

## **ABSTRACT**

Minimizing the impact of the transportation sector on the climate consists one of the main goals globally, and initiatives exists for all vehicle classes and sizes. As heavy-duty vehicles are responsible for a high share of the total emissions emitted from the transportation sector, multiple initiatives are targeting this vehicle class, with transit buses being no exception. While battery electric buses (BEBs) can lead to energy savings and reduced emissions, BEB adoption is developing slowly. Although BEBs offer quieter operations, better acceleration, and no smell of diesel or gas fumes, little focus has been placed on the user's perspective. This study investigates bus riders' preferences toward BEBs and general public's behavioral intentions to ride public transit. To achieve these objectives, two separate surveys were designed and disseminated in Salt Lake City, Utah to solicit riders' and general public's typical travel behaviors and patterns as well as preferences and opinions about BEBs' performance in terms of emissions and noise. In addition, attitudes, social norms, and environmental awareness were also captured. Statistical analysis showed that several factors influence rider perceptions towards transit bus electrification that include trip purpose, attitudes towards environmental issues and environmental impacts of BEBs, and certain non-instrumental ride factors such as ride comfort and social image. Turning to the behavioral intentions toward public transit usage, the structural equation model revealed the positive and direct influence of perceived behavioral control, subjective norms, and improved transit ride comfort attributes that BEBs offer. At the same time, the support for transit bus electrification and the green self-identity were found to indirectly influence behavioral intentions. The estimation results of this thesis provide valuable insights into BEBs preferences from the riders and general public scope of view. A better understanding of the importance of electrification to transit riders, and also, to the general public can help transit service providers adjust their marketing design, promotion strategies, and their systemwide operations to accommodate preferences towards BEBs, and ultimately, attract more transit riders.