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### Introduction

The Vermont Agency of Transportation (VTrans) has made a policy decision to transition the state's entire fleet of approximately 400 transit vehicles to zero-emission propulsion by 2050. This study identifies the current state of readiness and a transition plan with pathways and a timeline to accomplish this goal in terms of vehicles, facilities, funding, energy, partnerships, and policy decisions.

### Vermont and Electric Vehicle Context

There are seven transit agencies in Vermont. The areas they serve are shown in Figure 1 and the number of operating blocks by agency are shown in Figure 2. Operating blocks generally represent the number of vehicles needed to operate the current transit service levels at each agency.

Currently electric transit vehicles have shorter operating range than traditional diesel vehicles, so their use requires careful planning.

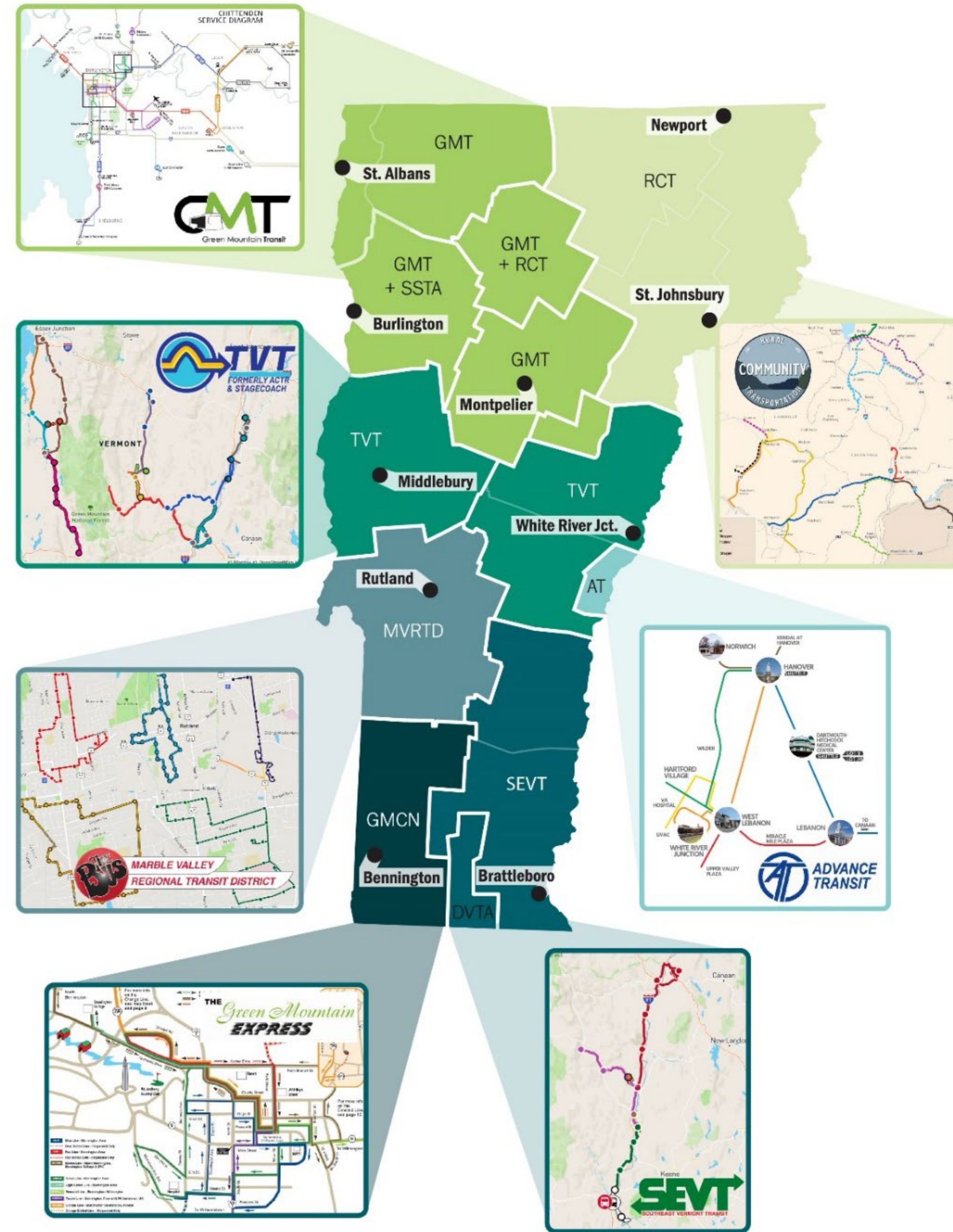


Figure 1. Vermont Transit Agencies

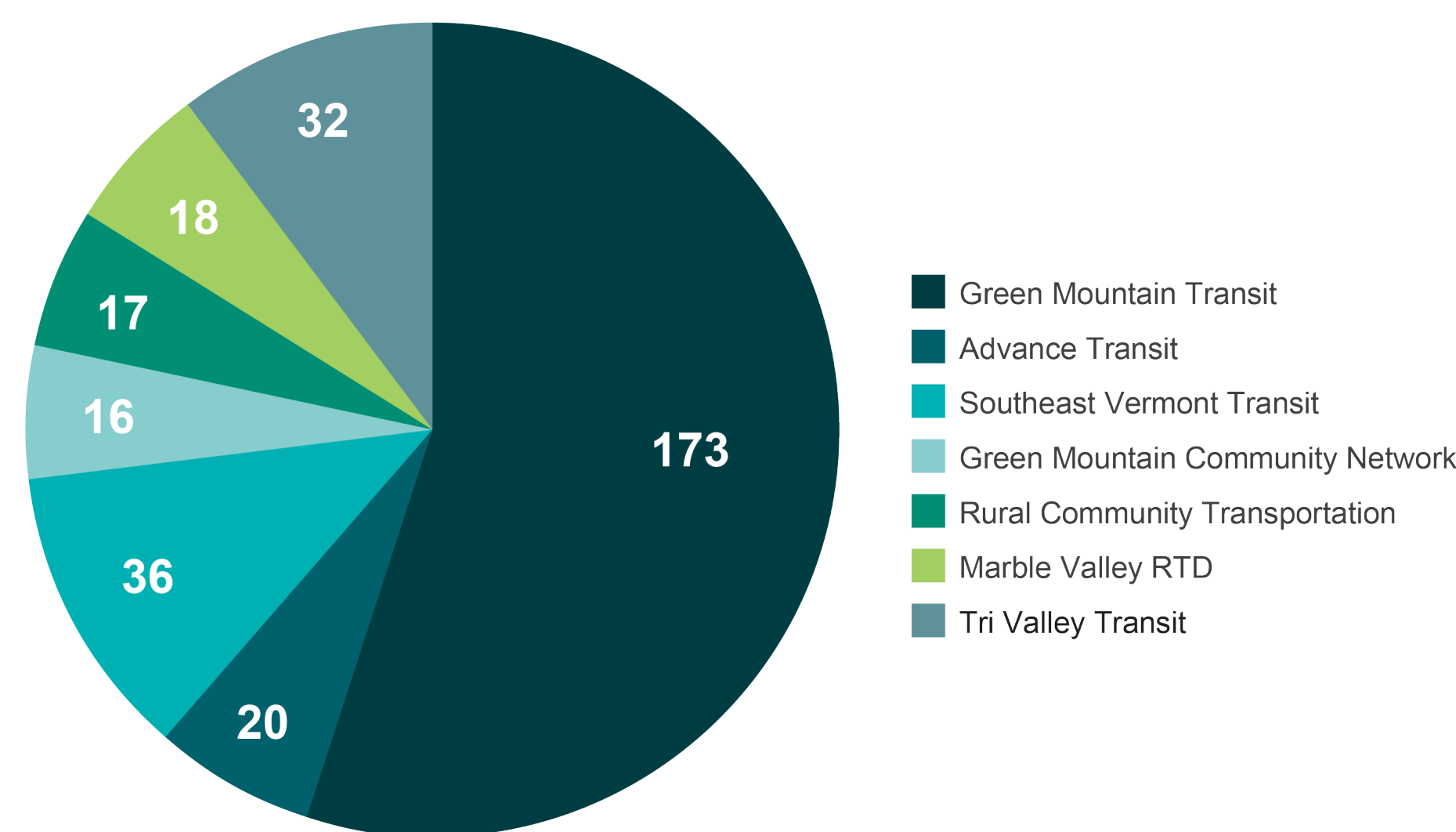


Figure 2. Operating Blocks by Transit Agency

### Preliminary Findings – Energy/Facilities

As part of the energy analysis, we identified which elements of electrification readiness are already in place at each agency's facilities to understand the order of magnitude upgrades needed to support electrification.

	Existing Electrification Plans	Off-Service Charging Opportunity	Sufficient Electrical Infrastructure	Adequate Parking Configuration	Onsite Solar
Advance Transit	Insufficient	Sufficient	Sufficient	Sufficient	Sufficient
GMCN	Insufficient	Sufficient	Sufficient	Sufficient	Sufficient
GMT – QCP	Insufficient	Sufficient	Sufficient	Sufficient	Sufficient
GMT – Berlin	Insufficient	Sufficient	Sufficient	Sufficient	Sufficient
MVRTD	Insufficient	Sufficient	Sufficient	Sufficient	Sufficient
RCT	Insufficient	Sufficient	Sufficient	Sufficient	Sufficient
SEVT – Rockwell	Insufficient	Sufficient	Sufficient	Sufficient	Sufficient
SEVT – Wilmington	Insufficient	Sufficient	Sufficient	Sufficient	Sufficient
TVT – Middlebury	Insufficient	Sufficient	Sufficient	Sufficient	Sufficient
TVT – Bradford	Insufficient	Sufficient	Sufficient	Sufficient	Sufficient

LEGEND: Unknown (grey), Insufficient (light blue), Sufficient (dark blue)

Figure 3. Preliminary Findings on Facility Readiness

### Preliminary Findings - Service

We looked at every operating block across the state to determine if it could be operated using an electric vehicle rather than a traditional diesel vehicle. Because Vermont is primarily rural, a lot of smaller vehicles, cutaways and vans, are operated across the state. The industry is further along for full-size transit vehicles than it is for smaller vehicles, so that is an important consideration in developing the timeline for the transition plan. To that end, we looked at whether a block could be replaced

TRANSIT AGENCY	NUMBER OF BLOCKS	CAN IT BE SERVED BY ONE ELECTRIC BUS?		CAN IT BE SERVED BY ONE ELECTRIC VAN OR CUTAWAY?	
		Yes	No	Yes	No
Green Mountain Transit	173	161	12	106	67
Advance Transit	20	12	8	5	15
Southeast Vermont Transit	36	29	7	17	19
Green Mountain Community Network	16	14	2	2	14
Rural Community Transportation	17	12	5	11	6
Marble Valley RTD	18	15	3	5	13
Tri Valley Transit	32	19	13	7	25

Figure 4. Preliminary Findings on Service Replacement

with a full-sized transit vehicle or a cutaway vehicle without modification from the current schedule. Currently 84% of blocks could be replaced with a full-sized transit vehicle or 49% with a cutaway.

### Timeline

This study is ongoing. It will be completed in November 2021.

### Acknowledgments

This study is sponsored by VTrans using the technical expertise of AECOM and is being guided by a Technical Advisory Committee that includes representatives from the Vermont State Legislature, the Federal Transit Administration (FTA), Vermont Air Quality and Climate Division, Vermont Department of Public Service, and VEIC.