

The Electrification of Vermont's Public Transit Fleet

PROJECT TITLE

The Electrification of Vermont's Public Transit Fleet

STUDY TIMELINE

March 2021 – November 2021

INVESTIGATORS

Jill Cahoon, AECOM, PM,
Jill.Cahoon@aecom.com
Patrick Gough, AECOM,
Patrick.Gough@aecom.com

VTRANS CONTACTS

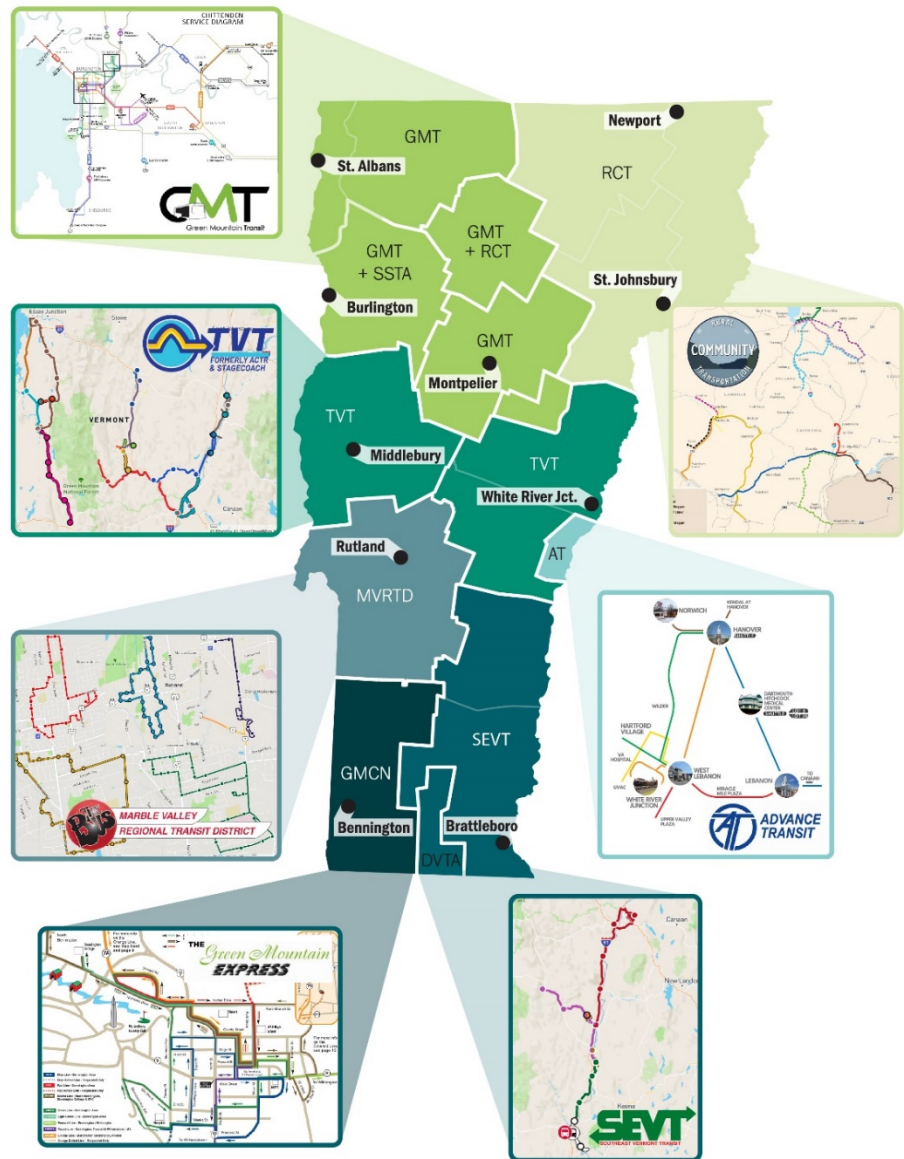
Ross MacDonald, Public Transit Manager,
Ross.MacDonald@vermont.gov
Timothy Bradshaw, Public Transit Program Coordinator,
Timothy.Bradshaw@vermont.gov

KEYWORDS

Transit, bus, electric vehicle, electrification, zero-emission, climate goals, energy, charging, low carbon travel

Introduction

The Vermont Agency of Transportation (VTrans) has made a policy decision to transition the state's fleet of approximately 400 transit vehicles to zero-emission propulsion. VTrans' plans call for 100 percent of the fleet to be powered by renewable energy by 2050.



What that means for the seven transit agencies that operate in the state is adapting to a new way of thinking about providing zero-emission transit now and in the future.

Electrification demands new infrastructure, training and maintenance needs, special consideration for scheduling transit services, additional capital costs, etc. This study seeks to outline a plan to assist VTrans and Vermont's transit

agencies in making decisions about which types of equipment and infrastructure to procure, and in what timeframe, based on the electrification implications on service provision, electric vehicle availability by type, infrastructure, and funding availability by source.

Methodology

The benefits of zero-emission transit are undeniable, which is why many transit agencies in the U.S. and around the world are exploring this technology and implementing plans for transit electrification. In fact, several transit agencies across the state have already started the process of electrifying their fleets and are currently operating electric buses. In 2021, VTrans was awarded additional federal funding to procure more electric transit vehicles, so the process is being advanced even as work on this strategic transition plan is being conducted.

The study contains eight components:

- State of the Industry Review
- Stakeholder Outreach
- Existing Conditions
- Energy Review
- Route and Block Analysis / Service Plan
- Procurement, IT, and Training
- Schedule for Fleet Transition
- Financial Plan / Scenarios

The components of the study are intended to inventory and document existing public transportation services, vehicles, and infrastructure to identify the number and type of vehicles and associated infrastructure upgrades needed to operate the state's transit network using only electric vehicles. The study also investigates the energy requirements of operating and maintaining an entirely electric fleet, existing energy capacity at transit facilities across the state, possible grid implications, and additional charging infrastructure requirements. The research and analysis components of the study will be used to develop a dashboard that describes possible scenarios for fleet transition, including what the transition schedule would look like based on different decisions and electric vehicle availability on the market and the funding levels needed to procure vehicles and upgrade infrastructure.

Next Steps

This study is ongoing. It is anticipated to be completed in November 2021. The intention of the transition plan is to present viable scenarios for the State of Vermont and VTrans to consider when making decisions about how to reach the goal of a zero-emission statewide transit fleet by 2050. Future study will be focused on more detailed technical approaches to electrifying the fleet, upgrading infrastructure and technology, and planning service around electric vehicle ranges.

Potential Benefits

As approximately 45% of Vermont's greenhouse gas emissions are produced in the transportation sector, electrifying Vermont's public transit fleet goes a long way towards reducing transportation emissions. Additionally, public transit is already a lower-carbon mode of travel, and—coupled with zero-emission vehicles and associated infrastructure—provides Vermonters with a viable low-cost, low-carbon alternative to the personal vehicle.