

The Journey to Net Zero Carbon Emissions

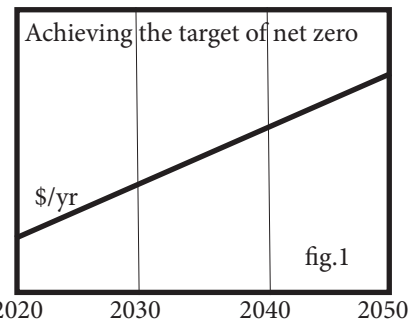


March 17, 2020

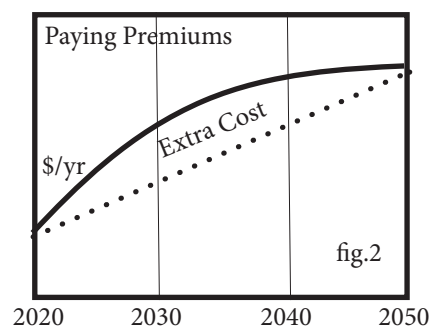
Dear Colleagues,

Risk of Overspending: The achievement of net-zero carbon emissions for London by 2050 will not be the result of desperate actions taken over a single term of office but rather a disciplined series of investments and policy changes over three decades. Because of political pressures, however, there is a risk that the city could spend twice what is necessary to achieve the target. High premiums paid to adopt new technology early, or programs that have a high price per tonne of GHG gas reduced would be the likely causes.

Path to Net Zero: Investments will likely increase over time with the appearance of new technologies required to make the transition possible. One could illustrate this with the simple graph in figure 1. The solid line shows the investment path to net zero in dollars spent per year while the area under the curve is the total amount spent over 30 years.



Effect of Premiums: If we pay premiums for technology or reduction strategies, then the graph of our investment will look more like figure 2. The area between the solid and dotted lines is the extra cost to the taxpayers.



Metrics Needed: The percent premium paid and \$/tonne GHG reduced are two metrics that will help us know where we stand. The determination can only be made only a case by case basis, but staff should be made aware of the Council’s appetite for paying a premium.

Social Cost of Carbon: In their 2018 paper, “The Cost of Reducing Greenhouse Gas Emissions” (scholar.harvard.edu) Kenneth Gillingham and James H. Stock determine that interventions range in cost from “less than \$10 per ton to over \$1000 per ton.” They conclude that “most of the costs are relatively expensive, in the sense that they exceed \$46/ton” since “under the Obama administration, the US government estimated the social cost of carbon to be approximately \$46” (~\$59 CND) for a metric tonne in 2017.

Limits on Metrics: I prefer staff not bring forward recommendations that require a premium above 15% or that cost more than \$60 per tonne, because the extra funds expended will limit the number of cost-effective or revenue-generating opportunities we can pursue, setting us back in the end.

Evaluating the Zambonis: The electric Zambonis make for a good example because, without including the savings on fuel, the investment is not satisfactory and should be relegated to the crowd funded projects.

ELECTRIC ZAMBONIS	Without Fuel Savings	With Fuel Savings
Cost for Electric	\$ 125,375	\$ 125,375
Present value of 10 years fuel savings	-	\$ 19,645
Net cost for Electric	\$ 125,375	\$ 105,730
Cost for Natural Gas	\$ 95,675	\$ 95,675
Premium (vs Natural Gas)	\$ 30,700	\$ 10,055
Percent Premium	32.4% (excessive)	10.5% (satisfactory)
GHG Reduction (over 10 years)	190 tonne	190 tonne
Reduction - cost per tonne	\$161 /tonne (excessive)	\$53 /tonne (ok but high)
Reduction - kg per dollar	6.2 kg/\$ (insufficient)	18.9 kg/\$ (ok but low)

Sincerely,

Michael van Holst
City Councillor, Ward