

COUNCILOR PACKAGE FOR KEN WATSONOct 25/16

- 1) Beginning of letter from Nov. 10/14
- 2) Proterra Electric Bus information from a Google Search
- 3) Text of presentation.

1)

103 Upper Paradise Rd.,
Hamilton ON. L9C 5B6
Nov 10/14

Mr. F. Eisenberger, Mayor
Hamilton City Hall,
71 Main St. W
Hamilton, ON L8P 4Y5

Dear Sir:

I am delighted to congratulate you on your success in the recent election. I see from the recent newspaper article (Friday, Nov 7/14, page A15) that you wish to address the poor voter turn out in the election. If I may comment,

- 3) I would like to offer thoughts on proposals to increase voter turnout.
- 4) During the election, you suggested you would strike a committee to address the topic of Light Rail Transit (LRT) vs. Bus Rapid Transit (BRT). I would like to offer thoughts to that discussion.

2)

CNN Money Innovate section

Mass transit is starting to embrace electric buses

by Matt McFarland (@matmcfarland)

September 12, 2016: 12:59 PM ET



This bus could drive 350 miles on a single charge

City buses may one day plug in and charge just like a smartphone. Electric car sales are on the rise, but that's not the only place where electric vehicles are starting to make a mark.

Proterra, a maker of heavy-duty electric vehicles, announced Monday that its latest bus can travel between 194 and 350 miles on a charge. Its previous buses maxed out at 193 miles per charge. Proterra believes its bus, called the Catalyst E2, is capable of handling the workload of nearly every U.S. mass transit route on a single charge. The bus, which can cost in excess of \$800,000, stores up to 660 KWh of energy -- that's 10 times the energy of the standard Tesla Model S.

"We're seeing the beginning of the end in fossil fuels in mass transit," said Proterra CEO Ryan Popple. Proterra's buses are currently in 10 cities, and it has sold more than 312 vehicles to 35 different municipal, university, and commercial transit agencies in North America.

The company's 2015 sales matched its sales from its first 10 years combined, according to Popple. Bus companies around the country are slowly warming to the technology. In May, Foothill Transit, the bus operator in the Pomona and San Gabriel Valleys outside Los Angeles, announced its 300-bus fleet would convert to all electric by 2030.

Today, Foothill Transit (West Covina California) has 17 electric buses, all made by Proterra, that have driven more than one million miles. It received its first electric bus in 2010. The agency's buses have eliminated 2,616 tons of greenhouse gases since then. Another benefit of electric buses is a quieter ride. Passengers won't feel vibrations that come from a gas or diesel engine. Foothill Transit frequently hears from other transit agencies who are curious about electric buses.

Spokeswoman Felicia Friesema expects more agencies will turn to electric buses due to improved

reliability and maintenance benefits. The key, she said, is to make it a seamless shift for bus companies. If too many infrastructure changes need to be made, going electric is unappealing. "It's happening now," Friesema said of the shift. "I don't know what the tipping point will be."

Proterra's Catalyst E2 is 40-foot long bus with a range of 350 miles under typical test track conditions. That's a big deal, considering Tesla only recently announced a battery upgrade for its Model S and Model X Ludicrous options that can achieve 315 miles of range — making it the *first electric car* on the market to exceed 300 miles of range.

To get that kind of range, Proterra worked on improving its battery tech and designing a bus that can accommodate the extra weight put on batteries for two-and-a-half years.

"If you take a traditional steel bus and just start dumping batteries on it, that bus is going to get really heavy really quick," Horton said of the decision to design a new bus entirely from scratch. The new bus body is made of a carbon fiber composite, allowing it to remain lightweight, but durable. Proterra, which makes its own batteries in its Silicon Valley office, improved energy storage and put most of the batteries "underneath the body of the bus so it helps us keep it very, very low center of gravity," Horton explained.

That innovation has resulted in a bus that fits 77 passengers and can pack 660 kWh of energy to drive 350 miles on a single charge. On a closed track, which doesn't mimic the difficulty of urban driving, a Proterra bus with just a 440 kWh battery achieved 600 miles on a single charge. But ranges are tricky to talk about, especially when it comes to buses, because range is affected by a variety of factors like constant braking, temperature, and the twists and turns of city streets. That's why Horton is sure to note that a 600-mile range isn't achievable in a route setting.

However, the battery tech is good enough for the bus to run the full 18 hours transit operators need, the company said. At night, the bus can get topped up using a typical charging station.

The Proterra bus will be fully functional soon, with the first deliveries arriving in Foothill Transit in California in early 2017.

Horton said the start-up has customers in 15 states across the country and that it's pre-sold over 300 buses to-date. By the end of 2017, all of the buses will be fully operational.

"This is the first time that an electric vehicle has been brought to market that, on a truly no compromise basis, is going to replace all the fossil fuel vehicles in its category," Horton said.

Could Hamilton approach Proterra as a test bed for their buses in our particular geography?

3)

PRESENTATION

Ken Watson (905) 575-8044

Thank you Madam chair. Ladies & Gentlemen.

I wish to clarify a misperception about those I know in the Anti LRT camp. Everyone I know in the group are not anti mass transit. What we seek is a streamlined and resilient transit system that will meet all the needs that the LRT seeks to accomplish but more flexibly.

When LRT came to town a long time ago ideas like electric vehicles, autonomous vehicles, Uber drivers, shared vehicles, the current bicycle ridership were fantasies - over the horizon – not in my lifetime stuff. To-day they are here and need to be represented in the mix of transport options that will meet Hamiltonian needs for the foreseeable future. We need to envisage shared road use. Our complaint with Metrolinx is that it does not share. It takes the middle of our arterial roads and leaves all other forms crowded into the rest. Scant wonder that the prospect of narrowed arteries raises blood pressure.

The discussion has slid into the point – counterpoint stage, becoming more bitter with each turn of the spiral. At its current emotional level, reason and logic no longer seem as helpful. What I'm going to suggest to you today is a way around that impasse. First two personal life lessons.

My grandmother lost her husband to an industrial accident in 1922. When she later married a widower, they were asked in whose house they would live. The answer was in neither. Both houses would be sold and they would buy a new residence together. I was impressed by that wisdom.

My granddaughter sings in the Hamilton Children's Choir and plays hockey. On leaving a recent concert she compared the feeling of leaving both events. In hockey, only half the people go home happy. But look around here. Everyone is going home happy." I would hope that this council will be able to say the same to-day.

I'm calling on Council, for comparative purposes, to study the impact of the other forms of transit I've mentioned as part of the plan to proceed. In your package, I've offered a starting point. The Electric bus company mentioned there will have a fleet on the street by next Fall. The buses have a range of 350 miles - over 500 km on a charge. They are quiet, move in and out of the traffic stream to share the space others pay to use and paid to provide.

My days of cycling are over but I see sharing is just beginning. What drives me into a car now is the time tax I must pay to use public transit. In future, a public system that puts an electric bus at every stop 5 minutes after the last, will make cars obsolete. In this fleet, buses will be different sizes depending on route all over the city. Transfer times will be 5 minutes. That is the system I'm proposing you look at

One of the many attractive features that an electric bus mass transit system has are solutions to two problems the Province has backed itself into. Because a united council can offer them such a gift, I suggest you need not fear about the financing.

First, LRT is expensive. Some of the responses in the meeting package prepared by the clerk tell you that what the Province is prepared to invest will indenture a generation. "It isn't worth it!" they declare. In other responses, you are ridiculed if you don't take the province's money. Well they haven't figured out there is no free lunch – but you have. You've read the small print, and the disclaimers and the caveats. YOU have the examples of all the cities you quoted in your literature, Edmonton, Minneapolis etc. You know they and every other LRT in North America has been over budget or reduced in service. That is why the train would stop at Queenston Circle instead of Eastgate Square as you proposed.

By comparison, how many electric busses can you buy for a bridge like the one over the 403? and the Longwood Road Bridge? and the Gage avenue trench? And we haven't laid a foot of track! How many suburban routes could be served so that people do get out of their cars? That is the way the Province will reduce its Carbon Footprint. And you can take that to the Province and the Bank! But the good news doesn't stop there.

The capital cost per citizen served will prove to be lower. More bang for the bucks! How attractive is that? And I haven't got the embarrassing problem that you will solve for them. And it is a beaut!

When the province invested in Green energy sources like wind power and solar farms, they committed to paying the builders any where from 20 cents to seventy-five cents a kilowatt-hour for electricity. Do you know what they do when they have too much electricity produced on sunny windy days? When they can't shut down enough windmills? They dump the power into other markets at four cents a kilowatt-hour! Someone forgot the way to accumulate their investment on days of bounty - the way to save their investment. You will come to the table to offer them a glimpse of a solution to that embarrassment. You're going to offer them storage of that electricity.

When you investigate an electric bus fleet, you'll find that by charging it in off peak times the utility gains better control of the resource. Not with the few hundred or so you'll have in the HSR fleet, but when enough others follow the lead you show for them. This is a unique quality of this transit form. You will be offering them the glimpse of hope they seek and need. They'll be glad to see you when those of you with close ties to the Provincial Government come with options such as I describe. With your negotiating skills, you'll be able to unite the whole Council and provide inspired leadership that draws broad public support that those 1016 so badly-divided letters have been asking of you.

You'll have to pause to do your own due diligence, and I would think the Province would cheer your care when you come up with a plan to do that.

Thank you.

