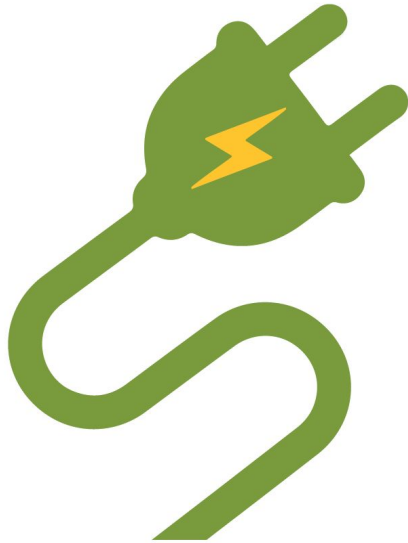




HARVARD
Campus Services
TRANSPORTATION

Harvard University's New **100% ELECTRIC** Shuttle Buses



Advancing
Sustainability
Innovation &
Supporting Harvard's
Climate Goals.

*John W. Nolan
Managing Director of Transportation
December 16, 2021*



THE ENVIRONMENT

Support

Harvard's goal to be fossil fuel-neutral by 2026 and fossil fuel-free by 2050

Lower

Greenhouse gas emissions by more than 220,000 pounds annually

Reduce

Air pollutants, harmful particulate matter (PM) and nitrogen oxides, providing health benefits to local communities

<https://www.hsph.harvard.edu/news/features/stronger-air-pollution-standards-in-u-s-would-have-significant-public-health-benefits/>

Create

Less air & noise pollution



THE **TRANSIT PROGRAM OVERVIEW**

Harvard's main campus fleet consists of 15 buses, 6 vans, 300 service vehicles, 11 hybrid, 3 electric and 50 pieces off-road seasonal equipment

Harvard transit provides 650K to 700K rides annually

All buses are 100% ADA accessible and run on 5 routes around 2 of our 3 local campuses

The buses run on 20% Bio-diesel fuel from an on-site 2K gallon fuel tank

Vehicle replacement program enables up to date emission and safety standards





THE **PROJECT FINANCING**

The EV Bus Project is made possible through:

- The Massachusetts (MassDEP) VW settlement fund
- Harvard's Green Revolving Fund
- Harvard's Office of Treasury Management



HARVARD
UNIVERSITY

| Sustainability





THE **EV BUSES**

Harvard purchased 4 battery-based electric buses to replace older bio-diesel powered buses representing ~30% of its fleet

Each bus is 35' long, has a seating capacity of 29 (but can hold 55 to 60 with standees) and runs on battery packs totaling 450 kWh

The buses are charged during off-peak overnight hours when demand for electricity is typically lower

The buses can be fully charged in about three hours





THE INFRASTRUCTURE PROJECT

CM project team vs. turn-key structure

Fundamental design and guiding principles

Managing internal and external entities

Lessons learned





The critical obstacle

Harvard hopes to be a catalyst for other universities, businesses, cities and towns by piloting the transition to electric buses.

However, it will need the support and engagement of others to move forward with 100% EV of it's Fleet.

Regarding mobility & transportation to achieve Boston's Carbon & Equity goals, a critical obstacle for our organization to overcome is:

the lack of a mutual assistance arrangement which enables resiliency for our fleets to run when the power grid is interrupted.

