



Vermont Climate and Health Alliance

Medical and Health Professionals Calling for Change

January 11, 2018

The Vermont Climate and Health Alliance (VTCHA.org) was recently formed by Vermont-based medical and health professionals who share a deep conviction that climate change is a primary threat to human and planetary health. Climate change is a staggering health disaster that will worsen if we do not dramatically accelerate our response. In the spirit of Vermont's *Health in All Policies* initiative, we are writing in strong support of directing Vermont's share of the VW Mitigation Trust Funds to the purchase of electric school buses.[1]

The purchase of electric buses will provide direct near-term and long-term benefits to Vermont's residents including:

- reducing Vermont's carbon-footprint
- providing immediate health benefits to children
- reducing long term transportation costs for school districts
- demonstrating that electric vehicles are quieter and more pleasant than diesel buses.

We are all witnessing the leading edge of climate change's impact on health - from the harmful changes in weather (e.g., record breaking hurricanes, floods, droughts and resulting forest fires) across the globe to the dramatic rise in Lyme disease, pollen induced allergies and heat-related illness here in Vermont. Across the Northeast, state agencies are recognizing and documenting the adverse health effects of the warming planet.[2]

Transportation accounts for 42% of greenhouse gas pollution in Vermont.[3] Commuting, including travel to school, is a major contributor to this figure. At present, diesel school buses are the norm. These vehicles exhaust carbon dioxide, nitrogen oxide, particulate matter, and other pollutants that are clearly harmful to human health. Children are particularly exposed given their repeated proximity to these vehicles.[4] *A child riding inside of a diesel school bus may be exposed to as much as 4 times the level of toxic diesel exhaust as someone riding in a car ahead of it. These exposures pose as much as 23 to 46 times the cancer risk level considered significant under federal law.*[5]

Furthermore, electric school buses provide significant cost advantages.[6,7] By way of example, a study conducted by Columbia University for New York City found that the net savings of an electric bus compared to a diesel bus would be \$168,000 over a vehicle's typical lifespan as a result of reduced maintenance and fuel costs.(Figure 1)[5] Thereafter, the annual savings would be \$39,000. When the study authors factored in associated health cost savings and the EPA's societal cost of carbon, the net savings over the period rose to \$1,416,000 (Figure 2).[6,8]

Directing the VW settlement funds to the recognized future of battery-powered transportation would be a very visible symbolic, pragmatic and appropriate action, proving to our citizens and especially our children, that Vermont is committed to confronting climate change.

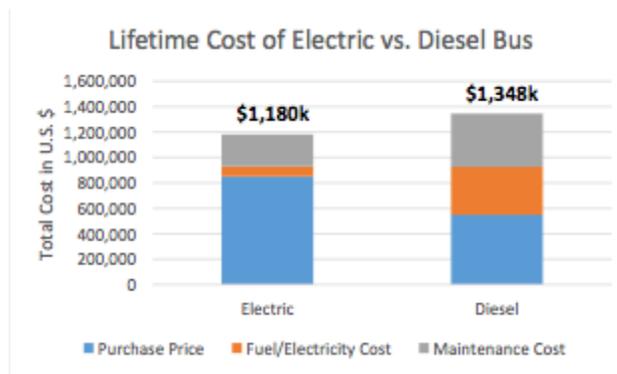


Figure 1: Lifetime Operational Cost of Electric Buses vs. Diesel Buses [6]

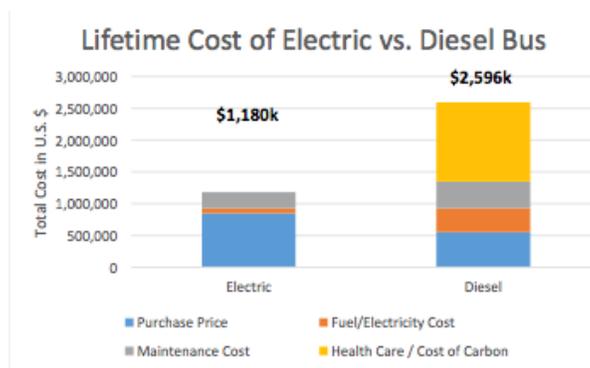


Figure 2: Lifetime Cost of Electric Buses vs. Diesel Buses Including Cost Savings Associated with Health Benefits and Cost of Carbon [6]

[1] The *Health in All Policies* is a collaborative approach to improving the health of all people by incorporating health considerations into policy development and adoption.

(www.healthvermont.gov/about/vision/health-all-policies)

[2] For example, see these websites: Vermont Dept. of Health

(www.healthvermont.gov/environment/climate), New York Dept. of Environmental

Conservation (www.dec.ny.gov/energy/68917.html), New Hampshire Department of Health and

Human Services (www.dhhs.nh.gov/dphs/climate/index.htm).

[3] Testimony to the Vermont Climate Action Commission, August 2017.

http://anr.vermont.gov/sites/anr/files/specialtopics/VTCAC/20170815_VTCAC_Mtg1_GHG%20Update.pdf

[4] *Children's Exposure to Diesel Exhaust on School Buses*, J. Wargo et al, Environment and Human Health, 2002.

[5] *No Breathing in the Aisles: Diesel Exhaust in School Buses*, G.M. Solomon et al, NRDC, January 2001.

[6] *Electric Bus Analysis for New York City Transit*, J. Aber, Columbia University, May 2016.

[7] *A Cost Benefit Analysis of a V2G-Capable Electric School Bus Compared to a Traditional Diesel School Bus*, L. Noel & R. McCormack, Applied Energy, Vol. 126, August 2014.

[8] *The Social Cost of Carbon*, EPA, <https://19january2017snapshot.epa.gov/climatechange/social-cost-carbon.html>