The Financial Implications of Gainesville Regional Transit System Electrification

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Abstract

Battery electric buses (BEB) are becoming increasingly common in the fleets of service providers as a sustainable solution for transportation. Plenty of studies have addressed the many benefits of BEBs, and the direct local environmental benefits of BEBs are not in doubt with this study, nor are the social benefits; however, for BEBs to be considered sustainable, they must also be financially feasible. That is what the question that this study aims to address; the financial implications for the Gainesville Regional Transit System (RTS). A 20-year projection model has been constructed using RTS fleet data to compare the lifetime costs of a diesel, diesel-hybrid, and BEB fleet of buses to demonstrate the positive financial consequences of RTS transitioning to a fully BEB fleet in the long-term.

While BEBs have a much larger upfront cost, the model shows that at the end of the buses lifespan there is a reasonable amount of lifetime cost savings over diesel buses; however, diesel-hybrid buses were found to be the most expensive at the end of a bus's lifespan of approximately 500,000 miles. This contributes positively to the concept that BEBs can be a sustainable source of transportation, but this study is just a small part of what makes a transportation system sustainable and should not be mistaken as a claim that BEBs are without a doubt sustainable. What these findings do show is that smaller transit providers, such as RTS, should begin the transition to BEBs as funds allow to help save operating costs in the long-term which can free up capital elsewhere to make system improvements and expansions.