



ACCELERATING THE ELECTRIFICATION OF BUS SERVICE IN THE BOSTON METRO AREA

The Massachusetts Bay Transportation Authority (MBTA) operates one of the largest transit agencies in the country with over 170 bus routes in 44 towns and cities in the Greater Boston region and an average of 410,000 weekday bus trips.

This report analyzes the economic, environmental, and public health benefits of electrifying the MBTA's fleet of more than 1,150 buses and calls on the MBTA to publicly commit to a facilities and fleet management plan that would fully electrify MBTA's bus fleet by 2030, while centering equity and people in the process by prioritizing garage upgrades and bus electrification for routes serving low-income neighborhoods and communities of color.

The MBTA's fleet currently consists primarily of diesel, diesel-hybrid, and compressed natural gas (CNG) buses, and purchases in the last four years have emphasized replacing aging diesel buses with diesel-hybrids. In April 2021, the MBTA [released a fleet and facility plan update](#) that states the agency intends to continue to purchase diesel hybrid buses while only gradually converting its bus fleet to zero emission technologies over the next two decades.

According to the update, the MBTA will purchase close to 400 diesel hybrid buses in the next six years. In contrast, the MBTA plans to purchase just 120 electric

buses in that same time period. This slow and insufficient investment in electric buses is further dependent on the pace of facility modernization efforts. Unfortunately, the MBTA electrification plans will begin by replacing existing electric trolley buses with 35 electric buses. Let's be clear: This move would not replace any fossil fuel buses, and it would have no impact on reducing air pollution or slashing climate emissions. In addition to resulting in no reduction of greenhouse gas (GHG) or particulate emissions, it also places these new buses in some of the most affluent, lowest-pollution areas that the MBTA serves, rather than in environmental justice communities

with higher rates of pollution and respiratory illnesses.

In this report, we offer a different vision for the MBTA's future that speeds up the electrification process and centers equity in the planning efforts by prioritizing garage updates and bus routes serving low-income neighborhoods and communities of color. Rather than first replacing already electrified trolley buses with electric buses, while adding more diesel hybrid buses to the fleet - as is the current pathway - the MBTA should identify solutions that prioritize upgrades to garages and the electrification of routes that serve the highest percentage of low income residents and people of color, who bear the brunt of transportation related pollution and are more likely to be transit dependent.

Our analysis shows that fully electrifying the MBTA's buses would reduce the fleet's GHG emissions by 97 percent, save the MBTA more than \$175 million in lifetime operating costs, and save area residents approximately \$9 million per year in avoided healthcare costs as result of reduced smog and other transportation-related air pollution.

The report also offers a fleet management plan that would transition the MBTA to a fully electrified fleet over the next ten years by expanding and upgrading the existing trolleybus network and ramping up the procurement of battery electric buses to phase out internal combustion buses over the next decade. This plan is designed to prioritize environmental justice communities and to ensure that electrified service will be of at least as high quality as non-electrified service.

Recommendations

Recognizing these benefits and the need for further new bus procurement and electrification planning, the MBTA should take the following steps toward full electrification of its fleet of transit buses:

1. Commit to full bus fleet electrification by 2030.

A gradual shift to electric buses and trolleys over the next ten years is well within the MBTA's reach. Publicly committing to electrifying the fleet by 2030 would provide clear objectives and timelines as the

public works with the MBTA to achieve equitable and productive interim steps.

2. Stop internal combustion engine bus purchases no later than 2023. The MBTA should commit to ending the purchase of internal combustion engines no later than 2023.

3. Release a 2030 fleetwide electrification plan by June 2022. The MBTA should create a detailed bus fleet electrification plan that includes a thorough network wide route analysis to identify electric bus technology options, battery specifications, and charging strategy.

4. Prioritize low-income and communities of color in its electrification planning. The burden of air pollution and climate change is disproportionately carried by low-income people and communities of color. These communities must be first in line when it comes to the deployment of zero emission electric buses.

5. Create an effective charging strategy to expand and build a reliable electric bus network. The MBTA should explore both in-route charging (IRC) and overnight garage charging for electric buses, and in-motion charging (IMC) for trolleys to provide added range resiliency and to ensure the smoothest possible transition to an electric fleet.

6. Accelerate bus facility modernization and replacement. The MBTA should identify MBTA and MassDOT properties that can be used as swing space as these facilities are rebuilt. All new garages starting with Quincy in 2024 must start housing an electric bus fleet from day one.

7. Make job retraining opportunities available to current employees. As part of the electrification process, the MBTA should provide opportunities for current bus drivers and fleet maintenance staff to update their skills to operate and maintain the growing electric bus fleet while providing new greener jobs and training opportunities for workers from disadvantaged communities.

You can read the detailed report [here](#).



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