; Seattle Times, October 2, 2017].

## Edmonton Buys Battery Buses

Battery buses will soon be humming along Edmonton streets, according to an April 13th announcement by Edmonton Mayor Don Iveson, provincial Transportation Minister Brian Mason, Federal Infrastructure Minister Amarjeet Sohi and Edmonton Southwest MLA Thomas Dang. The City will purchase up to 40 of them in the near term, with five vehicles arriving in 2019, and the remainder arriving in 2020.

While the battery buses cost twice as much as regular diesel buses, the announcement claimed that they were cheaper to run over the life-cycle of the vehicle. "The electrification of our bus fleet will allow us to accelerate our leadership on energy transition and reduce Edmonton's overall carbon footprint," Mayor Don Iveson said.

And Edmonton certainly has some catching up to do in terms of its reputation in energy transition after having decommissioned its large electric trolleybus system in 2009, with city administrators scoffing at the \$100 a barrel oil prices of the day. (continued on Page 2)

## Vancouver's TransLink to add Battery Bus Service along Marine Drive

TransLink will add four battery buses to its fleet next year to operate the transit service on Route 100 along Marine Drive in Vancouver and to Burnaby and New Westminster. The four battery buses will be "fast charge" buses that can recharge quickly at fixed points. Two high powered charging stations will be installed to allow the vehicles to operate – one at the Marpole Bus Loop, and the other at the 22nd Avenue Skytrain Station. (continued on Page 2)



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## Edmonton Battery Bus Purchase (continued from Page 1)

A news announcement of the battery bus purchase stated that Edmonton may be past the point of ever buying diesel buses again come 2020. ETS Manager Eddie Robar had indicated that the Ferrier Garage in Edmonton's southwest could be converted to handle the charging and maintenance infrastructure for the buses. "That would give us a capacity of 120 vehicles. So that gives us two years of purchases where we can switch from diesel to electrics. But we have to have that facility complete before we can do that," Robar told reporters back in September of 2017.

The funding for the current battery bus purchase totals \$43 million. \$21.5 million comes from the Federal government, with the province and the City contributing \$10.8 million each. The first battery buses will be based out of the new Kathleen Andrews Garage near Fort Road which is currently under construction. Charging infrastructure is being incorporated into the new building.

Based on previous testing of the vehicles, the City believes that they will be able to handle the winter conditions that prevail in Edmonton for a significant part of the year.

The City of St. Albert already introduced battery buses into its fleet in 2017. The Toronto Transit Commission Board approved an expenditure of \$50 million for 30 battery buses in November last year and hopes to have them in service in 2019. [Information sources: Global News, April 13, 2018 and September 6, 2017; Edmonton Journal, April 13, 2018 and September 5, 2017; CBC News, November 14, 2017; CBC News, May 23, 2017]

## TransLink Battery Bus Trial (continued from Page 1)

The vehicles will be on test for a period of two-and-a-half years.

"Mass transit has always scored high as a sustainable way to move large numbers of people," said TransLink CEO Kevin Desmond. "But many transit vehicles still use carbon based fuels. Today, almost half of our fleet in Vancouver runs on cleaner technology, including electric trolleybuses, hybrid diesel buses and natural gas buses. With this fast-charge battery bus trial, TransLink is getting the on-the-ground experience we need to develop our low carbon fleet strategy and the transition towards a fully zero-emission fleet."

Canadian manufacturers New Flyer and Novabus will produce two battery buses each for the trial. The total cost for the project is \$10 million. [Source: Vancouver Sun, April 12, 2018]

## Montreal Defies Electric Trend and Goes for Large Hybrid Diesel Bus Order

A transport authority that once had plans for the electrification of its entire bus fleet by 2025, including the construction of a trolleybus system and the widescale implementation of battery buses, the Société de Transport de Montréal (STM) seems to have lost some of its electric momentum. Although it has taken a small step onto the battery bus bandwagon, the authority is now talking about diesel-electric hybrids, a step back from true electrification.

Mayor Valérie Plante announced recently that the city will be adding 300 hybrid diesel buses to its fleet by December 2020, which would bring STM's fleet up to 2,107 vehicles.

The move is supposedly a step toward realizing an election campaign promise made by Mayor Plante to address transit problems. The announcement came a day before Plante tabled her administration's first budget.

Plante said public transit users will benefit from more efficient bus service as a result of the new buses. "We know it will encourage public transit," she said at the announcement. She believes that additional service provided by the vehicles will result in a 15% increase in transit use in Montreal.

Montreal and the Quebec government will jointly fund the project and will launch an open call for tenders. They have not released a cost estimate, but Projet Montréal had pegged the total at \$225 million when it made the promise during Plante's campaign.

The Transport Minister tried to make a connection to the environment in commenting on the announcement: "This investment will make our city a leader in environmental protection and sustainable development," said Transport Minister André Fortin. He claimed the hybrid diesel buses will help save up to 30 per cent in fuel costs and reduce greenhouse gas emissions, as hybrids can be somewhat greener than pure diesels.

Montreal opposition leader Lionel Perez said adding the buses was a welcome announcement, but added that the announcement itself "raises more questions than it really answers."

STM Chair Phillip Schnobb indicated that the transit authority is doing a "major review" of the network. [Information source: CBC News, January 9, 2018]

## Riders Just Love San Francisco's New Streetcars

When Dee Andrews recently climbed aboard San Francisco's J-Church line, she glanced around and voiced words rarely spoken about San Francisco's public transportation system: "It's beautiful." Andrews, 65, a longtime city resident, had boarded one of Muni's new streetcars for its inaugural run on the J-Church line.

"We intend to start putting one new car each week into service," said John Haley, the Municipal Transportation Agency's transit director. Gray and white with a wide red stripe wrapped around them like a ribbon, the new cars offer a different look for Muni. The third-generation Muni Metro car isn't fancy, but it's got a modern look and feel, with automated video screens announcing the next stop, loudspeakers you can hear. There is blue colored seating for passengers with disabilities and seniors, and red seating for regular passengers.

The first of the five new cars in service was rolled out in November of last year. Each car goes through a 1,000 hour break-in test to check for any deficiencies before carrying any passengers.

The new cars, built by German manufacturer Siemens in Sacramento, are part of a Muni renaissance, at least in terms of vehicles. The Municipal Transportation Agency is in the midst of replacing all of its trolleybuses, buses and railcars--except, of course, for the cable cars and historic streetcars. "Replacing the Muni fleet can have a significant impact on Muni reliability," said Paul Rose, a spokesman for the agency. "Each new vehicle is another step in that direction."

Muni plans not only to replace its current Metro fleet of 149 streetcars, but also to expand it to 264 by 2027. The additional cars will be needed, in part, for the Central Subway and to meet service demands resulting from the Golden State Warriors' new Chase Arena, both scheduled to open in 2019. The cost of the new cars is about \$1.2 billion.

So far, Muni has just run the new cars as single-car trains, but it's been testing trains with two cars and even three cars -- something the current Breda cars can't do. The system would then evolve to be more like an LRT system. If the state Public Utilities Commission approves, two- and three-car trains could be picking up passengers by late spring of this year.

As the new car that picked up Andrews made its maiden voyage from the Muni Metro East yard down Third Street, along the Embarcadero, into the Market Street Subway and onto the streets of the J line, many riders reacted enthusiastically. Even some of the most jaded Muni riders cracked smiles. Jim Wilson, a 36-year-old product manager, had seen many of the new cars roll past during testing. But this was his first chance to ride on one. He and his 5-month-old daughter, Gabrielle, in a stroller, both were wide-eyed. "I ride Muni every day to work," Wilson said. "It's always nice to board something new. It's nice and clean, there's a lot more room, and it's quieter." [Source: San Francisco Chronicle, March 13, 2018]

## Billion Dollar Plan for New Streetcars in Philly

An ambitious plan to remake Philadelphia's streetcars took a step forward this January with a preview of how modernization will change not only how people ride, but also how they drive, bike, and park along the city's six streetcar routes. A new report details plans for stops that, with platforms raised above street level, will be wheelchair accessible and provide the backbone of a service that, along with larger vehicles, would remake the streetcars into something more like street-based LRT. The report from the Delaware Valley Regional Planning Commission is a small advance toward the plan to introduce new streetcars by 2024, an estimated \$1 billion overhaul.

"This is really a game-changer for an entire section of Philadelphia," said Erik Johanson, SEPTA's Director of Business Innovation. The new service would lengthen the distance between stops and define platforms where riders get on and off, instead of the Toronto-style system in which streetcars can stop at nearly every intersection. The current 112 cars that are 53 feet long and were manufactured by Kawasaki during the Reagan administration, along with 18 cars that date back to 1948, would be replaced by 120 80-foot-long cars that could hold twice as many people.

SEPTA also has 29 streetcars on two routes in Delaware County that would be replaced, but the focus is on city transit for now.

SEPTA anticipates the size of the new streetcars would allow it to reduce its fleet by 39 cars. Streetcars largely run between West Philadelphia and Center City, with the exception of a line on Girard Avenue, and the lines get more use than any single bus line or most regional rail lines. Almost 80,000 people board the streetcars each weekday, and half of SEPTA's 10 most used routes across all modes of travel are streetcar lines.

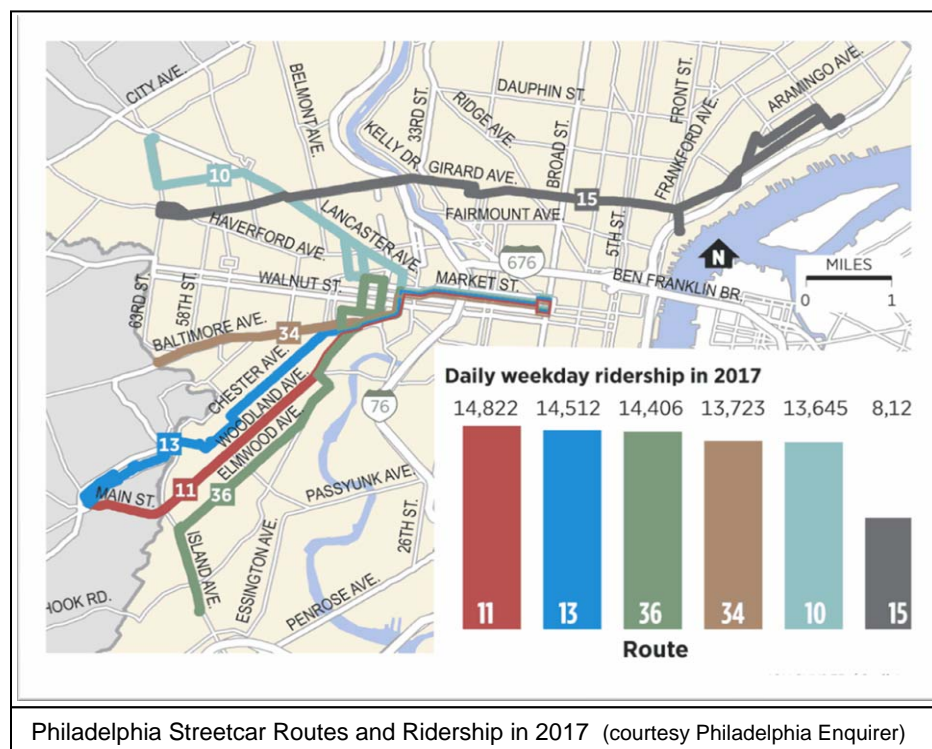
The streetcar modernization project is being shaped by twin demands: capacity and accessibility. The nearly 40-year-old cars are packed even when it isn't rush hour, and SEPTA anticipates ridership growing by half a percentage point a year for the foreseeable future. The current cars are seven years past their expected 30-year shelf life. New cars would be fully wheelchair accessible.

In addition to changes on the street, such as shifting the area where automobiles park and bikes travel, SEPTA is expecting to have to upgrade much of its streetcar infrastructure, including wires, bridges, and garages, to accommodate the bigger vehicles.

SEPTA officials have visited Toronto, where the transit commission is in the midst of a similar upgrade to its streetcar system. Toronto is spending about \$957 million (in U.S. dollars) for 204 new streetcars, a spokesman for the TTC said.

SEPTA's 68 miles of streetcar track is the largest streetcar network in the U.S. Philadelphia's streetcars survived the onslaught of diesel buses largely because of the 2 1/2 -mile, century-old tunnel from 40th Street near Baltimore Avenue to City Hall. It allows transit to avoid Center City's street-level congestion, but requires emission-free vehicles as the tunnel is an enclosed space.

SEPTA expects to hold community meetings in the neighborhoods that would be affected by the streetcar modernization. Much of the project remains in its infancy, with specifics to be determined and money to be found; much of the funding is expected to come from grants. [Source: Jan. 11, 2018, Philadelphia Inquirer]



## Citidis Trams for Bordeaux France

Electric equipment manufacturer Alstom has announced it will supply 10 additional Citadis trams to Bordeaux Metropole for a \$36.11 million U.S. as part of an optional order for the Bordeaux Phase III project. 26 new Citidis trams entered service in 2013 and 2014, and 15 trams are currently being manufactured as an add-on to the original 26.

These new 44-metre-long trams, identical to those of the previous orders, are intended to reinforce the multi-line transport offerings of the city of Bordeaux for 2019. Once this order has been delivered, the tram fleet that services 77 kilometres of track will consist of 125 Citadis vehicles. Bordeaux Metropole has one of the largest tram fleets in France.

All the Citadis trams of Bordeaux Metropole are equipped with the same APS ground-level power supply system used in the tramway systems of Reims and Dubai. This is an alternative to conventional overhead catenary which reduces energy consumption and removes the need for overhead lines in city centres.

Each Citadis vehicle can accommodate between 218 and 300 passengers--the equivalent of more than 3 buses. Citadis trams offer optimal on-board travel quality with a full low floor design, air conditioning, a video surveillance system and audio-visual information. Up to 98% recyclable materials are used in each vehicle, thereby helping preserve the environment.

In total, over 2,500 Citadis trams have been sold to more than 50 cities in 20 countries. [Source: Alstom, Jan 11, 2018]

## New Trolleybuses for Bern, Switzerland

As of December 11, 2017, eight new trolleybuses went into service on the BERNMOBIL trolleybus network. As exclusively electric vehicles, they enhance the energy efficiency and environmental friendliness of BERNMOBIL's operation.

Government Councillor Barbara Egger-Jenzer warmly welcomed the new trolleybuses as both transport and energy director: "They are attractive to passengers and help the canton of Bern to achieve its energy and climate goals." Thanks to a battery, the new trolleybuses built by Carrosserie Hess AG, Bellach will be able to cover construction zones in future without detours and without the need to substitute diesel buses, as was a past practice. The new trolleybuses thus increase the share of electrically driven vehicle kilometers at BERNMOBIL and reduce pollutant emissions and noise.

BERNMOBIL has been exclusively using electricity from renewable sources for eight years. "Trolleybuses help us achieve our goal: A BERNMOBIL fleet operated exclusively with renewable energy sources is CO<sub>2</sub>-free. That's one of the reasons why I'm delighted to hand over the new trolleybuses to BERNMOBIL today," said municipal councillor Ursula Wyss at a media event. The new trolleybuses also recover braking energy, are totally barrier-free and extremely comfortable.

For people with reduced mobility, the trolleybuses have low-floor entrances, generously sized wheelchair and stroller parking spaces, and more monitors for better passenger information. An air conditioning system ensures pleasant temperatures, the red leather seats increase comfort and are more durable and hygienic than the previous fabric coverings.

In total, BERNMOBIL has ordered 17 new articulated and 7 new double articulated trolleybuses from Carrosserie Hess AG in Bellach. They replace 20 older trolleybuses which must be replaced for reasons of age. In the summer of 2018, BERNMOBIL will receive a further five articulated and, in autumn 2018, seven double articulated trolleybuses. The remaining four articulated trolleybuses will arrive at BERNMOBIL in early 2019. The total investment amounts to around 26.5 million Swiss Francs.

BERNMOBIL has tendered the Request for Procurement for new trolleybuses together with Verkehrsbetrieb Biel in hopes of securing a better price for a larger order. [Source: Trolleyemotion via R. C. DeArmond, Dec 5, 2017]

## Esslingen, Germany; Rimini, Italy and Dayton, Ohio all go with Kiepe Electric Trolleybus Systems with State-of-the-Art In Motion Charging (IMC)

In Motion Charging is a concept for electric trolleybuses whereby the vehicles are operated on overhead lines where available to recharge a traction battery system. The vehicles can then also be operated for periods off-wire to provide service to areas without overhead lines. This system overcomes the range issues associated with battery electric vehicles, allows extensions of the service to areas where an investment in overhead wires cannot be justified, permits 24/7 operation of the vehicles without interruption and improves fleet utilization. The term In Motion Charging (IMC) was coined by Kiepe Electric, a global manufacturer of electrical systems for trolleybuses and other electric vehicles. With major trolleybus equipment orders from Seattle and San Francisco in recent years, Kiepe Electric has become one of the leading suppliers of electric drive systems for transit buses in the US market.

As reported earlier in Transit Talk, the Greater Dayton Regional Transit Authority (GDRTA) of Dayton, Ohio, USA, is renewing its current trolleybus fleet with new vehicles equipped with the Kiepe In-Motion Charging system. This option will allow the GDRTA the flexibility to extend some of its routes where necessary to areas not under wire during various time periods, potentially reducing the total number of vehicles needed to provide transit service.

Four variously equipped prototypes were tested earlier in a pilot program in Dayton and were able to defy the demanding conditions in the city center as well as harsh weather.

As of 2019, nine electric trolleybuses with IMC charging technology from Kiepe Electric will operate on the new express line called "Rapid Coast Transport" between Rimini and Riccione in Italy. The newly installed line will offer both locals and tourists a fast connection between the two cities. The built-in traction battery allows the transfer of trolleybuses to the electrified line without needing overhead lines leading to and from the depot. Charging of the traction battery occurs en route.

In Esslingen, Germany, the city's e-bus fleet is being expanded to ten battery equipped trolleybuses. Since 2016, four Kiepe-equipped vehicles have been operating successfully in Esslingen. The focus there now is on the further development and pioneering of the In Motion Charging technology: With the new IMC 500 version and an improved traction battery, up to 500 kW of energy can now be transferred from the overhead contact lines to the vehicles. This benefits the performance of the buses when driving uphill in areas without overhead wires. [Source: R. C. DeArmond, International Trolleybus News, March 8, 2018]

## New Trolleybuses for Opava, Czech Republic

Škoda Electric and Czech bus maker SOR are to supply 10 model 32Tr trolleybuses with battery auxiliary propulsion to Opava. The contract was signed on January 9 of this year, and delivery is due in September. The vehicles will be based on SOR's NS 12 bus model.

The vehicles will be equipped with 42.1 kWh lithium-titanate-oxide batteries, which would be charged from overhead wires. A 1 minute charge would allow up to 8 km of off-wire running. [R. C. DeArmond, International Trolleybus News, January 15, 2018]



## Teheran Trolleybus System Re-Opened

In 1992, the city of Teheran, Iran opened an electric trolleybus system which made headlines as the first electric bus system ever to operate in Iran, a country known for its oil production. This system, however, was shut down in 2013, and a number of the vehicles were placed in storage. Much, if not all, of the infrastructure was removed. The reasons for the closure, whether financial or otherwise, are not clear. For some time, there was discussion of the intent to re-open the system.

In 2016, that discussion was brought to fruition with the re-opening of one line on September 17th. The re-opened service uses 15 refurbished Skoda vehicles that incorporate some new technology, including traction batteries and an automatic wiring system to set the poles on the wires. [Source: R. C. DeArmond, International Trolleybus News, December 4, 2017]

## Solaris will deliver 41 new Trolleybuses to Vilnius, Lithuania

In the last days of 2017, Polish manufacturer Solaris Bus & Coach Company received a contract for delivery of 41 electric trolleybuses to the operator UAB "Vilniaus Viešasis Transportas" (VVT). It is yet another major contract with this public transport company in Lithuania. A few weeks earlier, Solaris received an order from the same operator for 150 buses.

According to the agreement, all 41 Trollino 12 metre trolleybuses will be delivered to Vilnius in 2018. Among other things, the vehicles will be equipped with air conditioning in the passenger compartment, Wi-Fi access, USB chargers and a video surveillance system. One of the additional elements for safety is a special device integrated into the driver's compartment which checks the sobriety of the driver before starting the vehicle. The trolleybuses will also have a braking energy recovery system that reduces energy consumption. [Source: R. C. DeArmond, International Trolleybus News, January 9, 2018]

## Trolley Wire stolen in Vancouver

Metro Vancouver Transit Police are hoping the public will be able to help them solve a mystery involving stolen Coast Mountain Bus Company trolley feeder cable. In a media statement, Transit Police say they have investigated nearly two dozen cases where trolley cable has been stolen over the past two years in the City of Vancouver alone.

The cost of replacing the wires, which can carry up to 600 volts of power, can cost up to \$50,000. Officials are calling the thefts a total disregard for public safety.

According to police, theft of copper wire from trolleybus, streetcar and LRT installations is becoming a problem in many cities in North America due the high price of copper. Most of the thefts happen at night, and thieves may be disguised as work crews. Police are asking anyone who sees someone cutting or dragging wires or sees an unmarked vehicle involved with what appears to be utility work at night to contact police or call 911. [Source: Global News, February 22, 2018]

## *Battery Bus News*

### BYD Battery Midi Buses to Come to Italy

European communities typically have larger existing investments in grid-connected electric vehicle technologies such as trolleybuses, streetcars and electric rail, and so the uptake of battery-electric buses as a replacement for diesel vehicles tends to have been slower than in North America, where diesel power is extremely prevalent in transit fleets.

However, according to battery bus manufacturer BYD, four city operators in the Piedmont Region of Italy have placed orders for a total of 13 6.7 metre BYD battery midibuses—a new model which was unveiled at the Busworld Show last October. GTT, the Turin operator is ordering eight midibuses, AMAG in Alessandria is taking two as is BUSCOMPANY, the operator in nearby Saluzzo, and CHIESA in Carmagnola is ordering one.

Each of the vehicles will feature two battery packs delivering a total of 174 kWh of power for a minimum range of 150 km. The buses will be built at BYD's plants in China and will be delivered in late 2018. [Source: BYD, January 15, 2018]

## New Trolleybuses for Kyrgystan

Bishkek Trolleybus Co of Kyrgystan has ordered a total of 52 new trolleybuses from two different suppliers to complete the renewal of its electric fleet.

Russian manufacturer Trolza is to supply 37 of the vehicles, and the Belarusian company Belkommunmash is to supply 15. The 12 m long vehicles are being ordered under a contract partially funded by the European Bank for Reconstruction & Development.

Trolza had previously supplied 44 trolleybuses to Bishkek in 2013 and 23 to Osh in 2017.

[Source: Trolleymotion via R. C. DeArmond, December 4, 2017]

## Colorado Springs to Buy Battery Buses with Volkswagen Settlement Money

Colorado Springs hopes to purchase some battery- electric buses with money from the state's multi-million dollar settlement with carmaker Volkswagen. According to reports, the state of Colorado will receive a total settlement of \$68.7 million. Volkswagen settled with the state for violating emissions laws, and this settlement included an agreement to dole out billions of dollars to U.S. states over 10 years to promote the adoption of electric vehicles and charging infrastructure.

The Gazette reports that Gov. John Hickenlooper unveiled a "road map" of how the state will use the money to accelerate the widespread adoption of electric vehicles.

Craig Blewitt, the director of Mountain Metro Transit, says Colorado Springs wants to replace six of its 50 buses with battery-electrics. Blewitt says the battery buses will benefit the environment and provide low maintenance and fuel costs.

The state will decide which communities receive money based on the extent of damage caused by Volkswagen diesel vehicle emissions. [Source: The Gazette, Jan 29<sup>th</sup>, Next City, January 30, 2018]

## Batteries in the Cold North: Battery Buses come to Alaska

Alaska's first battery-electric public transit bus was set to begin carrying passengers in Anchorage on January 16th. A four-month trial period will test how the bus and its batteries fare in cold weather, as the city looks into whether it makes sense to have an entire fleet of battery buses.

Reduced noise pollution is one benefit of electric buses. Like electric trolleybuses, the 40-foot battery-electric bus is a little quieter than two people having a conversation and almost silent compared to a diesel vehicle. But reducing air pollution and fuel costs are more the point. City transit officials say replacing just one diesel bus with an electric one would cut greenhouse gas emissions by nearly 250,000 pounds every year.

"That's a substantial change in terms of what we're breathing in, what our children are breathing in," said Anchorage Public Transportation Director Abul Hassan. The city will be looking to replace as many as 10 diesel buses in the next few years if this testing goes well.

Battery-bus manufacturer Proterra is leasing the test vehicle to the city. City-operated waste removal utility, Solid Waste Services, is paying the \$77,000 bill in exchange for advertisements on city buses. If the testing goes well, the waste removal utility would like to look at incorporating battery-electric garbage trucks into its fleet. [Source: Alaska Public Media, January 15, 2018]

## Battery Electric Vehicles Expanding in North America – Dallas begins Battery Bus Service

Electric vehicle (EV) sales in the U.S. increased 38 percent in 2016, and then another 32 percent throughout 2017, as charging stations became more convenient. Those EV purchases reflect a desire to protect our communities' public health, reduce global warming pollution and stop using so much oil. Even the change-resistant auto industry recognizes that the future is electric. GM plans to launch 20 EV models by 2023, while Ford announced last month it plans to invest \$11 billion in EVs, with a goal of having 40 models by 2022. These new cars don't just check off the "electric" box; they're earning acclaim from mainstream car enthusiasts. Motor Trend even named Chevrolet's Bolt the 2017 Car of the Year.

With electric vehicles hitting the streets in record numbers, a new study by TexPIRG Education Fund, Environment Texas Research and Policy Group, and Frontier Group highlights best practices to help officials make cities as EV-friendly as possible. The new report includes local and state data for Dallas and Texas about the projected number of battery electric cars expected on the road in coming years, and how cities can accommodate these new EVs with enough places to park and recharge.

"Electric cars are leaving gas-guzzlers in the dust in Dallas" stated Bay Scoggin, State Director of TexPIRG Education Fund. "We have an opportunity to make a positive change after more than a century of vehicles spewing pollutants into the air. Local and state officials who want to plug into this opportunity need to commit to an EV-friendly infrastructure as smoothly and quickly as possible." TexPIRG Education Fund's "Plugging In" report estimates that Dallas, Texas could possibly see 39,000 electric vehicles on the road by 2030.

Unless transit operators recognize and respond to this trend with the electrification of public transit, however, they will also be left in the dust. Gary Thomas of Dallas Area Rapid Transit (DART) told reporters: "DART's customers want mobility choices that are safe, reliable and affordable. But they also want choices that make a smaller impact on our environment."

Seven Battery Buses will arrive in Dallas by the end of March to operate the city's free D-LINK service in the downtown area. The vehicles will be painted pink to make them look unique. The 35-foot buses are intended to be a test for the possible introduction of larger 40-foot models on other services in Dallas. The vehicles, built by Proterra, cost roughly a million dollars each, take 10 minutes to charge and can operate 30 miles on that charge. Passenger capacity is 27 seated plus 30 standees. The vehicles are expected to save \$350,000 to \$400,000 in fuel over their 12-year lifespan. [Information Sources: Dallas News, January 18, 2018; Dallas Morning News, January 19, 2018; DART, Feb. 27, 2018]

## Optibus comes forward with Scheduling Help for Integration of Battery Buses

While electric trolleybuses can readily be substituted for diesel buses and often run faster schedules, thereby generating a savings in the number of buses required to provide a particular service, the implementation of battery buses is not quite so straightforward. There are significant logistical challenges — including time and frequency of charging and range. For example, a diesel bus takes on average 5 minutes to refuel and can travel 135+ miles on a single fuelling. A battery bus, however, takes on average 3 hours to charge and may need to be charged at least twice a day to manage the same distance.

"It's not as simple as taking a diesel bus off the road and replacing it with a shiny new battery bus," said Amos Haggiag, co-founder and CEO of Optibus. "Cities may want to run battery buses, but they are unable to implement them as fast as they would like due to the challenges of deployment. Municipalities and transit operators find themselves ill-equipped to address these new requirements as their existing planning methods are outdated and often manual."

In order to aid the integration of battery buses into fleets, Optibus, producer of bus scheduling software, has announced the launch of OnSchedule EV, a solution for the rapid and efficient deployment of electric buses. The scheduling software helps reduce capital and operational costs by optimizing battery charging times and locations. Optibus' proprietary algorithms factor in unlimited types of batteries, chargers and charging locations to create optimal battery usage for fleets. The solution integrates battery buses into the existing routes and schedules without negatively impacting drivers or passengers. [Source: Optibus Ltd, Mar. 8, 2018]

## Electric Transit Returns to Shreveport, Louisiana as Battery Electric Buses

Shreveport transit operator SporTran says it has embraced the future with the recent adoption of five brightly colored 40-foot Proterra Catalyst E2 buses. The Shreveport-based transit agency is the first in the state of Louisiana to deploy battery-electric buses. The choice marks a commitment by SporTran and government to begin the switch away from diesel towards a more sustainable, quiet, zero-emission fleet.

Louisiana is all about lagniappe--a little something extra. The new battery buses will also save the community over \$2.2 million in maintenance and fuel costs over their 12-year lifetime. SporTran plans to re-invest these savings towards improving bus routes, technology, and rider experience.

Shreveport was once well-known for its electric trolleybus installation from 1931 to 1965. Under the direction of its imaginative president Ed Jacobs, Shreveport Railways was one of the most public relations minded electric transit operations anywhere. Every Shreveport family received a personal letter from Jacobs each year containing a route map and a free book of transit tickets. Large "Go by Trolley" signs hung in the city on span wires along heavily travelled streets, and Jacobs staged free extravaganzas to draw crowds downtown and attract riders. Shreveport trolleybuses originally used metal symbols mounted on a short post at the front of the vehicle to denote the route. The large electric system fell victim to the relentless onslaught of the diesel bus when local control of the transit system was lost in 1965 under a takeover by American Transit Systems, Inc. [Information Sources: Proterra, Feb 22, 2018; Mac Seabee and Paul Ward, The Trolleycoach in North America, 1974, p. 270]

## Proterra Battery Bus Shuttle Super Bowl Fans in Twin Cities

In January, battery bus manufacturer Proterra announced that the Minnesota Valley Transit Authority (MVTA) would deploy a 40-foot Proterra Catalyst E2 electric bus for the Super Bowl. Battery-electric buses are said to support the Twin Cities sustainability goals and commitment to the Paris Climate Agreement. "As thousands of people flock to the Twin Cities for the Big Game, it's paramount that we deliver on our promise to provide reliable, high-performance transit to all of our riders," said MVTA Executive Director Luther Wynder. "By deploying the battery-electric bus during the busiest week of the year, we will share this state-of-the-art technology with travelers from near and far."

The routes were scheduled to run during rush hour and weekend peak hours, shuttling customers from popular destinations such as the Mall of America, the University of Minnesota and Minneapolis, Cedar Grove and Burnsville Transit Stations. The vehicles had to cope with freezing temperatures, but were equipped to do so reliably because of a thermal management system which monitors battery cell temperature and voltage. More than 70 sensors capture 160 different diagnostic data streams from each battery pack. [Source: Proterra News Release, Jan 30, 2018]

## SEPTA buying hybrid diesel-electrics: Manufacturer Advances Production of Hybrid Buses for Philly

Bus and Coach Manufacturer New Flyer of America Inc. has announced it will advance third year production of 100 Xcelsior diesel-electric hybrid, forty-foot heavy-duty transit buses for the Southeastern Pennsylvania Transportation Authority (SEPTA) of Philadelphia. It is the third installment of a five-year contract for a total of 525 hybrid diesel-electric buses approved by SEPTA in May 2016. The buses will be deployed in the city of Philadelphia and surrounding suburbs of Delaware, Montgomery, Bucks, and Chester, supporting four million people living in and around southeastern Pennsylvania. At the conclusion of the five-year contract, hybrids will comprise 95 percent of SEPTA's bus fleet. [Source: New Flyer of America, March 19, 2018]