



Low/Zero Emissions Propulsion Study, Infrastructure Assessment, and Transition Plan

Executive Summary (extract)

FORT WAYNE PUBLIC TRANSPORTATION CORPORATION (CITILINK)

October 6th, 2023



EXECUTIVE SUMMARY:

The transportation sector accounts for substantial greenhouse gas emissions in the United States. Greenhouse gases are comprised of a combination of emissions of carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and various fluorinated gases.

Among the compilation of greenhouse gases, CO₂ has the largest share, about 79%, according to the US EPA. The primary source of CO₂ emissions is the use of fossil fuels in traditional, internal combustion engine vehicles. Public transportation agencies, as providers of essential transportation services in communities, and as significant users of traditional, internal combustion engine vehicles, play a critical role in the transition to a more sustainable future for the environment.

The Fort Wayne Public Transportation Corporation (Citilink) is committed to evaluating CO₂ emissions reduction initiatives at the state, federal, and local levels. This commitment will be accomplished primarily by considering the value-added benefits of converting to a low- or zero-emission bus fleet. A bus fleet conversion replaces traditional diesel- or gasoline-powered vehicles with alternative propulsion technologies.

Citilink has already taken incremental steps towards CO₂ reduction with the acquisition of diesel-electric hybrid (hybrids) as well as modern clean diesel buses. The promised fuel savings and operating cost reductions did not materialize to the expected levels which would justify the vehicle's increased purchase price and technical complexity compared to clean diesel buses. The Citilink Hybrid electric vehicles have demonstrated a combined efficiency of less than 13% versus the combined clean diesel fleet; however, when compared with the latest clean diesel vehicles received the difference drops to 9%. These factors combine to approach the possibility of introducing zero-emissions buses (ZEBs) carefully as the past experiences have not lined up with promises from the technology and vehicle suppliers.

In considering the possibility of a zero-emission fleet, the goals of a reduced carbon footprint and the realities of operational impacts and funding need to be balanced to maintain Citilink's primary role of providing safe, reliable, and affordable transportation to the citizens of Fort Wayne.

Key considerations and recommendations are summed up as follows:

Facility Requirements: To transition to a zero-emissions fleet, Citilink would need to invest significantly in a new facility capable of maintaining and charging electric buses and/or fueling fuel cell electric buses with hydrogen (FCEB). The existing facility is simply inadequate for this purpose due to infrastructure and layout limitations required for the operation of a full zero-emissions fleet.

Cost Implications: (Facility)

The construction of a new facility or upgrading the current facility for a zero-emissions fleet would incur substantial costs. Note, that upgrading the current facility is not recommended as the cost to build ground up would be almost identical. Similarly sized facilities have been costed at \$100-150 million.

Cost Implications: (Vehicles)

As of writing, zero-emissions vehicle costs have been on the rise and are expected to continue to climb as the demand for vehicle batteries increases and bus suppliers dwindle. In recent news, Proterra has filed for Chapter 11 and Nova Bus will no longer sell vehicles in the United States. Although Citilink has not historically purchased vehicles from either supplier this situation increases the demand on the remaining bus suppliers thus reducing vehicle availability and increasing lead times and pricing. Recent pricing on 40' battery electric buses has been in the range of \$1.3 million, with fuel cell vehicles being significantly more expensive with a starting price of \$1.7 million.

Given the above considerations, it would be recommended to hold off on an immediate transition to zero-emissions buses for Citilink. Instead, the following approach is proposed:

Continue with Clean Diesel Buses: Citilink should continue operating its current fleet of clean diesel buses. These buses are compliant with all regulations and offer a reliable and cost-effective means of transportation. While diesel-powered vehicles do still emit tailpipe emissions, the latest generation of clean diesel buses are significantly cleaner than those from even just a few years ago. These newer vehicles do contribute to lower environmental carbon levels as they replace the aging buses.

Pilot Program for Plug-In Battery Electric Buses: In the interest of environmental sustainability and as a potential next step towards zero emissions, Citilink may consider piloting a small fleet of plug-in battery electric buses on selected routes. This pilot program can help assess the feasibility of electric buses without committing to a full-scale transition. It would also provide valuable data for future decision-making.

While a transition to zero emissions is an admirable goal, the high cost of a new facility and vehicles, as well as the limitations of available funding make an immediate shift unfeasible for Citilink and the city of Fort Wayne. The recommended approach of continuing with clean diesel buses and exploring a pilot program for plug-in battery electric buses balances sustainability goals with fiscal responsibility.

Citilink can revisit the zero emissions transition in the future as funding becomes available or as technological advancements make it more economically viable. In the meantime, Citilink can maintain its commitment to providing reliable and efficient public transportation services to the community while taking measured steps toward a greener future.