

# Martha's Vineyard Transit Authority

Regional Transit Plan

Final Report - October 2015

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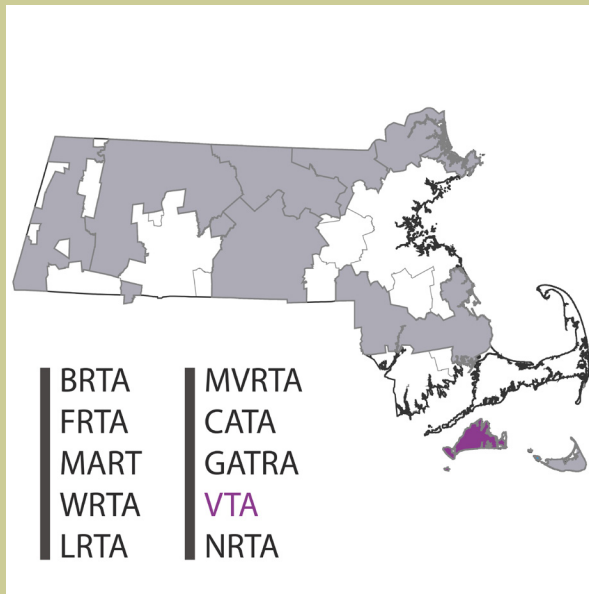
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# Executive Summary

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## EXECUTIVE SUMMARY

### Overview:

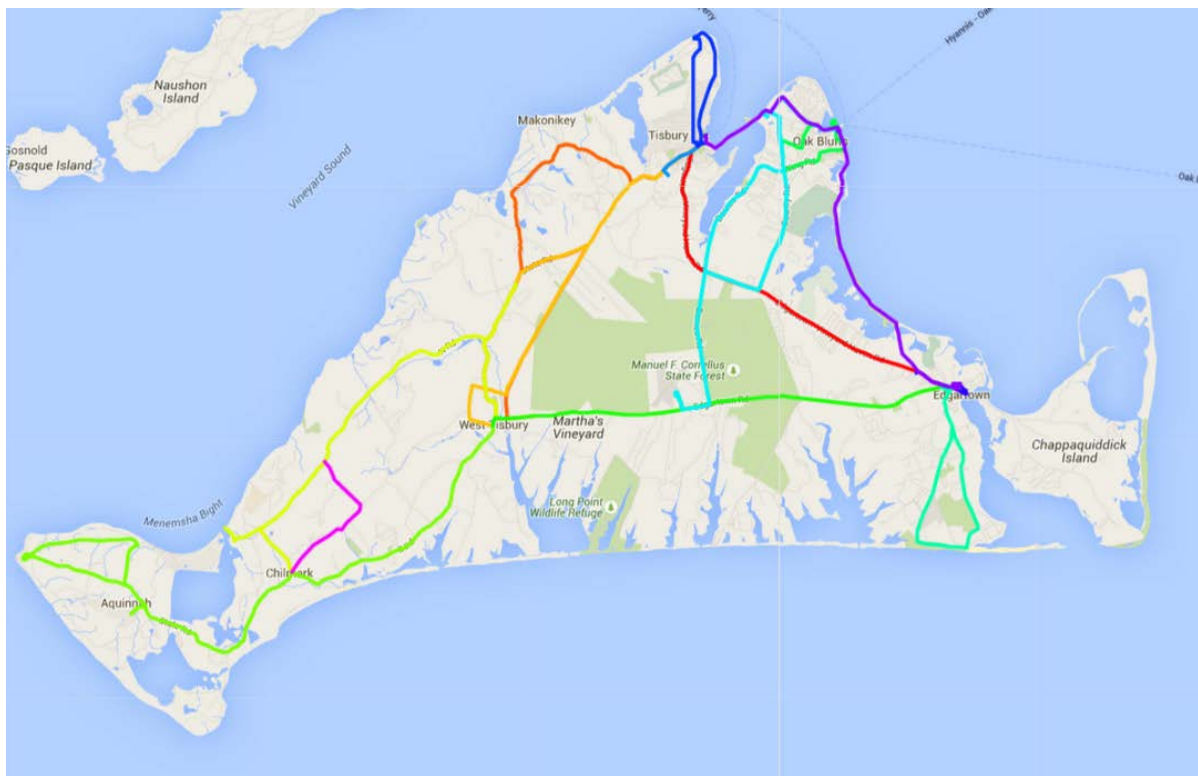
The State Legislature, in response to requirements of the Transportation Finance Bill passed in 2013, tasked each Regional Transit Authority (RTA) in the Commonwealth of Massachusetts to prepare a Regional Transit Plan. The purpose of this plan is to:

- examine existing service
- identify local markets with potential ridership
- provide recommendations on ways to improve service operations.

The consultant firm of AECOM (URS) was selected to prepare this plan with assistance provided by Martha's Vineyard Transit Authority (VTA), MassDOT, and local stakeholders.

VTA provides year-round public transit service to the six towns on the island of Martha's Vineyard: Aquinnah, Chilmark, Edgartown, Oaks Bluff, Tisbury, and West Tisbury. In addition to serving inter-Island transit needs, VTA also provides regional connections to the Vineyard's two ferry terminals (Vineyard Haven and Oaks Bluff) and airport. Figure 1 depicts VTA's existing system service area and routes.

**Figure 1. VTA Service Area**







VTA's fixed-route service operates 14 routes, although only 12 are operated year-round. Peak season is typically between May and September; two shoulder seasons transition into and out of the off season (October - April) during the winter months. VTA has a fleet of 31 vehicles and operates 23 buses during peak fixed-route service, although VTA often has 2-3 additional vehicles out as floater buses in order to keep the system moving on schedule. VTA has 5 vans for ADA paratransit service. Fixed-route service is generally operated between 7:00 AM and midnight. Service during the off season is less frequent and scheduled to meet the morning and evening peak periods. VTA carried 1.2 million passengers during FY 2014. Generally, ridership peaks during the summer months with more than 9,000 daily unlinked passenger trips while ridership during the off season significantly drops to roughly 700 daily passenger trips.

### **Recommended Phase Approach**

To meet the goals of the plan, recommendations are made to improve VTA service over three phases, as follows:

During Phase 1, consistent schedules are established and frequencies during the off season are standardized and improved. To facilitate transfers with the Steamship Authority during the morning hours, key routes will operate with earlier bus service.

Phase 2 seeks to implement a flex zone to service Chappaquiddick Island. Frequencies during the peak season are also improved.

Lastly, in Phase 3, frequencies during the peak season are further improved.

Figure 2 depicts the VTA service area with the proposed route network based on the recommendations in all three phases.

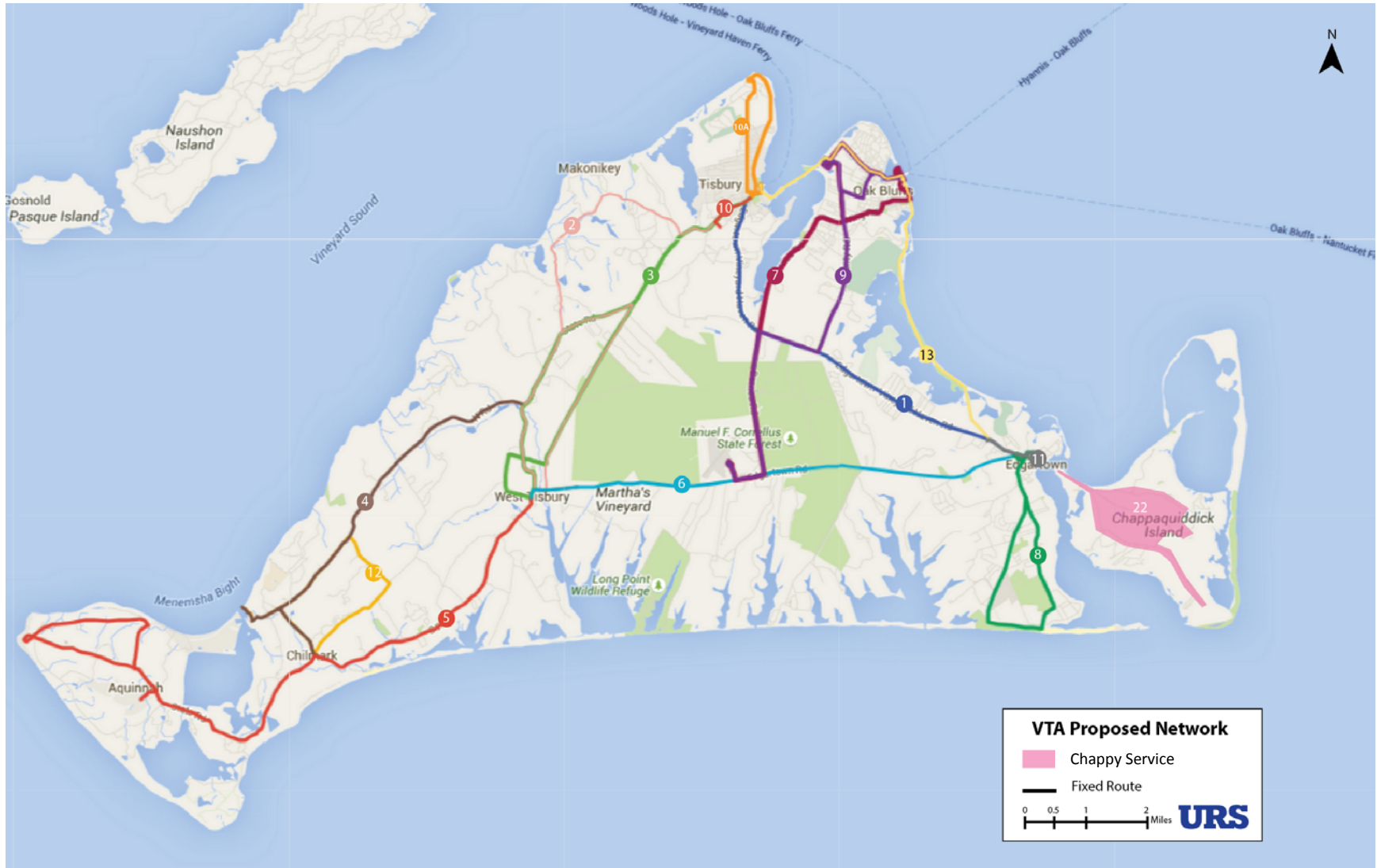


Figure 2. Proposed Route Network

## Benefits

Implementing the phased recommendations would provide benefits to VTA and aid them in meeting their goals and objectives to provide quality transportation service to meet the demands of the diverse population on the island. The phased service improvements would result in the following benefits:

1. Standardizing and improving route frequencies would provide a higher and more convenient level of service to VTA riders.
2. Extending service hours to facilitate transfers with other transport modes will increase mobility in the region.
3. Implementing new routes will provide service to areas that demonstrate a high demand for transit service.

The following are VTA objectives that have been met through the development and selection of the phased recommendations:

### **Goal #1: Determine Service Saturation Levels Needed to Attract More Choice Riders**

**Objective 1.a:** Increase the number of choice riders

**Objective 1.b:** Examine how level of service relates to choice ridership

**Objective 1.c:** Decrease vehicular traffic by increasing ridership

### **Goal #2: Identify Unmet or Latent Service Demands in the Off Season**

**Objective 2.b** Work with the community to identify transit-dependent and/or underserved populations

**Objective 3.c** Implement service to meet the demands of these individuals

### **Goal #6: Minimize Auto Use on the Island**

**Objective 6.a** Increase frequency and service options to make transit an attractive transportation alternative

### **Goal #7: Expand Ability to Meet Resident, Worker, and Tourist Mobility Needs**

**Objective 7.a** Improve existing services and implement new ones that meet the demands of present and untapped customers

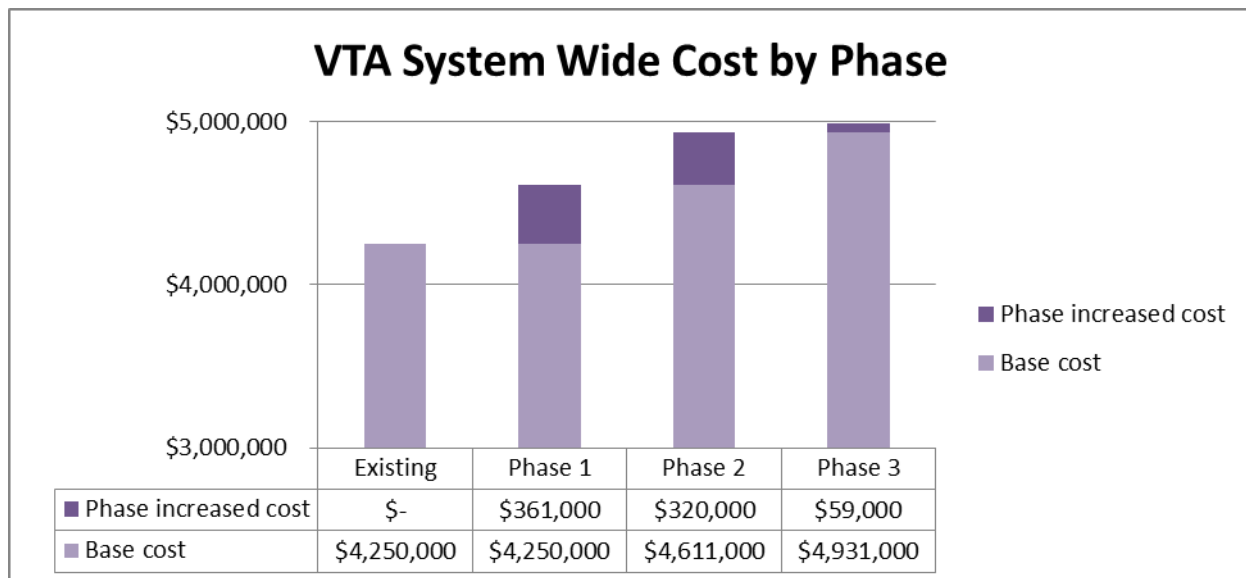
**Objective 7.c** Work with the community to identify transit-dependent and/or underserved populations

## Cost Estimation

With the implementation of each phased recommendation, additional operational and capital improvements would increase VTA's annual cost. Figure 3 depicts the base operating costs for the existing system along with the additional costs associated with the service improvements in each phase.

VTA's existing annual revenue operating hours are 63,886; these hours are expected to change throughout each phase. In Phase 1, annual revenue hours are expected to increase by 5,758. During Phase 2 annual revenue hours would increase by 4,194 and finally by 944 to an estimated 75,897 hours in Phase 3.

Figure 3. Cost by Phase<sup>1</sup>



## Capital Costs

Phase 1 service improvements have been designed using the constraint of VTA's existing fleet of 31 buses, although only 27 are used for peak service. Phase 1 operates with a peak fleet which requires only 27 buses. Phase 2 requires 29 vehicles during peak hour while Phase 3 requires 30 vehicles.

Additional vehicles will be required for the recommendations presented in Phases 2 and 3. To implement this phase in a timely manner, the VTA must begin the planning process now as vehicle procurement can take up to two years before the buses can be put into service.

## Framework

Recommendations were developed using a cumulative process that incorporated public outreach, a diverse steering committee, operational input from VTA, and analysis of existing transit service and the

<sup>1</sup> These costs do not include those that were further refined after the public hearing was held

local/regional market. Strategies to improve the system were developed based on VTA's goals and objectives and the following guidelines:

1. **Simplify** – Routes should be designed along main corridors with minimal schedule deviations.
2. **Service should match demand** – The denser (both in terms of employment and population) areas should have a higher level of service with either higher frequency routes or multiple lower frequency routes. Major corridors often warrant higher frequencies.
3. **Standardized frequency** – Frequencies should be standardized and where possible clock-face schedules should be established to create 10, 15, 30, 60 and 120 minute headways.
4. **Priority to existing ridership** – Service should be increased in areas that warrant it over servicing new areas if limited resources are available.
5. **Connections** – No route should be designed in isolation. If possible it should connect to at least one hub. Where connections to hubs are not possible the route should connect with at least one other route to facilitate transfers. Routes should be designed to maximize transfer opportunities.
6. **Efficiency** – Where possible routes should be designed to be the most efficient. Decisions to deviate off the main corridor and add time to the route are only warranted where key destinations are too far off the main road, there are a lack of pedestrian facilities, transfers can be made, or the benefit (due to demand) of servicing the deviation outweighs the additional time incurred to others on the route.
7. **Consistency** – Routes should travel the same path and service the same locations on each trip to provide consistent service; this may not be feasible for some routes due to schedule limitations and deadhead mileage.

## Task Summaries

The Transportation Finance Bill assigned the following nine tasks to be evaluated by each RTA:

### Task 1. Comprehensive Assessment of Transit Services

VTA has identified eight goals to help guide service improvements. These goals, as outlined below, have been considered in the development of this Regional Transit Plan.

Goal 1: Determine Service Saturation Levels Needed to Attract More Choice Riders

Goal 2: Identify Unmet or Latent Service Demands in the Off Season

Goal 3: Improve Bus Stop Infrastructure

Goal 4: Educate the Business Community on the Benefits of Public Transit

Goal 5: Improve Environmental Sustainability

Goal 6: Minimize Auto Use on the Island

Goal 7: Expand Ability to Meet Resident, Worker, and Tourist Mobility Needs

Goal 8: Obtain Funding Sources Through the Development of Regional Impacts





## **Task 2. Examination of Ridership Trends**

Ridership data collected between FY 2003 and FY 2014 was used to analyze yearly transit ridership trends. Within this period ridership has increased by 60%; this significant growth can be attributed to the expansion of Island-wide and year-round service in 2005 as well as increasing seasonal and year-round population. Between FY 2009 and FY 2014, ridership increased 11% to 1.2 million passengers. The top three routes that experienced the most growth between FY 2012 and FY 2014 are Routes 7 (10.5% increase), 11 (9.45% increase), and 2 and 10A (9.0% increase).

## **Task 3. Performance Analysis of Service**

Each route in the VTA service area was evaluated based on several factors including ridership, passengers per revenue hours, and subsidy per passenger. Key findings indicate routes with higher frequencies also had higher productivities. Across all performance indicators, the top two performing routes have consistently been Routes 1 and 3.

## **Task 4. Develop and Evaluate Service Alternatives**

Service alternatives for the entire VTA system were evaluated through a process that incorporated public outreach, a diverse steering committee, operational input from VTA, and analyses of the existing transit service and local market. Alternatives were guided by the five goals identified by VTA to improve service. Preliminary alternatives were presented to VTA at a workshop where they were further refined.

## **Task 5. Recommendations to Better Align Service**

Recommendations for VTA have been presented through a three phase approach. Phases establish the immediacy and prioritization of needs and are based on an incremental approach and by the availability of resources. Recommendations in Phase 1 can be implemented immediately while recommendations in Phase 2 and 3 can only be implemented as resources become available.

Phase 1 focuses on establishing consistent schedules with standard frequencies. In Phase 2, frequency during the peak season is improved and a new route has been implemented. Lastly, in Phase 3, frequencies in the peak season are further improved.

## **Task 6. Commonwealth's Environmental Policies**

GreenDOT's implementation plan, developed in 2012, identifies themes, goals and indicators to guide transportation development to a more sustainable future. An evaluation of VTA's services was conducted to determine their ongoing compliance with the policy. While there are over 300 short, medium, and long-term indicators, only 62% are applicable to VTA. Of these applicable indicators, VTA is already meeting 70% and working towards meeting additional medium-term indicators in 2015 and long-term indicators by 2020.

## **Task 7. Fare Rates and Collection Methods**

VTA installed GFI Genfare Electronic Validating Fareboxes on all fixed route vehicles and they are equipped with SmartCard readers. These fareboxes accept coins and bills and can issue change cards, essentially a stored value card, which can be used towards payment for future fares. Stored value cards



can be purchased on the buses or at the Steamship Authority & Edgartown Visitor Centers year-round. VTA fares are zone-based and each zone costs \$1.25 per trip. Fares recently increased by \$0.25 in January 2015 as part of VTA's 5 year plan. Moving forward, VTA should explore new technology, such as mobile payments or bPay/Magic Band/Uband, to replace outdated fare collection methods.

### **Task 8. Region's Job Creation Goals and Employment Needs**

The economy on Martha's Vineyard is primarily supported by the tourism industry. More than 900 service-producing establishments employ over 10,000 employees in the peak season; however, this number does not reflect the potentially large number of unreported "cash economy" jobs on the Island. During the off season, the Island's economy is largely supported through education and health services industries which employ 1,600 employees year-round. The number of employees on the Island fluctuates accordingly from a high of 11,400 in August to a low of 6,200 in February. The largest employer on the Island is Martha's Vineyard Hospital with over 1,000 employees. Businesses and jobs are concentrated in Tisbury, Edgartown, and Oaks Bluff. Understanding the region's employment sector will allow VTA to provide a better level of service to workers in the region.

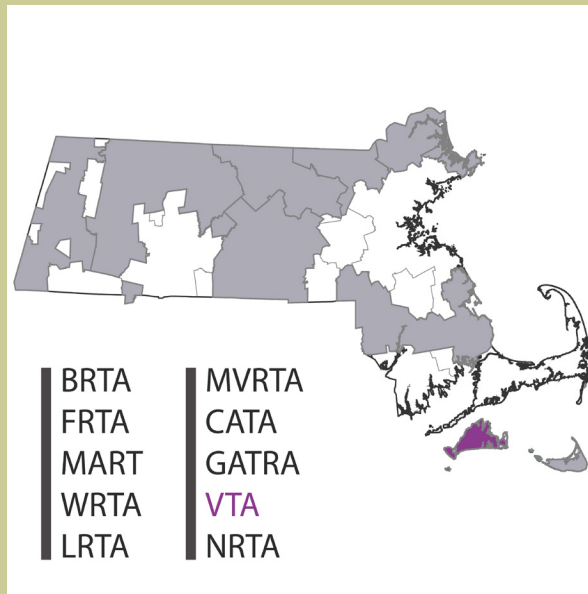
### **Task 9. Determination of Effectiveness of VTA Service to Meet the Needs of the Region's Workforce**

To determine the effectiveness of service to meet the region's workforce needs demand was calculated for the peak season and then for the off season since they distribute very different characteristics. The following indicators were used to identify demand levels during the peak season on Martha's Vineyard: housing unit density, employment, proximity to hospitals, presence of public beaches, and the number of park-and-ride spaces. In the off season the following indicators were used: population density, proximity to the schools and hospitals, employment, elderly population densities, vehicle availability, disabled populations, income levels, and the number of park-and-ride spaces.

The analysis revealed that during the off season, VTA provides fixed-route service to all areas with highest transit demand. Additionally, service is also provided to areas that exhibit a very low demand such as the Katama section of Edgartown, West Tisbury center, Lamberts Cover Road, and the West Chop area of Tisbury. During the peak season, VTA provides service to all areas with the highest transit demand. Similar to the off season, VTA provides service to areas with low demand for service such as West Tisbury yet areas that demonstrate a medium demand for transit, such as Chappaquiddick Island, are not served by VTA.

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# Chapter 1

## Project Overview

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# 1. PROJECT OVERVIEW

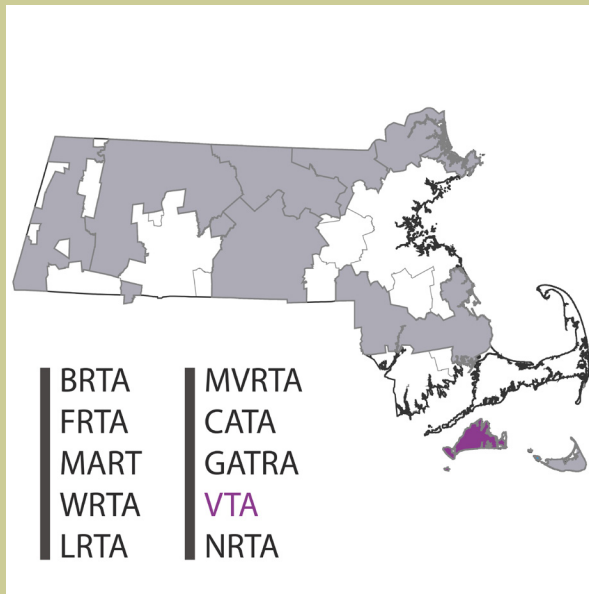
The Martha's Vineyard Transit Authority has prepared this Draft Regional Transit Plan in accordance with the Transportation Finance Bill.

The State Legislature has instructed all Regional Transit Authorities (RTAs) in the Commonwealth of Massachusetts to undertake the preparation of a Regional Transit Plan as a requirement of the Transportation Finance Bill passed in 2013. These Regional Transit Plans present an opportunity to improve local bus service operations, identify new markets of service opportunity, and meet the identified needs for public transit services in each respective RTA service area. Section 63 of the Bill notes nine discrete tasks that each Regional Transit Plan must address. These tasks are as follows:

- (1) Comprehensive assessment of transit services
- (2) Thorough examination of the ridership trends for each line and service provided by the regional transit authority
- (3) Performance analysis of existing services
- (4) Development and evaluation of alternative service scenarios
- (5) Development of a recommendation to better align service with local and regional demand
- (6) Commonwealth's environmental policies
- (7) Fare rates and collection methods
- (8) Region's job creation goals and employment needs
- (9) Determination of whether the regional transit authority's service is deployed in the most effective way possible to accommodate the transit needs of the region's workforce.

Each RTA is also required to hold a public hearing on the draft relating to the development of its Regional Transit Plan in order to inform the public and gather their input.





# Chapter 2

## Project Purpose

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## 2. PROJECT PURPOSE

### 2.1 VTA Overview

The Martha's Vineyard Regional Transit Authority (VTA) provides year-round public transit service to the six towns on the island of Martha's Vineyard: Aquinnah, Chilmark, Edgartown, Oak Bluffs, Tisbury, and West Tisbury. The VTA exhibits a lot of benefits for being a relatively small organization, and is well matched with the communities that they serve. With only six towns, decision-making is nimble and VTA is flexible and able to quickly review and add worthwhile trips. The island can be divided into two regions, the down island on the eastern side which exhibits suburban characteristics and up island on the western half which is rural in characteristic. The VTA's transportation services consist of fixed-route and ADA paratransit services, with the operation of 32 buses and five vans, respectively. In addition to serving inter-Island transit needs, VTA also provides regional connections to the Vineyard's three ferry terminals and airport.

The VTA's peak season and subsequent off season growth were a result of directly offering service to meet expected latent demand. In both seasons, minor expansions were applied incrementally as the use of the core trips steadily grew and later from demand for more service earlier and later in the day that was requested by the traveling public. Fixed-route service varies throughout the year, depending on the seasonal travel demand. The VTA's peak season of operation typically runs from June to September with a shoulder season on either end to transition into the off season. Fixed-route service is comprised of 14 routes, 12 of which operate year-round. Ridership peaks during the summer months, with more than 9,000 unlinked passenger trips a day compared to just over 700 in the winter months. Fixed-route services run seven days a week year round, except for Thanksgiving and Christmas Day. During the summer peak, most VTA service runs on 30 to 60 minute headways, from approximately 7:00AM to midnight. Some routes, such as the seasonal Route #11 which runs through downtown Edgartown, operate as frequently as every 15-20 minutes. Off season, routes are less frequent and generally focused on service during the AM and PM peak periods. Service is provided between approximately 7:00 AM to 6:00 PM and operates with a frequency of every 60 to 120 minutes. One of the key feature of the VTA service is the network of timed transfers connecting the routes, which allows for optimizing resources. Due the largely rural service area the VTA operates on a flag-stop basis year round with a few designated stops at key locations.

VTA's ADA complementary paratransit service, "The Lift," is available to individuals who are unable to use the fixed-route services because of a disability. The Lift is available within ¼-mile of a fixed route during the same days and hours as fixed-route service is offered. VTA also operates the regional human services transportation, which is fully funded.



The affairs of the Authority are managed by an administrator who is appointed by the Advisory Board. The Advisory Board consists of one representative from each member municipality as well as one non-voting individual who represented disabled commuters and one riders representative. The Advisory Board convenes monthly and is responsible for adopting an annual budget, approving changes in fares, and approving substantial changes in service. In 2002, the VTA developed a Consumer Advisory Group made up of users of fixed-route and paratransit services. This group meets regularly to discuss concerns, and meetings are open to the public and advertised in the local papers. The goal of the group is to identify unmet needs for all aspects of the system and to develop new ideas to improve the system. Bus routes, bus stops, signage, and outreach to users are just some of the topics explored by the group.

Funding sources for VTA include local, state and federal programs for operating assistance funds as well as capital funding available through the state and federal governments. Local funding is assessed to each of the six communities, and increases are capped at 2.5% per year, unless new service is added. State funding is provided by the Commonwealth of Massachusetts Department of Transportation through state contract assistance. Federal money, through rural operating assistance Section 5311, is provided to the VTA. Farebox revenue is money collected from passengers and pass sales. The VTA's operating budget covers three areas of expense: fixed route, demand response and administration.

## 2.2 Core Goals and Objectives

In April 2014, representatives from several Regional Transit Authorities (RTAs) were asked what they wanted their Regional Transit Plans to accomplish. Ideas were developed and ranked by these representatives to create a core list of goals and objectives for each RTA's Regional Transit Plan. The most highly-rated concepts – and those to which each of the Regional Transit Plans will respond – are as follows:

- Better align service with needs
- Improve efficiency and cost-effectiveness of system
- Improve transit access for the public
- Increase ridership levels
- Increase transit frequency and service options
- Increase revenue
- Improve transit access for transit-dependent populations
- Support economic development

While goals outline priorities, objectives are measurable actions that are necessary to realize the goals. The above list can be broken down as follows:

Table 1. Core Goals and Objectives

Goals	Objectives
<ul style="list-style-type: none"> <li>• Increase ridership levels</li> <li>• Better align service with needs</li> <li>• Support economic development</li> <li>• Increase revenue</li> </ul>	<ul style="list-style-type: none"> <li>• Increase transit frequency and service options</li> <li>• Improve transit access for the public</li> <li>• Improve transit access for transit-dependent populations</li> <li>• Improve efficiency and cost-effectiveness of system</li> </ul>

It should be noted that goals and objectives that were ranked favorably by individual RTAs but did not receive an overall high ranking will still be considered in the Regional Transit Plan for those authorities. Section 2.2 explains the goals and objectives that are specific to VTA.

## 2.3 VTA Goals and Objectives

In addition to responding to the core goals and objectives outlined in Section 2.2, the regional transit plan for VTA is also based on concerns that are specific to this RTA.

### Mission Statement:

It is the mission of the Martha's Vineyard Transit Authority (VTA) to provide year-round, Island-wide, fully accessible public transportation services on Martha's Vineyard that are safe, reliable, and economical for both the community and the environment. It is VTA's goal to provide quality transportation services at a sufficient level to meet the demands of a broad-based population with diverse needs for year-round populations, seasonal populations tourists and target markets. The VTA will strive to continue to increase their modal share of the regional transportation system while providing the community with the advantages of public transportation.

### Goal 1: Determine Service Saturation Levels Needed to Attract More Choice Riders

What level of service does the VTA need to offer to alter modal choice? The VTA does have choice riders, but how many would VTA have if they offered more frequent headways on all routes?

#### Objectives:

1. Increase the number of choice riders
2. Examine how level of service relates to choice ridership
3. Decrease vehicular traffic by increasing ridership

### Goal 2: Identify Unmet or Latent Service Demands in the Off Season

The VTA wishes to identify the affordable housing locations on the Island in order to better serve the transient nature of residents. While these locations are served during the off peak, the housing market causes the captive riders to be transient, thus causing gaps in service year to year.

*Objectives:*

1. Identify affordable housing locations where potential riders reside
2. Work with the community to identify transit-dependent and/or underserved populations
3. Implement service to meet the demands of these individuals

**Goal 3: Improve Bus Stop Infrastructure**

The VTA seeks to improve infrastructure at the bus stops in order to provide a more comfortable travel experience for the riders.

*Objectives:*

1. Work with the communities to require that new infrastructure accommodates bus service in the initial design
2. Inventory the current bus stops for passenger amenities
3. Install more bus pullouts, benches, trash receptacles, proper lighting and way winding information at key bus stops

**Goal 4: Educate the Business Community on the Benefits of Public Transit**

The business community is a potential ally for the VTA, as it involves workers, residents, and visitors of the Island. Outreach to this community about the benefits of public transit can help to increase awareness about and usage of the VTA system.

*Objectives:*

1. Meet with businesses to explain the benefits of transit on the Island
2. Encourage businesses to promote VTA services
3. Work with businesses to develop transit-friendly policies

**Goal 5: Improve Environmental Sustainability**

The VTA seeks to improve and enhance sustainability on the Island in order to be assured financial assistance to implement Federal and State initiatives including Smart Growth, Green DOT, and livability principles.

*Objectives:*

1. Reduce the carbon footprint of the system
2. Obtain grant funding to install compressed natural gas infrastructure
3. Transition the fleet to alternative fuel sources such as compressed natural gas
4. Promote transit-oriented development

### **Goal 6: Minimize Auto Use on the Island**

Providing an attractive, accessible alternative transportation option will help to minimize the use of automobiles on Martha's Vineyard. Such service will also contribute to increased mobility access as well as a healthier environment for residents and visitors

#### *Objectives:*

1. Increase frequency and service options to make transit an attractive transportation alternative
2. Provide rider-friendly and accessible marketing material
3. Use technology to make bus use more convenient

### **Goal 7: Expand Ability to Meet Resident, Worker, and Tourist Mobility Needs**

The VTA seeks to deliver flexible, affordable, innovative, and effective transit services that enhance livability within Martha's Vineyard. Its services will enhance the Island's advantages as a place to live, work, and recreate.

#### *Objectives:*

1. Improve existing services and implement new ones that meet the demands of present and untapped customers
2. Promote services through marketing efforts in order to increase awareness of options
3. Work with the community to identify transit-dependent and/or underserved populations

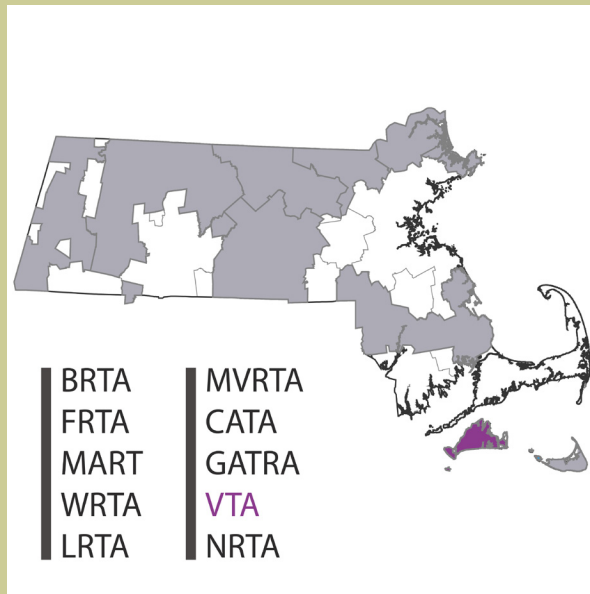
### **Goal 8: Obtain Funding Sources Through the Development of Regional Impacts**

The VTA seeks to work with the six communities to require new developments be transit friendly and financially supportive through impact fees

#### *Objectives:*

1. Require communities to approve transit-friendly development designs
2. Encourage transit impact fees as part of development review





# Chapter 3

## Performance Analysis

**AECOM / URS**  
**TMD**  
 Burke & Company





## 3. VTA PERFORMANCE ANALYSIS

### 3.1 Service Overview

The VTA operates fixed route services year-round on the Island of Martha's Vineyard, and has become an integral part of the region's transportation network since expanding services both Island-wide and year-round in 2005. The level of transit service provided naturally varies with the ebb and flow of seasonal activity. The VTA has two major schedule changes per year, switching between a peak season and an off season. Each season also has "shoulder seasons" during which transit service is scaled up and down to match the VTA's experience with historical demand.

Martha's Vineyard is well known nationally as a prime vacation destination, and is visited by thousands of seasonal residents and vacationers annually. In a region driven largely by its seasonal and tourism economy, it is notable that the VTA serves a loyal core of year-round work commuters as well as the multitudes of visiting tourists. The VTA's route timetables reflect an effort to serve its wide range of customers. There are headway mode trips for the VTA's most frequent services, as well as resources concentrated during the typical work commute hours.

On any given day, VTA buses carry passengers with a variety of different trip types. There are people riding the bus to work, shopping, and recreating. Island residents with modal choice options are increasingly relying on public transit as a safe and reliable alternative mode of transportation. Island students and seniors are two of the VTA's strongest ridership segments and transit-dependent groups.

Martha's Vineyard has a relatively simple road network of roads that connect the six Island towns and serve as collectors of residential roads. During the peak season from early May to October, the VTA system has a peak pull-out requirement of 28 fixed route vehicles for 14 routes, which cover nearly all of the main roads in the region. The off season service includes 12 routes, with all of the same major fixed route corridors covered as during the peak season.

This performance analysis examines Fiscal Year 2014, spanning July 2013 through June 2014. The ridership, revenue hours and revenue data are presented for three distinct time periods: the peak season peak months of July and August, the shoulder season months of September and half of October 2013 and May and June 2014, and the off season months from mid-October through April.

#### 3.11 Route Descriptions

The following text summarizes the key facts about the VTA's fourteen fixed routes. For background information, the type of service, surrounding land uses, key trip generators, connecting routes, and operation highlights are described.

Each route description is accompanied by its FY 2014 ridership. The VTA's ridership reflects the dramatic changes in seasonal activity in the Martha's Vineyard region. The summer months of July and August clearly stand out as the peak demand for transit service, with peak days of over 12,000 passengers. There are two "shoulder" seasons as ridership ramps up in the spring and tapers down in the fall to off season levels. For this report's purposes, the VTA's ridership is either presented in total for the fiscal year, or broken down into the three distinct periods: peak, Shoulder (spring and fall), and off season.

### Route #1 Edgartown – Vineyard Haven Road

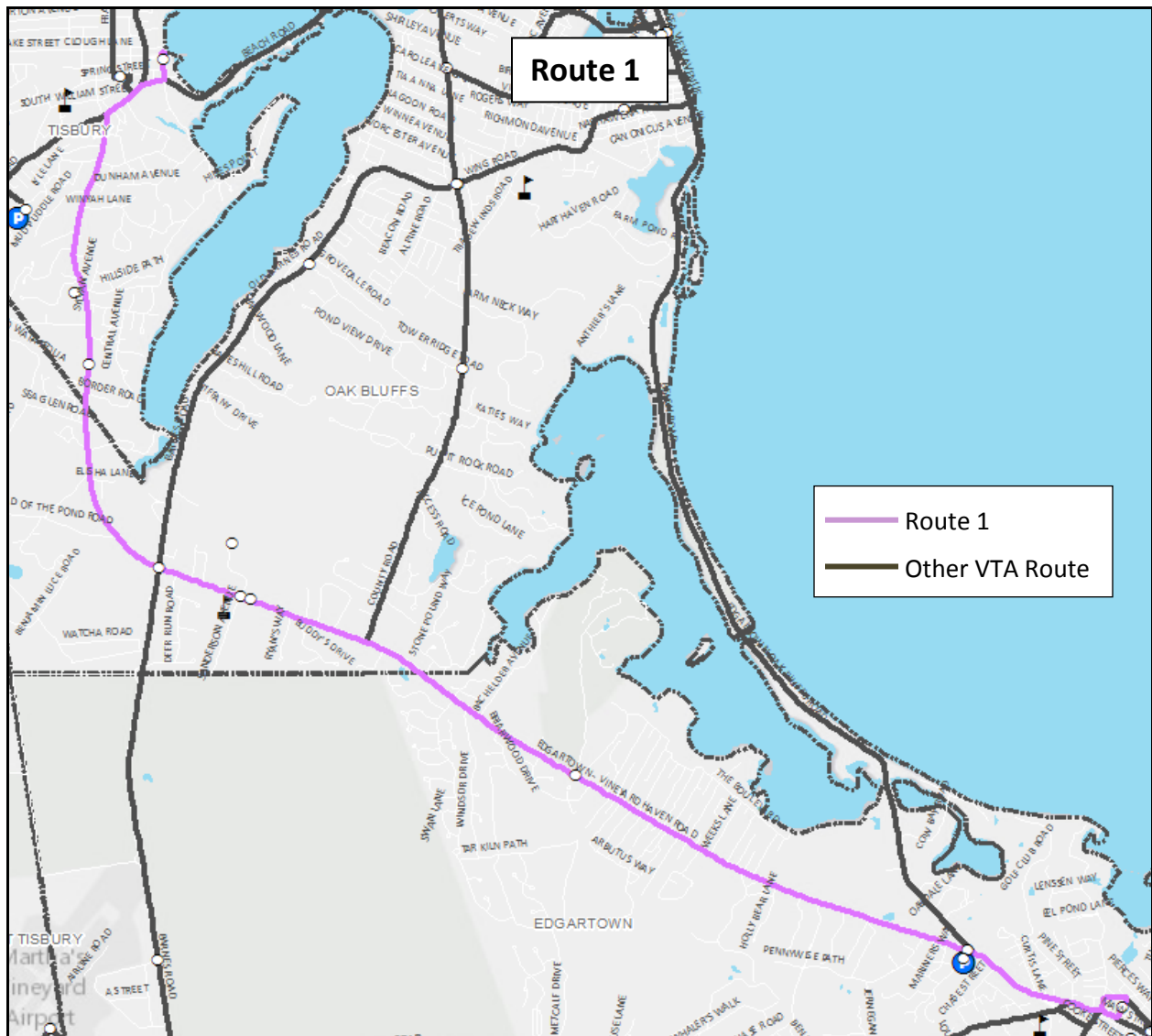


Figure 2. Route #1

Fixed Route, Year-Round



Route #1 is one of the transit system's most popular and frequent routes, serving the entire length of the "backbone" of the down-Island road network. This route directly connects the downtowns of Edgartown and Tisbury (Vineyard Haven), and goes through the southern part of Oak Bluffs. The road is a major collector of a significant number of the Island's year-round residential roads. Major trip generators along Route #1 include the regional high school, the Y, M.V. Community Services, the Ice Arena, two elderly housing complexes and a seasonal campground.

Connecting routes:   #2, #3, #10, #10A and #13 in Vineyard Haven  
                              #7 and #9 in Oak Bluffs  
                              #6, #8 and #13 in Edgartown

Route #1's fixed schedule timetable switches to headway mode for the peak months, during peak travel times with the public timetables indicating departures from all stops every 20 minutes. The rest of the year has standard fixed route service. The one-way trip time (including layovers) is typically 30 minutes, with off-peak periods dropping down to every 60 minutes.

Route #1 is a stand-out route in the VTA transit system, connecting to more routes than any other route. An average of 1,734 passengers ride Route #1 daily during the peak season. While demand at the end terminals often exceeds the capacity of the vehicles, VTA policy limits the boarding at the terminals so that space is available on each vehicle for the many passengers expected along the Edgartown-Vineyard Haven Road at its intermediate stops.

The shoulder season daily average is 883 riders, with June as the heaviest travelled month of the shoulders. The off season averages 297 riders per day, ranging from a high of 451 riders in late October (partial month) down to 224 daily riders in January, and then steadily increasing again each month through April with 371 daily riders. Route #1 is the VTA's strongest off season route.

The route is typically served by more than one vehicle dedicated to the route. The route is depicted with dark purple and white colors.

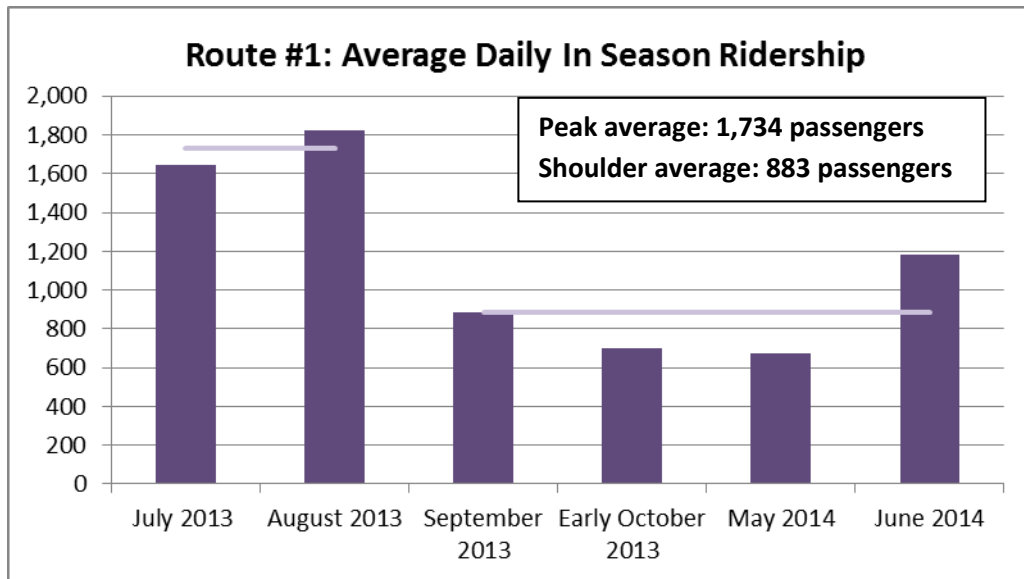


Figure 3. Route 1 Average Daily Peak and Shoulder Season Ridership

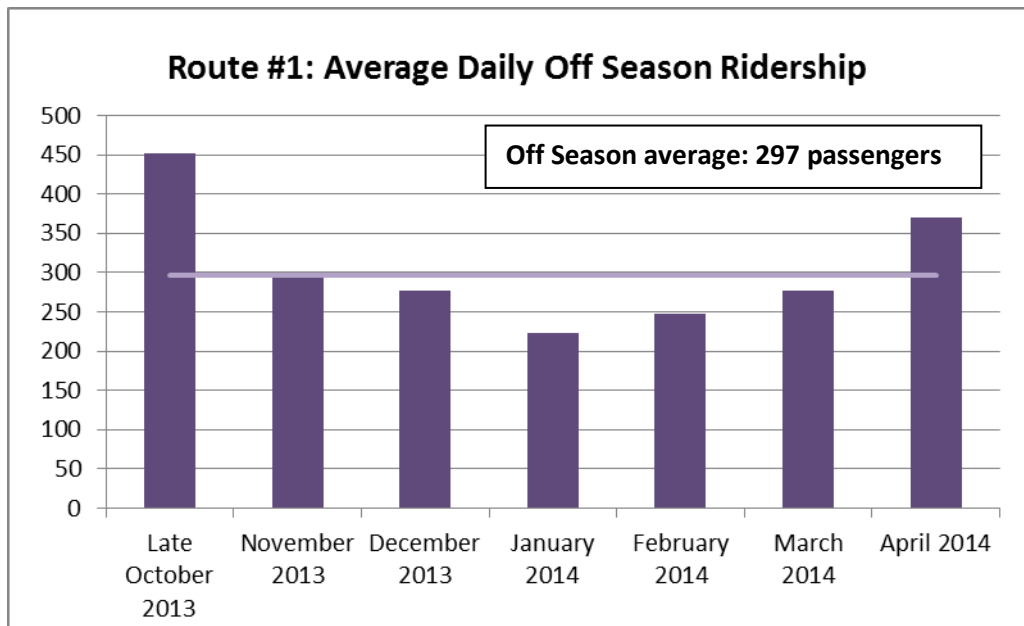


Figure 4. Route 1 Average Daily Off Season Ridership



**Route #2 West Tisbury – Vineyard Haven via Old County Road and Lambert's Cove Road**

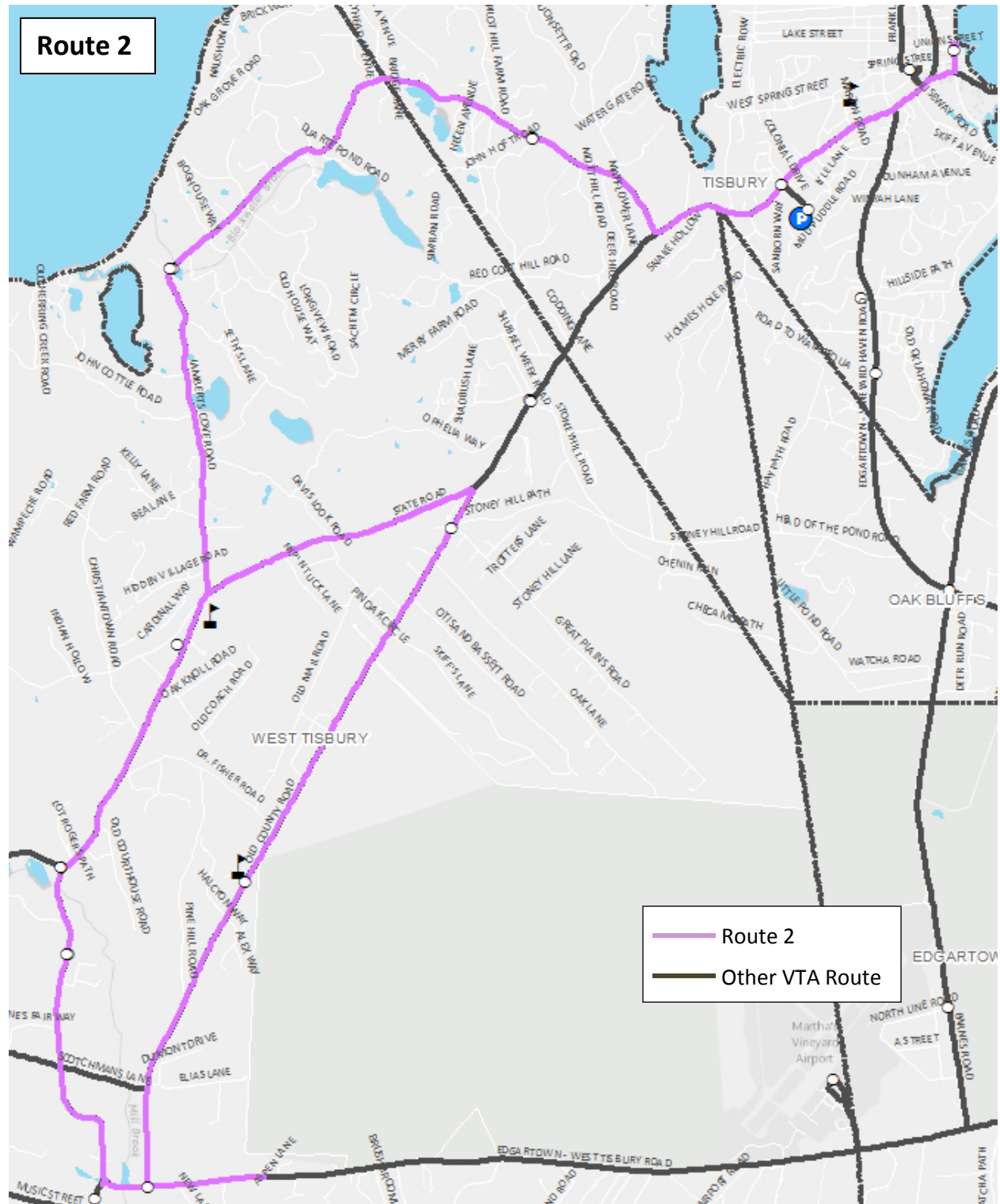


Figure 5. Route #2

Fixed Route, Year-Round



Originally designed as an in-town loop for West Tisbury, the utility of Route #2 was greatly expanded by connecting it to the Vineyard Haven Steamship Authority Terminal. In conjunction with Route #3, Route #2 allows service in both directions on Old County Road in West Tisbury. Route #2 travels over the more rural and hilly Lambert's Cove Road in both directions. Residences in this area of the Island are dispersed, and include some of the most valuable properties.

The route has two major stops in West Tisbury: both the traditional town center at the Town Hall and the Business District approximately three miles north on State Road.

The northern section of Old County Road is a residential collector, with the southern portion largely bordering the State Forest. The West Tisbury School is in this vicinity. Other notable trip destinations along Route #2 are downtown Tisbury, the Tisbury Business District on State Road, Lambert's Cove Beach and Polly Hill Arboretum.

Operationally, Route #2 is interlined with Route #10A during the peak season. This pairing came about when Route #10 Tisbury Park-and-Ride was switched to a dedicated vehicle to satisfy travel demand and funding partners.

Connecting routes:     #1, #10, #10A and #13 in Vineyard Haven  
                                 #3 and #4 in multiple locations  
                                 #5 and #6 at West Tisbury Town Hall

Route #2 trips have a frequency of every 90 minutes during the peak season, and uneven frequency in the off season. The Route #2 vehicle always has to serve at least one other route. One-way trips are scheduled in 30 minute time blocks.

Ridership on Route #2 follows the characteristics of a rural transit service. This route serves an average of 99 riders daily during the peak season, and 57 riders during the shoulder season months. Through the VTA off season, a minimal number of trips are offered to the transit dependents along this route, which serves an average of 15 daily riders.

Route #2 is shown in coral pink on colored marketing materials.

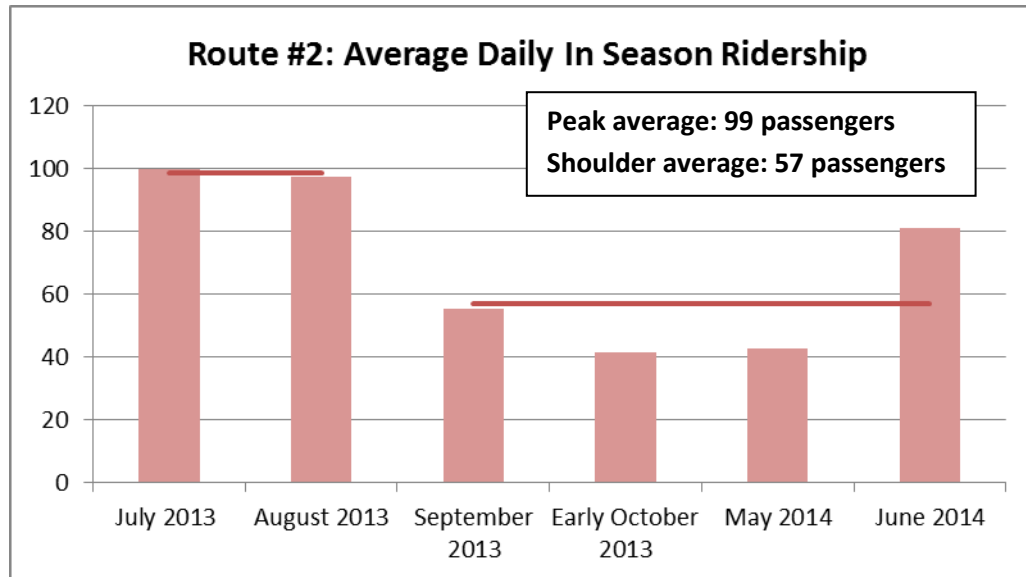


Figure 6. Route 2 Average Daily Peak and Shoulder Season Ridership

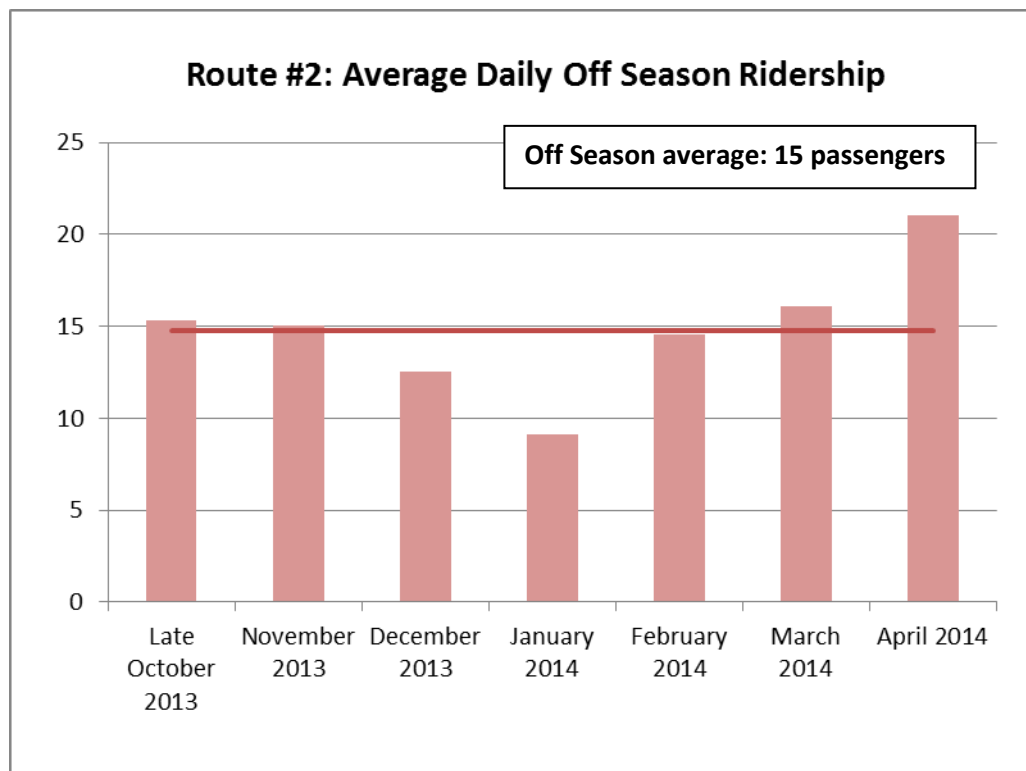


Figure 7. Route 2 Average Daily Off Season Ridership

**Route #3: Vineyard Haven – West Tisbury via State Road and Old County Road**

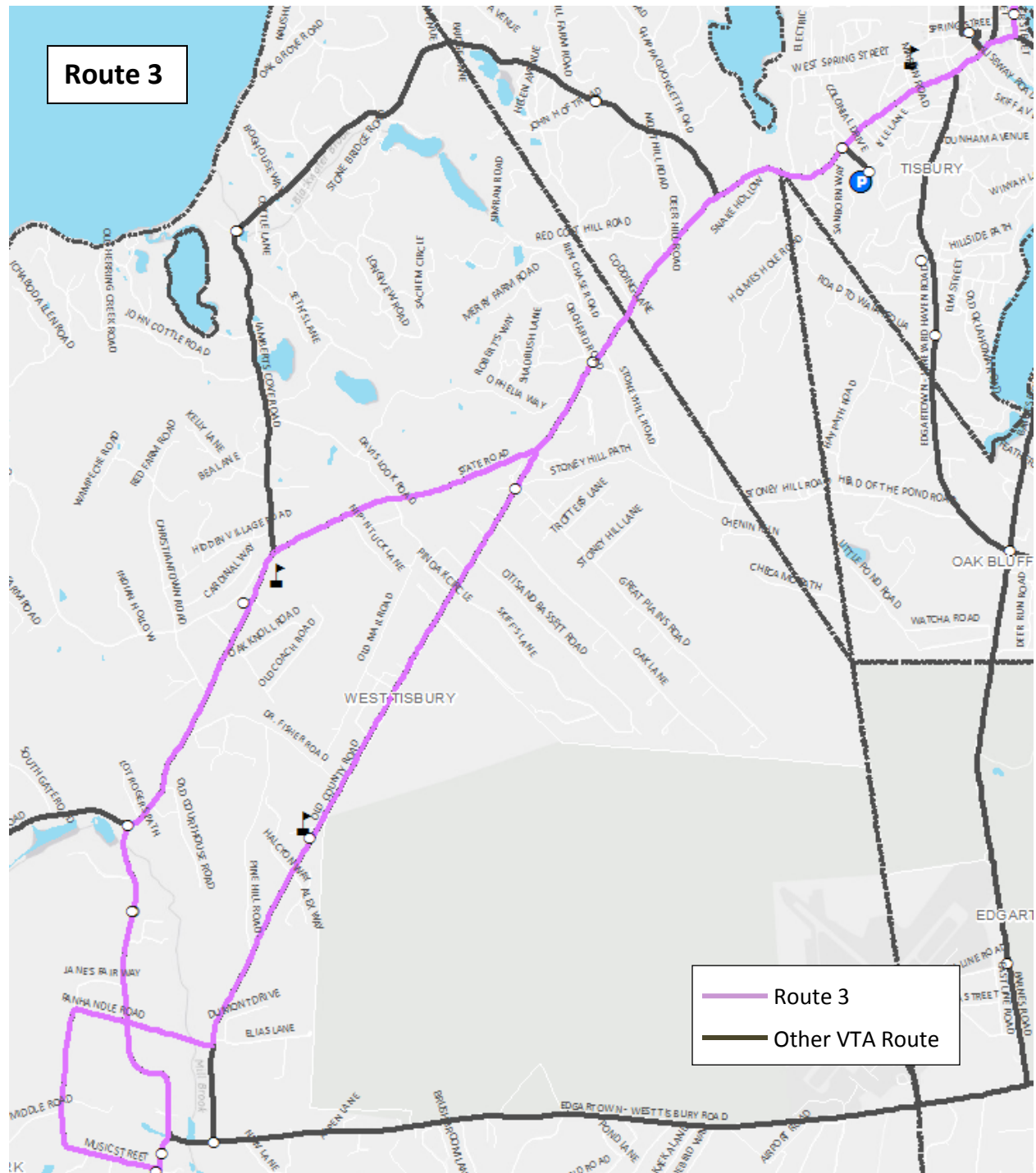


Figure 8. Route #3

Fixed Route, Year-Round



Route #3 provides an inter-town link between Vineyard Haven and West Tisbury via State Road. In addition to State Road, Route #3 travels in the Vineyard Haven to West Tisbury direction on Old County Road. Route #3 is a more direct route between Vineyard Haven and West Tisbury than Route #2.

Similar to Route #2, key locations for Route #3 are the Vineyard Haven Steamship Authority Terminal, the Tisbury State Road Business District, West Tisbury Business District, West Tisbury Elementary School, West Tisbury Town Hall and Polly Hill Arboretum.

Connecting routes:      #1, #10, #10A and #13 in Vineyard Haven  
                                 #2 and #4 in multiple locations  
                                 #5 and #6 at West Tisbury Town Hall

Route #3 is interlined with Route #5 and Route #6 during the peak season, with three vehicles covering the three-route interline. This system was invented by the VTA at the request of the Town of West Tisbury, which was concerned about the impact of multiple buses meeting at the same time in the historic town center. The VTA's interline method replaced a hub and spoke system that included Routes #3, #4, #5 and #6 at the natural geographic crossing point.

The current system minimizes the exchange of passengers between vehicles, since many of the passengers are continuing their trips beyond West Tisbury and take advantage of the same-bus transfers. It should be noted that the number of passengers recorded with this system is reduced, but does make the inter-connected routes more efficient. The VTA's practice is to group together for ridership purposes. Route #4 is included because it historically was combined with its other up-Island route counterparts, though it is not part of the interline.

Peak season frequency is every 60 minutes. Route #3 one-way trips are 30 minutes.

The three up-Island routes combined carry an average of 1,427 passengers daily in the peak season. The shoulder seasons average 628 daily riders, with September 2013 and June 2014 above the average and early October 2013 and May 2014 below the average. This ridership curve is typical of the Island's seasonality, both looking at the annual graph and just focusing on the shoulders. This constant change in demand is one of the challenges that is unique to the VTA in contrast to most transit operations.

The route colors are dark green and white.



## Route #4: West Tisbury – Chilmark – Menemsha via North Road



Figure 9. Route #4

### Fixed Route, Year-Round

Route #4 connects the two up-Island towns of West Tisbury and Chilmark over two of the Island's most rural major roads: North Road and Menemsha Crossroad.

Route #4 has major stops in West Tisbury at the town's two major transfer locations: West Tisbury Town Hall and West Tisbury Business District. At the other end of the route in Chilmark, Route #4 stops in the

fishing village of Menemsha, Menemsha Beach and at the Chilmark Community Center. In recent years, Route #4 has deviated from its regular route during commute hours to make stops at a satellite parking lot being promoted by the Town of Chilmark to alleviate traffic congestion in Menemsha.

Connecting routes:     #2 and #3 in multiple locations  
                                  #5 and #6 at West Tisbury Town Hall  
                                  #12 (seasonal) at multiple locations

Route #4 one-way trips are 30 minutes, with a peak season frequency of every 60 minutes. Route #4 is served by a dedicated single vehicle during the peak season, and is interlined with multiple other routes during the off season.

The route colors are brown and white.

#### Route #5: West Tisbury – Chilmark – Aquinnah via South Road

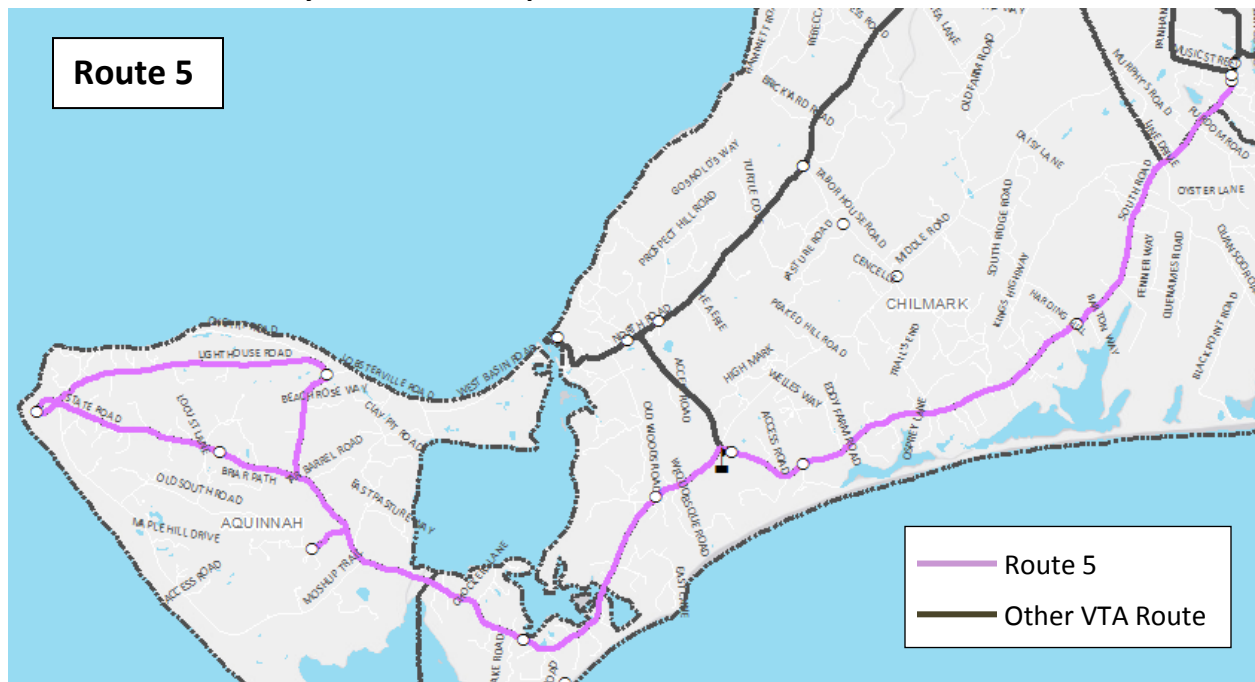


Figure 10. Route #5

Fixed Route, Year-Round

Route #5 serves all three up-Island towns of West Tisbury, Chilmark and Aquinnah, providing service along South Road and State Road, the most direct route to the Island's outermost attraction: the Gay Head Lighthouse and Cliffs.

Like all five routes that travel up-Island, Route #5 has a major stop in the historical West Tisbury town center. Depending on the season, the Route #5 departure occurs at the Grange Hall (peak season) or from the West Tisbury Town Hall (off season). Route #5 passes the Chilmark Community Center, the Wampanoag Tribe on Black Brook Road and the Aquinnah Town Center. Upon return from the Gay Head Lighthouse and Cliffs stop, Route #5 returns via Lighthouse Road before looping back to State Road for the return to Chilmark and West Tisbury.

During the peak season months, Route #5 has capacity issues largely due to the popularity of the Gay Head Cliffs for visitors as a key tourist destination. On fair weather days, the VTA operates a second Route #5 bus (the "5-X"), which closely shadows the scheduled bus to handle the excess demand. Peak season frequency is every 60 minutes. The Route #5 bus is interlined with Route #3 and Route #6, but not the 5-X bus.

Connecting routes:      #2, #3, and #6 at West Tisbury Town Hall  
                                    #4 and #12 (seasonal) at Chilmark Community Center

Route #5 one-way trips are 30 minutes, with a peak season frequency of every 60 minutes. Route #5 is interlined with Route #3 and Route #6 during the peak season, with three vehicles covering the three-route interline.

The route colors are red and white

### Route #6: Edgartown – Airport – West Tisbury

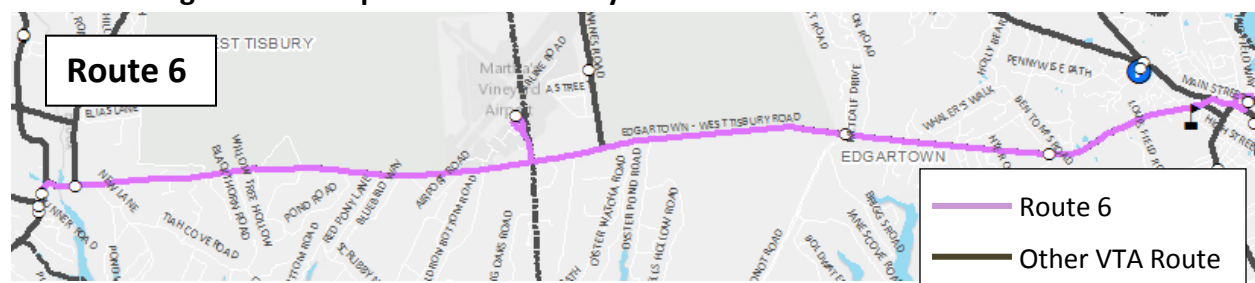


Figure 11. Route #6

Fixed Route, Year-Round

Route #6 provides a direct connection between Edgartown and West Tisbury. Edgartown-West Tisbury Road serves as a major collector of some residential roads in both Edgartown and West Tisbury.

The Martha's Vineyard Airport and the Youth Hostel are the primary trip generators along Route #6. Routes #7 and #9 from Oak Bluffs feed and pick up from Route #6 at the Airport, which is close to the route midpoint. During the peak season, timed transfers are set-up in both directions with these routes. During the peak season, Oak Bluffs passengers can seamlessly travel from Route #9 to Route #6, which interlines and becomes Route #5, allowing a trip from Oak Bluffs to Aquinnah with practically no layover delay and only a single bus transfer.

Connecting routes: Routes #1, #8, #11 and #13 in Edgartown  
Routes #2, #3, #4 and #5 in West Tisbury  
Routes #7 and #9 at Martha's Vineyard Airport

Route #6 one-way trips are 30 minutes, with a peak season frequency of every 60 minutes. Route #6 is interlined with Route #3 and Route #5 during the peak season, with three vehicles covering the three-route interline.

The route colors are blue and white.

### Routes #3, 4, 5, & 6: Combined Ridership

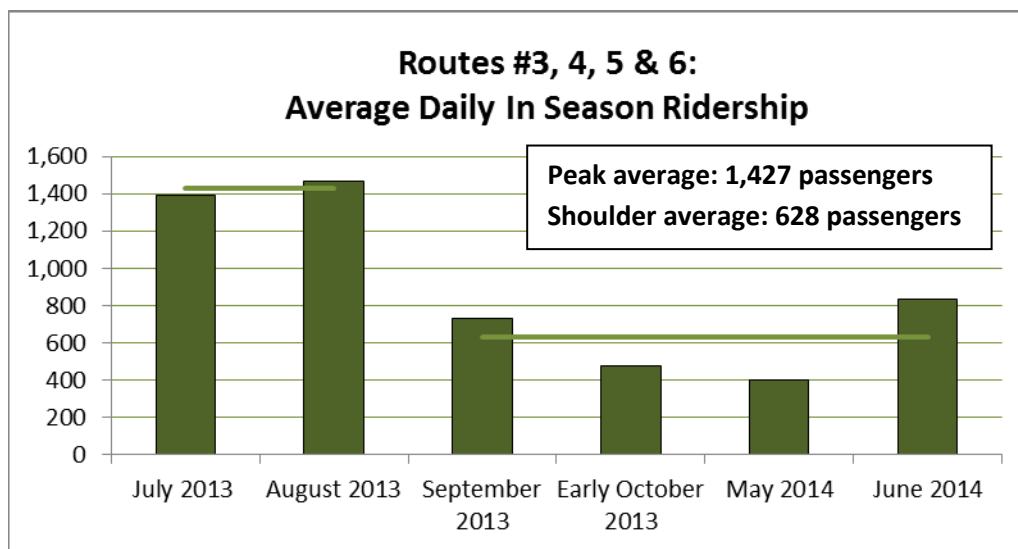


Figure 12. Routes 3/4/5/6 Average Daily Peak and Shoulder Season Ridership

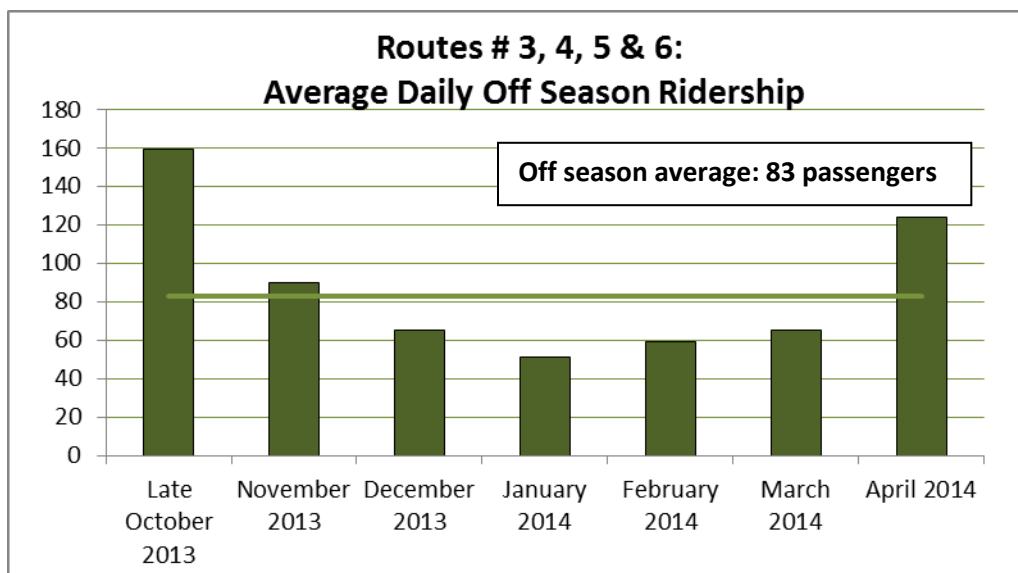


Figure 13. Routes 3/4/5/6 Average Daily Off Season Ridership



### Route #7: Oak Bluffs – Airport via County Road / Barnes Road

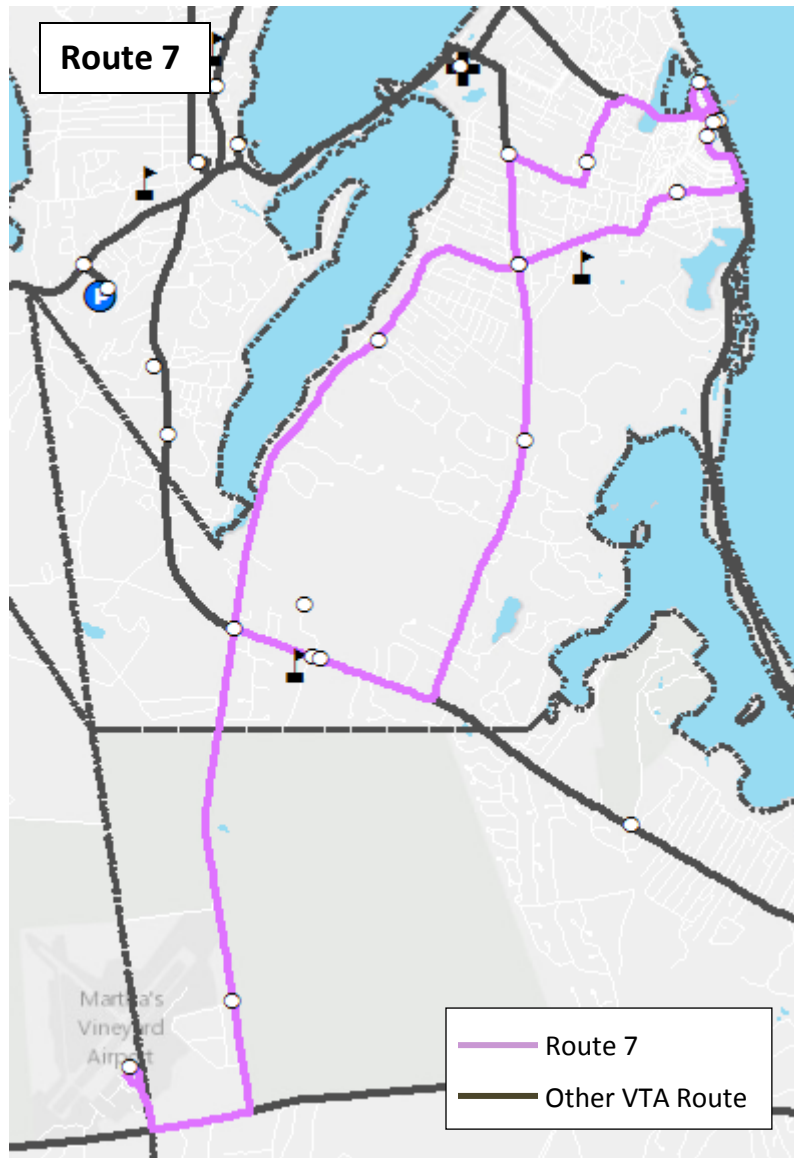


Figure 14. Route #7

Fixed Route, Year-Round

Paired with Route #9, Route #7 provides service between downtown Oak Bluffs and Martha's Vineyard Airport. Route #7 departs from Ocean Park and travels through the dense residential neighborhoods surrounding the downtown and passes near the Oak Bluffs Council on Aging, an elderly housing complex and the Oak Bluffs School.

Route #7 goes over County Road in the outbound direction, passing the Y, Martha's Vineyard Community Services, an elderly housing complex and the regional high school along a key stretch of Edgartown-Vineyard Haven Road. The southern section of the route is primarily through the State Forest on the way to the Airport, with a few residential roads and the Airport Business Park as the only developments in the central portion of the Island.

Connecting routes:      Route #1 along Edgartown-Vineyard Haven Road  
                                  Route #6 at MV Airport  
                                  Route #9 at multiple locations  
                                  Route #13 in Oak Bluffs

The time between one-way trip departures averages 30 minutes. A dedicated vehicle serves Route #7 during the peak season. It is part of a multi-route interline during the off season.

Route #7's ridership figures reflect its dual role as an in-town residential collector (connecting downtown Oak Bluffs with its outlying neighborhoods) and feeder route. The timing for Route #7 is such that Route #6 passengers returning down-Island can immediately transfer at the Airport to Route #7 to complete their trip to downtown Oak Bluffs. The Airport serves as the outlying terminal for this route.

Route #7 averages 191 riders per day during the peak months, and 108 riders during the shoulder months. The June 2013 ridership averaged 161 passengers. With a minimal number of trips to support the transit dependents in the community, Route #7 averages 22 daily riders through the off season.

Route #7 is presented in fuchsia and white in colored materials.

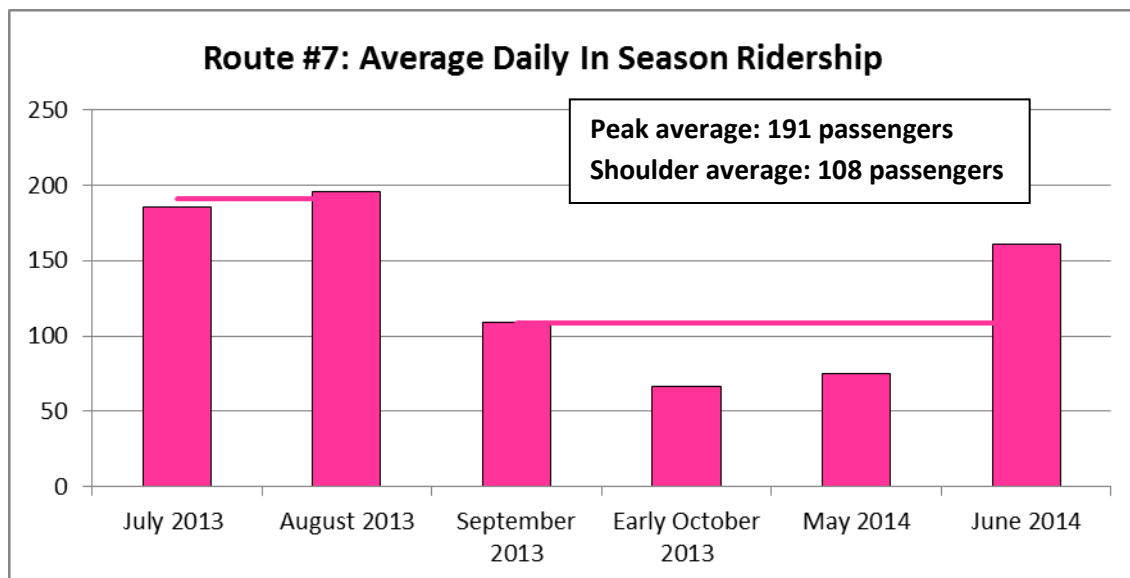


Figure 15. Route 7 Average Daily Peak and Shoulder Season Ridership

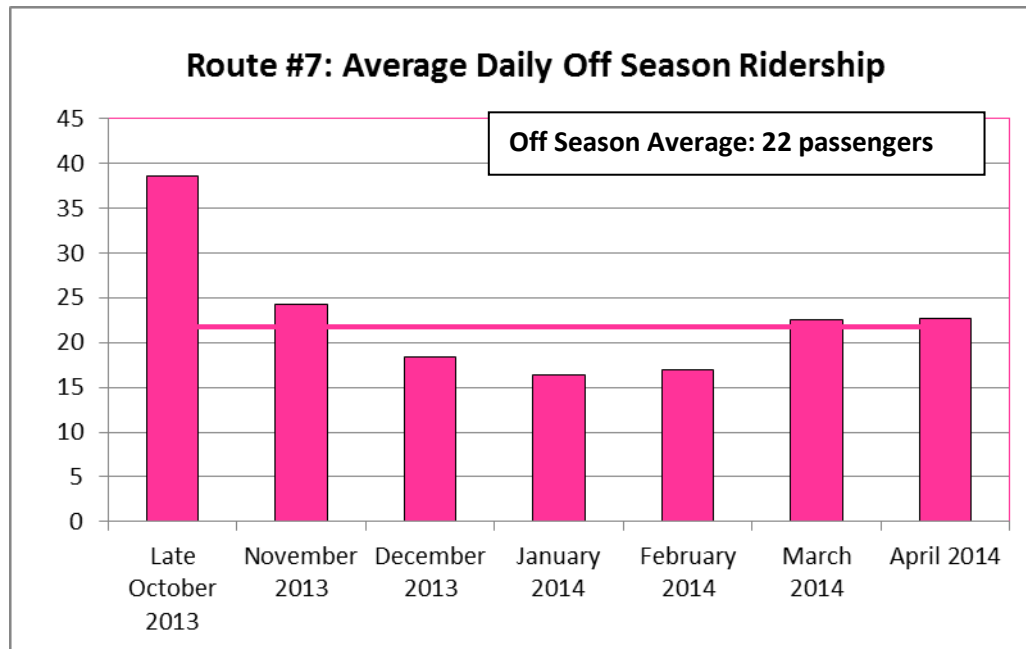


Figure 16. Route 7 Average Daily Off Season Ridership

### Route #8: South Beach Route

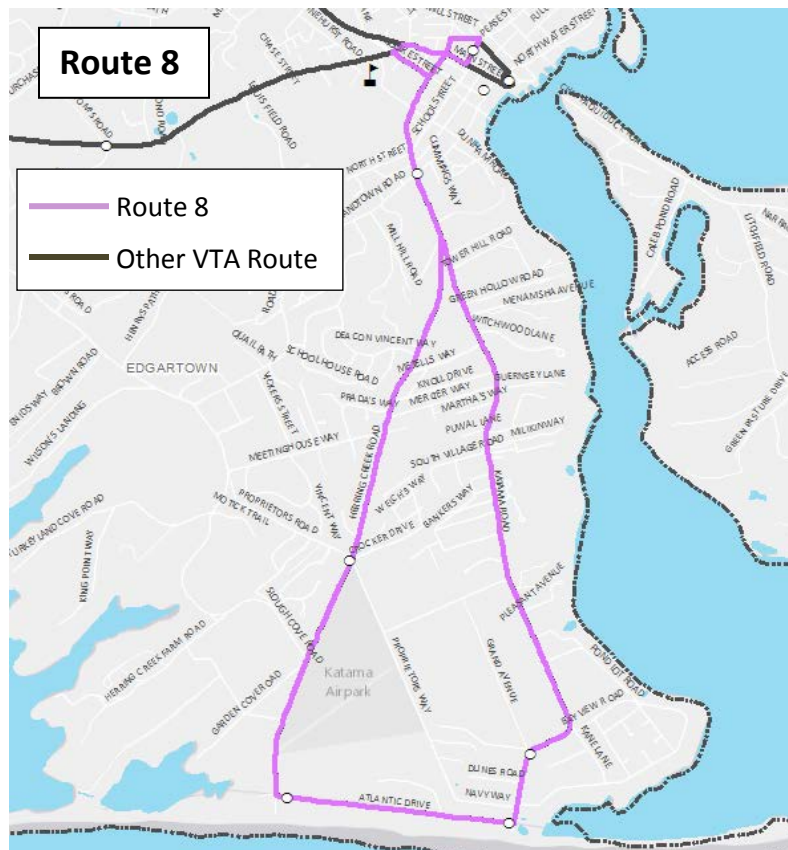


Figure 17. Route #8

### Fixed Route, Year-Round

Route #8 serves the southern section of Edgartown known as Katama. It is one of the oldest routes in the VTA system, pre-dating the modern era expansion that occurred from 1998-2005. With the main terminal point at the downtown hub at the Edgartown Visitors Center, Route #8 makes a loop out Herring Creek Road (“Right Fork”) and returns via Katama Road (“Left Fork”).

The Katama area has a mix of year-round and seasonal residences. The main attraction is South Beach, a popular public beach of the Island’s south shore known for surf. Other attractions are a grass airfield, the Farm Institute and a hotel & restaurant resort.

Connecting routes: Route #1, #6, #11 and #13 in Edgartown

The one-way trip length is typically 15 minutes, and 30 minutes for the full loop. The route’s operation varies from sharing an interlined vehicle during the shoulder seasons to employing two dedicated vehicles during the peak months.

Route #8’s ridership shows the popularity of its main attraction: South Beach. An average of 518 passengers ride on Route #8 in the peak season. These figures are susceptible to weather conditions. Years which have had a major storm during a prime summer week have substantially affected Route



#8's ridership. When there are two buses scheduled for this route, one of these is designated as 'fair weather only' on the public timetables. With both buses in operation during a beach day, the VTA offers 15 minute service on this route.

During inclement weather, the second Route #8 bus is re-purposed to other routes, which are often delayed by heavier downtown traffic during non-beach days.

With a much scaled-down shoulder season schedule (30 minute frequency in the spring shoulder and 60 minute frequency in the fall shoulder), Route #8 averages 117 daily riders. With a 'bare-bones' level of 6 to 7 trips per day in the off season, Route #8 averages 9 riders.

The route's colors are light green and black.

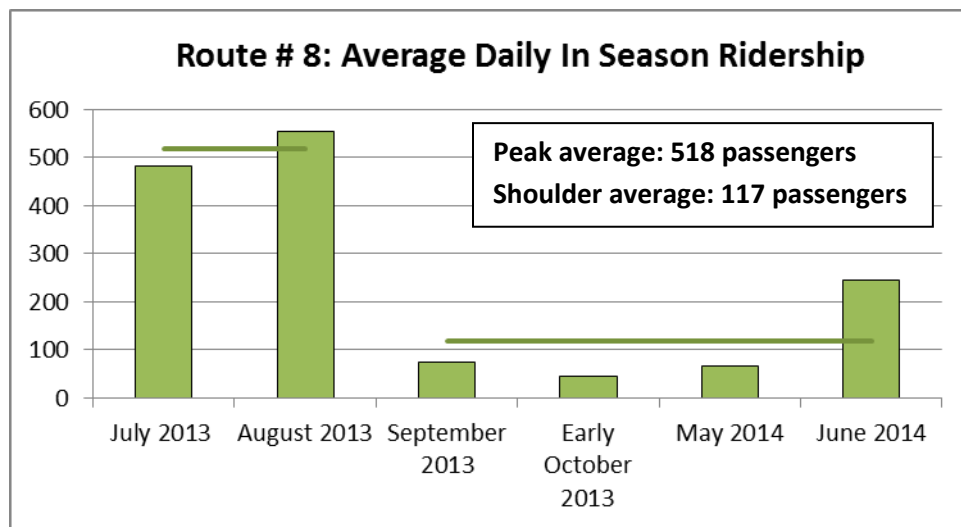


Figure 18. Route 8 Average Daily Peak and Shoulder Season Ridership

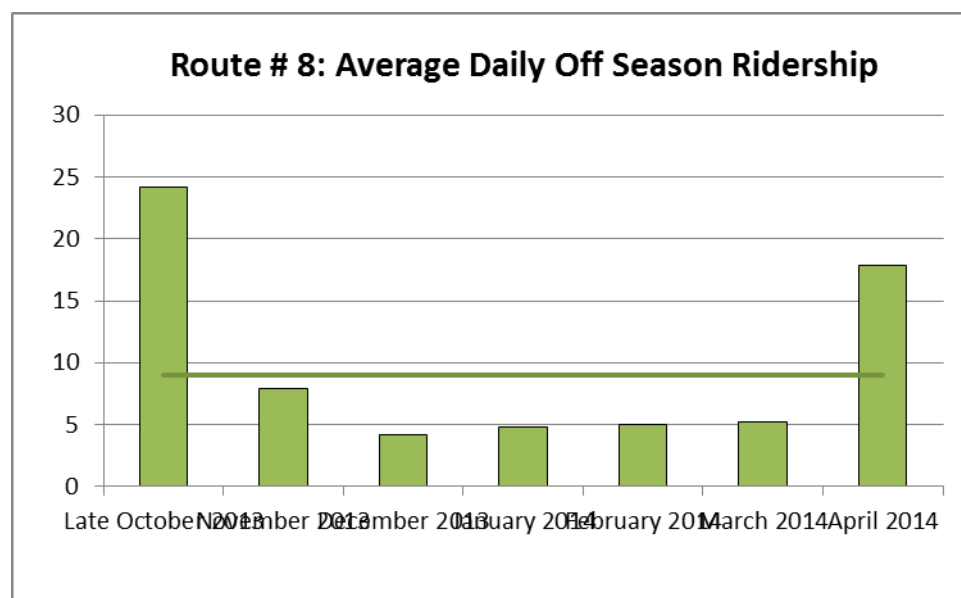


Figure 19. Route 8 Average Daily Off Season Ridership

**Route #9 Oak Bluffs – Hospital – Airport via Barnes Road and County Road**

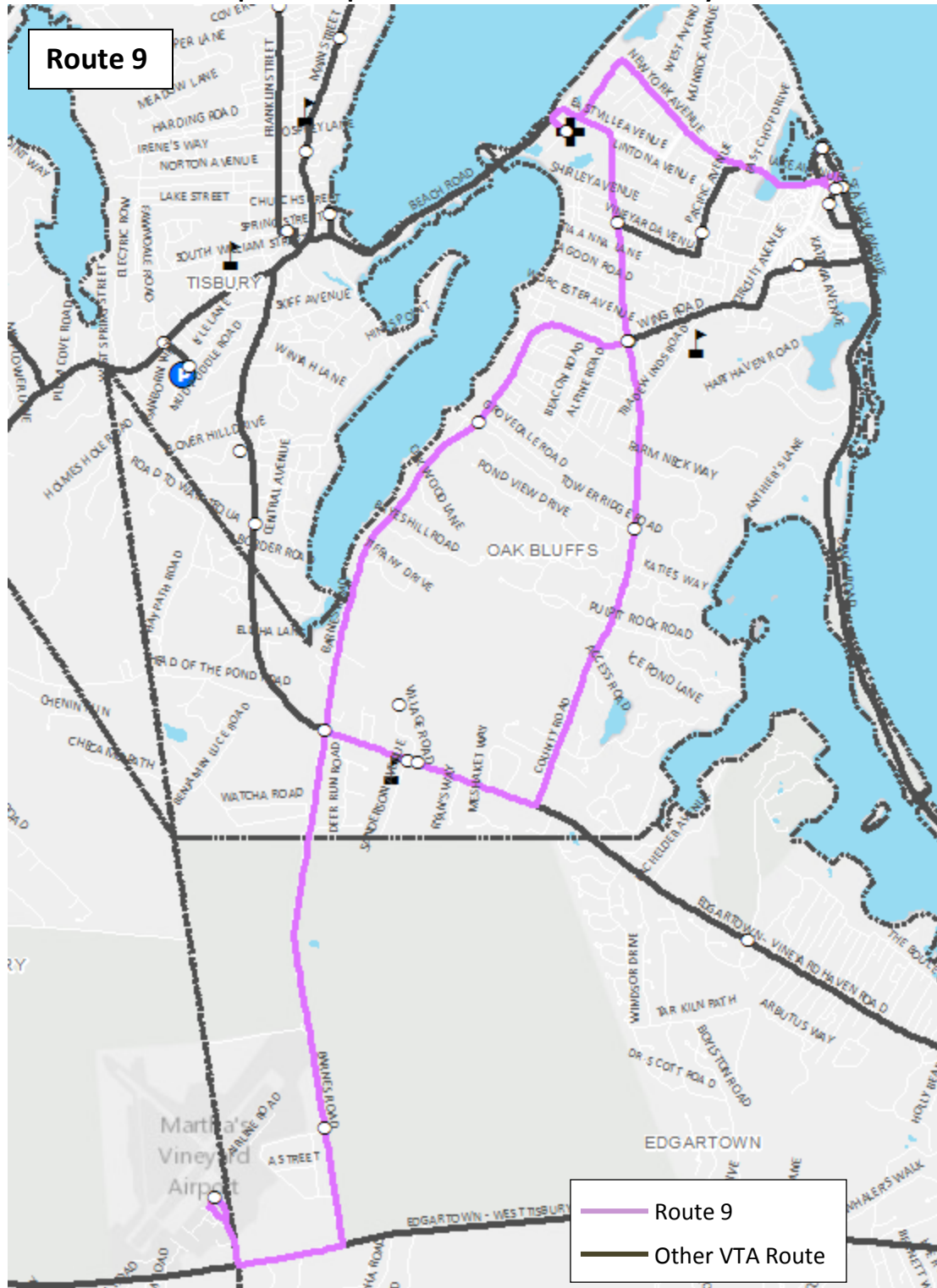


Figure 20. Route #9

Fixed Route, Year-Round



Route #9, along with its counterpart, Route #7, serves primarily the Town of Oak Bluffs. This route connects downtown Oak Bluffs and Martha's Vineyard Airport.

In the outbound direction, Route #9 travels over the residential collectors roads New York Avenue, County Road (northern section) and Barnes Road. On the return to downtown Oak Bluffs, Route #9 travels over the middle section of Edgartown-Vineyard Haven Road and the full length of County Road. The Martha's Vineyard Hospital, the regional high school, the ice arena, the Y, Community Services and an elderly housing complex are all located along the route.

Connecting routes:      Route #1 along Edgartown-Vineyard Haven Road  
                                 Route #6 at Martha's Vineyard Airport  
                                 Route #7 at multiple locations  
                                 Route #13 in downtown Oak Bluffs

During the peak season, Route #9 serves the important function of feeding passengers from Oak Bluffs to Route #6 at the Airport. At this timed transfer point, Route #6 proceeds to bring these passengers to up-Island destinations. In the evening hours, Route #9 trip times are off-set by 30 minutes, so the timed transfer (two minute layover) can happen in reverse – up-Island passengers from Route #6 are fed onto the waiting Route #9 bus to complete the return trip to downtown Oak Bluffs.

This route has seen increased growth in particular from more seasonal workers occupying residences in the neighborhoods along Barnes Road. It is now common for real estate ads to include proximity to a VTA transit route as a desirable property feature.

A dedicated vehicle in the off season provides hourly service. Route #9 is part of a multi-vehicle interline during the off season. One-way Route #9 trips are 30 minutes.

Route #9 averages 229 daily riders in the peak season and 99 daily riders in the shoulder season. Like many VTA routes, the shoulder season schedule scales back from the peak season schedule in that the evening and nighttime trips are operated on Fridays and Saturdays only, instead of daily. The minimal off season service carries an average of 22 passengers per day.

This route can be identified on the system route map and the bus destination signs by its light purple and white colors.

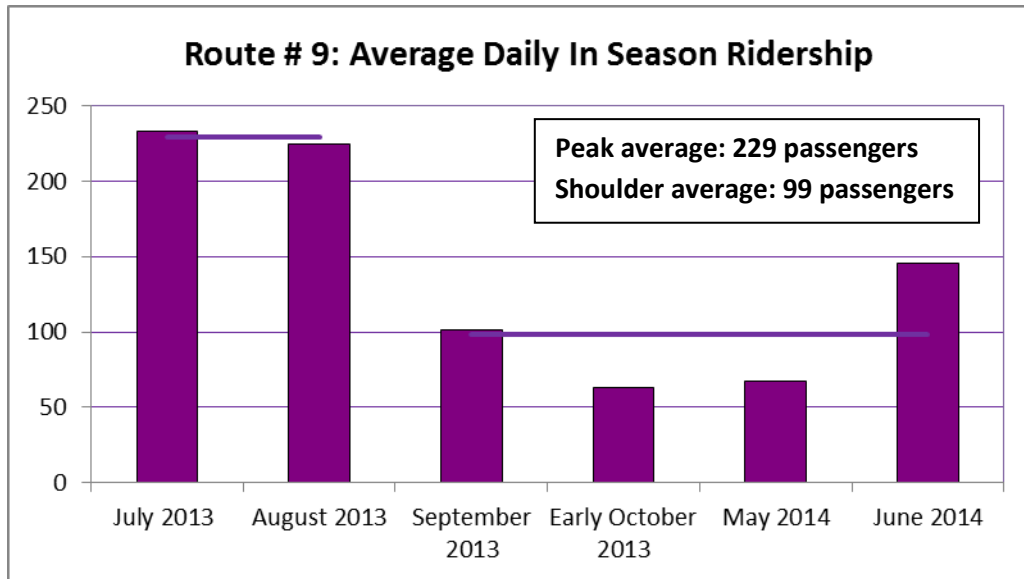


Figure 21. Route 9 Average Daily Peak and Shoulder Season Ridership

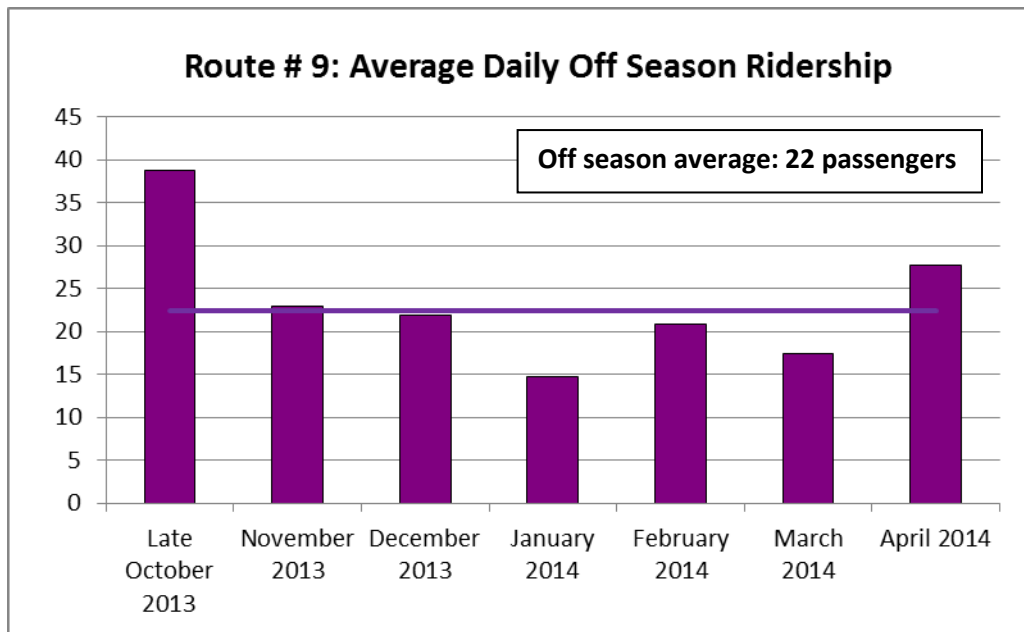


Figure 22. Route 9 Average Daily Off Season Ridership



## Route #10 Tisbury Park-and-Ride

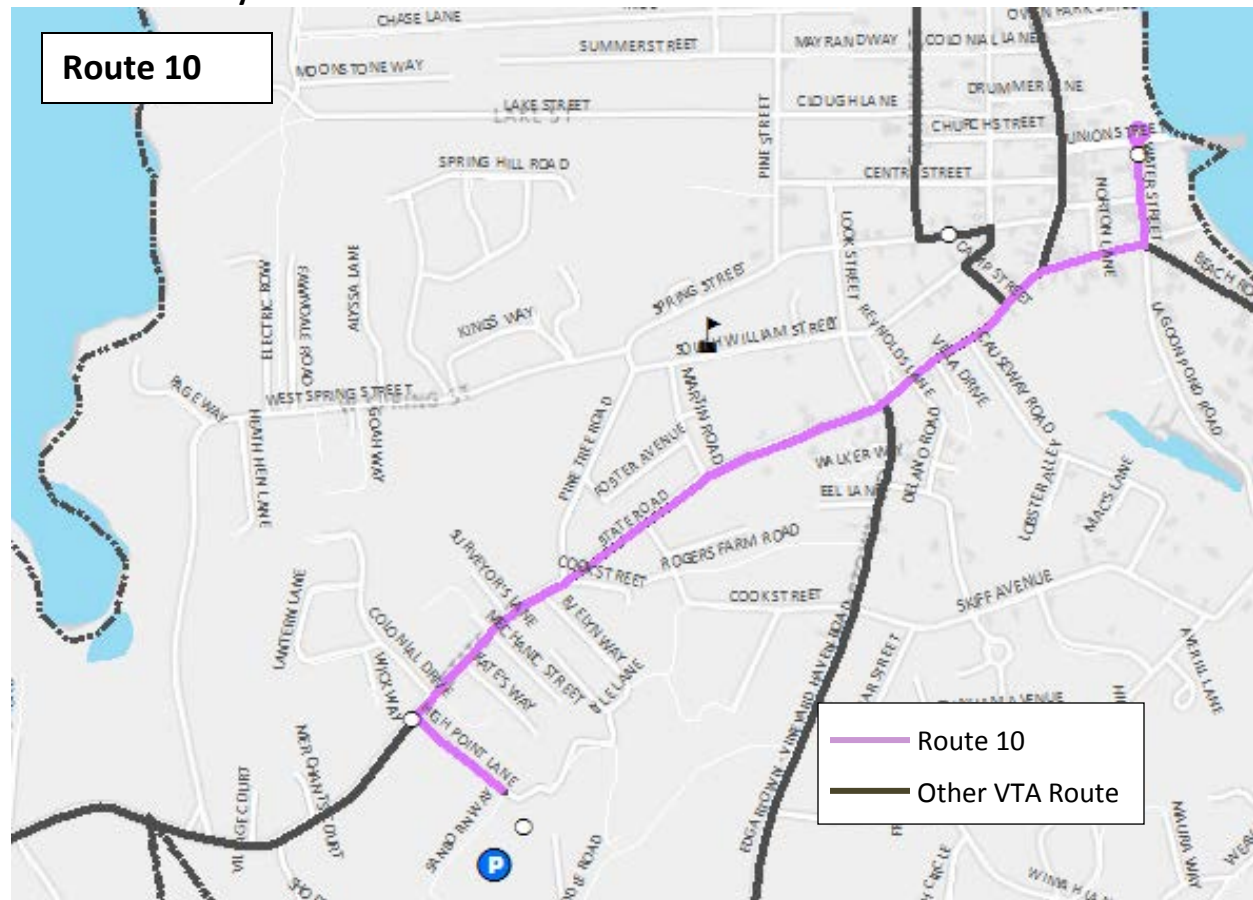


Figure 23. Route #10

### Fixed Route, Year-Round

Route #10 is a park-and-ride service. This route is vital to the region, linking the Steamship Authority Terminal in Vineyard Haven to the Town of Tisbury's Park-and-Ride Lot. The SSA Terminal is the primary year-round port, linking the Island to the mainland. The Lot has been improved to a capacity of approximately 400 vehicles. The Steamship Authority partially funds the cost of the service.

In addition to its primary role, Route #10 provides frequent service connecting the Town's traditional downtown with the business district along State Road. This Route also flexes to the Council on Aging upon request.

Route #10 is operated by one dedicated vehicle throughout the year on a fixed timetable. Round trips are 15 minutes. Challenges for running this route involve a single vehicle serving two masters – both arriving ferry passengers as well as departing passengers for the same ferry – along with frequent heavy traffic along the corridor and limited alternate route options.

Route #10 varies the least from season to season of all the VTA's routes. The peak season averages 415 riders per day. The shoulder season averages 368 riders, with June as busy as either July or August. The off season Route #10 carries 248 passengers daily.

Route #10's colors are red and white.

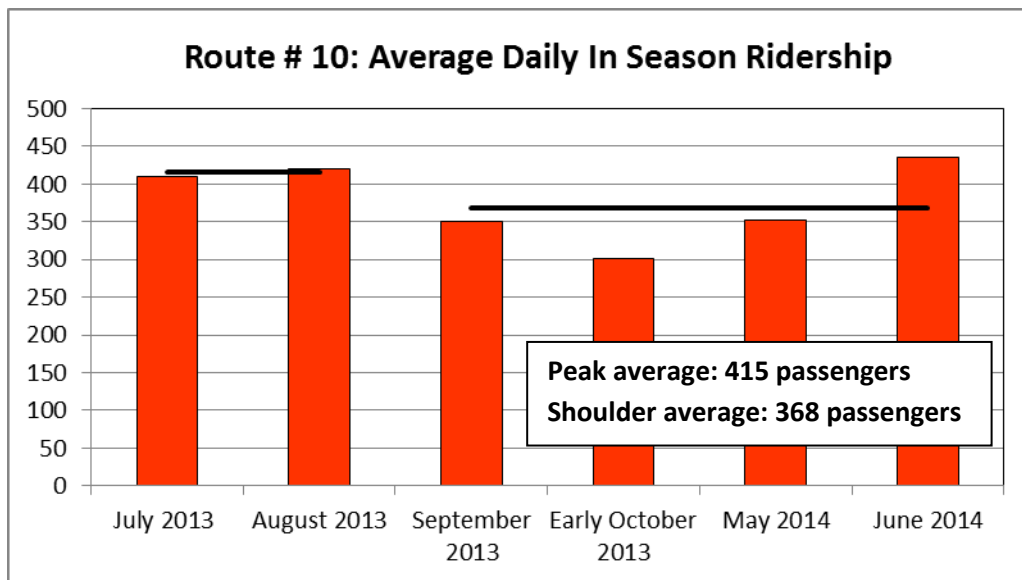


Figure 24. Route 10 Average Daily Peak and Shoulder Season Ridership

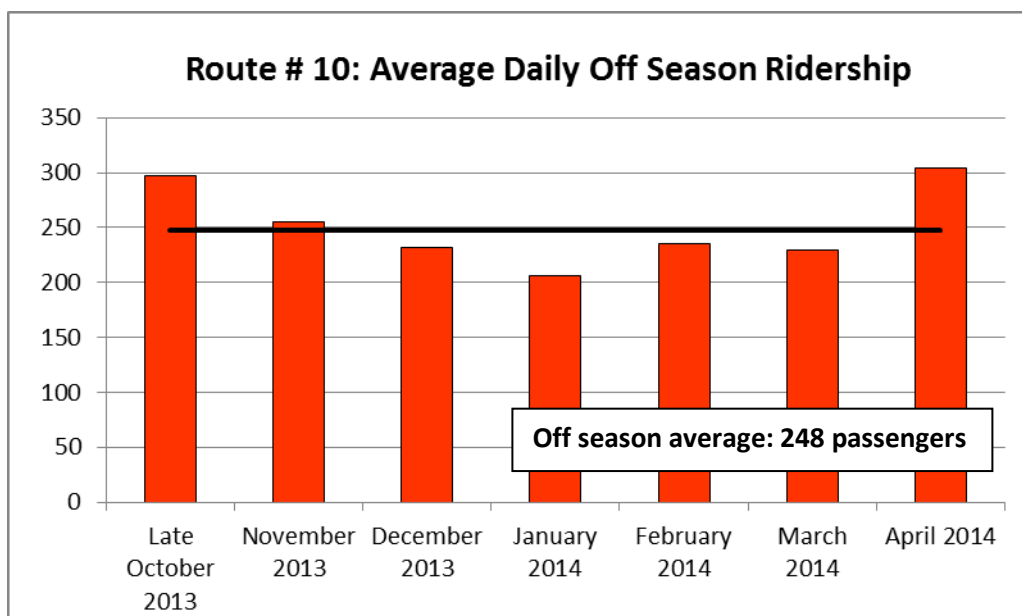


Figure 25. Route 10 Average Daily Off Season Ridership

## Route #10A West Chop Loop

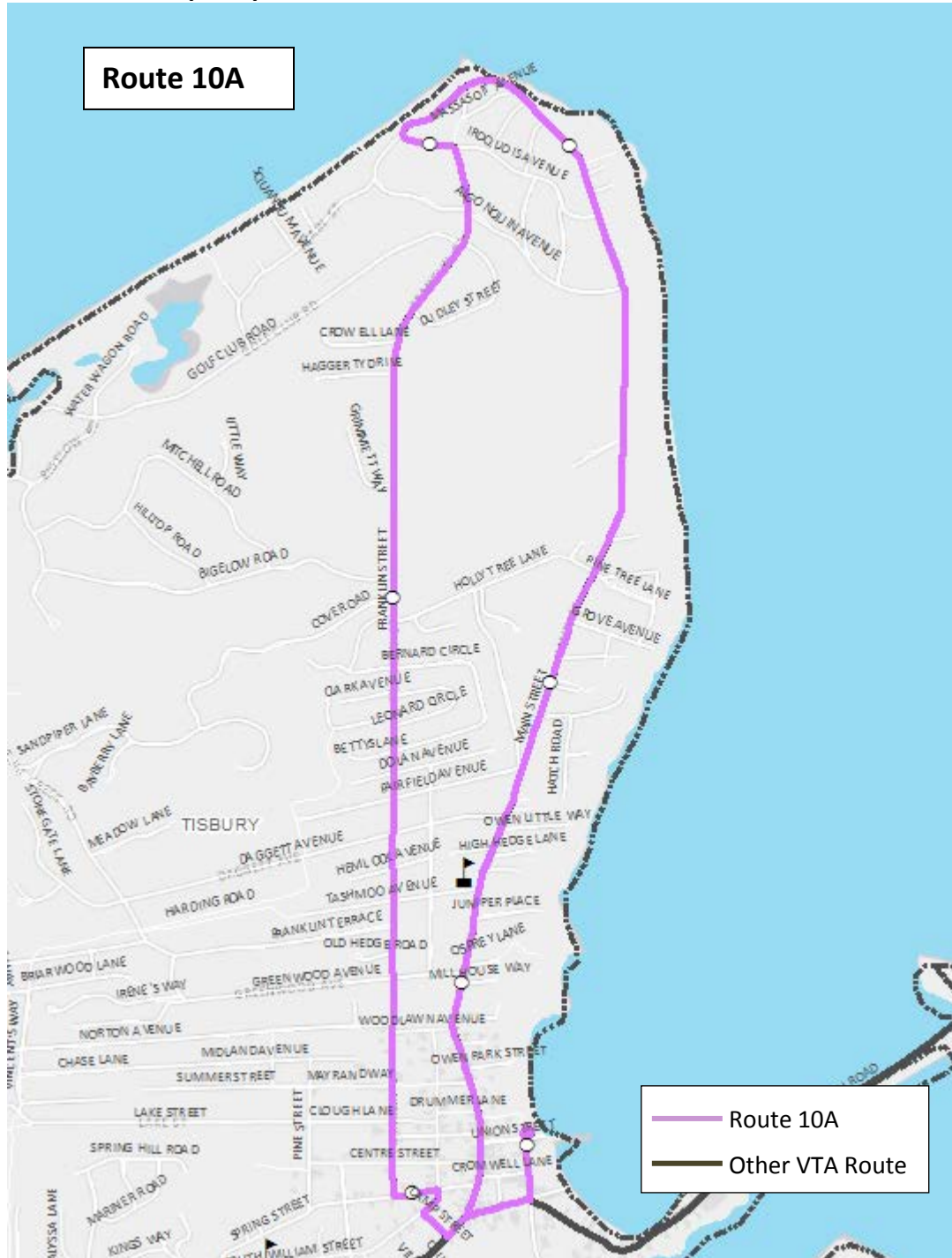


Figure 26. Route #10A

Fixed Route, Year-Round

Route #10A is a short loop route serving the West Chop neighborhood of Tisbury (Vineyard Haven). The route is based at the popular Vineyard Haven SSA Terminal hub. The route travels by the businesses of

Main Street and through residential neighborhoods. The Tisbury Library, an inn, the West Chop Lighthouse, West Chop Tennis Club, churches, Tisbury Town Hall and two elderly housing complexes are potential destinations.

Connecting routes: Route #1, #2, #3, #10 and #13 in Vineyard Haven

During the peak season, Route #10A shares one vehicle with Route #2. Route #10A was originally paired with Route #10, and also has the colors red and white. The routes were separated when Route #10 was mandated to have a dedicated vehicle year-round.

A Route #10A round-trip is scheduled for 15 minutes, making it the VTA's shortest route. Ridership is modest for this residential area, with 22 peak season daily riders and 11 shoulder season daily riders. Unlike other routes, there is no evening service at any time of year. The off season daily ridership average is 7 passengers.

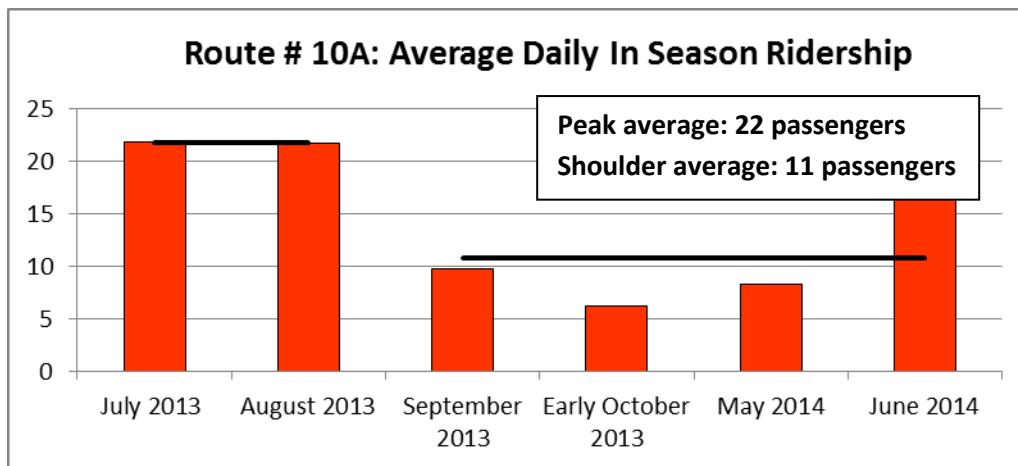


Figure 27. Route 10A Average Daily Peak and Shoulder Season Ridership

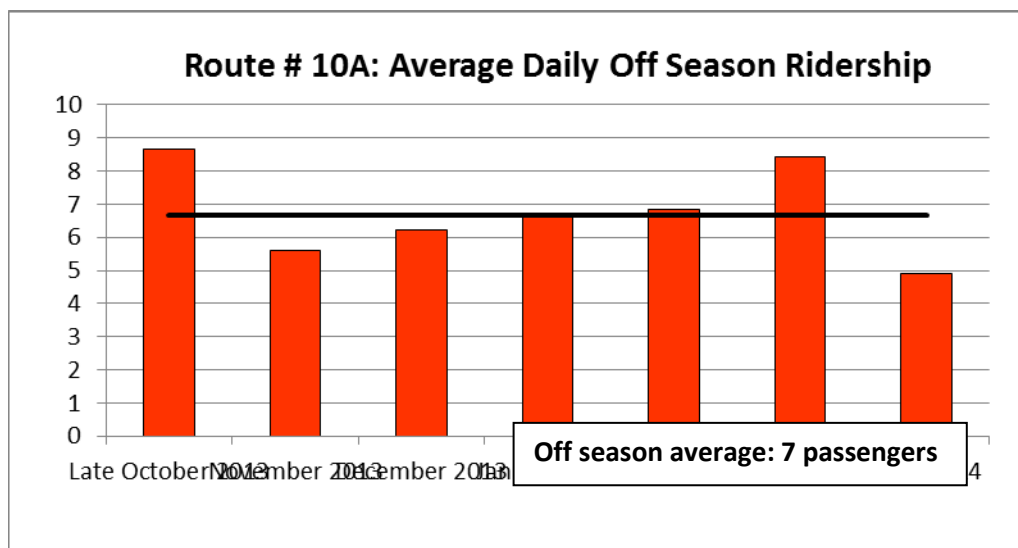


Figure 28. Route 10A Average Daily Off Season Ridership

## Route #11 Downtown Edgartown

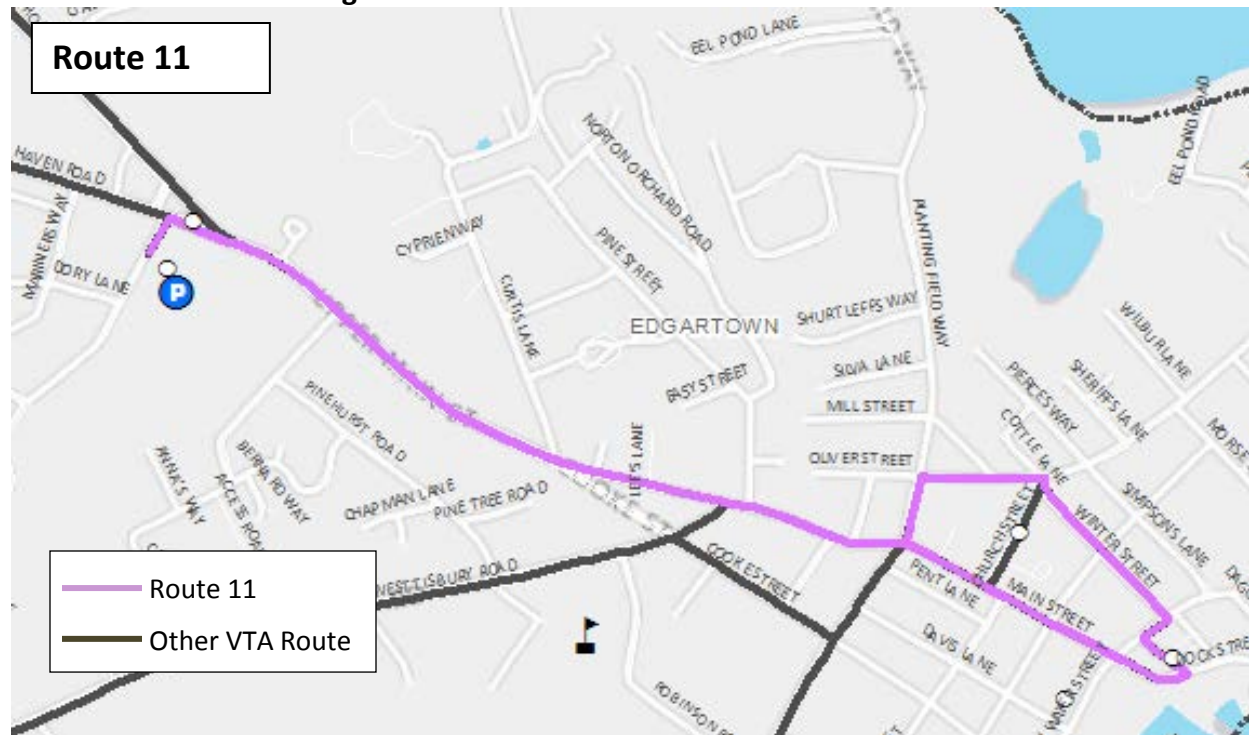


Figure 29. Route #11

### Fixed Route, Seasonal

One of the VTA's original routes, Route #11 serves Edgartown's Upper Main Street and Main Street corridor. The terminal points are the Edgartown Harborfront and the satellite park-and-ride lot located off Edgartown-Vineyard Haven Road at the gateway to the Town. Various businesses, including the Island's largest grocery store, and residences line the route. There is no fare on this Route.

Route #11 is the only Edgartown route to not touch the popular Church Street hub, but it passes the top of the street as it continues down Main Street.

Route #11 is overlapped by inter-town routes, so it is needed only seasonally. The operation of Route #11 varies from an interline with Route #8 in the shoulders, to a dedicated vehicle during the peak months. An additional vehicle is needed for the Fourth of July holiday festivities in Edgartown. Route #11 is operated in headway mode during the peak months, and on a fixed timetable all other months.

The ridership for Route #11 can be closely tied to the period of parking and traffic enforcement in downtown Edgartown. Route #11 serves an average of 319 passenger trips during the peak months, when 15 to 20 minute frequent service is offered. During the shoulder season months, Route #11 operates twice an hour (alternating 15 & 45 minute intervals), Route #11 carries 59 riders daily.

Route #11 is distinguished with the colors gray and black.



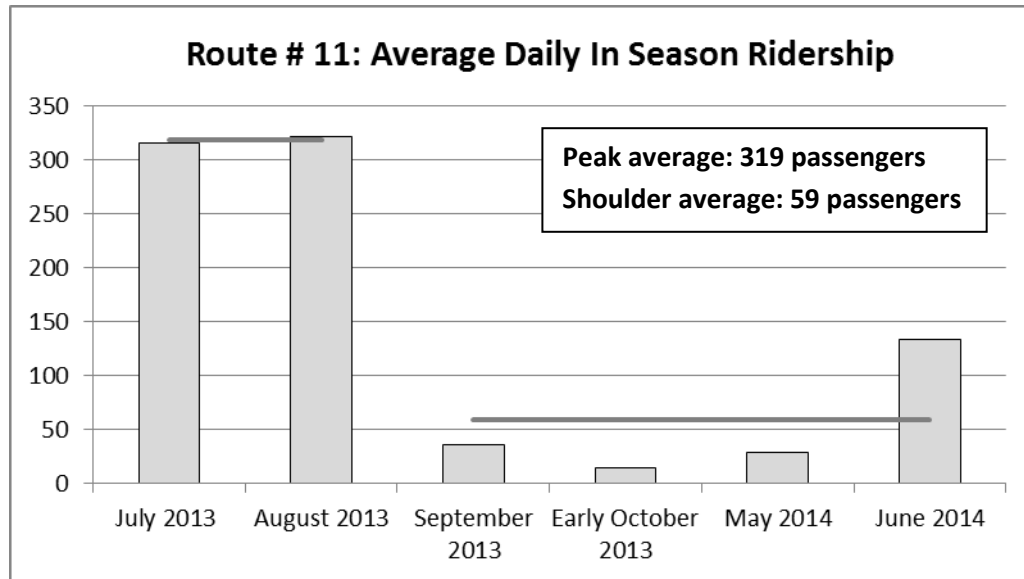


Figure 30. Route 11 Average Daily Peak and Shoulder Season Ridership

## Route #12 Chilmark Inns / Sunset Bus

Fixed Route, Seasonal

Route #12 serves multiple transportation roles for the rural Town of Chilmark. Originally conceived as parking mitigation for the Town's beaches (trips originating from Town center and scattered inns to Lucy Vincent Beach and Squibnocket Beach), the route now also serves an important role connecting the VTA's two outermost routes - #4 and #5. The route has evolved based on changing needs and priorities. In FY 15, the Town has supported an expansion of the route to include evening service between a Town parking lot and the popular Menemsha village, a very popular sunset viewing location.

Route #12 serves the small Chilmark town center, making its stop at the Chilmark Community Center. All trips are advertised as fair weather only.

Connecting routes: Routes #4 and #5 in Chilmark

Due to its varied service trips, standard frequency statistics do not apply to all stops on this route. The timed transfer connection between Route #5 and Menemsha does occur at a set time every 60 minutes.

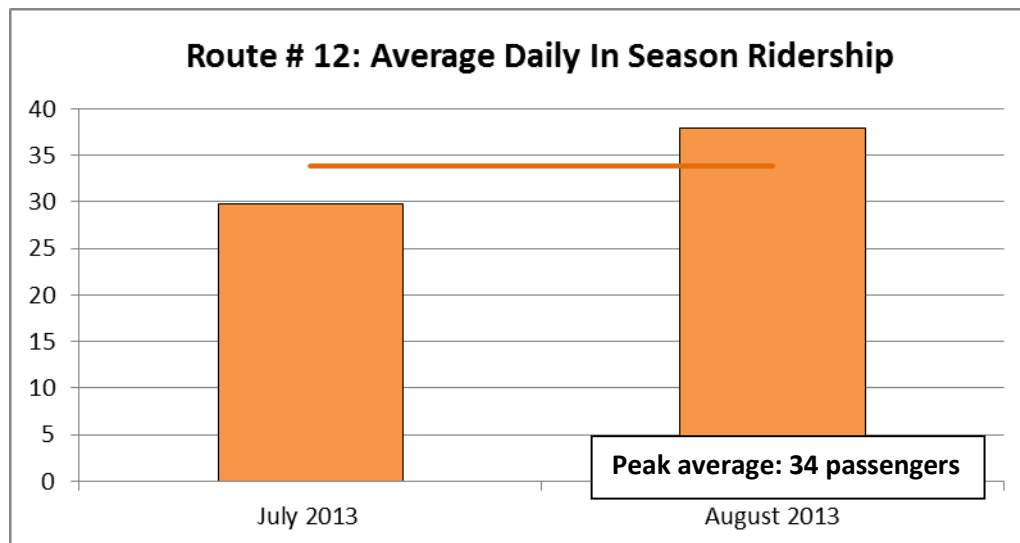


Figure 31. Route 12 Average Daily Peak Season Ridership

### Route #13 Edgartown – Oak Bluffs – Vineyard Haven via Beach Roads

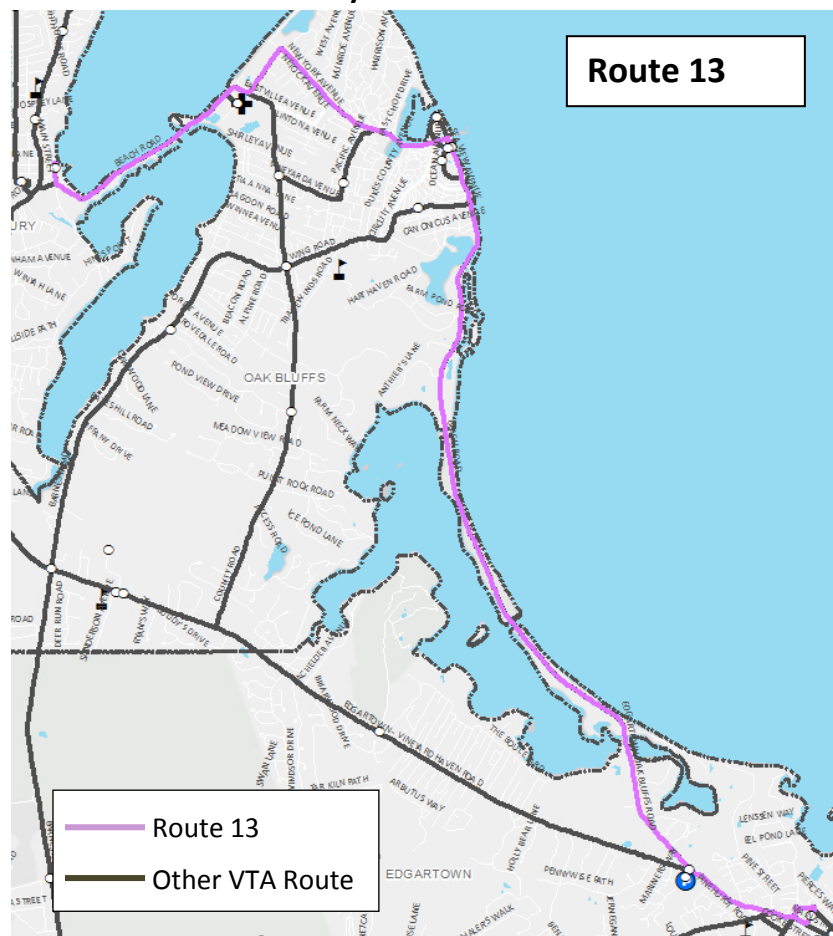


Figure 32. Route #13



## Fixed Route, Year-Round

Route #13 connects all three of the down-Island town centers via one of the most scenic water view route. Its terminal stops in Vineyard Haven and Oak Bluffs are located at the Steamship Authority Terminals, which are the Island's primary gateways to the mainland.

Route #13 is popular for all of the VTA's customer base - residents, workers and tourists alike. Even with additional resources being assigned, passenger demand for Route #13 can exceed capacity at times, and the VTA employs additional staff for ticket sales at all four major stops (two in Oak Bluffs across the street from each other) to support the operation of the route.

In between the town centers, intermediate destinations for Route #13 are multiple beaches, tourist attractions such as the "Jaws Bridge", and Martha's Vineyard Hospital.

Connecting routes:

- Route #1 in Vineyard Haven and Edgartown
- Routes #2, #3, #10 and #10A in Vineyard Haven
- Routes #7 and #9 in Oak Bluffs
- Routes #6 and #8 in Edgartown

Similar to Route #1, nearly all Route #13 trips are served by vehicles dedicated to the route. As many as six vehicles are working together on Route #13 on a peak day. The VTA offers 15 minute headway service from 10:30 AM to 6:00 PM daily in the peak season, and reverts to a fixed schedule for all other times (30-60 minute frequency). The shoulders of the off season features two Route #13 vehicles, with a single dedicated vehicle during the winter months.

The operation of Route #13 is affected by a high ratio of loading time and traffic delay time as compared to actual travel time. During peak periods, the VTA's largest buses disembark and welcome aboard the full capacity of passengers. Though there are some residential neighborhoods along Route #13 in Oak Bluffs, there are far fewer intermediate stops along Route #13 as Route #1.

The management of Route #13 requires balancing vehicle spacing (as many as 6 or 7) to maintain the headway times promised to the public. At the same time, passenger demand in excess of two vehicles' capacity often forms in Oak Bluffs mid-day and Edgartown at the end of the day, and this need also has to be met, making vehicle spacing not the only priority.

Route #13's ridership is strong enough to consider it the "money" route for the VTA. The peak daily average is 4,463 passenger trips. The shoulder season average is 1,905 passenger trips. During the Off season Route #13 carries 292 riders.

Route #13 can be readily identified on timetables and signs by its bright yellow and black colors.

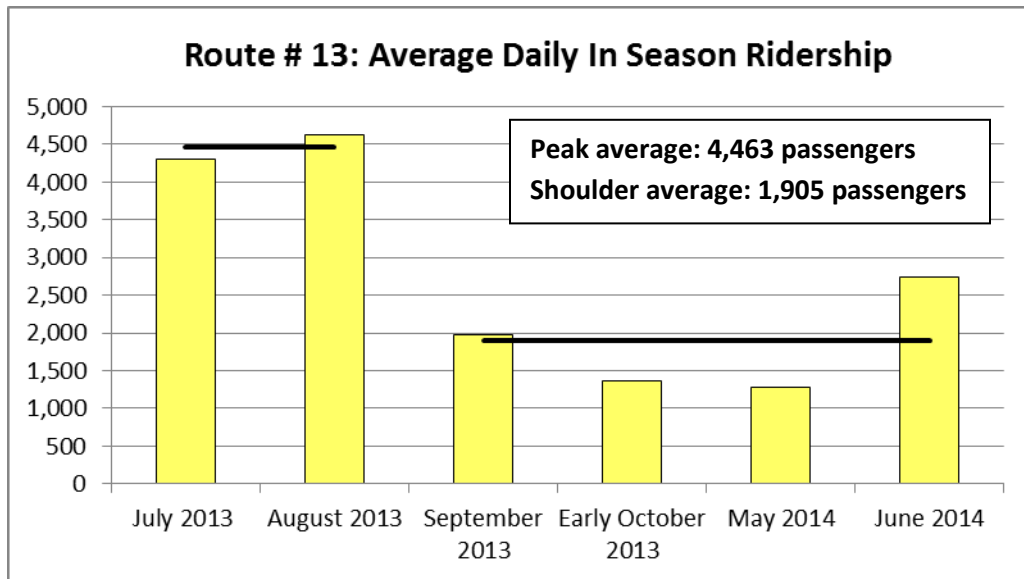


Figure 33. Route 13 Average Daily Peak Season Ridership

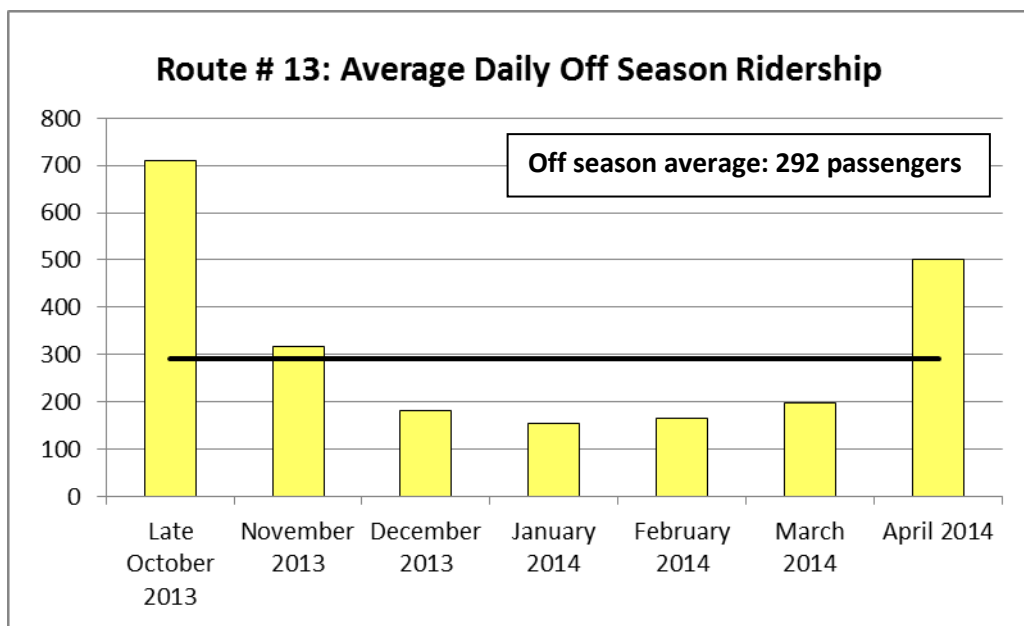


Figure 34. Route 13 Average Daily Off Season Ridership

## 3.2 Ridership

- VTA ridership is based on year-round service.
- Annual ridership is over 1.2 million passengers.
- Ridership has increased 60% from FY 2003 to FY 2014.
- Ridership has increased 11% from FY 2009 to FY 2014.

- Peak month ridership (August 2014) was over 300,000 riders.

The VTA operates year-round, seven days a week, with the exception of Thanksgiving and Christmas. In the most recent full fiscal year (2014), the VTA recorded over 1.2 million passenger boardings.

Since its expansion into Island-wide and year-round service in 2005, the overall VTA ridership has increased steadily with modest annual increases in transit service. These expansions of service have been focused on particular trips on established routes where an unmet need was demonstrated by the travelling public. The increases are also consistent with the Vineyard's trend of increasing population, both year-round and seasonal.

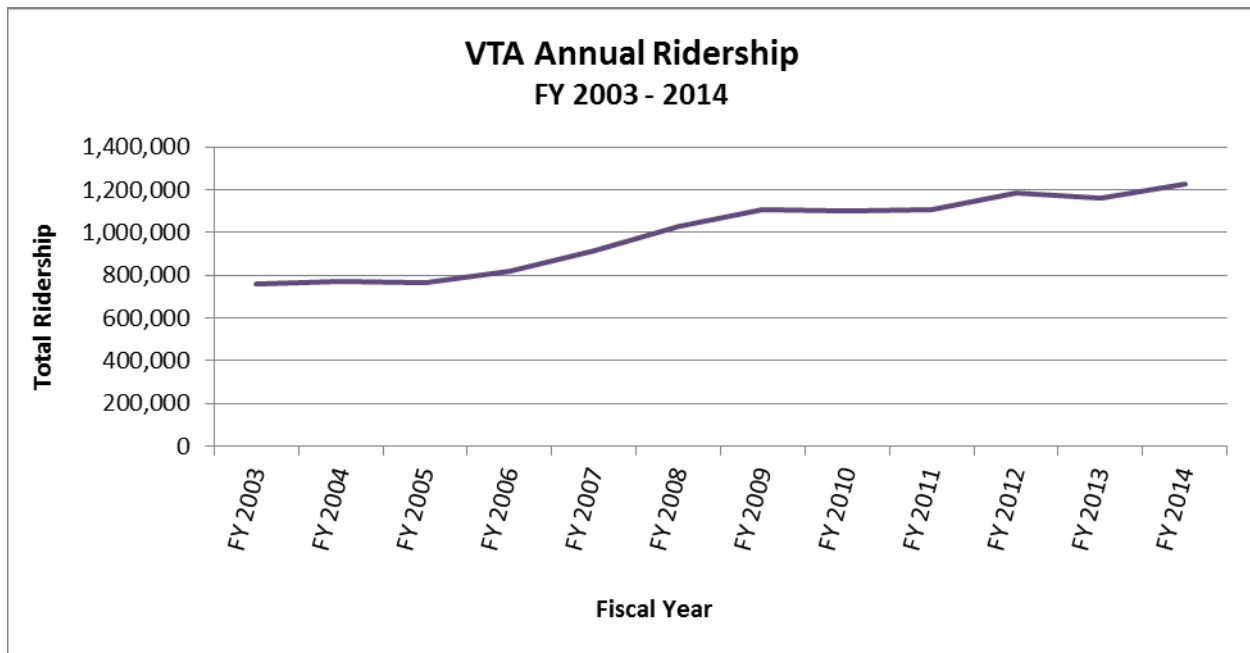


Figure 35. Ridership data as reported in VTA Annual Reports, FY 2003-2014.

The VTA's services from its inception in 1980 through the mid-1990's were limited to a few seasonal in-town and beach shuttles and park-and-ride services. When the need for more substantial traffic mitigation became widely apparent, the VTA evolved into the modern era of providing a comprehensive Island-wide year round route system with inter-connecting routes. Ridership growth in these early development years was very strong, indicating a latent demand for transit service in the region.

This pattern of expanding into latent demand has continued through the VTA's recent history. Each expansion of service, after a relatively short break-in period, has been followed by ridership growth. In most cases, new trips were added to create additional connections with other routes, so the expansions



not only sought new riders, but also expanded the viability of public transportation for existing users of the system.

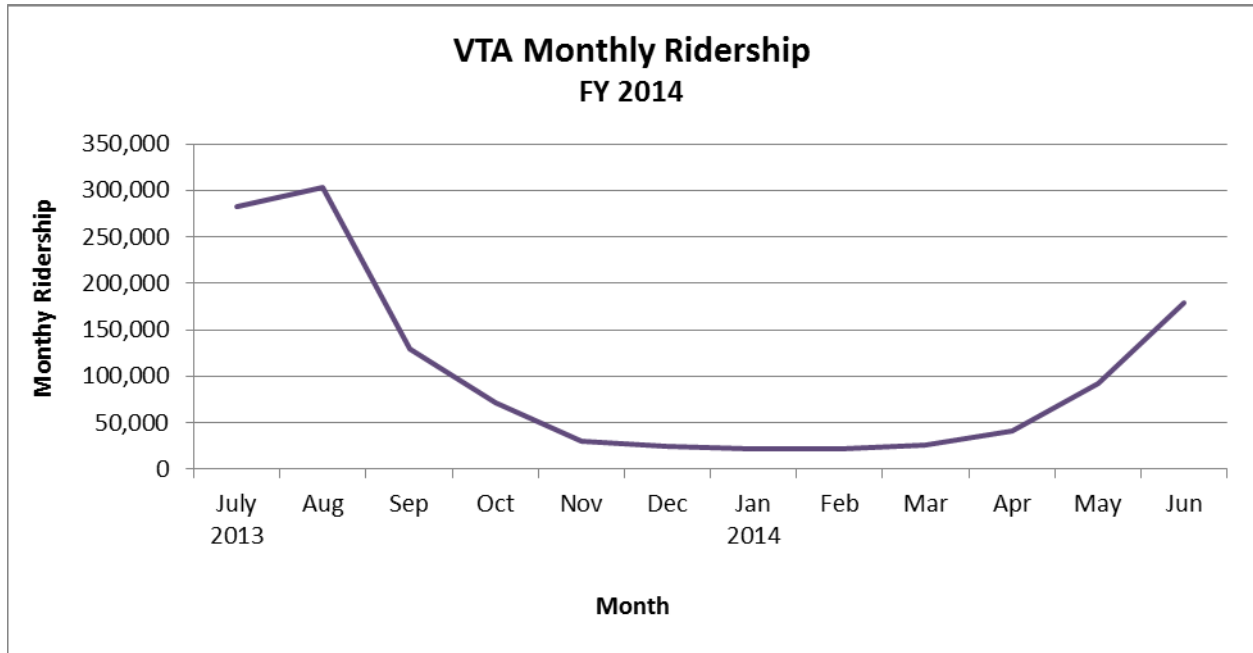


Figure 36. Monthly Ridership

Customer feedback frequently highlights appreciation for the VTA operators' common practice of radioing each other to ensure passenger transfers between vehicles and routes. Such practices create a culture of customer-service on VTA buses that helps attract repeat customers.

### 3.21 Peak and Shoulder Season Ridership

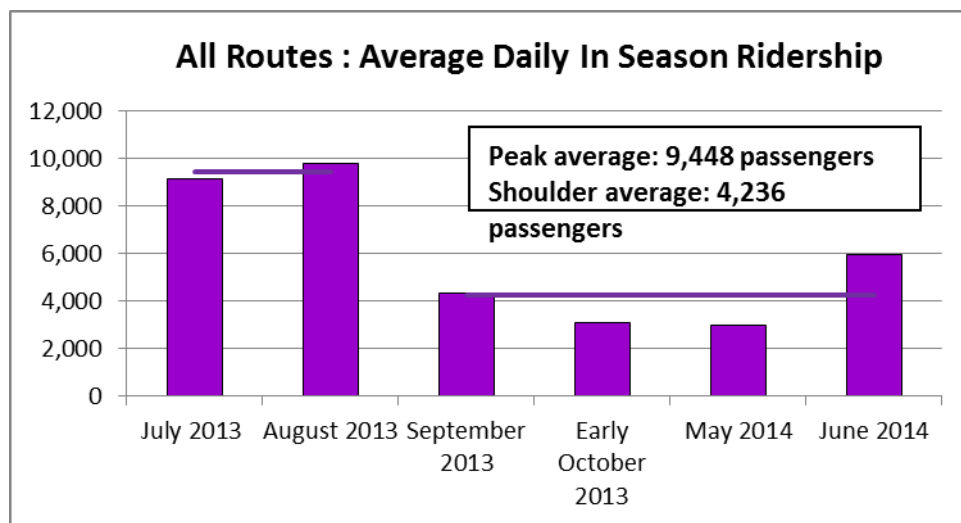


Figure 37. Average Daily Peak and Shoulder Season Ridership, All Routes

The VTA carried an average of 9,448 passengers for the peak season months of July and August 2013. A vast majority of the VTA's passenger load is carried during the first two months of each fiscal year. Average daily system ridership for the combined shoulder season months was 4,236 passengers.

The VTA is funded as a rural transit authority, consistent with its off season character. However, this characterization creates a challenge for the VTA during the peak season demand, which rivals that of small urban cities in New England. Peak demand is roughly twelve times greater than off-peak demand. This creates challenges that range from maintaining a vehicle fleet throughout the year to training seasonal staff.

### 3.22 Off Season Ridership

Off season figures in absolute terms are a fraction of those for the peak season due in part to the reduced level of service that VTA is able to offer. It is difficult to provide attractive transit service with the reduced amount of resources available to VTA during the off season period, although that is an important goal for the agency so as to foster a year-round ridership base.

When viewing the VTA's off season ridership, the VTA's operational practice of route interlining should be taken into account. A distinct benefit for passengers, where transferring between buses often means simply staying on the same bus during a layover in the wintertime, also means that the ridership is collected only for the first route of the trip. A less coordinated route system would count the same rider multiple times via transfers to complete a longer trip.

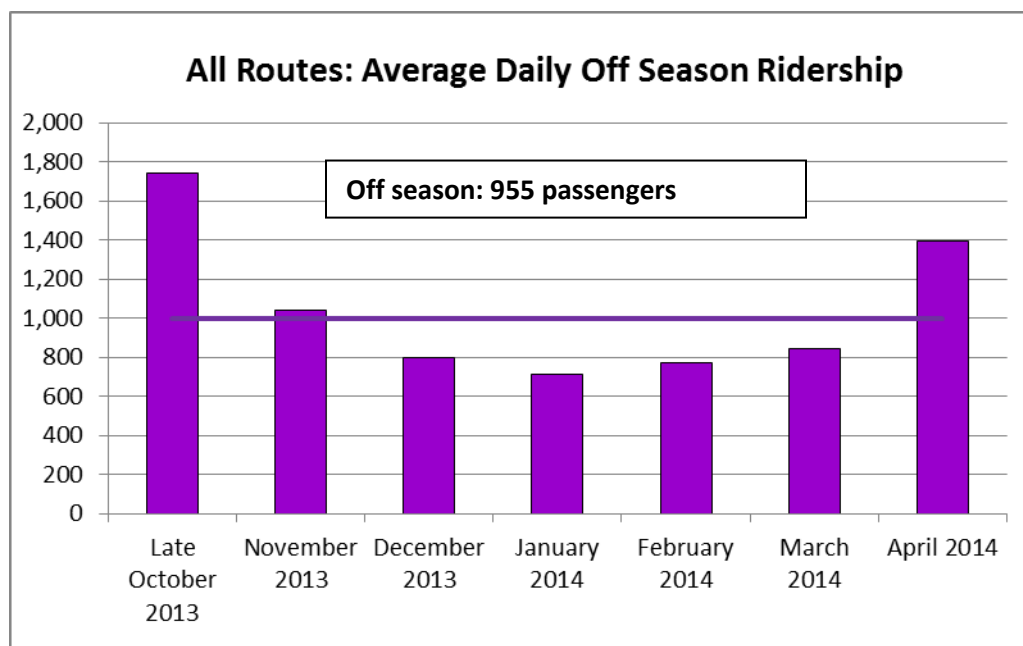


Figure 38. Average Daily Off Season Ridership, All Routes

Average daily system ridership for the off season during FY 2014 was 995 passengers. November is the closest month to this average, with the following four months representing the Island's slowest part of

the year. Late October and April are substantially busier, representing the shoulder periods of the off season. Routes #1, #10 and #13 carry a majority of the VTA's off season passengers.

### 3.23 Ridership Growth

During the current VTA uptrend in overall ridership, the various routes experienced a range of individual growth rates. Route #7 in Oak Bluffs has experienced the highest rate of growth in the past two years. The VTA's three most popular routes (#1, #10 and #13) all saw at least 4% growth, consistent with the overall growth rate.

VTA ridership is recorded through the farebox system, which requires drivers to manually enter their route and other parameters. Certain routes that are usually interlined are grouped together for ridership purposes because of the likelihood of passengers being erroneously recorded for a previous trip's route rather than the current one.

The minor negative growth rate of Routes #3, #4, #5 and #6 is out of line with the other VTA routes likely due partially to the impact of a Presidential visit during the prime week of August 2013. In that particular year, the President stayed in a residence close to South Road, which led to the closure of a section of the road for security reasons. This had a major impact on the up-Island rotation, with buses re-routed and revised timetables. In other years, the Presidential visit did not have such a notable impact on the VTA's operation.

Route #8's data indicates a 3% decrease since FY 2012. South Beach is the primary destination on this route, so its ridership is highly susceptible to being affected by fair or inclement weather, or even the threat of stormy weather.

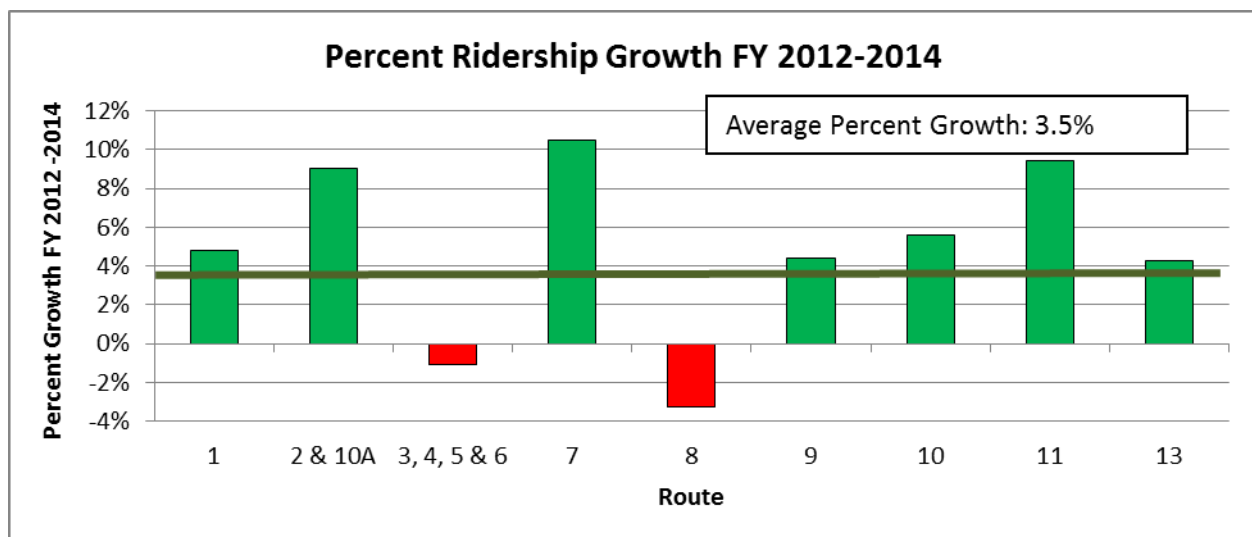


Figure 39. Percent Change in Ridership, FY 2012 – FY 2014

Route #12 was not included in the graph presentation above because its negative percentage growth rate was out of scale with the other data points. Route #12's ridership decreased 32%, or 632 riders in

absolute terms. Since the service runs strictly July 1 – August 31, the effect of the number of fair weather weekend days potentially creates dramatic swings in the ridership data.

## 3.3 Service Operations

### 3.31 Revenue Hours

- Over 62,000 annual and over 18,000 peak season revenue hours.
- Increases due to service expansions to address peak-period capacity shortages on Route #1 and Route #13.
- Notable increases in FY 2014 due to re-routing for Presidential visit special event, which required more vehicles to go greater distances and maintain frequency.
- VTA's routes have varying ranges for times of operation.

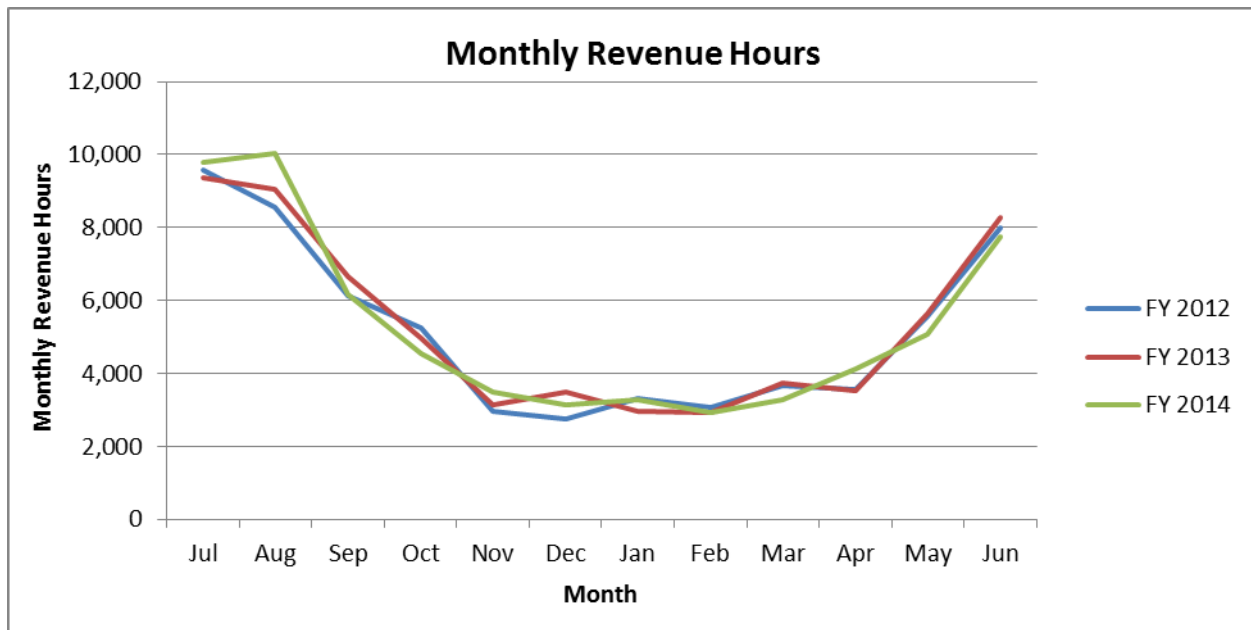


Figure 40. Total Revenue Hours by Month

### 3.32 Revenue Miles

- Over 1.1 million annual and over 327,000 peak season revenue miles.
- Minor increases due to service expansions and re-routing up-Island routes during 10-day Presidential visit to the Island in August 2013.
- Revenue miles data consistent with revenue hours data, tracing service region's seasonality.

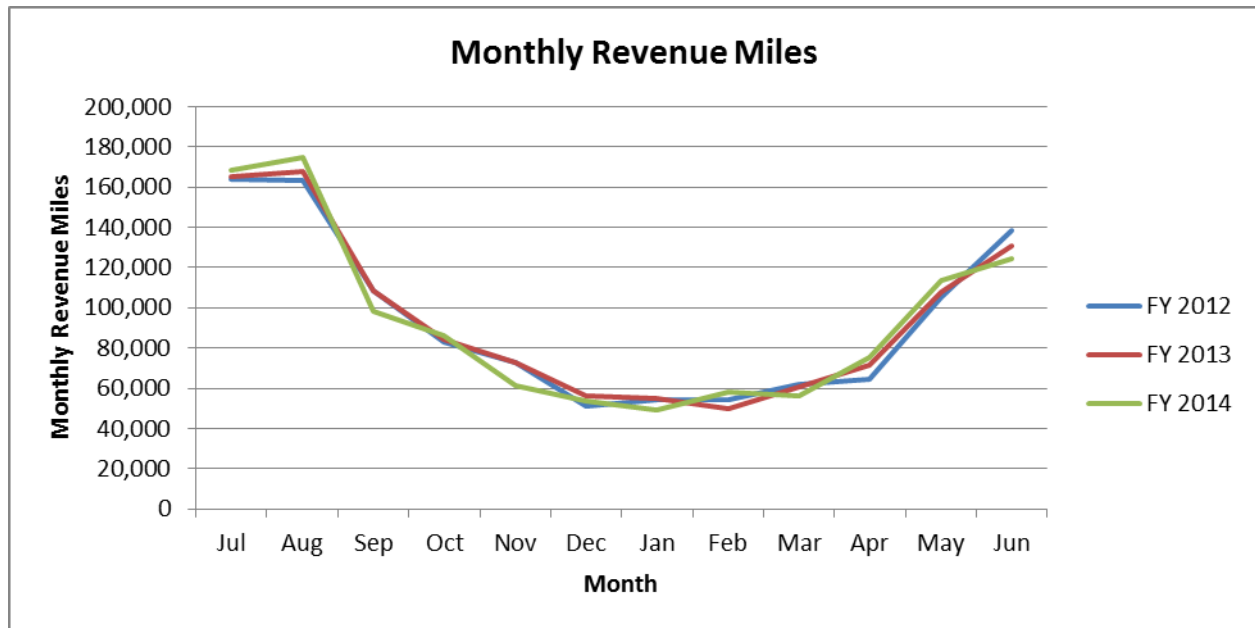


Figure 41. Total Revenue Miles by Month

### 3.33 Operating Costs

- \$3.9 million operating cost annually.
- The hourly operating cost in FY 2014 was \$62.73 per revenue hour.
- Operating cost correlates with revenue hours and not revenue miles.

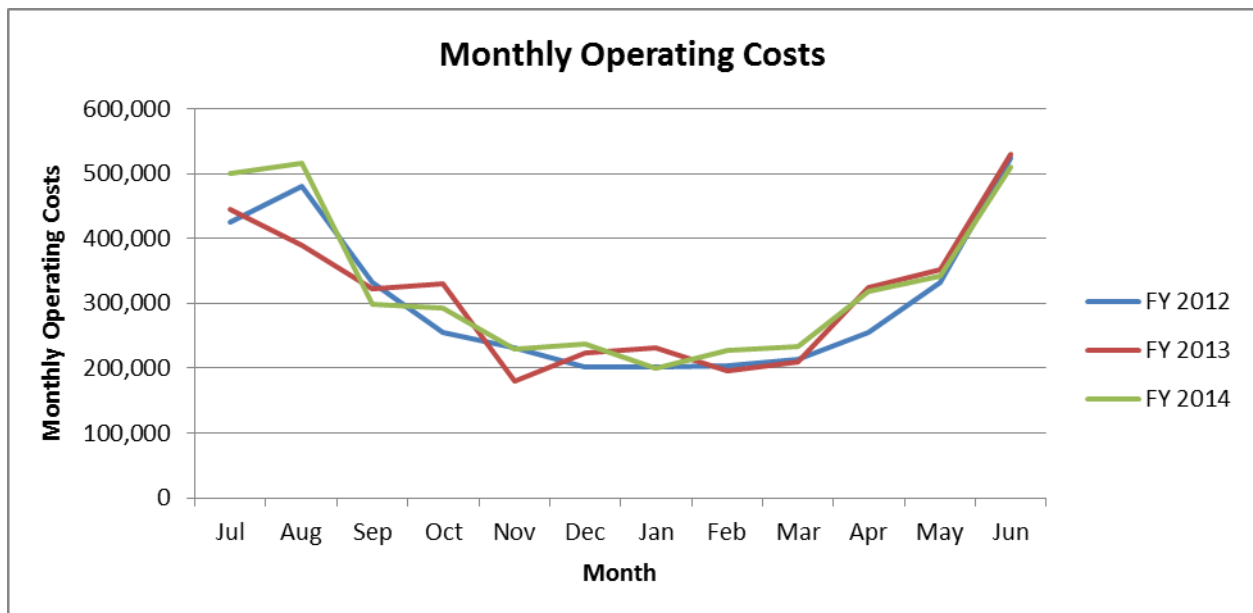


Figure 42. Total Operating Cost by Month



VTA operating costs peak during the busiest months of June, July and August at just over \$500,000 each of those months. The contrast between the peak season and off season months is less pronounced for monthly operating costs due to annualized expenses.

### 3.4 Service Productivity

#### 3.41 System Productivity

Productivity measures the ridership generated per unit of service (revenue hours or revenue miles) and provides an understanding of the effectiveness of a route or transit network.

- The routes with the most revenue hours exhibit the greatest productivity.
- Overall riders per revenue hour was 19.98 for FY 2014.
- 30.87 riders per revenue hour for peak months in FY 2014.
- Because of the effect of Route #13's productivity on the overall average, the average of the routes (giving equal weight to each route) is also presented. This value is 21.04 riders per revenue hour for the peak months.

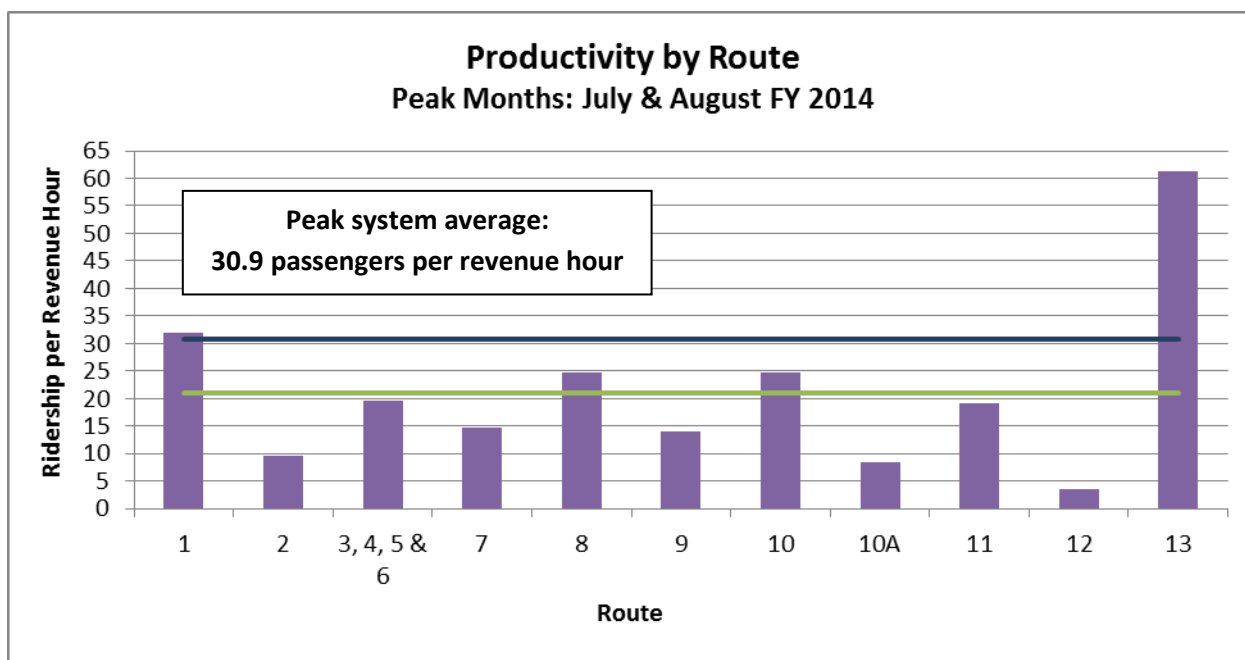


Figure 43. Productivity by Route, Peak Service

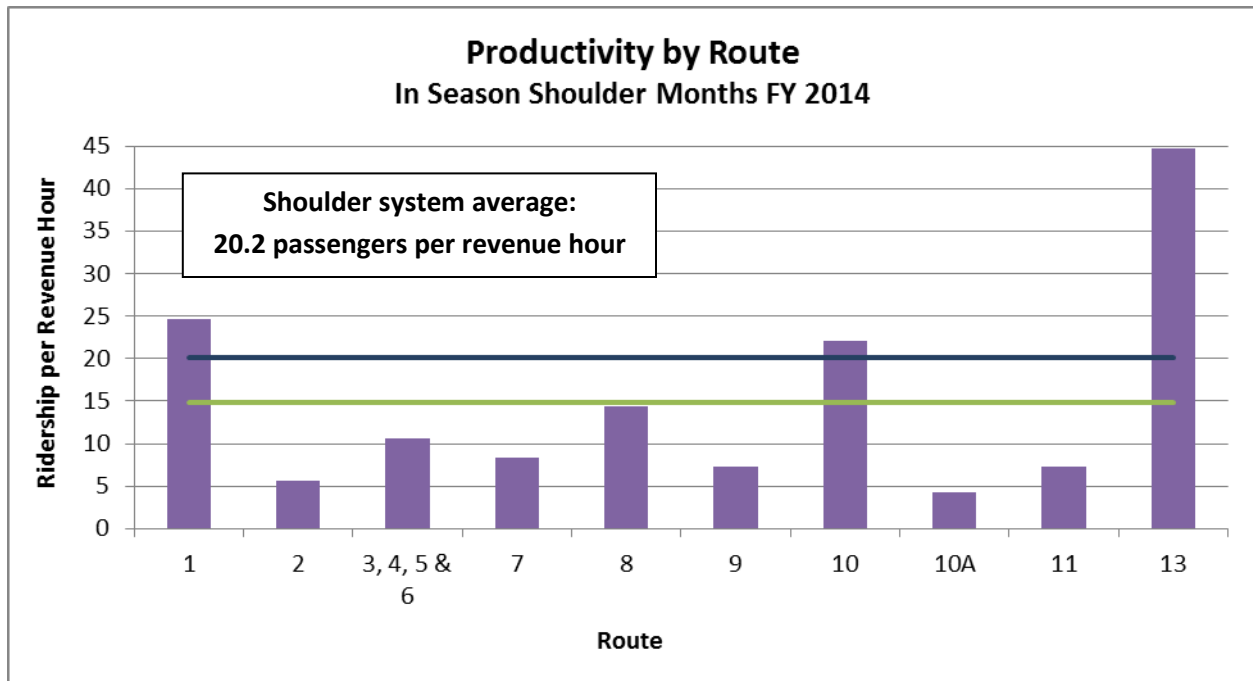


Figure 44. Productivity by Route, Shoulder Service

- Overall average of 20.17 riders per revenue hour during the peak season shoulder months.
- Overall average of 8.70 riders per revenue hour during the off season.

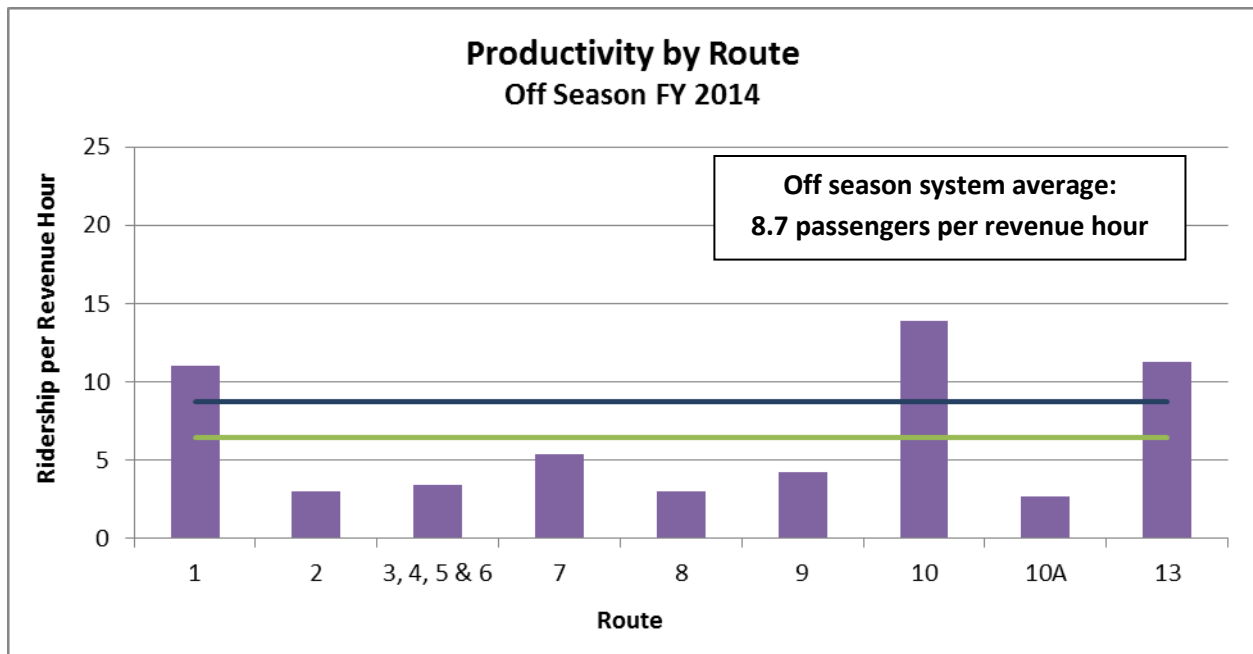


Figure 45. Productivity by Route, Off Season Service

### 3.42 Productivity Growth

- Overall productivity growth from FY 2012 to FY 2014 averaged 3.6%.
- Route #7 exhibited the greatest productivity growth in the past two years at 9%.
- Route #8's negative growth may be due to the effect of weather on a route with a public beach as the primary destination.
- Route #12 also experienced negative productivity growth during this period, with a value of -32%, which was not charted because it is far out of scale with the rest of the system. This route is evolving for the Town of Chilmark, and likely will grow now that the Town has committed more resources to supporting the route's mission with a Town lot and marketing.

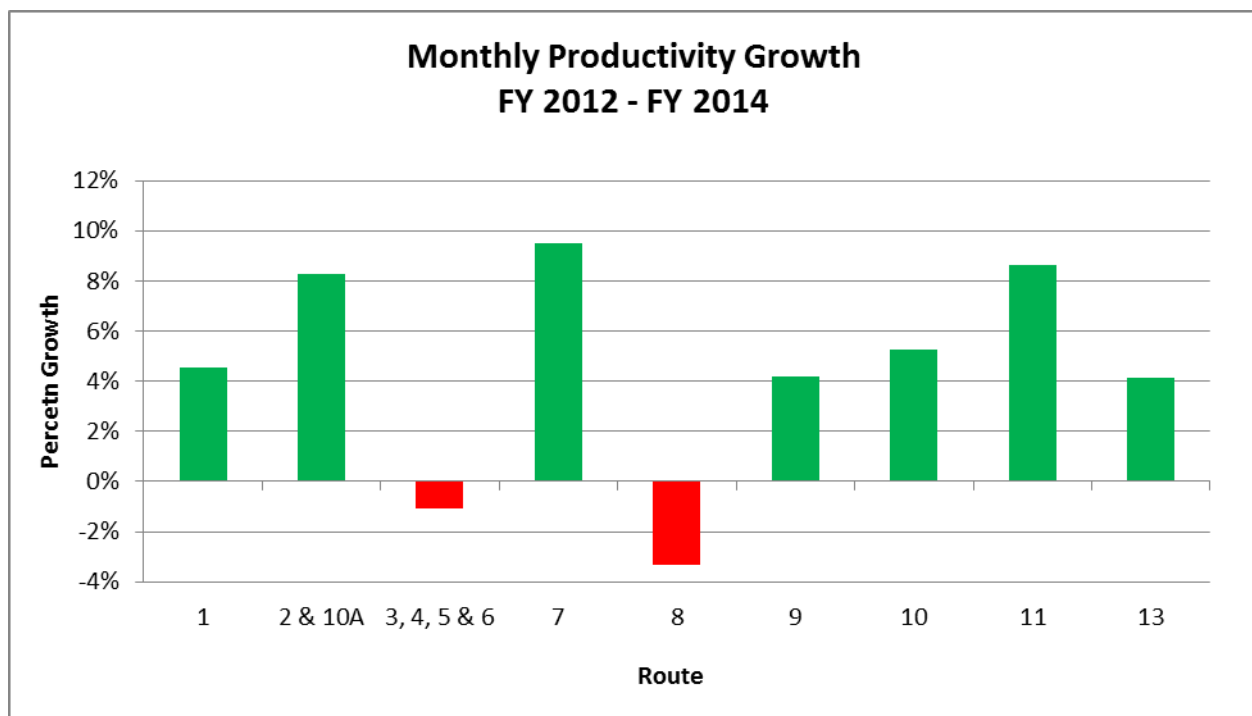


Figure 32: Percent Change in Monthly Productivity, FY 2012 – FY 2014

## 3.5 Financial Performance

### Farebox Recovery Ratio

The farebox recovery ratio measures the portion of operating costs covered by passenger fares. Higher ratios indicate higher cost-effectiveness and require fewer subsidies to operate service. The VTA's farebox recovery ratio has historically been one of the strongest in the Commonwealth.

- FY 2014 peak season farebox recovery was 63.9%.
- FY 2014 shoulder season farebox recovery was 40.4%.
- Overall annual farebox recovery was 34.4% for FY 2014.

### 3.52 System Subsidy per Passenger

Subsidy per passenger measures how much it costs to operate a route on a “per passenger” basis. It is calculated by subtracting passenger revenue from operating cost and dividing by the total number of passengers.

- The subsidy per passenger trip in FY 2014 was \$2.11.
- The subsidy per passenger trip has remained fairly steady over the past five years at an average of \$2.13.

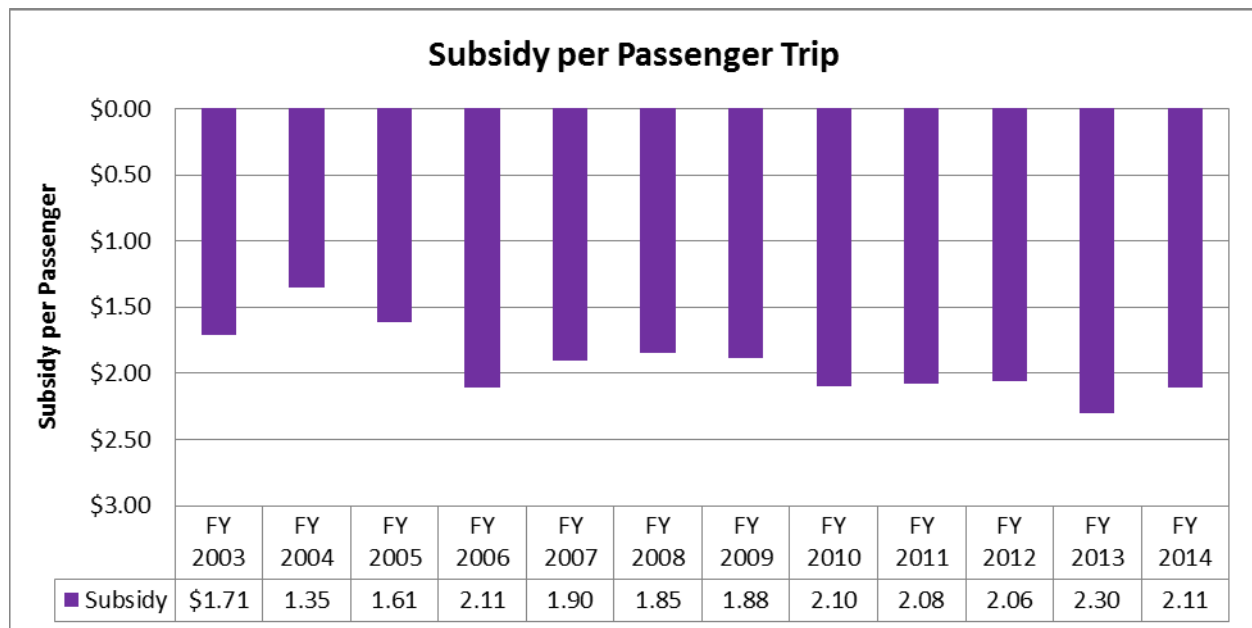


Figure 33: Annual Average Subsidy per Passenger Trip, FY 2003 – FY 2014

### 3.6 Service Frequency

Frequency refers to how often a bus serves a particular route. Service frequencies affect how passengers use the system and the flexibility they can have when making travel plans.

A table of the route frequencies is provided below. The VTA routes have a wide range of frequencies, depending on the route, from 15 minutes to 90 minutes during the peak season. Some routes have different frequencies during peak and non-peak periods of the day. In the off season, only Routes #1, #10 and #13 have dedicated vehicles and standard frequency departures. The other routes are served with interlined vehicles, and to minimize layovers, departure times have varied intervals. The overall average is provided as an approximation of trip frequency.

Table 2. Service Frequency by Route

Route	Peak Season	Shoulder Season	Off Season
#1 Edgartown-Vineyard Haven Road	15-30 min.	30 min.	30 - 60 min.
#2 West Tisbury - Vineyard Haven via Old County Road and Lambert's Cove Road	90 min.	90 min.	Varies - 100 min. avg.
#3 Vineyard Haven - West Tisbury via State Road and Old County Road	60 min.	60 min.	Varies - 70 min. avg.
#4 West Tisbury - Chilmark - Menemsha via North Road	60 min.	60 min.	Varies - 170 min. avg.
#5 West Tisbury - Chilmark - Aquinnah via South Road	60 min.	60 min.	Varies - 120 min. avg.
#6 Edgartown - Airport - West Tisbury	60 min.	60 min.	Varies - 90 min. avg.
#7 Oak Bluffs - Airport via County Road / Barnes Road	60 min.	60 min.	Varies - 90 min. avg.
#8 South Beach Route	15 - 30 min.	30 min.	Varies - 90 min. avg.
#9 Oak Bluffs - Hospital - Airport via Barnes Road / County Road	60 min.	60 min.	Varies - 90 min. avg.
#10 Tisbury Park and Ride	15 min.	15 min.	15 min.
#10A West Chop Loop	90 min.	90 min.	Varies - 80 min. avg.
#11 Downtown Edgartown	15 min.	30 min.	n/a
#12 Chilmark Inns / Sunset Bus	Varies	n/a	n/a
#13 Edgartown - Oak Bluffs - Vineyard Haven via Beach Roads	15 - 30 min.	30 min.	30 - 60 min.

Table 1: Service Frequency by Route

### 3.7 Route Performance

- A straight-forward analysis of the VTA data indicates that the system includes two inter-town routes and one park-and-ride service that carry a bulk of the total ridership.
- Travel demand on the VTA's busiest routes experience peak period capacity issues.
- The Island's transit routes were laid out to provide a comprehensive and accessible transportation network for the entire region. This also allows a complementary ADA service to be provided year-round.
- The fixed route service during the off season was initiated to support the concept of using alternative transportation year-round in the region. Gradual increases in the number of trips have been added, based on requests from customers. While the peak season runs at capacity in some areas, the potential for growth is greatest in the off season.
- Investment in the VTA's top performing routes would help the VTA meet the trending growing travel demand and maintain the current level of quality and reliable transit service.



- Routes such as Route #1 would likely yield continued positive productivity growth if resources were invested to reduce headway times from 20 minutes to 15 minutes.
- The VTA's most popular inter-town routes would be more appealing to modal choice riders with 30 minute rather than 60 minute frequencies.
- Investment in the VTA's 90 minute frequency routes to a more useful 60 minute frequency would give these routes a chance to attract more riders.

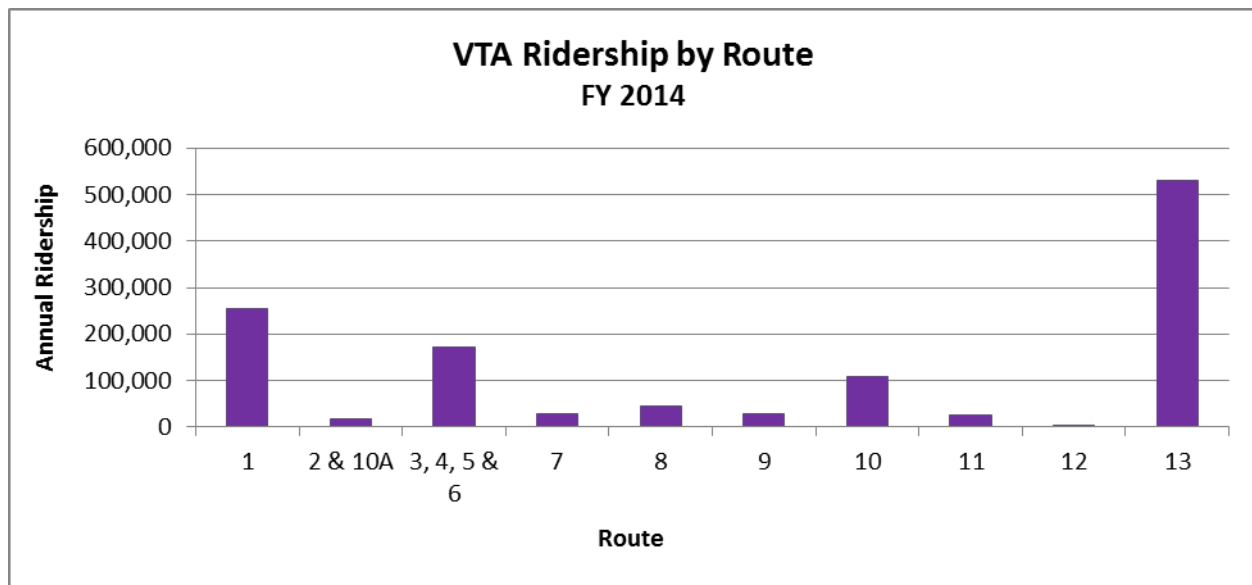
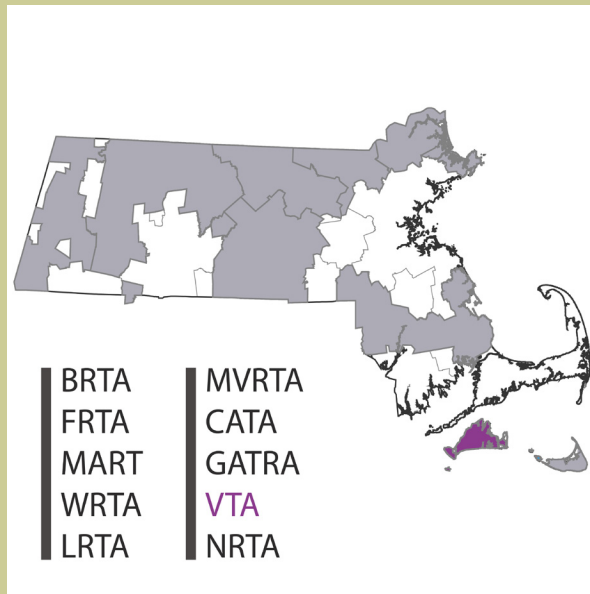


Figure 46. Ridership by Route, FY 2014

### 3.8 Summary of Key Findings

- Even with relatively consistent service revenue hours and miles, service performance has slightly increased in the most recent years examined.
- Route #1 and Route #13 connect the down-Island towns and are consistently the top two routes across all performance indicators.
- Routes with higher frequencies have higher productivities.
- Overall, total ridership continues an increasing trend, with both peak season and off season months setting new records for passenger trips in month-to-month comparisons.
- Ridership increases are system-wide. Exceptions are due to environmental conditions or are actively being addressed with the local town.
- The VTA's service levels have been closely matched to the Island's activity and travel demand, transitioning efficiently from peak season to off season with shoulder seasons in between.

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# Chapter 4

## Determining Demand

**AECOM / URS**  
**TMD**  
 Burke & Company



## 4. DETERMINING DEMAND

In order to evaluate a transit system and identify possible ways to strengthen it, it is important to understand who the riders of the system are, the surrounding market and how this market is evolving. Demographics, land use, and socioeconomics – all of which impact ridership – are constantly changing. To align service to meet the needs of these potential riders, it is important to understand the level of transit demand that they represent.

This chapter is divided into two parts. The first section examines regional job creation goals and employment needs to demonstrate the economic context of the region and to identify potential ridership growth areas. The second section seeks to determine how the Martha's Vineyard Transit Authority's current service aligns with its regional transit demand in the summer peak season and then in the winter off season.

### 4.1 Regional Job Creation Goals and Employment Needs

This section will examine economic growth in the region to determine job creation goals and employment needs as well as the role transit plays in accommodating these needs. In order to determine the region's job creation goals and employment needs, the Strategic Plan of the Commonwealth of Massachusetts Executive Office for Housing and Economic Development (EOHED) was reviewed to determine the overarching goals for the State. The Island Plan, Long Range Transportation Plan, Martha's Vineyard Economic Profile, and census data were also reviewed to determine economic context. This information was supplemented by site visits and interviews with Martha's Vineyard Transit Authority (VTA) Staff.

#### 4.11 EOHED Strategic Plan

The EOHED plays a crucial role in supporting the growth of the economy, vibrant communities, and competition for consumers and businesses. The office, led by the Secretary of Housing and Economic Development, is focused on steering Massachusetts towards smart growth, a development approach that recognizes the interactions between land use, energy, and transportation. To achieve this, the EOHED has outlined a three-year strategic plan that focuses on the following four goals:

1. Accelerated job creation;
2. Stabilized housing;
3. Enhanced consumer awareness; and
4. Improved regulatory solutions.





As presented in the EOHED Strategic Plan, as the Massachusetts economy transitions from health care, higher education, technology, financial services, and tourism to one that includes life sciences, clean energy, and the creative economy, more jobs will be created. Accelerating job creation in conjunction with compact land use development patterns that promote sustainability and increase the number of affordable housing units will change residential patterns and transportation needs. To serve the needs of the new emerging clusters of employment and housing, the transportation system as a whole must change and adapt. The new environments, which will be comprised of small and mid-sized businesses, must be served by public transit in order to meet the demands of the new workforce. While the public transit system must adapt to the changing economy, it should be noted that no two regions of the state are the same. As such, job creation goals and employment needs – and thus transportation needs – will differ.

#### **4.12 Martha's Vineyard Economic Development**

On Martha's Vineyard, a 100-square-mile island off the coast of Cape Cod, the economy varies seasonally based on the influx of seasonal residents and tourists in the summer months. The year-round population of 16,739<sup>2</sup> more than triples in the summer months with the arrival of seasonal residents, many second home owners, and visitors. Thus, the economy on the island is primarily driven by the tourist industry. The largest industry on the island is the service-producing domain, with more than 900 establishments and peak employment of more than 10,000 employees during the summer months.<sup>3</sup> This does not include the potentially large number of "cash economy" jobs that go unreported to the Massachusetts Department of Labor and Workforce Development. Within the service-producing domain, the largest sector is accommodation and food services, with approximately 150 establishments and peak employment of 3,000 employees. Retail trade is another large service-producing sector with approximately 200 establishments and 2,000 employees during the summer months.

With regard to the year-round economy, the education and health services industries are the largest, and average 1,600 employees throughout the year. Construction is another major industry with 200 establishments and average employment of 700 employees with only a small increase during the summer months. Public administration averages approximately 600 employees throughout the year.

Total employment on the island during the peak season (May to October) averages 9,800 with a peak of 11,400 in August. During the off-peak season, total employment averages 6,700, with February employment being the lowest at 6,200. The year-round resident labor force is 9,101.<sup>4</sup>

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<sup>2</sup> US Census Bureau. 2009-2013 American Community Survey 5-Year Estimates. "Age and Sex." Census.gov.

<sup>3</sup> Massachusetts Department of Labor and Workforce Development. "Employment and Wages by Industry and Area," 2013.

<sup>4</sup> US Census Bureau. 2009-2013 American Community Survey 5-Year Estimates. "Selected Economic Characteristics." Census.gov.





The largest employer on the island is Martha's Vineyard Hospital with over 1,000 employees.<sup>5</sup> All other employers have 250 or fewer employees. Of the 200 largest employers on the island, approximately half have between 20 and 49 employees, and another quarter have 10 to 19 employees. The vast majority of the businesses on the island are small businesses that employ 1 to 4 employees and most are locally owned.<sup>6</sup> Businesses and jobs are concentrated in Tisbury, Edgartown, and Oak Bluffs, as are housing units.

VTA operates transit service year-round with increased service in-season (May through October) to the six towns of Martha's Vineyard. While the majority of the year-round labor force commutes via single occupancy vehicle, many (31%) use alternative modes of transportation (including 9% work at home, 7% carpool, and 6% public transportation) to commute to work.<sup>7</sup> Transit services consist of both fixed-route and paratransit services.<sup>8</sup> VTA meets the Steamship Authority in Vineyard Haven and Oak Bluffs, serves the Tisbury Park & Ride, and serves the airport for arriving residents, workers, and visitors. The Park & Ride is not just used for commuters residing on the island but for regular workers, such as contractors, who commute to the island 4 to 5 days a week for work.

The cost of living on the island is higher than on the mainland, generally due to the need for importing goods and the higher property values.<sup>9</sup> Property values on the island amount to more than \$18 billion, with a median home price of \$650,000.<sup>10</sup> There are approximately 6,000 year-round housing units on the island, with seasonal housing units numbering more than 11,000.<sup>11</sup> A shortage of affordable year-round housing is a challenge for the island's economy given that the majority of the jobs on the island are service-based, lower wage jobs.<sup>12</sup> The location of seasonal housing is based on the zoning at the time of development and what is affordable shifts with development patterns and value.

Environmental preservation and preserving the rural character of the island are important to the community. To that end, the mission of the Martha's Vineyard Commission, the regional planning agency of Dukes County, is to "help carefully manage growth so that the Vineyard's unique

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<sup>5</sup> Massachusetts Department of Labor and Workforce Development. "Largest 200 Employers in Dukes County," 2014.

<sup>6</sup> Martha's Vineyard Commission. "Martha's Vineyard Economic Profile," 2008.

<sup>7</sup> US Census Bureau. 2009-2013 American Community Survey 5-Year Estimates. "Means of Transportation to Work" Census.gov.

<sup>8</sup> The Martha's Vineyard Regional Transit Authority. VineyardTransit.com, accessed 2/27/15.

<sup>9</sup> Martha's Vineyard Commission. "Cost of Living Index for Martha's Vineyard," 2006.

<sup>10</sup> Martha's Vineyard Commission. "Island Plan," 2010.

<sup>11</sup> US Census Bureau. 2009-2013 American Community Survey 5-Year Estimates. "Selected Housing Characteristics." Census.gov.

<sup>12</sup> Martha's Vineyard Commission. "Martha's Vineyard Economic Profile," 2008

environment, character, social fabric and sustainable economy are maintained as development takes place.”<sup>13</sup> The goals for the community regarding economic development are as follows:

- Preserve and reinforce the traditional settlement pattern of the Island; reduce the amount of future development, especially in environmentally sensitive areas; slow the rate of growth; and ensure that development and redevelopment projects are better planned and designed.
- Restore the Vineyard’s native lands, waters, and wildlife to functional and sustainable levels.
- Preserve the distinct character of Martha’s Vineyard and promote environmentally sound building.
- Transition to a more diverse and balanced year-round economy that enables those who grow up here to stay or return, helps year-round residents lead productive lives, and fortifies the seasonal aspects of the economy.
- Provide a full range of housing options by significantly increasing the number of affordable housing and community housing units on the Vineyard, by prioritizing those residents with the greatest need, and by emphasizing the creation of rental units.
- Reduce dependence on private automobiles and promote alternate modes of travel – especially bus, bicycle, and walking – for both residents and visitors.

## 4.2 Transit Market Analysis

Certain groups, such as older adults, the young, low income populations and those without access to a vehicle, are more likely to use transit, and quite often their trips are for work purposes. By analyzing and examining such factors as population density, vehicle availability, land use, and employment locations, an overall market and demand for transit on the island was established. To determine if service was currently deployed in the most effective way to accommodate the transit needs of the island’s workforce, each route was mapped and overlaid on maps displaying employment and socio-economic data.

### 4.21 Transit-Dependent Populations

Transit-dependent populations are those exhibiting socioeconomic and demographic characteristics that make them more likely to use public transit than others, such as level of income, access to a vehicle, and age. On Martha’s Vineyard, however, transit-dependent populations also include the tourists who visit the island without a vehicle and the influx of seasonal workers in addition to the year round residents. Transit systems are often designed with a focus on serving transit-dependent populations. In addition, population and employment densities can also provide an indication to the feasibility of providing service. Industry standards indicate that at least 2,000 households are needed per square mile to

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<sup>13</sup> Martha’s Vineyard Commission. MVCommission.org, accessed 2/27/15.

support a fixed-route transit system. It is important to match the level of demand with the level of service as it is expensive to run a transit system.

## Outdoor Recreation

The beaches on Martha's Vineyard are the primary tourist destinations during the summer months. There are over 29 miles of beaches on the island, of which almost half are public and the other half private. Many of the beaches are serviced by VTA (Figure 47). In addition to the numerous beaches almost one-third of the island (29.2 square miles) is protected open space. Many of the open space areas are accessible via transit and the MV Land Bank encourages people to use the bus to visit these areas, they even publish a document which outlines hikes and which VTA bus routes to use.

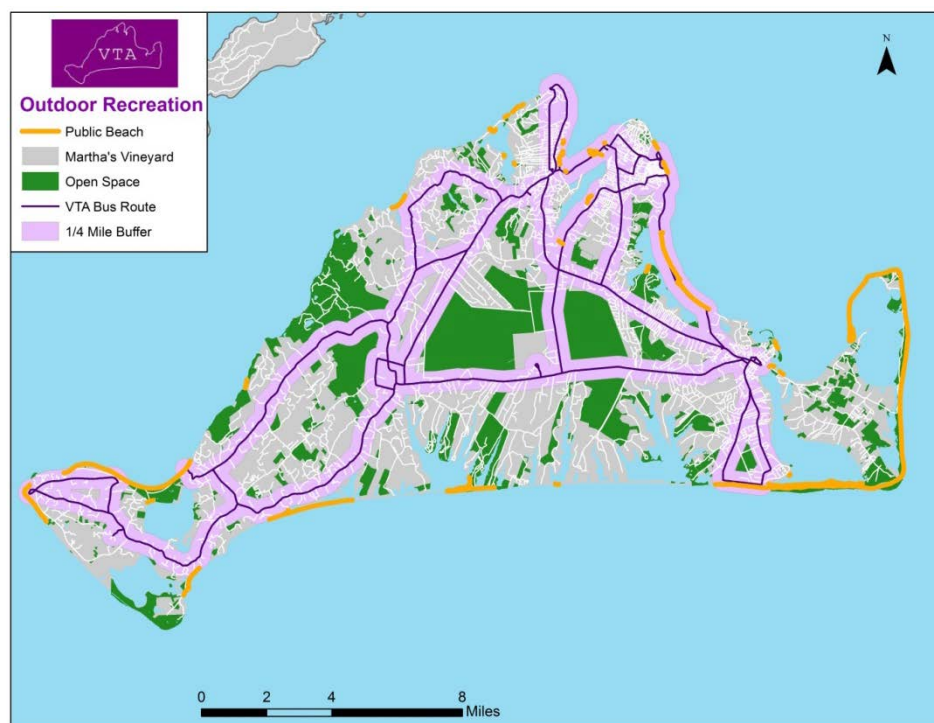
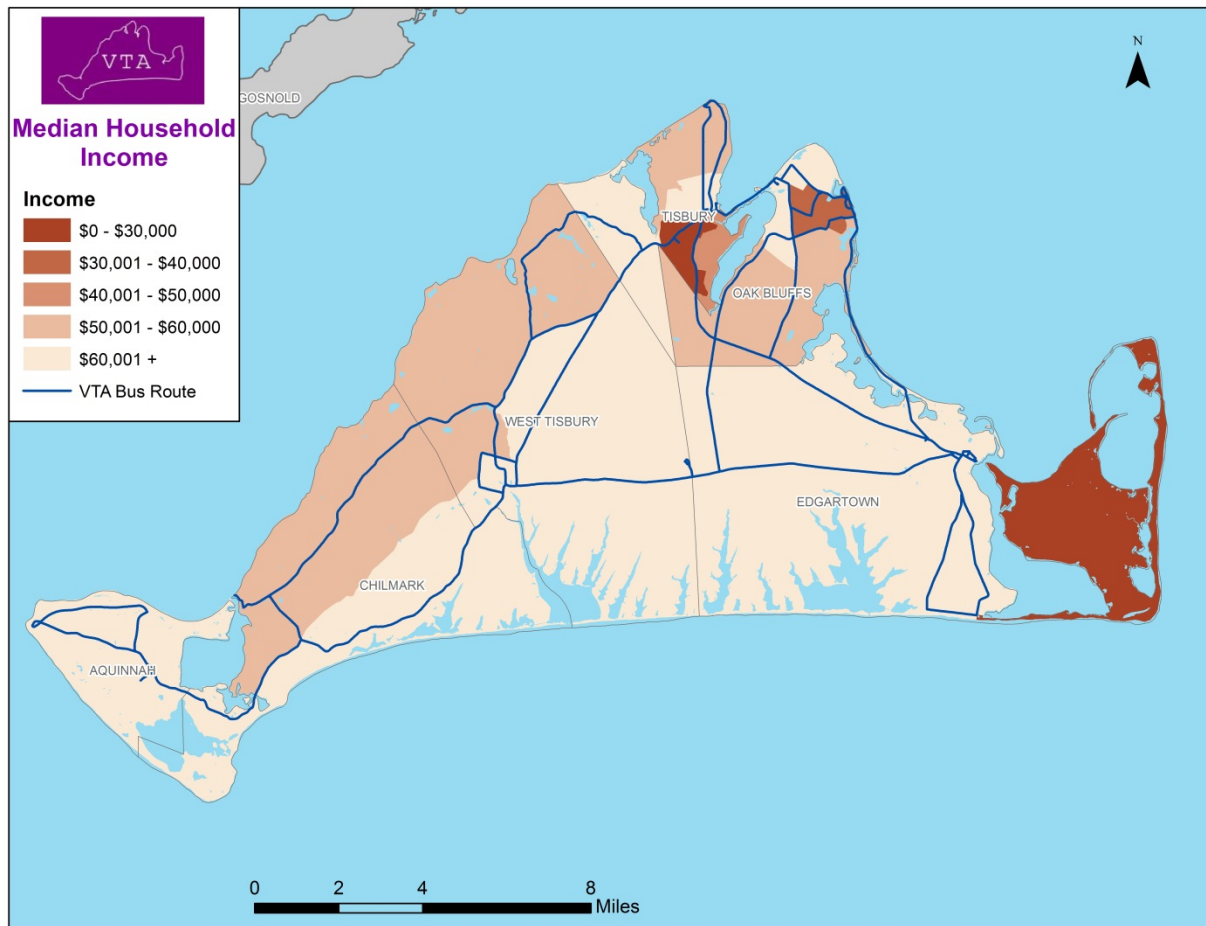


Figure 47. Outdoor Recreation

## Income Level

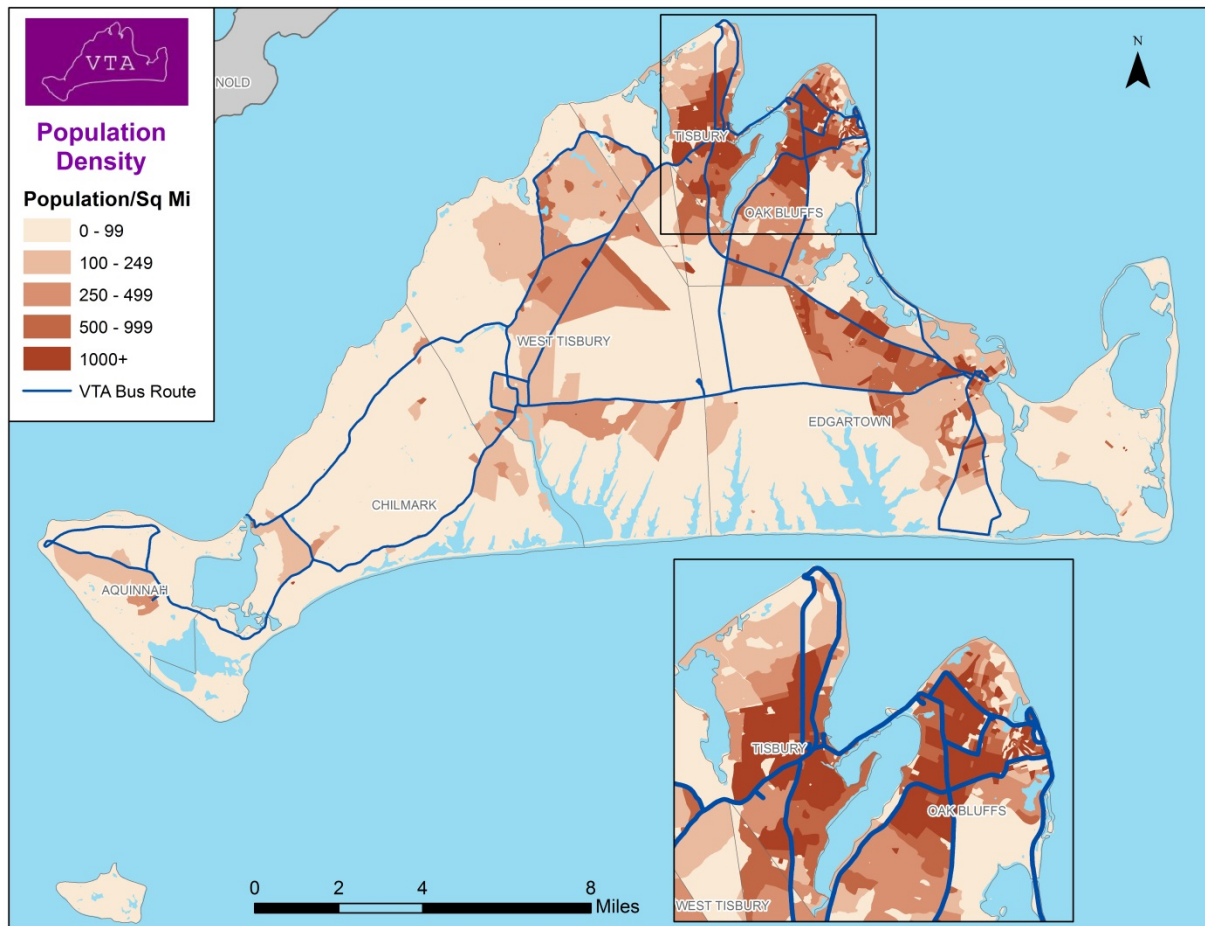
Median household income is used as a measure for propensity to use transit. Automobile ownership is expensive, and as household incomes decline so does the likelihood of having access to a private vehicle. Work-trip market shares from the American Community Survey show that as income rises the percentage of people using transit decreases. The average median household income on Martha's Vineyard is \$63,135. Despite this average, however, there are some regions – such as Oak Bluffs and Tisbury – with substantially lower income levels. These are depicted on the following map (Figure 48).



**Figure 48. Median Household Income**

## Population Density

The majority of trips (transit or non-transit) originate or end at the home. This makes population an important indicator of potential transit use. High density areas are typically found in urban centers, consisting of mixed-use developments, limited parking, and walkable environments all of which typically generate higher transit ridership. The average population density across the island is 176 persons per square mile, but this is skewed by the fact that one-third of the island's area is non-buildable, protected land. The densest areas are located in Tisbury, Oak Bluffs, and Edgartown. There is also a pocket on Aquinnah where the Wampanoag Tribe cluster housing is. As shown on the following map (Figure 49), the most dense population areas are served by VTA routes.

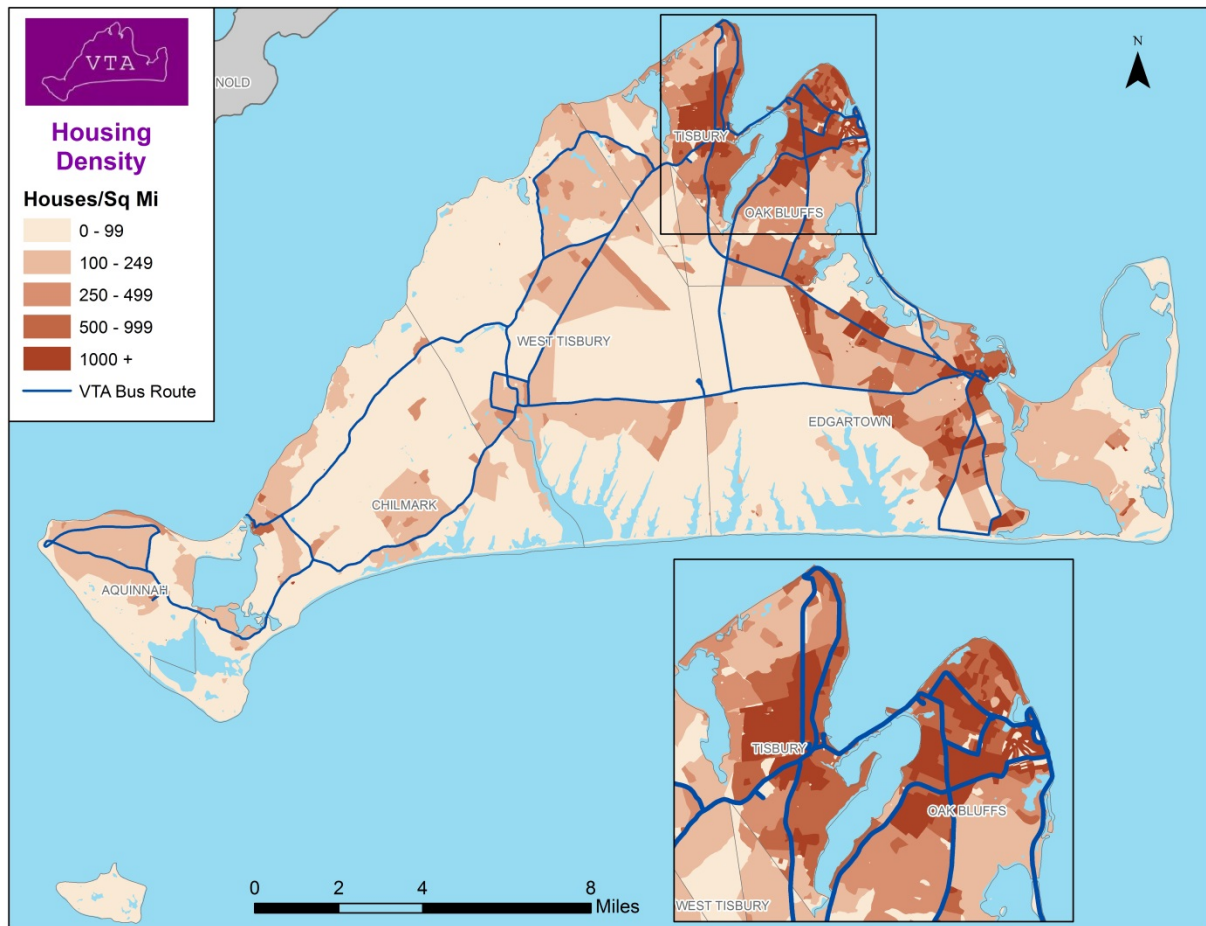


**Figure 49. Population Density**

## Household Density

With more than 50% of the housing units on Martha's Vineyard being seasonal units, there is a disparity in the population and household density. There are denser clusters of housing units in Tisbury, Oak Bluffs, and Edgartown as well as small pockets spread throughout the island (Figure 50). The average housing density across the island is 181 units per square mile, but this is skewed by the island's large proportion of non-buildable, protected land (about 1/3 of the island), and over half of the units are seasonally occupied. High densities of housing units accompanied by lower densities of population indicate areas that have a higher percentage of seasonally occupied homes. There is also a transient nature of rentals, many people who have winter rentals must move in the summer

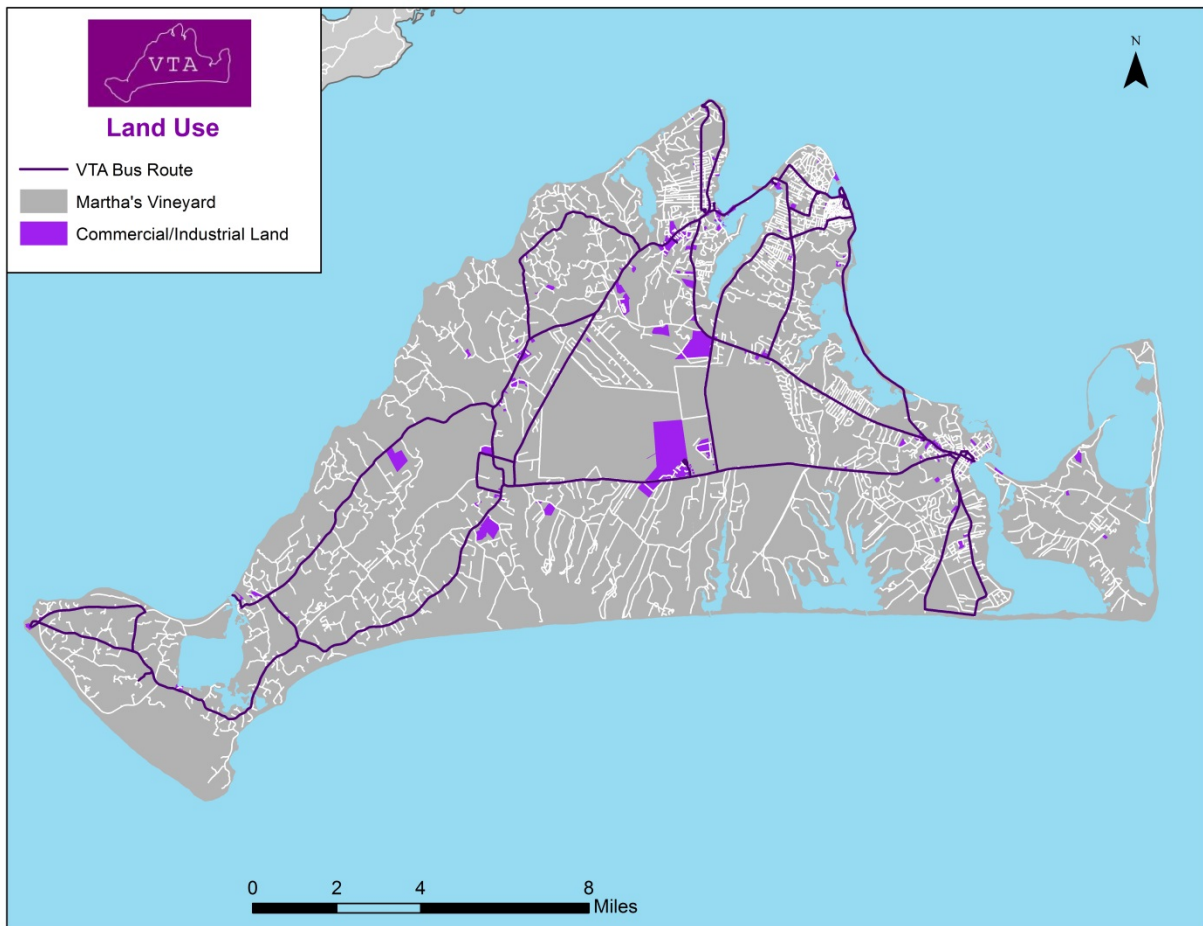




**Figure 50. Household Unit Density**

## Land Use

Commercial and industrial lands (including mixed use) indicate areas of employment and are attractors for tourism. The majority of the land on the island is residential or protected open space. According to assessor's data, only 2.1% of the land on Martha's Vineyard is either commercial or industrial. Most of the commercial land can be found in Vineyard Haven, in Oak Bluffs in the vicinity of the ferry docks, in downtown Edgartown, and around the airport (Figure 51).

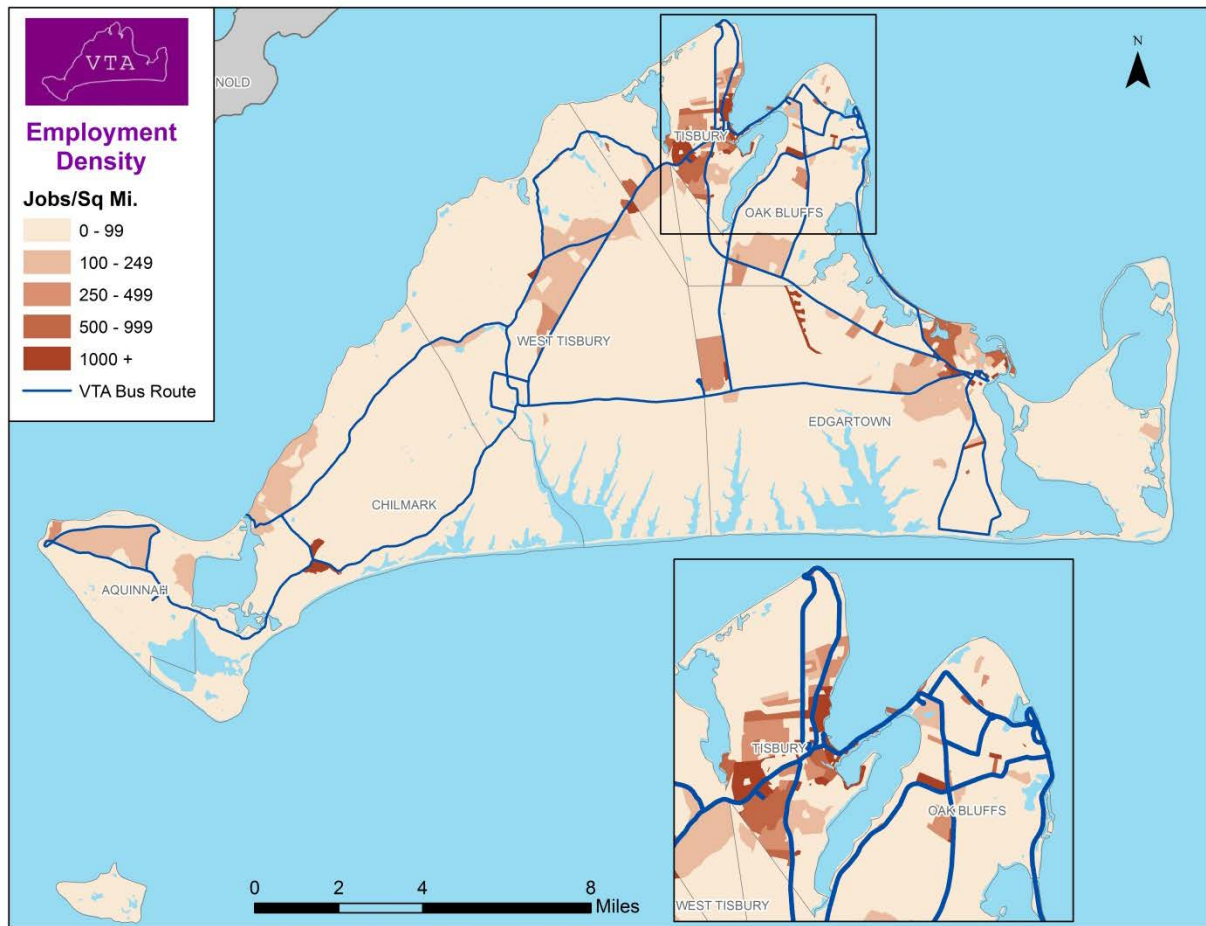


**Figure 51. Land Use**

## Employment Density

According to the American Passenger Transportation Association (APTA), commuting for work purposes is the primary reason people take transit.<sup>14</sup> As such, it is imperative that transit systems serve areas with high concentrations of employment. Within the VTA service area, there are 6,800 jobs in the off-season, which equates to an average of 72 jobs per square mile. These employment centers tend to be concentrated in the centers of Tisbury and Edgartown as well as along State Road. Many of the dense employment areas are served by VTA (Figure 52). The data set used only represents jobs for which state taxes were collected and may skew the numbers to be lower than what they actually are due to the hundreds of cash economy jobs which are not accounted for.

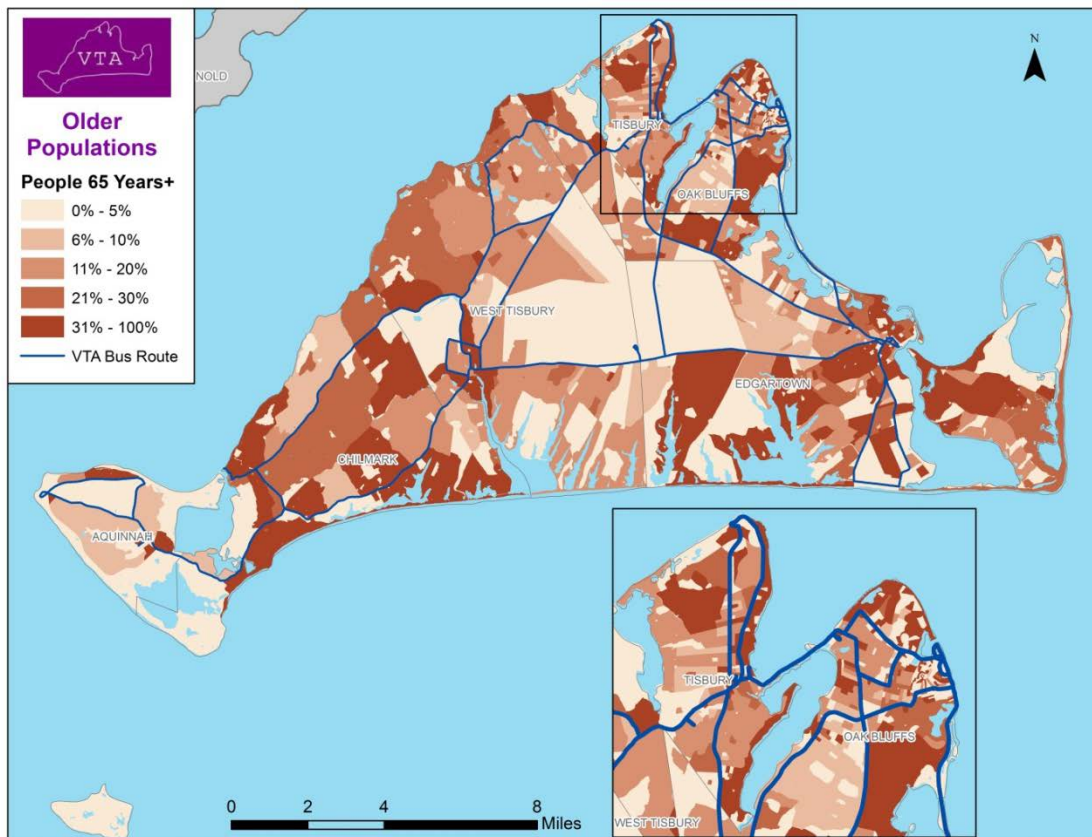
<sup>14</sup> Neff, J. &Pham, L. (2007). A profile of public transportation passenger demographics and travel characteristics reported in on-board surveys. American Public Transportation Association.



**Figure 52. Employment Density**

## Older Populations

According to APTA, individuals aged 65 and above represent the second largest transit user group. This group's high level of transit ridership, however, is disproportional to the relatively small percentage of the population that the group represents.<sup>15</sup> Senior populations typically correlate with low levels of income and vehicle ownership. These individuals are often on fixed incomes, which may reduce their desire to own a vehicle; health issues such as poor eyesight can also deter them from driving. The growth in retirees to the Vineyard tend to not be low income or carless though. In the VTA service area, people 65 years and older make up 16.3% of the population, and this is expected to increase as the baby boomer generation continues to age. There are several senior living complexes though on the island, in particular three on the Route 10A, two (Hillside and Woodside Village) on the Route 1. Route 7 and 9 also service Woodside. Otherwise there is no real pattern to where this age group tends to live in the VTA service area (Figure 53).



**Figure 53. Older Populations Map**

<sup>15</sup> Neff, J. &Pham, L. (2007). A profile of public transportation passenger demographics and travel characteristics reported in on-board surveys. American Public Transportation Association.



## Zero-Vehicle Households

The VTA system serves an area where 3.4% of households do not have access to a personal vehicle, but it is difficult to distinguish which households are year-round residents and which are second home owners. As such, the values may be skewed by second home owners who bring a car over by ferry but do not keep one on island. This may be exhibited by the fact that concentrations of these households don't necessarily coincide with low-income and densely populated areas. For example the only region where there is a correlation between low-income, vehicle access, and population density is in Tisbury (Figure 54).

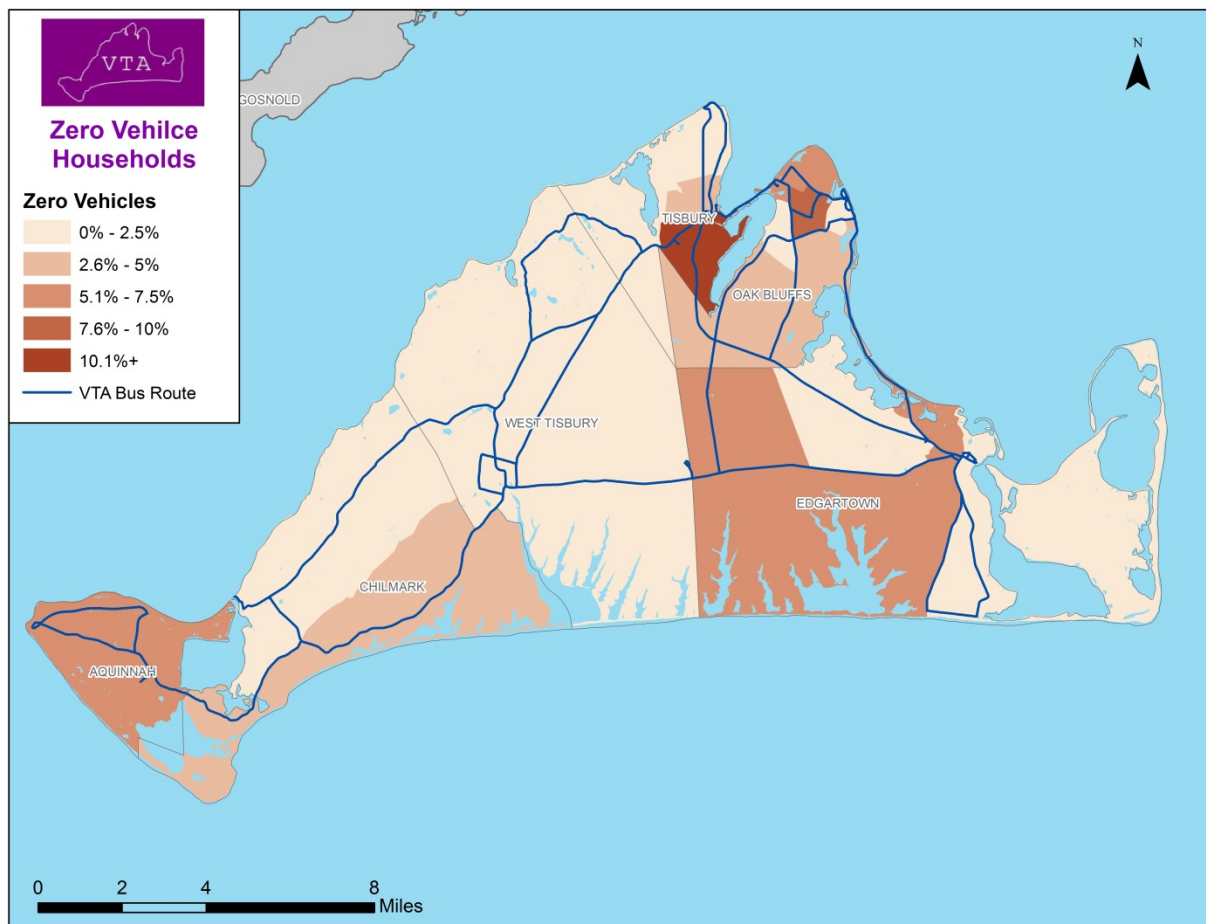


Figure 54. Zero-Vehicle Households

## 4.22 Methodology

Demand was calculated separately for the summer peak season and off season, resulting in two slightly different methodologies. The level of potential demand for the peak season is based on the housing unit density, employment, proximity to hospitals, presence of public beaches, the enrollment at local colleges and universities, and the number of park-and-ride spaces. Potential demand for the off season is based on population density, proximity to the schools and hospitals, employment, elderly population densities, vehicle availability, disabled populations, income levels, and the number of park-and-ride spaces. The data was derived from the 2008-2012 ACS 5-Year Estimate, and MassGIS (Table 1).

**Table 3. Transit Demand Data Variables and Sources**

Variable	Source	Use
<b>Area</b>	Cartographic boundary files, US census	Peak Season, Off Season
<b>Household Units</b>	ACS 5 Year table 2008-2012 SF 3 Table B00002	Peak Season
<b>Hospitals</b>	MassGIS from the DPH – OEMS	Peak Season, Off Season
<b>Park and Ride Locations</b>	MassDOT and land use plan	Peak Season, Off Season
<b>Beaches</b>	MassGIS from the MDPH, CEH, and ETP	Peak Season
<b>Schools</b>	MassGIS from Mass - DOE	Off Season
<b>Population</b>	ACS 5 Year table 2008-2012 SF 3 Table B00001	Off Season
<b>Zero-Vehicle Households</b>	ACS 5 Year table 2008-2012 SF 3 Table B25044	Off Season
<b>Median Household Income</b>	ACS 5 Year table 2008-2012 SF 3 Table B19013	Off Season
<b>Disabled Households</b>	ACS 5 Year table 2008-2012 SF 3 Table B22010	Off Season
<b>Employment</b>	MAPC statewide employment data	Off Season
<b>Elderly Populations</b>	ACS 5 Year table 2008-2012 SF 3 Table B00001	Off Season
<b>Land Use</b>	MassGIS Assessors Data	Peak Season

The peak season transit system is designed to predominantly serve the tourists, seasonal workers, year-round residents, and second home owners during the summer months. Therefore many traditional variables used for calculating transit demand were not included for the summer peak season demand. Household unit density was used in place of population density to account for second home owners and seasonal workers, this though does not account for informal seasonal housing arrangements. There is no way to account for this segment of housing due to the lack of documentation but should be considered as anecdotal evidence when evaluating final recommendations. Census data shows that there are approximately 500 more households than people on Martha's Vineyard, which indicates that many of the units are empty during parts of the year. Similarly, the population on the island changes drastically between the peak and off season months. The 2010 Census reported that Martha's Vineyard's population was 16,460, but in the summer months this number can swell to upwards of 100,000. For this reason, population density was not included in the peak season demand as it did not account for the undocumented populations. The presence of primary and secondary schools were not included because





they are not open during the summer. The MAPC statewide employment data set showed that there were approximately 6,800 jobs on the island which indicates the data set represents employment during the winter months. The percentage of commercial/industrial land use was substituted for employment density to better accurately reflect summer employment. Demographic variables such as median household income, elderly populations, disabled populations, and zero-vehicle households were not included in the summer months since the service is geared towards tourism and by default serves these populations. Due to the tourism nature of service in the summer, beach access was included. Park and ride capacities and hospital locations were used for both demand calculations.

For the off season, population density was substituted for household unit density because during the off season months many of the units are unoccupied due to the second home market. Population density more accurately reflects the year-round residents. Schools were added because school is in session during this period. Beaches were removed because there is very little tourism demand during the off season. Employment density was substituted for commercial/industrial land use as it represented densities found during the off season. In addition, socioeconomic indicators of transit dependent populations were added to the demand calculations.

To compile the data, all GIS shape file layers and tables were loaded into ArcGIS and joined on the appropriate variables. Data was transformed to the census block if needed and clipped to the VTA service area. A model was then run in ArcGIS to calculate the housing unit density, population density, percent of zero-vehicle households, percent of households with people with disabilities, percent of the population older than 65, employment density, and area of commercial/industrial developments within each block. This data – along with the beaches, schools, hospitals, and park-and-ride locations – was then extracted into Excel for each block within the VTA service area. Using the Jenks natural breaks optimization method<sup>16</sup>, housing unit density and population density was arranged into five classes. Both have a positive correlation with transit demand thus higher values were in higher classes. Blocks that fell into class 1 were given a score of 1, class 2 = 2, etc. up to class five.

The scores were then weighted based on highly recognized research done by Brian D. Taylor on the determinants of transit ridership<sup>17</sup> and research conducted by the Center for Urban Transportation Research.<sup>18</sup> The study uses a two stage regression model to look at over fifteen census variables (along with 20 others related to highway statistics, fuel costs, politics, and transit operating characteristics ) in

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<sup>16</sup> The Jenks method is a way of arranging data into different classes by minimizing the average deviation from the mean and maximizing each class's deviation from the means of other groups. It is based on standard deviation.

<sup>17</sup> Taylor, B.D. et al, Nature and/or nurture? Analyzing the determinants of transit ridership across US urbanized areas, Transport. Res. Part A (2008), doi:10.1016/j.tra.2008.06.007

<sup>18</sup> Polzin, E. S. et al. PUBLIC TRANSIT IN AMERICA: FINDINGS FROM THE 1995 NATIONWIDE PERSONAL TRANSPORTATION SURVEY, Center for Urban Transportation Research (1998) report No. NUT14-USF-4

265 urbanized areas to determine which characteristics impact the level of transit use the most. A complete set of variables and the method for calculating the value can be seen in Table 4.

**Table 4. Transit Demand Variables and Formulas**

Variable	Value Calculation	Use
<b>Housing Unit Density</b>	Classification score * 1.52	Peak Season
<b>Population Density</b>	Classification Score * 0.76	Off Season
<b>Hospitals</b>	Count	Peak Season, Off Season
<b>Schools</b>	Count	Off Season
<b>Land Use</b>	Percent of area that was commercial or industrial * 5	Peak Season
<b>Park-and-Ride Locations</b>	Number of spaces/100	Peak Season, Off Season
<b>Beaches</b>	Yes = 1, no = 0	Peak Season
<b>Median Household Income</b>	Classification score * 0.92	Off Season
<b>Disabled Households</b>	Classification score * 0.25	Off Season
<b>Employment</b>	Classification score * 1.5	Off Season
<b>Older Populations</b>	Classification score * 1.31	Off Season
<b>Zero-Vehicle Households</b>	Classification score * 1.75	Off Season

The scores for each variable were then summed for each block to get an overall score for transit demand for peak season and off season. This data was then put into GIS and displayed to show demand for the entire region. Features such as schools, hospitals, park-and-ride lots, known major employers, key destinations, and important features were overlaid on the map to provide a frame of reference and to act as supporting material.

## 4.23 Findings and Maps

### Off Season Demand

Overall the VTA provides service to all of the areas that warrant a high demand, but service is also provided to areas with a very low demand such as the Katama section of Edgartown, West Tisbury center, Lamberts Cove Road, and the West Chop area of Tisbury. The majority of the demand in the off season can be found on the eastern half of the island and on Aquinnah where the Wampanoag Tribe cluster housing is.

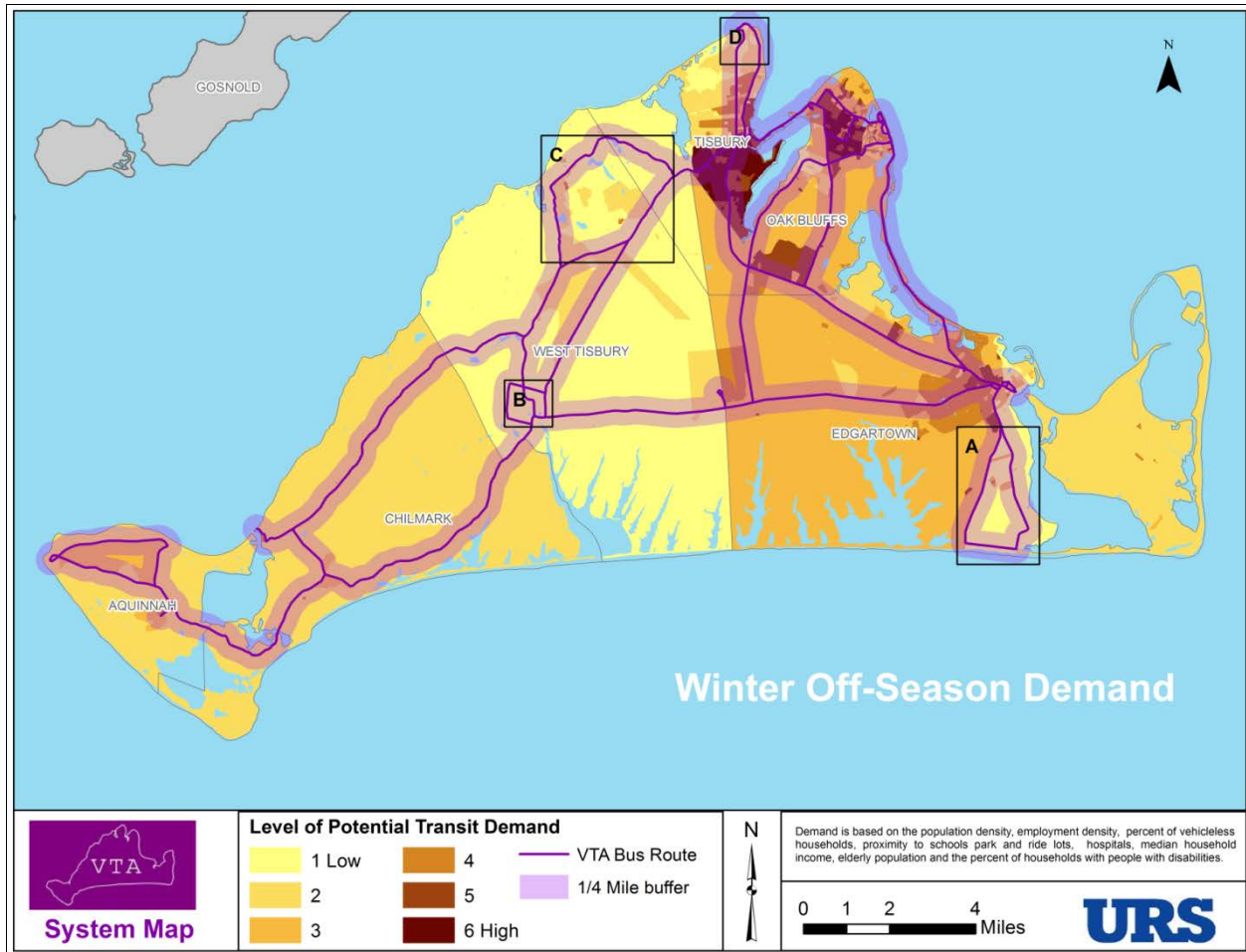


Figure 55. VTA Off Season System Demand Map

Off Season Area A in Katama (Figure 56) has some demand for transit service because 15% of households in the western part of the area have no access to a vehicle. However, the area has higher levels of income (\$61,000 to \$81,000) and very few jobs (19 per square mile, mostly associated with The Boathouse). The population density for this area is 91 persons per square mile, but density decreases closer to the beach.

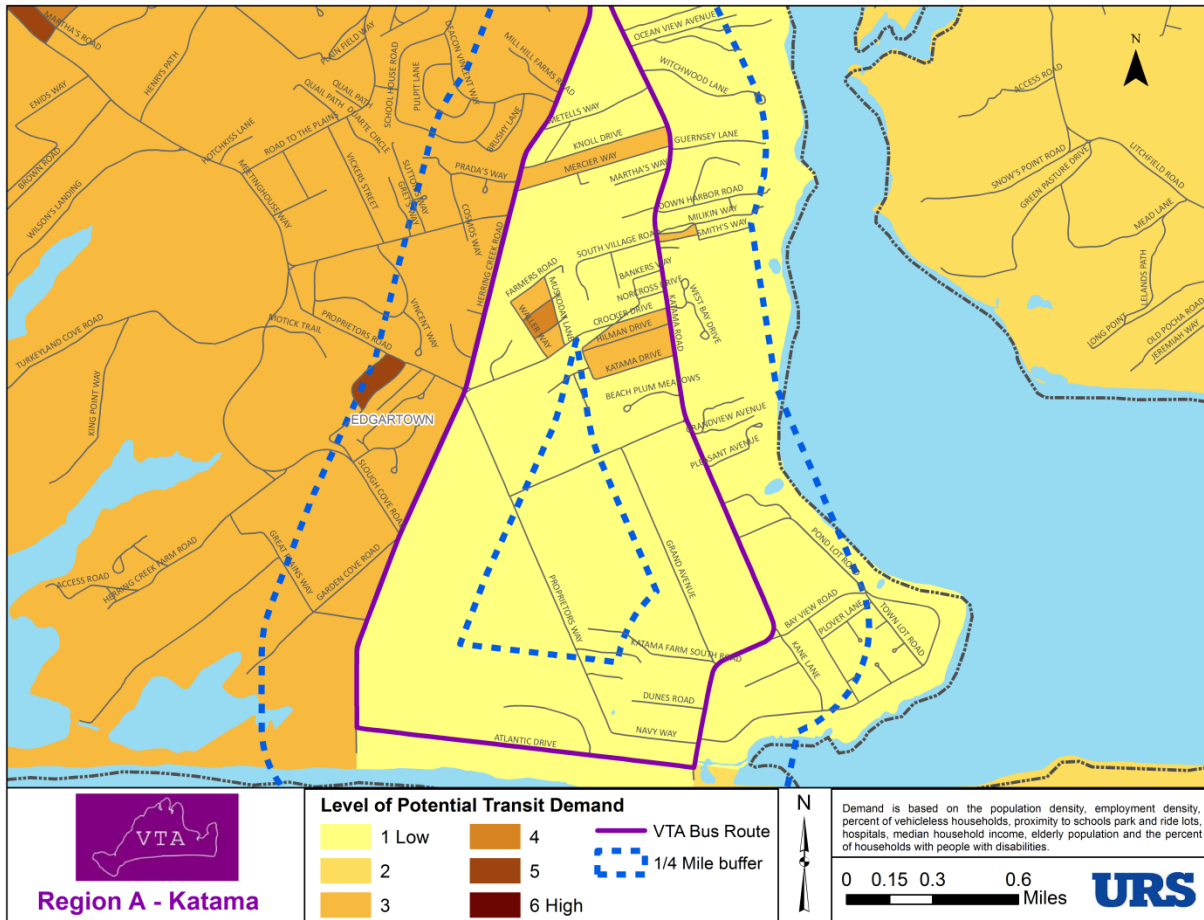


Figure 56. Off Season Area A - Katama

Off Season Area B in West Tisbury Center (Figure 57) at the onset appears has very little transit demand because all residents own cars; the population density is only 120 persons per square mile; there are only 34 jobs (7.7 per square mile); and the median income is higher than average. The area does, however, have a higher percentage (20.8%) of elderly persons, which equates to 115 people. It does though house the Town Hall, Library, Council on Aging and a small historic grocery & general store with postal service, which makes it vital that it be served by transit.

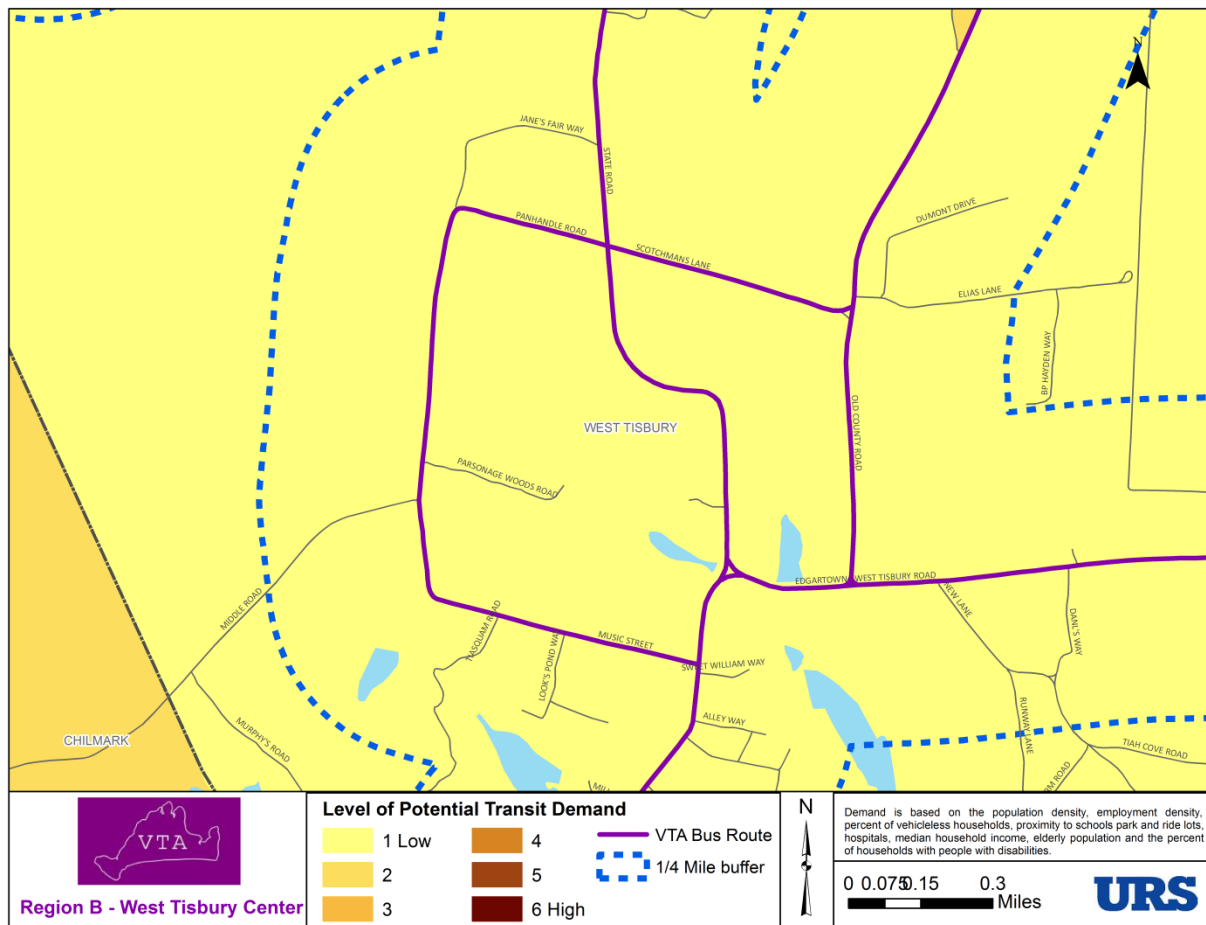


Figure 57. Off Season Area B - West Tisbury Center

Off Season Area C along Lamberts Cove Road (Figure 58) has limited transit demand because all residents own cars and the population density is very low. While parts of this area have median incomes over \$110,000, other parts have below-average incomes. This area has 44 jobs per square mile, for a total of 429 jobs. Due to the configuration of the geographic units, however, more than three-quarters of these jobs are not within the ¼-mile buffer along Lamberts Cove Road. Instead they are associated with State Road just above and below where Lamberts Cove begins.

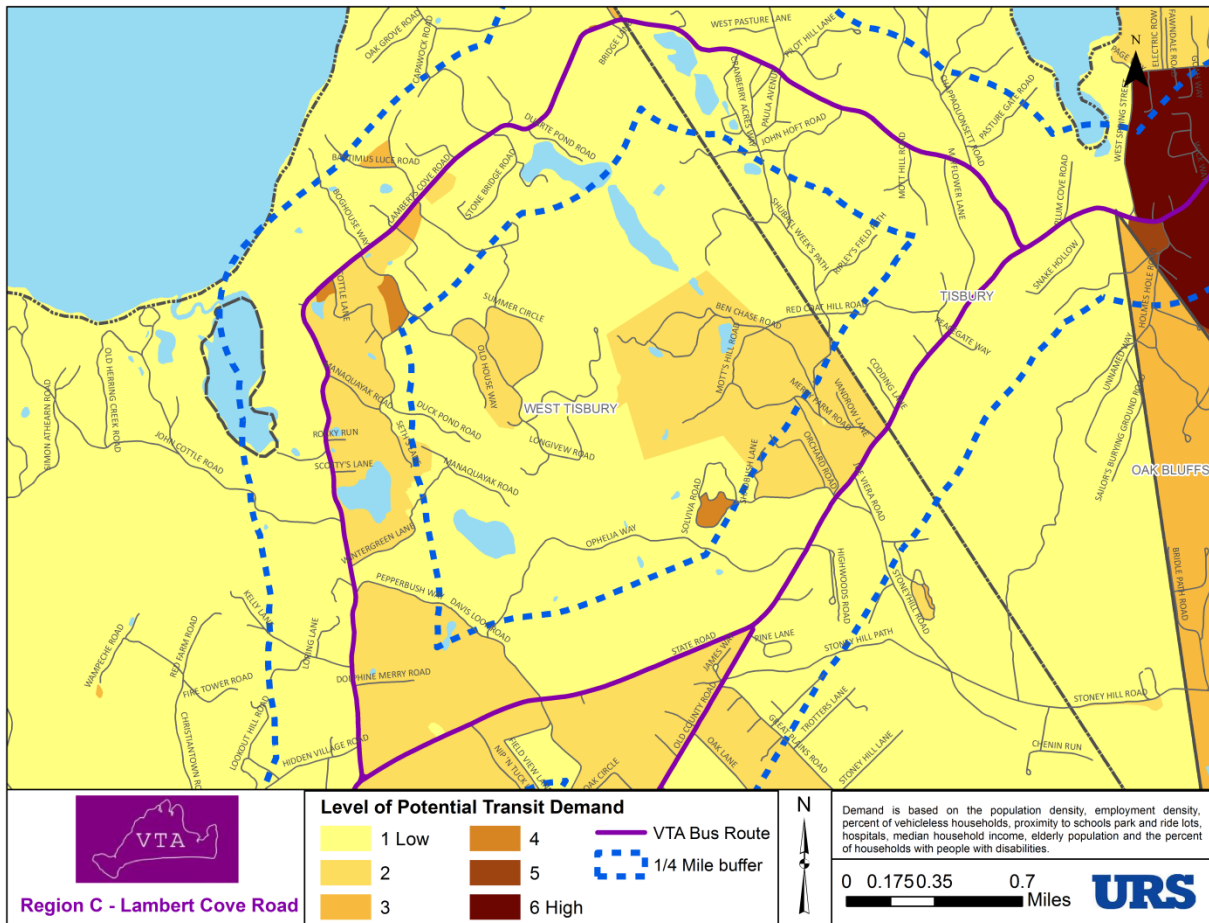


Figure 58. Off Season Area C - Lamberts Cove Road



Off Season Area D in West Chop (Figure 59) has some transit demand because median household income is lower than the average at \$56,000. However, all residents own cars; there are very few jobs; there is below-average population density; and there are more households than people, which indicates this area includes a number of second residences.

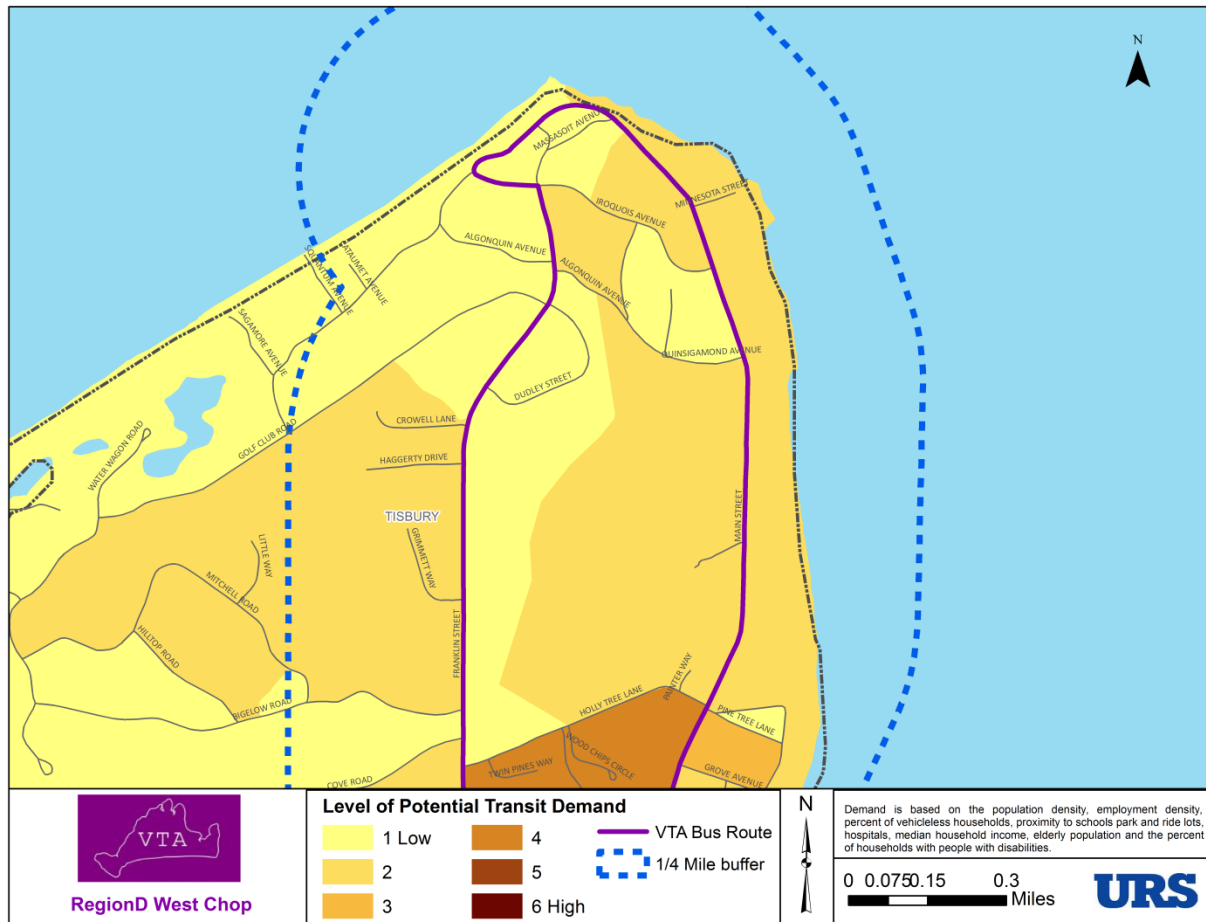
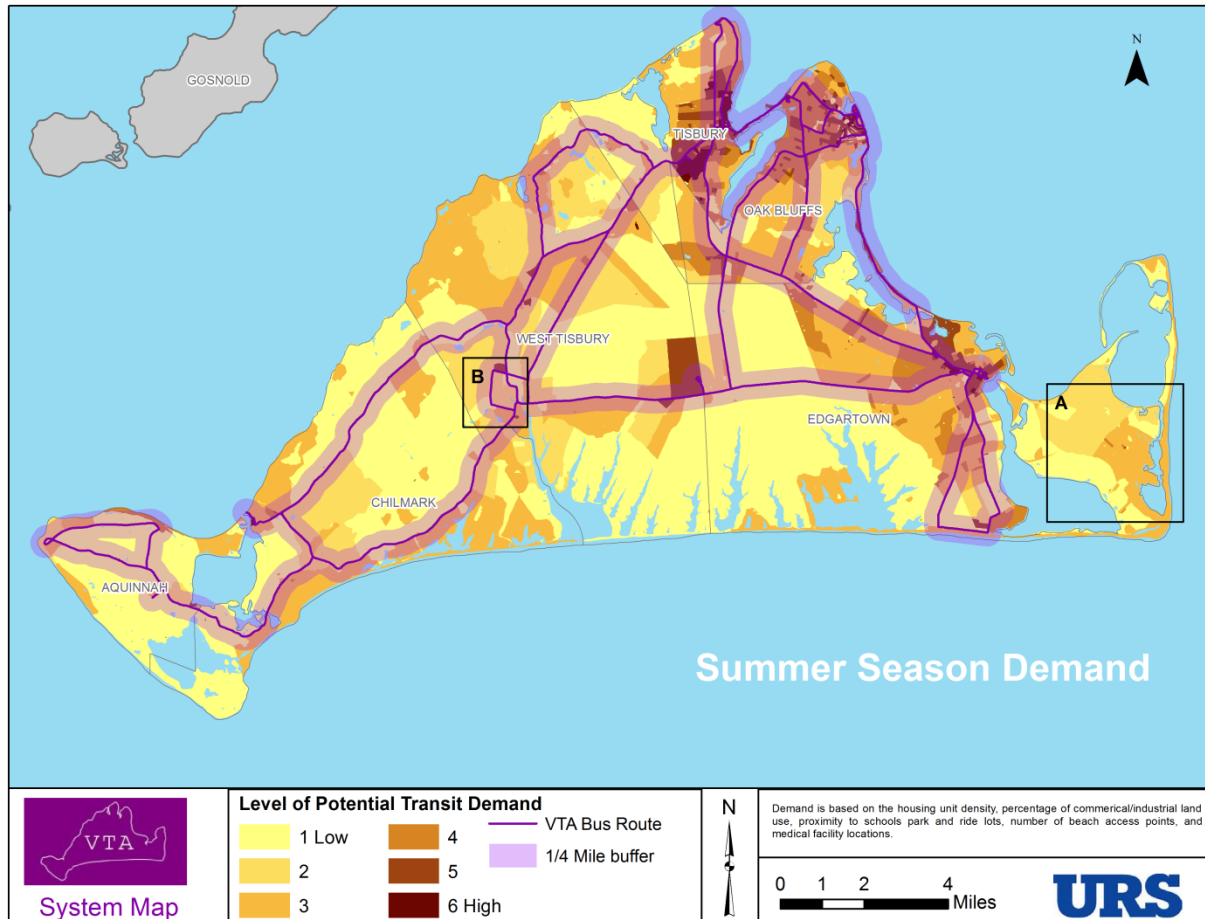


Figure 59. Off Season Area D - West Chop

## In-Season Demand

Overall the VTA provides service to all of the areas that warrant a high demand but they also serve areas with a very low demand such as West Tisbury center and do not serve areas with medium demand such as Chappaquiddick Island. There are other areas that may indicate a demand for service due to the presence of beaches, but they are not possible to service because of the lack of paved roads. All other areas such as Tisbury, Oak Bluffs, Edgartown and Aquinnah exhibit demand and are currently being serviced.



**Figure 60. VTA Summer Peak Season System Demand Map**

Summer Peak Area A on Chappaquiddick Island (Figure 61) “Chappy” has a higher level of transit demand because of the 2<sup>nd</sup> home owner population, beaches, limited connectivity<sup>19</sup> to the main land and limited parking for the Ferry. The former island would benefit from a circulator to bring people to

<sup>19</sup> Between 2007 and April 2<sup>nd</sup> 2015 the mainland and Chappaquiddick were separated, currently the two have reconnected and it is no longer referred to as an island but considered a peninsula of Martha's Vineyard. The land connection is accessible by 4 wheel drive vehicles only.

the Chappy Ferry. Despite the demand, it would be extremely difficult to service this area because there is limited land connection to the main island and would require VTA to use the ferry to access Chappy. The private ferry would not give preferential treatment to VTA and the vehicle and operator would have to wait in line with the rest of the general public. This makes maintaining a service on Chappy expensive and schedules difficult to stick to. Due to the lack of fueling station on Chappy, it would not be possible to leave a vehicle there and send the driver over on the ferry. Since the island is served only by a private ferry and there are limited paved roads it is not recommended that service be added at this time.

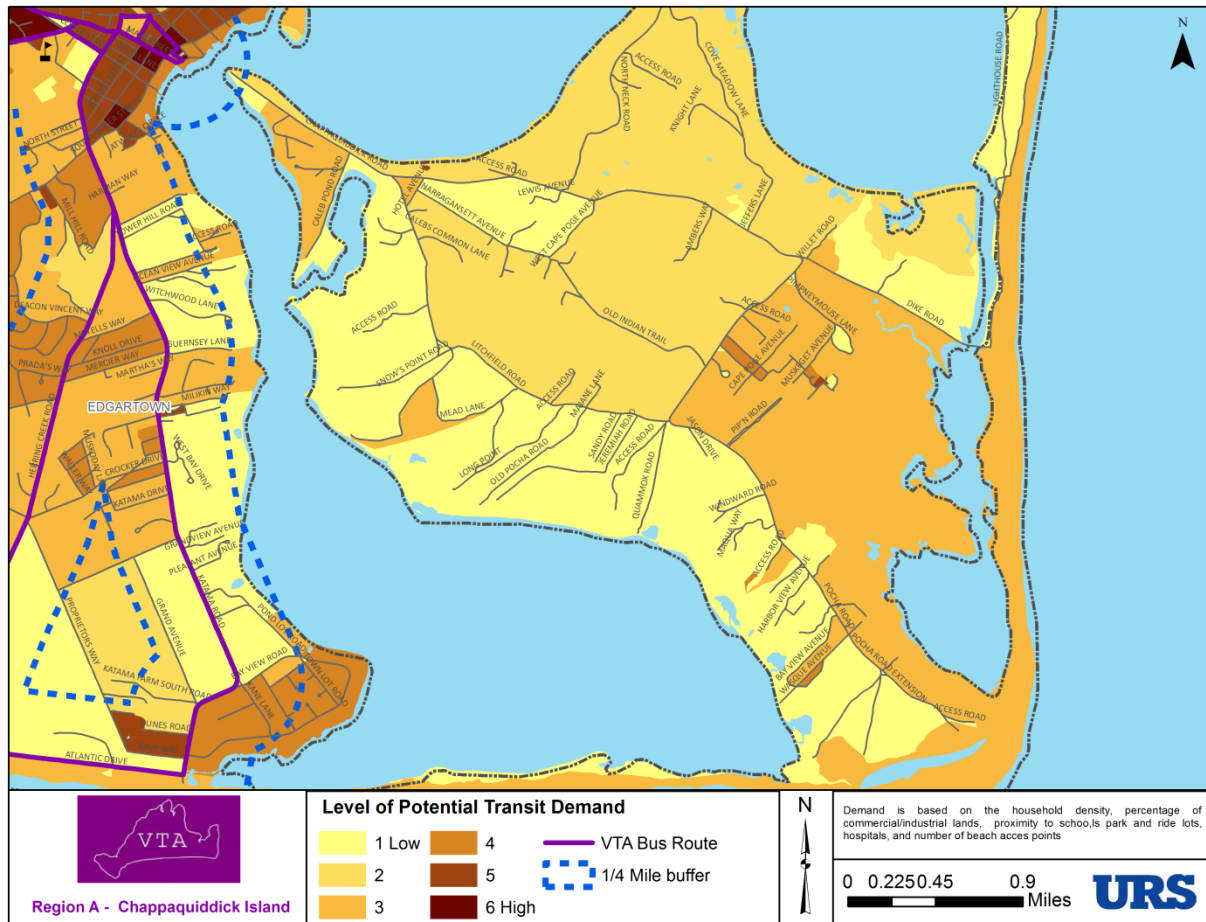
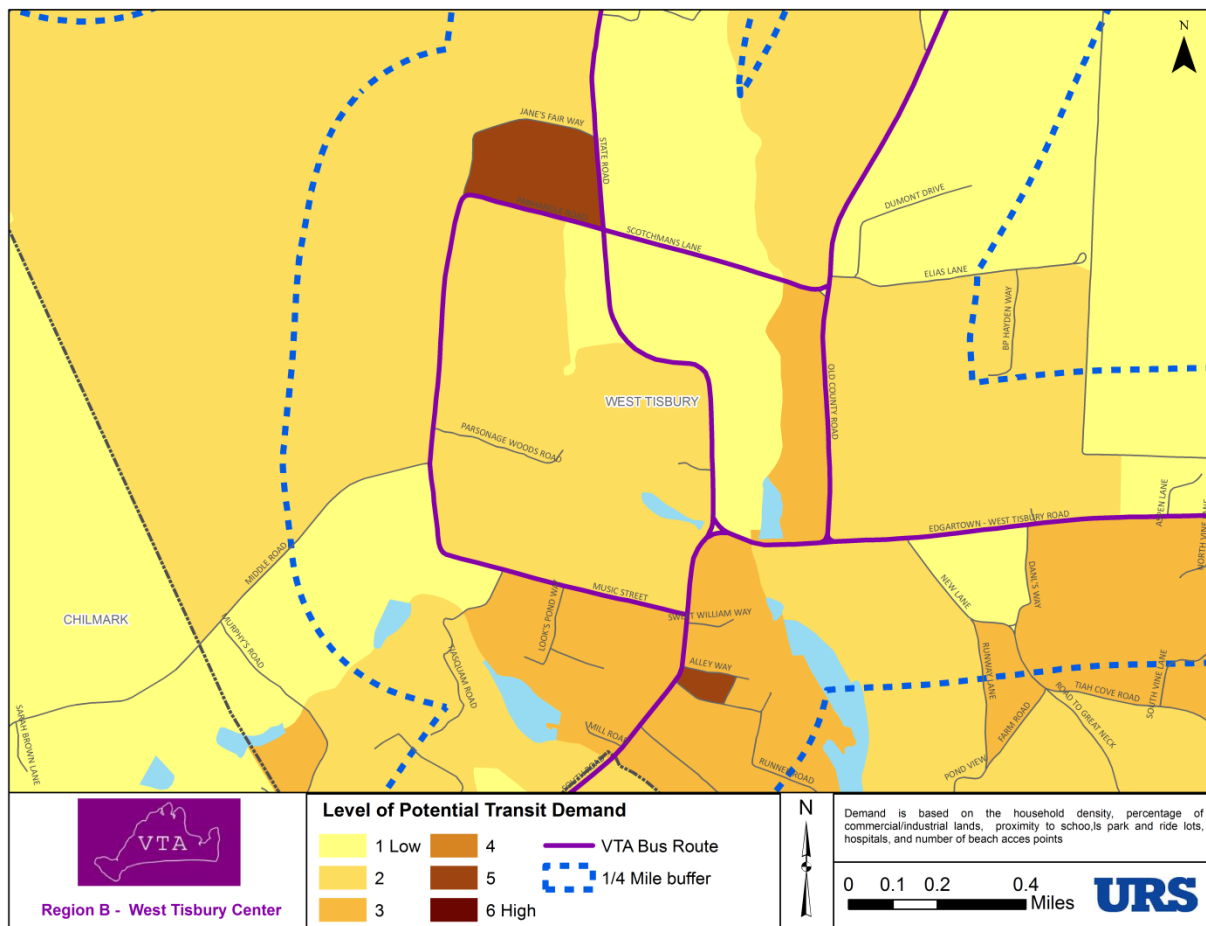


Figure 61. Summer Peak Area A - Chappaquiddick Island

Many VTA routes converge in Summer Peak Area B in West Tisbury Center (Figure 62). This area, however, is very rural with few households. As such, there is not much transit demand except for a few pockets which have commercial activities. The northern pocket is the home of the Martha's Vineyard Agricultural Society and as such the land is zoned as commercial increasing the score. The small pocket between Alley Way and Runner Road contains a gas station, veterinarian office and automotive shop. Grange Hall is across the street and many weekly events are held here throughout the season such as the Farmers Market, and Artisan fairs. West Tisbury Center also houses the Town Hall, Library and Council on Aging and a small grocery store.



**Figure 62. Summer Peak Area B - West Tisbury Center**

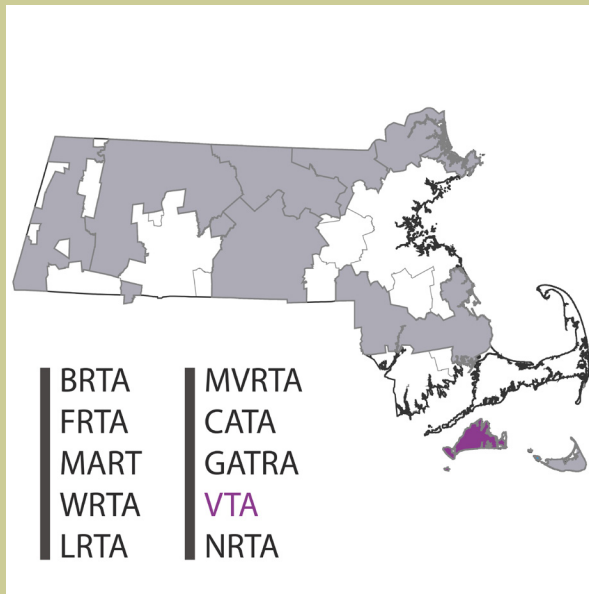
There are areas in the VTA service area which are possible candidates for service modifications, which would better deploy service to meet the needs of the region's workforce and improve access to employment and the island. Overall VTA has good coverage of service on the island but improvements can be made, particularly on the off season to better match demand with service. VTA has demonstrated success at connecting people to destinations but more can be done. To understand what



the system can achieve, we must first understand what the current demand is around each route. The following are profiles and maps of each route depicting the regional demand within ¼ mile of each route for the summer peak season and winter off season. Recommendations in the following chapters will be designed to strengthen job access and develop even better connections.

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# Chapter 5

## Fare Analysis

**AECOM / URS**  
**TMD**  
Burke & Company





## 5. FARE RATES AND COLLECTION METHODS

### 5.1 Collection Methods

The Martha's Vineyard Transit Authority (VTA) purchased and installed GFI Genfare Electronic Validating Fareboxes in 2002. Fareboxes are installed on all fixed route vehicles and are equipped with smart card readers. Passengers are able to purchase stored value cards on board as well as 1, 3, and 7 day passes or at the Steamship Authority & Edgartown Visitors Center year round. Seasonally, tickets can be purchased from a ticket seller during the day at the three main stops in Tisbury, Oak Bluffs and Edgartown.

#### **Farebox**

VTA uses GFI fareboxes with SmartCard readers on them. The farebox is also capable of electronically validating and verifying all coins and bills inserted for payment as well as the magnetic fare tickets. All coins and bills are automatically identified by denomination, without operator action. All invalid coins and bills are automatically rejected and returned to the passenger. The farebox assists operators with verification of the fare deposited by showing on the Operator Control Unit (OCU) the value of coins and bills inserted. All accepted coins and bills will be deposited into a single cashbox, securely compartmentalized to separate the coins and bills. The fare only recognizes exact fares and no change is given for over payment. Instead the farebox will issue a magnetic change card with the excess value stored on it. This card can only be used for future trips.

### 5.2 Fare Structure

VTA fares are based on the number of zones passed through. Each town is a zone and each zone passed through is \$1.25 per trip. On January 1<sup>st</sup> 2015 VTA implemented a fare increase for the zone fare, from \$1.00 to \$1.25, as well as increases for the one day pass and annual pass. These increases are part of their 5 year plan (2014-2018) for fare increases (Table 5). By outlining a plan early on VTA is able to estimate increases in revenues and plan for future service. Transfers are allowed within 20 minutes of alighting the bus and boarding another. In addition to the zonal fare VTA offers a variety of passes; types and prices can be found in Table 1 under 1/1/15. One, three and seven day passes can be purchased on board, at the Steamship Authority Terminals or from ticket sellers. VTA staffs ticket sellers at the Oak Bluffs, Edgartown and Vineyard Haven stops between Memorial Day and Columbus Day holidays in order to expedite boarding during the busy season. Annual passes and 31 day passes can also be purchased at the VTA Operations Center or the Edgartown Visitors Center.

Table 5. Fares Increase Plan

Pass	1/1/13	1/1/14	1/1/15	1/1/16	1/1/17	1/1/18
<b>1 day Pass</b>	\$7.00	\$7.00	\$8.00	\$8.00	\$8.00	\$8.00
<b>3 day Pass</b>	\$15.00	\$18.00	\$18.00	\$18.00	\$18.00	\$18.00
<b>7 day Pass</b>	\$25.00	\$25.00	\$25.00	\$30.00	\$30.00	\$30.00
<b>Annual Pass</b>	\$100	\$110	\$120	\$130	\$140	\$150
<b>Senior Annual</b>	\$50.00	\$55.00	\$60.00	\$65.00	\$70.00	\$75.00
<b>Student Annual</b>	\$50.00	\$55.00	\$60.00	\$65.00	\$70.00	\$75.00
<b>Single Zone</b>	\$1.00	\$1.00	\$1.25	\$1.25	\$1.25	\$1.25
<b>Single Zone – Senior/Disabled/Vet</b>	\$0.50	\$0.50	\$0.75	\$0.75	\$0.75	\$0.75
<b>Zone Fare – The Lift</b>	\$1.00	\$1.00	\$2.00	\$2.00	\$2.00	\$2.00
<b>Medivan*</b>	\$10.00	\$10.00	\$15.00	\$15.00	\$15.00	\$15.00

\* Medical

### 5.3 National Best Practices

This chapter provides an overview of different fare policies and fare media that are used throughout the United States. While the fare policies and practice of VTA reflect local needs and practices, the comparison with national standards can provide helpful insight and guidance regarding ways to improve available fare media and policies. The fare policy and standards section describes various policies and fare pass types employed by transit agencies and represent standard fare practices on a national level. A wealth of information regarding best practices in fare policy, technology, and fare media is presented by the Transit Cooperative Research Program (TCRP) and forms the basis of this section. Information is also supplemented by research on specific fare practices of transit agencies throughout the country.

An overall summary of TCRP Report 94, the update on Fare Policies, Structures, and Technologies shows that<sup>20</sup>:

- Overall fare levels are increasing, specifically the base cash fares
- Agencies are moving towards a more simplified fare structure
- Many agencies are moving away from a policy of free or reduced cost transfers and replacing the transfer policy with a day pass that can be purchased onboard vehicles
- Pre-paid and multi-trip fare media is growing
- Many agencies have either implemented or are exploring Smart Card technologies
- Regional fare integration, where multiple operators within a metropolitan region are moving towards a common fare policy and media improving the customer experience

<sup>20</sup> Transit Cooperative Research Program Report 94: Fare Policies, Structures, and Technologies pages 2 through 5



### 5.31 Fare Technology and Media

Fare technology and media represent the primary hardware and software for collecting passenger fares onboard transit vehicles. Transit agencies throughout the country use a variety of different fare technology and media (how the fare is paid). The technology and media have evolved greatly over the years. Current fare technology runs the range from non-registering fareboxes which are literally just containers that house the fare revenue deposited by passengers all the way up to SmartCard technologies that allow passengers to pay their fare with a quick pass of a credit card size fare instrument. Technology is evolving in such a way that some agencies have been experimenting with paying fares using SmartPhone applications. Some systems, primarily rail and Bus Rapid Transit systems, have off-board fare collection technology with a proof of payment system. Below is a description of different fare technology and media.

Non-registering fareboxes are the simplest fare technology. These fareboxes are little more than containers where passengers are able to deposit fares. These fareboxes can only accept cash fares or, if the system utilizes them, fare payment coupons. Flash passes, coupons, and punch cards are used for prepaid fare media. These fareboxes do not have the ability to track ridership payment characteristics. Many operators who use these fareboxes will have a separate passenger counter device that the operator manual "clicks" for each fare type. Very few systems use non-registering fareboxes nowadays.

Registering fareboxes allow for fares to be paid and data to be collected regarding fare types. These fareboxes can collect the number of passengers boarding a bus by each fare type for each trip operated. Registering fareboxes can be designed to accept different types of fare media including flash or punch passes or even magnetically coded fare cards. With magnetically coded fare cards, the fare type can be read automatically by the farebox. For punch and flash passes, operators can manually enter information regarding fare type paid. These are currently the most common types of fareboxes.

The newest fare technology used by transit agencies are known as a SmartCard system. The SmartCard fare instrument is the size of a credit card and can be loaded with any kind of pass or stored value passes. SmartCard readers are needed on fareboxes in order to process fares. Similar to the magnetically coded fare media, many different fare types are available and are automatically counted by the farebox itself. By installing SmartCard readers at each door of a transit vehicle, multiple door boarding can be facilitated. Another advantage of SmartCards is that they can be used by multiple systems. The Massachusetts Bay Transportation Authority (MBTA) Charlie Card, which is also accepted by ten of the fifteen Regional Transit Authorities<sup>21</sup>, is an example of a SmartCard. There is a high cost to

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<sup>21</sup> Charlie Card is accepted for fare payment by the following operators: Massachusetts Bay Transportation Authority, Berkshire Regional Transit Authority, Brockton Area Transit Authority, Cape Ann Transportation Authority, Cape Cod Regional Transit Authority, Lowell Regional Transit Authority, Merrimack Valley Regional Transit Authority, MetroWest Regional Transit Authority, Montachusets Regional Transit Authority, Southeastern Regional Transit Authority, and Worcester Regional Transit Authority



transit agencies when implementing SmartCards as they require new or modified fareboxes, and the fare media itself is rather expensive.

SmartCard technologies are constantly evolving such as with contactless technology where a user no longer swipes a farecard but simply taps the card on a reader and enters and mobile ticketing where ones pays their fare from their smartphone. An example of a contactless card is the Washington METRO SmarTrip card. Transit agencies are also starting to experiment with fare payment through cellular telephone. With this, the cellular telephone operates as a SmartCard and has the ability to store multiple pass options and fare types. This works by riders downloading an application onto their cell phone, payment is processed through the app and a transit pass is produced on the person's phone<sup>22</sup>. This mobile ticketing system is currently used by TriMet in Portland, OR, the first agency in the US to pilot this for fixed route. The user simply selects their rider and mode type to purchase a ticket, then when they want to use it they select the ticket which generates a QR code that the fare inspector can scan. The technology was developed by GlobeSherpa, a Portland based software company. Similar technology, developed by Bytemark, was deployed in 2014 at Capital Metro in Austin, TX. Locally the MBTA uses technology developed by Masabi for mobile payments on their commuter rail and ferry systems.

In the future, other technologies such as the Magic Band which Disney uses as admission to the park, connects to your credit card for easy payment and unlocks your hotel room, may be possible for travel on transit. The band contains a short range RFID chip similar to the read-only RFID<sup>23</sup> chip found in contactless SmartCard technology. The Disney Magic Band is similar to the UBand made by IDenticard. The UBand uses MIFARE<sup>24</sup> technology to provide contactless access and payment and is currently being used by Mohawk College in Ontario. In the United Kingdom, Barclaycard launched the bPay band a similar wrist band which users can link any VISA or MasterCard debit or credit card to and can be used at any establishment that accepts contactless payments (300,000 locations). Amongst the many things the band can be used to pay for is the fare (bus or rail) on Transport for London,<sup>25</sup> which collects all fares off the vehicle.

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<sup>22</sup> <http://trimet.org/mobiletickets/>

<sup>23</sup> Radio-frequency identification cards (RFID) is a wireless chip which uses electromagnetic fields to transfer data,

<sup>24</sup> MIFARE is the name of the technology (chip) that is created by NXP. It complies with international standard ISO/IEC 14443 for data security and transmission protocols for communication with contactless integrated circuit cards, proximity cards and identification cards.

<sup>25</sup> The agency who oversees the London rail and bus network.



Figure 63. SmartCard Technologies. Left WMATA Smartrip contact-less; Center TRI MET mobile ticketing; Right Disney's Magic Band

Fare media has evolved drastically over the last 100 years for transit from entirely cash based system to the new innovative contact technology merging today. The first fare media was the token followed by the ticket. These allowed transit agencies to offer discounts over the cash fare. Tickets were used until magnetic stripe cards were introduced, this allowed for the development of passes. Tap cards were developed next with RFID technology and had the capability of operating as a stored value card and as a daily, weekly monthly, etc pass. The newest technology is contactless “open” fare payments which are directly linked to debit or credit cards and can be in plastic card form, on a mobile device and now a wrist band. Regardless of the type of technology used reducing cash transfers benefits the transit system all around. The overhead cost to process cash as opposed to cards can be as much as double due to the security measures and personal needs to empty vaults and count money. Improved farebox technologies not only can improve operating costs but can speed up the boarding time of passengers thus reducing the overall travel time.

In Helsinki, an innovative fare strategy is being implemented through a new market approach viewing Mobility as a Service (MaaS). The principle of the MaaS approach focuses on door-to-door service and mobility as a whole package, instead of each mode individually. Through this method, users are able to plan their trip through one portal and payment system. Different packages provide riders with unique options to meet their transit needs. For example, an urban commuter package, available for purchase at a set price point, may include free public transport in the rider’s home city, up to 60 miles in taxi services, 300 miles for rental cars, and 1,000 miles in domestic public transport. Packages are flexible and can be adjusted to meet the needs of different service areas. Incorporating all transport modes into one, user-friendly interface will provide seamless service to the rider and encourage the use of public transportation over personal vehicles.



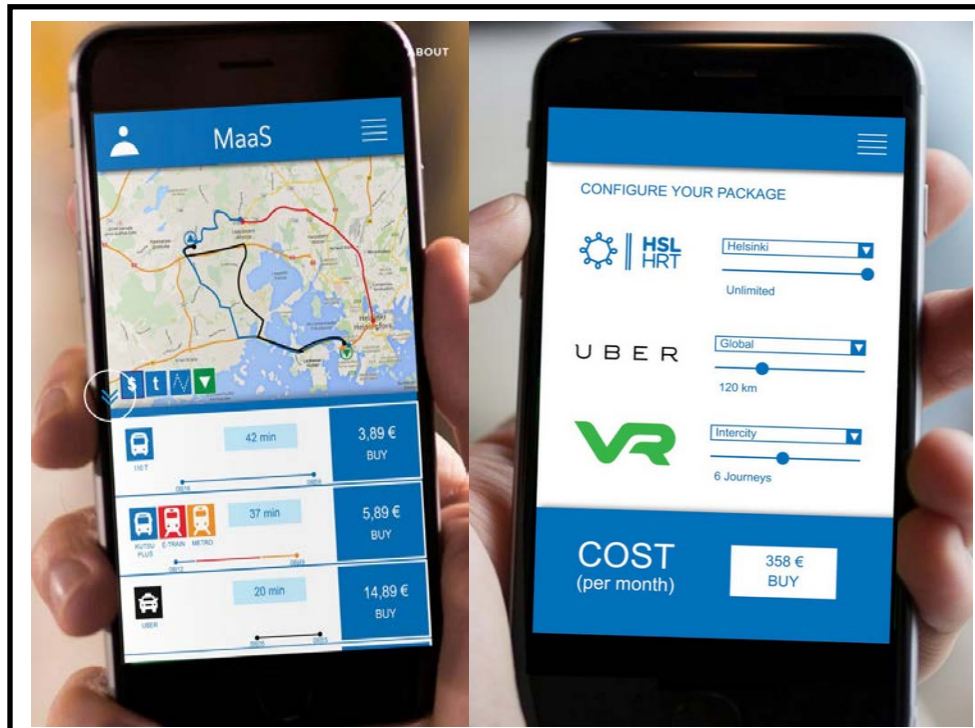


Figure 64. Helsinki Mobility as a Service App

Some systems have implemented off-board fare collection/proof of payment fare payment. Off board fare collection requires fare equipment located at stops and stations and allows for faster boardings. Passengers pay their fare off-board and are issued a receipt or their farecard is validated for the trip. Fare inspectors randomly check to see if passengers have paid their fares by scanning farecards or looking at the receipts. Those who have not paid fares are issued a citation.

Moving forward, the best plan of action involves each of the RTA's joining together to research and develop innovative fare policies and media for the next generation. Through collaboration, the RTA's have the chance to implement fare strategies that can function collectively across Massachusetts and be a model for innovation. As the Sheidt & Bachmann fareboxes and CharlieCard technology, that many of the RTAs have, becomes outdated and must be replaced this present an opportunity for the RTAs to explore alternative technology such as the MaaS project in Helsinki, mobile payments, or the bPay/Magic Band/Uband. A system-wide approach, as opposed to individual fare strategies for each RTA, will foster a cohesive transit system and provide riders an easier opportunity to travel between the RTA's.

### 5.32 Fare Policy and Standard Practices

A review of fare policies around the country provides a myriad of different fare types and fare media. Fare media types include unlimited ride passes and multi-ride/stored value transit fares. A description



of cash fares and transfer policies are included in this section. Fare policies and standard practices vary amongst various transit agencies and are suited to meet individual local conditions.

## **Fare Policies**

Cash fares are accepted by almost all transit agencies. Most transit agencies accept only exact fare and will not make change. A small number of agencies will make change for passengers on some or all services. Some agencies have limitation with their fare collection equipment that only allows the farebox to accept coins, while most operators are able to accept both bills and coins.

Unlimited ride passes allow users to take as many rides as needed over a set period of time. These passes are a pre-paid fare media and come in many increments. Most agencies have either a 30-day, 31-day or "monthly" pass. For a shorter duration, agencies may have a week pass or even a two-week pass. The shortest duration pass is a one-day pass and agencies that sell a one-day typically do not have free or discounted transfers. Unlimited ride passes provide a discount over cash fares, with the discount related to the number of times the pass is used as it represents a single payment over a time period. The issue with unlimited ride passes is that it typically requires a large upfront payment by customers to take advantage of the discount, which may be difficult for lower income users.

Multi-ride passes or stored value cards allow for passengers to buy a set number of transit trips ahead of time usually at a discount. These pass/stored value cards allow for the pre-paid purchase of discounted fares. Similar to the unlimited ride passes; these fares require a large upfront payment, although not as large as the unlimited ride passes, in order to take advantage of discounts. Multi-ride passes/Stored value cards can come in a variety of different types of media and formats including ticket books, tokens, punch cards, or as stored values on a fare card or SmartCard.

Some agencies have instituted free fares. Free fares primarily exist in places where the primary generator in the area is a major university. In these areas, funding sources for transit services come from the university. In other locations, college students are provided a free transit pass that is funded by student service fees, parking revenues at the college, general fund revenue, or a combination of these sources. An example of a system that has a free fare policy is Chapel Hill Transit in North Carolina, which serves the University of North Carolina<sup>26</sup>.

Transfer policies are a very important consideration and part of any fare policy and fare media. Transit passengers have varied origin and destination locations so it is impossible to serve all passengers without requiring passengers to transfer. Many systems are designed around bringing passengers to a central location where they can connect to another bus to reach their destination. Other systems have transfers occur at points where two or more routes intersect. Regardless of transfer location, transfer policies have an impact on ridership. The existing transfer policies include allowing transfers to occur for

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<sup>26</sup><http://www.townofchapelhill.org/town-hall/departments-services/business-management/fee-schedules/transit-policies-fee-schedules>

free, transfers to occur at a low cost, or requiring passengers to pay full fare when transferring. Some systems have different policies based on fare media used, for example a free transfer if using a SmartCard while cash passengers have to pay full fare when transferring.

### **Standard Practices**

Fare policies typically respond to local needs. In some locales the fare policy and changes to fare policies are well codified. In other locations, fare policies change only in response to an identified issue; otherwise fare policies may not change at all for a long time. Fare policies need to be responsive to local needs. The fare policy has to be cognizant of the need to provide an adequate local share of operating costs. That being said the fare policy has to also strike a balance between being equitable to all users, encourage pre-paid fares, encourage ridership, and the need to raise local revenue.

Federal rules and guidelines need to be taken into account in fare policy discussions. Environmental justice concerns also need to be taken into account as part of fare policy and fare policy changes as it relates to Title VI of the Civil Rights Act of 1964. Legal proceedings have forced modifications to fare policies and fare policy changes due to environmental justice concerns<sup>27</sup>. Environmental justice concerns are addressed by ensuring that fare policy changes are equitable for all services an agency operates. Fare policies also need to be consistent with rules and guidelines with the American's with Disabilities Act.

As stated previously, very few agencies have a policy regarding fare changes. Primarily, agencies adjust fare levels based on a specific need, usually the need for additional directly generated revenue. This could be in response to cuts in funding from other sources, changes in cost structure, or overall cost increases. On a philosophical level many agencies prefer to increase fares along with improvements in service so that passengers are receiving "better service" as part of higher fares.

The key elements of a fare policy include a base cash fare, multi-ride fare media, unlimited ride passes, and a transfer policy. Ten out of fifteen RTA's in Massachusetts use the Charlie Card SmartCard for fare payment which does have the ability to store unlimited ride passes. Beyond this fare policy, transit agencies have been partnering with colleges and universities to fund UPass programs which provide free trips for students and guaranteed revenues for the transit agency.

## **5.4 Comparison of VTA to National Trends**

This section presents how VTA compares to national trends in terms of fare rates and fare collection technology. For the most part VTA does not have any policies or practices that vary from national trends and practices. The few places where VTA differs from national trends, such as not using smartcards or not raising all fare types at the same time, the VTA has good reasons for not adopting

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<sup>27</sup> Transit Cooperative Research Program Report 94: Fare Policies, Structures, and Technologies page 5



such policies. Recommendations for additional changes to fare collection, technology, and media will be presented in chapter 7.

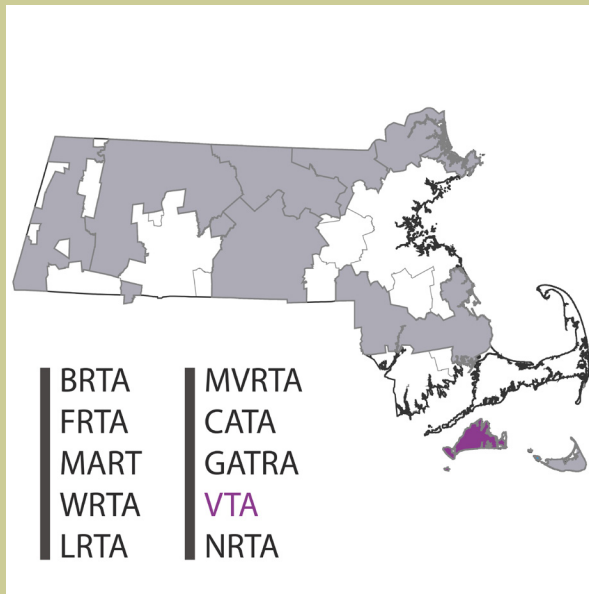
For fare collection, VTA does utilize electronic validating fareboxes for fare payment. While these fareboxes do have the ability to accept Smartcard payments, the system is not active on VTA buses. To activate this feature, VTA would have to coordinate with the farebox manufacturer and either coordinate with the MBTA to accept CharlieCard or develop an exclusive system. While the acceptance of CharlieCard on VTA buses would be ideal, however there are issues and concerns about revenue reciprocity with the CharlieCard system and the movement to a next generation fare payment system. Kiosks at the ferry terminal stations could be used to sell tickets, particularly on the off season when a ticket seller is not there, as well as educate passengers on the VTA system and routes. Overall, VTA's fare technology and equipment is consistent with national trends and may evolve over time to keep with trends.

VTA does have a variety of fare passes and payment methods that are consistent with the national trends. A cash fare is offered by VTA that is based on a zone system depending on how far a passenger travels. A number of unlimited ride passes are available for purchase by riders, with shorter durations available for visitors to the island. Overall, the fare and pass structure is consistent with national trends.

Table 1 shows the January fare levels on January 1, 2013 through 2018. This table shows that between 2013 and 2018 the only increase in base fares is the fare increase that went into effect on January 1, 2015. This fare increase occurred on all fare types except 3 day and 7 day passes. In 2016 3 day, 7 day, and annual pass fare will increase. This fare change policy is slightly different than the typical fare increase, where all fare media increases at the same time.

In the future it is recommended that VTA consider developing a door-to-door fare package for its seasonal riders. This would involve coordination with intercity service providers, MBTA, Cape Cod Regional Transit Authority, the ferry companies, taxi providers, and bicycle rental businesses to offer a complete transportation package such as what has been developed for Helsinki. This focuses on a door to door approach to transportation. It could be promoted through the VTA's website as well as other participants, and take the form of an "Island Traveler Package" that could provide door-to-door transportation from cities like Boston to Martha's Vineyard, as example.





# Chapter 6

## Environmental

**AECOM / URS**  
**TMD**  
Burke & Company





## 6. ENVIRONMENTAL

In 2010, MassDOT launched their sustainability and environmental responsibility initiative to “green” the state transportation system, called GreenDOT. All branches of the Commonwealth’s transportation system (transit, air, highway and planning) are subject to the policies contained within the GreenDOT initiative. The policy is driven by three primary objectives: (1) reduce greenhouse gas emissions, (2) promote healthy transportation options, and (3) support smart growth and development. In order to meet these objectives and to become a national leader in sustainability and transportation, MassDOT created an implementation plan in 2012 that outlines 7 themes (Air, Energy, Land, Materials, Planning Policy & Design, Waste, Water) and 16 sustainability goals. As part of the GreenDOT policy, each indicator was given a priority for implementation. Indicators for immediate implementation are those that were to be implemented by 2013, medium-term by 2015 and long-range policy targets for 2020.

While the concept of improving sustainability and environmental responsibility would prove beneficial for Massachusetts, coordination and input from the 15 RTAs across the state was not included in the development of the GreenDOT policy. As a result, many of the requirements were specifically intended for large impact divisions like MassDOT Highway, the MBTA & the Office of Transportation and Planning. In addition, while the GreenDOT policy outlines 331 indicators applicable to the rail and transit division, not all of these are relevant to the fifteen RTAs across the state<sup>28</sup>. Those that are not relevant are often the responsibility of the MBTA, Bay State Roads, metropolitan planning organizations, and/or MassDOT but not the RTA. Many of the policies extend beyond the responsibility and reach of any of the RTAs and the timeline for achieving the indicators are not realistic or necessarily right sized for the RTA’s. Many of the RTA’s (either individually or collectively) will require more time to implement these environmental initiatives. A logical step is for each RTA to coordinate and confirm with MassDOT which initiatives are the most appropriate and achievable actions that can be taken and how best to achieve them.

In addition to GreenDOT, Massachusetts recently passed regulation *310 CMR 60.05: Global Warming Solutions Act Requirements for the Transportation Sector and the Massachusetts Department of Transportation*. The purpose of the act is to assist the state in achieving their goals of reduced greenhouse gas emissions (GHG). There are various parts to the regulation that require interagency coordination between MassDOT, Metropolitan Planning Organizations (MPOs), Regional Transit Authority’s (RTAs), the Department of Environmental Protection and the Executive Office of Energy and Environmental Affairs. The RTAs are specifically given 4 tasks:

- Conduct comprehensive service reviews (CSRs),
- Identify service enhancements to increase passenger ridership
- Identify vehicle technology and operational improvements that can reduce GHG emissions
- Work within the MPO process to prioritize and fund GHG reduction projects and investments

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<sup>28</sup> Mass GreenDOT policy <http://www.massdot.state.ma.us/GreenDOT.aspx>

The RTAs along with MassDOT and the MPOs will be required to calculate GHG impacts on all RTP projects, consider GHG impacts when prioritizing and selecting projects, and report GHG impacts of all projects. Spreadsheet calculation tools have been developed for calculating GHG emissions and air quality analysis on bus replacements, new bus services, complete street programs and park and ride lots. The Department of Environmental Protection requires that the GHG impacts be measured for all projects and reported annually.

This section of the VTA plan examines how the policy's themes and their goals are being applied to regional transit authorities and which ones, in particular the VTA, is currently meeting. There are a total of 332 indicators identified in the GreenDOT policy, of which only 206 or 62% are applicable to the VTA. Of the 206 applicable indicators, 108 are short term indicators which are recommended to be in place by 2013, 75 are medium term indicators to be implemented by 2015 and the remaining 23 indicators should be implemented by 2020. VTA has met 77 (71%) of the short term, has met or is working towards meeting 73 (97%) of the medium-term and 22 (96%) of the long-range indicators (Figure 66). Overall, the VTA is meeting 144 (70%) of the 206 applicable indicators (Figure 1), even though 47% are not required to be met until the end of 2015 or 2020 according to GreenDOT.

**Table 6. GreenDOT Goals, Objectives and Indicators**

Theme	Goals	Objectives	Indicators	Applicable Indicators
<b>Air</b>	2	11	49	29
<b>Energy</b>	2	7	39	21
<b>Land</b>	2	9	45	32
<b>Materials</b>	3	14	64	50
<b>Planning, Policy &amp; Design</b>	3	12	56	24
<b>Waste</b>	2	9	33	25
<b>Water</b>	2	9	46	25
<b>Total</b>	<b>16</b>	<b>71</b>	<b>332</b>	<b>206</b>

The VTA is working continuously to achieve the indicators and has accomplished many of them ahead of schedule. Some of the applicable indicators are joint responsibilities of the VTA, MassDOT, the planning commission or the municipality and they must work collaboratively to achieve success. Additionally, of the 206 indicators that do not apply, some reasons may be because they are specific to the MBTA, specific to rail, require that there has been or will be new construction, they are for MassDOT owned facilities, they are for environmentally sensitive land areas, and/or there may be other constraints beyond the VTA's control.

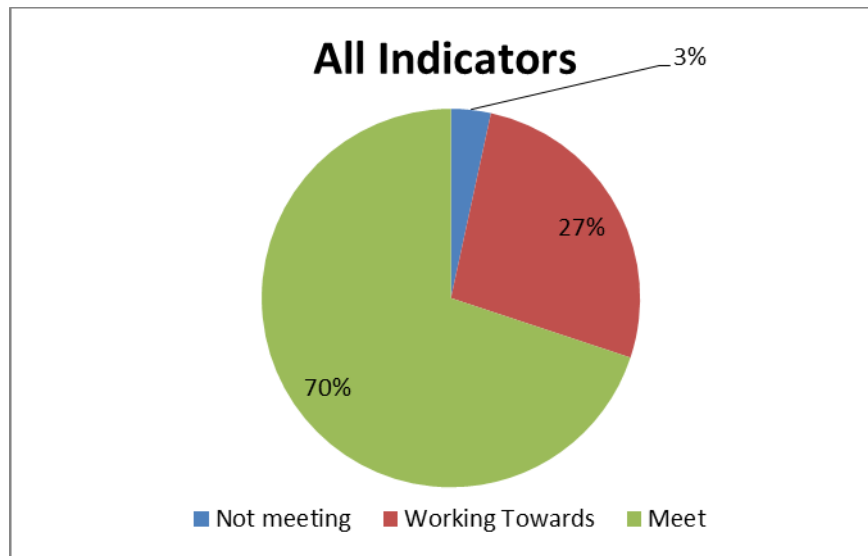


Figure 65. All Applicable Indicators by Level of Attainment

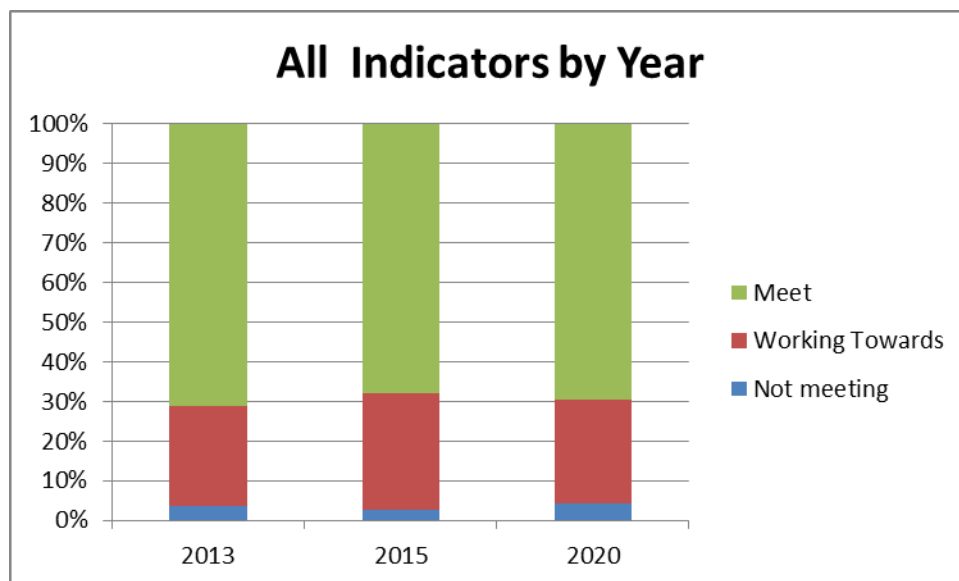


Figure 66. All Applicable Indicators Attainment by Year

## 6.21 Air

Air goals include improving the state's air quality and reducing greenhouse emissions. There are 49 indicators for air but only 29 (59%) are applicable to VTA. VTA is meeting 18 (62%), working towards 10 (35%) and not meeting 1 (3%) of the applicable air indicators as seen in Figure 68. Figure 69 outlines the air indicators by implementation time and level of achievement. There are 20 indicators in the air theme which are not applicable to VTA. For the applicable indicators 12 are short term indicators, 11 are medium-term, and 6 long-range. Of those that are applicable to VTA they have met 7 (58%) of the

immediate implementation (2013) indicators, and are working towards or meeting 10 (91%) of the medium-term (2015) indicators and 6 (100%) of the long-range indicators.

To improve statewide air quality VTA has purchasing and using Hybrid support vehicles since 2005 (Figure 67). VTA is working to achieve the air indicators but many are not applicable, such as those related to fuel efficiency and operations efficiency because they are specific to commuter rail which VTA does not operate.



Figure 67. Hybrid Vehicles

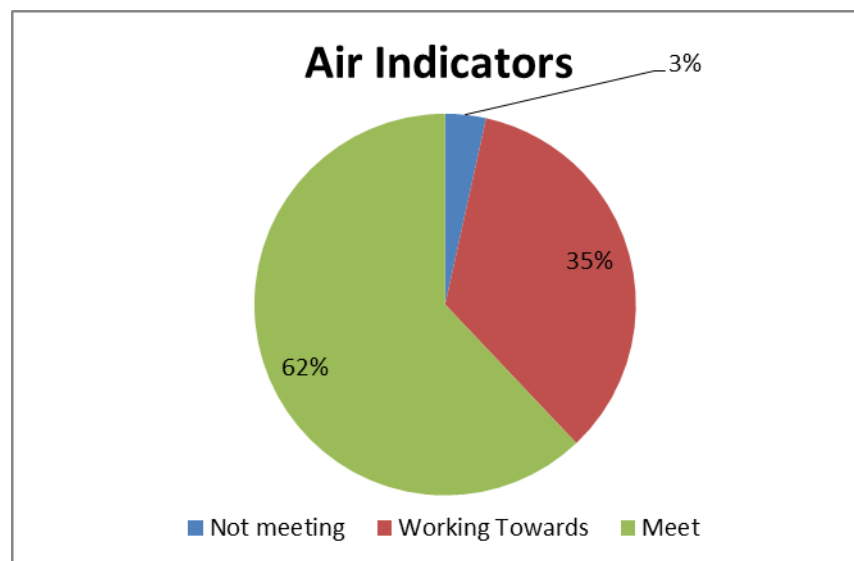


Figure 68. Air Indicators Level of Attainment

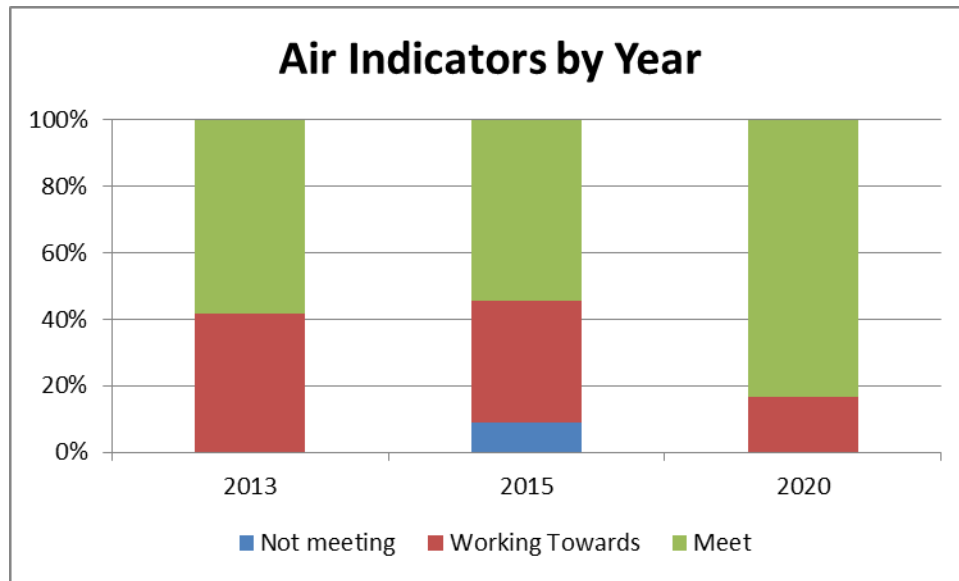


Figure 69. Air Indicators Attainment by Year

Table 7. Air Goal Achievement

Goal 1: Improve Statewide Air Quality	
Objective: Reduce emissions from maintenance & construction equipment	
Indicator	Contribution
Retrofit + use of hybrid engine system for each vehicle class piloted	Working towards – dependent on reliable & available technology & funding
Diesel retrofit program for on and off-road vehicles expanded	Yes
Hours of non-revenue vehicle operation reduced by 5% through operations streamlining	Yes
Electric and/or full exhaust cycle motors have replaced 2-stroke equipment	Yes
All new heavy equipment purchased run hybrid, CNG, or other high efficiency engines	Working towards
Objective: Decrease total engine idling	
Indicator	Contribution
On-board electrification of maintenance equipment for each vehicle type piloted	Working towards
MassDOT compliance with anti-idling laws ensured	Yes
On + off-road anti-idling policies included in all construction, maintenance + service contracts	Working towards - Will put in if future contracts are awarded
Anti-idling policies, more restrictive than state law developed to eliminate unnecessary idling	Yes
Anti-idling technology in transit vehicle + maintenance truck operations utilized	Working towards - New buses that are coming are equipped with anti-idling technology
90% of MassDOT over-road maintenance vehicles run hybrid engines or have on-board electrification	Not applicable – not MassDOT



Objective: Decrease volatile organic compound discharge from facilities	
Indicator	Contribution
Spray painting restricted to permitted booths + emissions controls installed at spray shops	Not Applicable - No painting booth
All maintenance yard gasoline fueling pumps retrofitted with vapor recovery systems	Yes
Technologies for diesel + jet fuel vapor recovery explored + implemented where feasible	Yes for diesel
Air emission control training provided to all maintenance employees	Working towards - We will incorporate this training into our existing training
Objective: Increase fuel efficiency of operating transit fleet	
Indicator	Contribution
100% of transit bus fleet replaced or retrofitted with hybrid systems or best in class fuel efficiency vehicles	Yes
Statewide diesel transit + school bus retrofit program optimized + balanced with efficient vehicle purchases	Yes
20 new high efficiency commuter rail diesel locomotive in service	Not Applicable - Do not operate Commuter rail
40 new high efficiency commuter rail locomotives purchased	Not Applicable - Do not operate Commuter rail
Objective: Increase efficiency of transportation systems operations	
Indicator	Contribution
Bus route efficiency measures implemented by all transit operators	Working towards - We have on most routes, undergoing a study that may reveal more possible efficiencies
Planned bridges and ROWs designed to increase options for double tracked lines + allow double-stack cars	Not Applicable - Do not operate rail
Six rail corridors upgraded to increase speed including separated grade crossings or other improvements	Not Applicable - Do not operate rail
Dwell time of commuter rail trains at stations decreased	Not Applicable - Do not operate Commuter rail
Program initiated to increase the number of high level commuter rail platforms	Not Applicable - Do not operate Commuter rail
Electronic tolling facility of road and parking facilities launched	Not Applicable - No tolled parking facilities

Goal 2: Reduce Greenhouse Gas Emissions	
Objective: Increase vehicle electrification facilities	
Indicator	Contribution
At least 30 electric vehicle (EV) chargers installed along state highway system + transit parking areas	Not Applicable - No parking facilities
All major park and ride, + transit parking lots (>50 vehicles) have charging stations	Not Applicable - No parking facilities
Feasibility analysis of expanding the use of battery + fuel cell powered buses completed	No, until technology & funding is secured
Optimal Statewide EV plug-in station network planned + implemented	Not Applicable - State Initiative
The feasibility of electric commuter rail locomotives studied within the Commuter Rail Master Plan	Not Applicable - Do not operate Commuter rail

Objective: Increase use of alternative + renewable fuels	
Indicator	Contribution
Bio-fuel (such as B10-B20 biodiesel) tested in oil heated buildings	Not Applicable - Not compatible with our heating system
20% biodiesel (B20) blend purchased for oil heated buildings	Not Applicable - Not compatible with our heating system
Recycled vegetable oil / non-food stock impairing fuel purchased for biodiesel blends	Not Applicable - No bio diesel
Volume purchasing of alternative fuels established across facilities + divisions	Working towards – CNG study going out this summer
B10 + B20 biodiesel pilot begun in all diesel vehicle types	Not Applicable - No biodiesel & not consistent with new diesel engines
B10 to B20 biodiesel utilized in all diesel vehicles, depending on availability, vehicle type + season	Not Applicable - No biodiesel & not consistent with new diesel engines
Objective: Increase fuel efficiency of light duty vehicles	
Indicator	Contribution
Vehicle fleet inventoried + prioritized for replacement and retrofit based on emissions reduction	Yes
A portion of light duty fleet in urban areas integrated with car-share programs	Not Applicable – Not urban area nor is Zipcar on MV
Light duty fleet downsized with carpooling, interdepartmental vehicle use, + car-sharing	Yes
All light duty vehicles replaced or retrofitted with hybrid, electric, CNG or best in class technology	Yes
50% of DOT light vehicle fleet replaced or retrofitted with zero or partially zero emission vehicles	Not Applicable - Not DOT
Objective: Increase fuel efficiency of maintenance + construction equipment	
Indicator	Contribution
Performance measures added to maintenance + construction contracts for green fleets	Working towards - If we do a future contract, we will
15% of maintenance fleet replaced with best in class emission ratings	Yes
Objective: Increase telecommuting + meetings by web conference	
Indicator	Contribution
Teleconference technology capabilities installed at all offices	Yes
Take home vehicle fleet for office employees eliminated	Yes
Telecommuting + flex time options expanded for employees	Working towards - For applicable employees, yes. Improving infrastructure to broaden base to allow more
Peak hour single occupancy vehicle trips by employees reduced by 20%	Working towards - Not sure we will every hit the 20% mark, but we have altered some run cuts to reduce the number of shift changes during peak hours
Objective: Track progress toward statewide GHG reduction + other sustainability goals	
Indicator	Contribution
All resource use + purchases reported for performance monitoring	Yes
MassDOT's GHG emissions target of 40% reduction from a 2002 baseline is met	Yes

## 6.22 Energy

Energy goals are focused on consuming less energy and increasing the percentage of energy which comes from renewable sources. There are 39 indicators for energy but only 21(54%) are applicable to VTA. VTA is meeting 16 (76%), working towards 5 (24%) and not meeting 0 (0%) of the applicable energy indicators as seen in Figure 71. Figure 72 outlines the energy indicators by implementation time and level of achievement. There are 18 indicators in the energy theme which are not applicable to VTA. For the applicable indicators 7 are short term indicators, 9 are medium-term, and 5 long-range. Of those that are applicable to VTA they have met 6 (86%) of the immediate implementation (2013) indicators, and are working towards or meeting 9 (100%) of the medium-term (2015) indicators and 5 (100%) of the long-range indicators.

VTA has installed motion detectors throughout their office in order to reduce their energy consumption. To manage the temperature inside the building a wireless remote access thermostat has been set up. It is programmed for seven days a week with four different settings based on the time of day. If the temperature exceeds allowable cold and hot thresholds an email alert is sent. This allows for the efficient use of energy and monitoring of the system even when no one is in the facility (Figure 70).

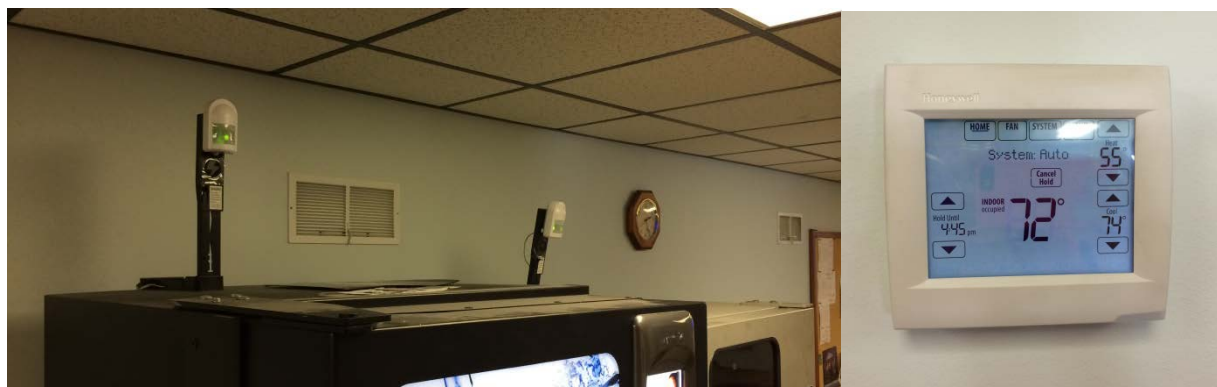


Figure 70. Left: Motion Detectors, Right: Automated Thermostat

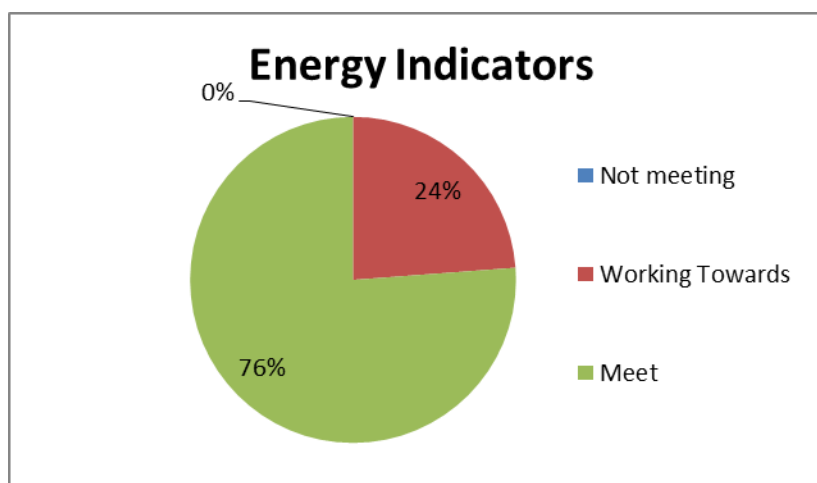


Figure 71. Energy Air Indicators Level of Attainment

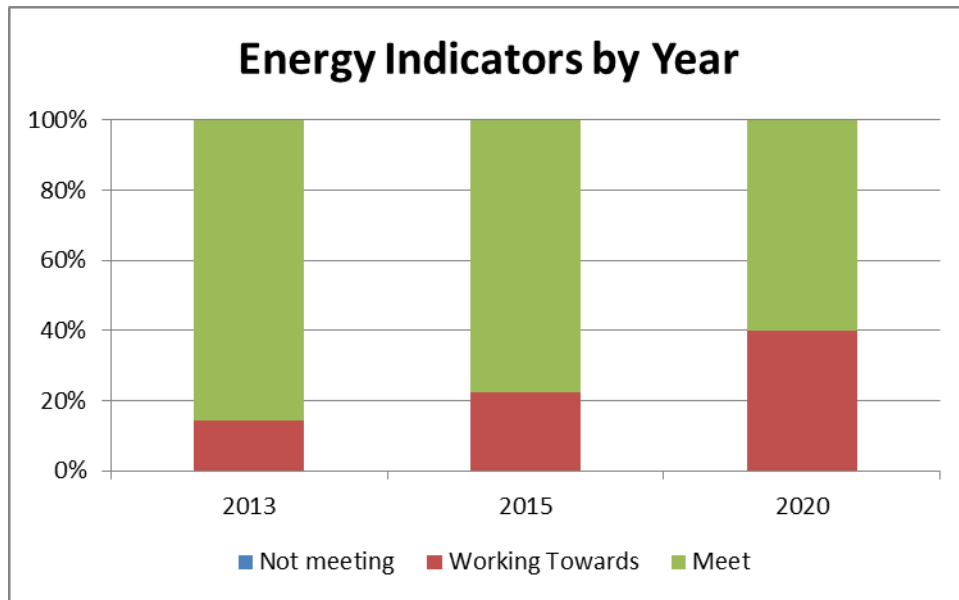


Figure 72. Energy Indicators Attainment by Year

Table 8. Energy Goal Achievement

Goal 1: Consume Less Energy	
Objective: Reduce building electricity use	
Indicator	Contribution
Electrical + HVAC use of all buildings + facilities audited	Yes
Office electrical equipment shutdown program implemented	Yes
Employee education and incentive programs established to encourage energy use reduction	Working towards - Working on policies to implement into personnel policies
All buildings not updated in 10 years renovated / overhauled / consolidated	Yes
Motion sensor/occupancy lighting installed in all buildings	Working towards - In owned building, yes. A couple of rooms were not sensed and will be
Electricity purchased by the MBTA reduced by 20% per passenger mile	Not Applicable - Not the MBTA
Objective: Reduce electricity use by outdoor lighting	
Indicator	Contribution
Use of incandescent bulbs eliminated	Yes
Outdoor lighting assets + technology inventoried	Yes
50% of all outdoor lighting (ROW, parking lots, tunnels, runways, airfields) retrofitted	Yes
100% of all outdoor lighting retrofitted	Yes
Electricity consumption for lighting reduced by 50% through retrofits and operations	Yes
All traffic signals replaced with LED bulbs	Not Applicable - No traffic signals on MV

<b>Objective: Reduce fuel use for heating buildings + water</b>	
<b>Indicator</b>	<b>Contribution</b>
Audit of all heating systems + water fixtures conducted + opportunities for retrofit identified	Yes
Temperatures of all adjustable boilers/heaters reduced	Yes
All inefficient / electric water heaters replaced with high efficiency tanks or tankless systems	Working towards - One has, one in progress
Oil heating systems converted to natural gas or renewable alternatives where feasible	Yes
Geothermal + cogeneration heating systems studied for all new buildings	Yes
Envelops of all buildings are evaluated and prioritized for insulation upgrades	Yes
Total heating fuel + costs for MassDOT-owned buildings reduced by 20%	Not Applicable - Owned by VTA
Total heating fuel + costs for MassDOT-owned buildings reduced by 35%	Not Applicable - Owned by VTA
Insulation of all heated / air conditioned buildings assessed and replaced as needed	Yes
All MassDOT-owned HVAC systems +/- windows retrofitted or replaced	Not Applicable - Owned by VTA
Shade tree planting around MassDOT buildings increased to improve building energy performance	Not Applicable - Owned by VTA
50% of all inefficient / electric water heaters replaced with high efficiency tanks or tankless systems	Yes
<b>Objective: Reduce electricity consumption by subways + trolleys</b>	
<b>Indicator</b>	<b>Contribution</b>
Evaluation of on-board and/or wayside energy recapture conducted for all subway lines	Not Applicable - Do not operate rail
Electrical systems of all subway lines evaluated and retrofitted where cost effective	Not Applicable - Do not operate rail
All outdated transit vehicles replaced with high efficiency cars	Not Applicable - Do not operate rail
New subway car purchases contain regenerative braking technology	Not Applicable - Do not operate rail
RFR issued for wayside station regeneration installation	Not Applicable - Do not operate rail

<b>Goal 2: Increase Reliance on Renewable Energy</b>	
<b>Objective: Participate in MassDOT Energy Initiative</b>	
<b>Indicator</b>	<b>Contribution</b>
Create a MassDOT energy management plan	Not Applicable - Not MassDOT
All energy consumption (electricity / heating / fleet fuel) tracked + centrally reported	Yes
Feasibility study completed for additional wind power generation sites on MassDOT properties	Not Applicable - Not MassDOT
<b>Objective: MassDOT GreenDOT Implementation Plan Increase energy produced at MassDOT facilities</b>	
<b>Indicator</b>	<b>Contribution</b>
Comprehensive feasibility assessment and renewable energy generation plan completed	Not Applicable - Not MassDOT
4 RFR's issued by MassDOT for additional renewable generation sites	Not Applicable - Not MassDOT
10 new renewable energy projects installed at MassDOT facilities	Not Applicable - Not MassDOT
At least 5% of electricity demand generated by MassDOT renewable projects	Not Applicable - Not MassDOT



Objective: Purchase more renewable energy	
Indicator	Contribution
Bulk purchasing of green electricity portfolio with other state agencies initiated	Not Applicable - is a MassDOT initiative
12% of electricity needs met through production or green energy purchases	Working towards – Electrical supplier is working towards. Limited by geographic & local requirements
25% of electricity needs met through production or green energy purchases	Working towards – Electrical supplier is working towards. Limited by geographic & local requirements

## 6.23 Land

Land goals are aimed at using sustainable vegetation maintenance practices and protecting significant habitat areas and natural landscapes. There are 45 indicators for land but only 32 (71%) are applicable to VTA. VTA is meeting 27 (84%) and working towards 5 (16%) applicable land indicators as seen in Figure 74. Figure 75 outlines the land indicators by implementation time and level of achievement. There are 13 indicators in the land theme which are not applicable to VTA. For the applicable indicators 19 are short term indicators, 11 are medium-term, and 2 long-range. Of those that are applicable to VTA they have met 18 (95%) of the immediate implementation (2013) indicators, working towards or meeting 11 (100%) of the medium-term (2015) indicators, and are working towards or meeting 2 (100%) of the long-term (2020) indicators. 100% of long term indicators has been achieved through planting native vegetation.

Many of the indicators are not applicable because there are no significant habitats on any of the VTA property, no endangered species and no surplus land. VTA has installed new LED exterior parking lot lights and replaced the dawn to dusk lights on the building with LED bulbs (Figure 73).



Figure 73. New LED Parking Lot Lighting

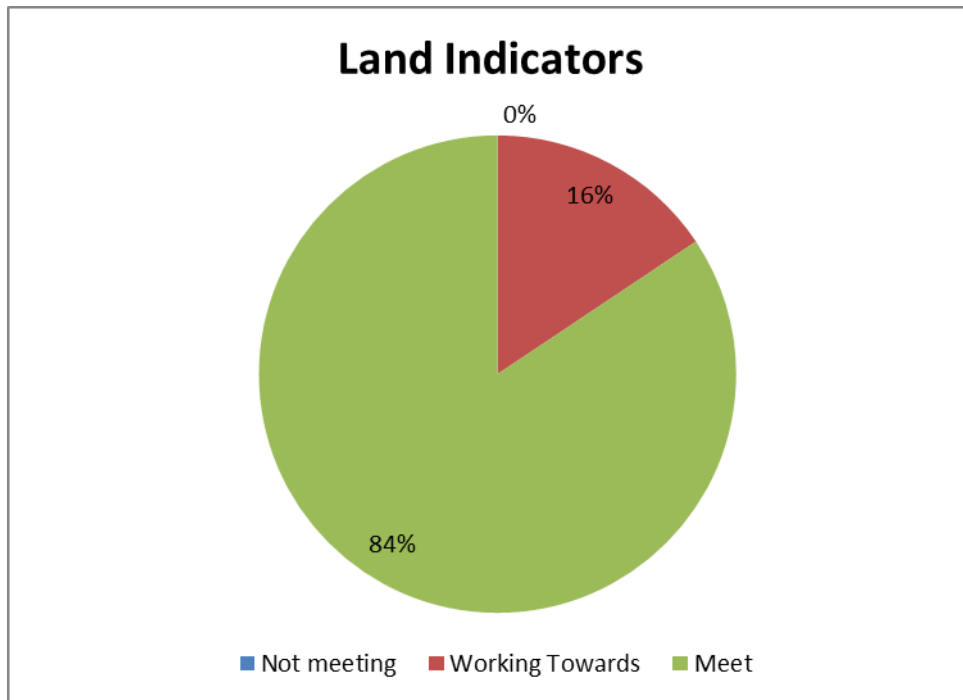


Figure 74. Land Indicators Level of Attainment

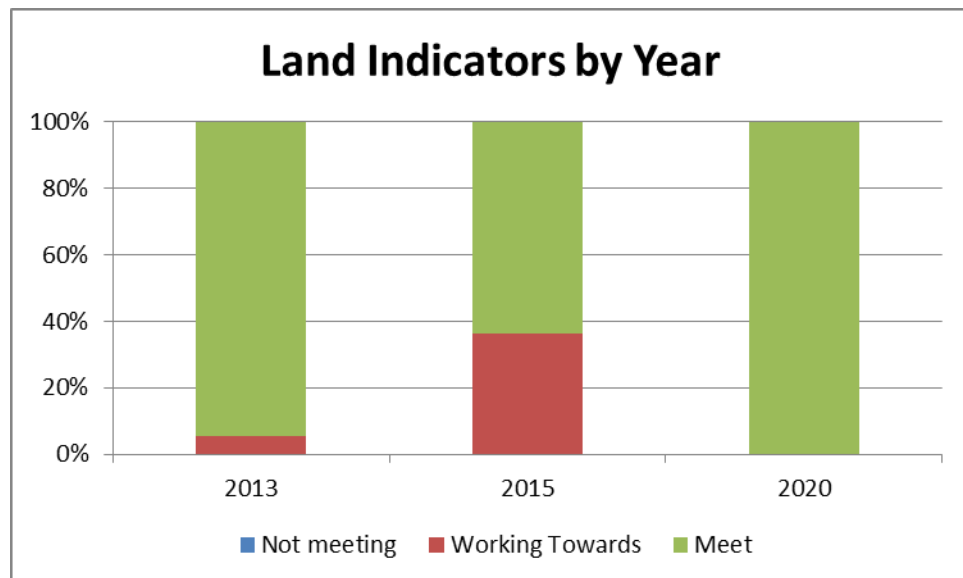


Figure 75. Land Indicators Attainment by Year

**Table 9. Land Goal Achievement**

<b>Goal 1: Minimize Energy + Chemical Use in Maintenance</b>	
<b>Objective: Increase acreage of land planted with native / low maintenance vegetation</b>	
<b>Indicator</b>	<b>Contribution</b>
New facilities planted with sustainable, minimally managed native landscape	Yes
Lawn installations around five facilities replaced with natural (low maintenance) vegetation	Yes
Native plant restoration or managed fallow habitat restoration increased 25% along ROWs	Yes
Available land surrounding all rural depots and offices planted with native vegetation	Yes
<b>Objective: Decrease area + frequency of land mowed</b>	
<b>Indicator</b>	<b>Contribution</b>
Inventory of grassed area conducted	Yes
Turf grass replaced with broad spectrum blend of grasses including warm season + slow growing for low maintenance	Not Applicable - No turf grass
Mowing frequency reduced by 25%	Yes
Mower blades raised in turtle habitat + areas contiguous with natural areas as standard operating procedure	Yes
Mowing + brush cutting jobs are scheduled around animal nesting season to the maximum extent possible	Yes
<b>Objective: Implement an integrated vegetation management approach for ROWs + facilities</b>	
<b>Indicator</b>	<b>Contribution</b>
Landscape areas inventoried by habitat area + maintenance regime	Not Applicable, planning commission responsibility
Adopted Vegetation Management Plans focus on integrated management approach	Not Applicable, planning commission responsibility
Soil augmentation utilize organic landscape techniques + minimize nutrient loads to water supplies	Yes
Compost materials used as the preferred soil amendment in all maintenance + construction projects	Working towards - When appropriate
<b>Objective: Require intelligent use herbicides + pesticides in construction + maintenance</b>	
<b>Indicator</b>	<b>Contribution</b>
Mechanical weed control utilized to minimize traditional herbicide use	Not Applicable - No weed control
Herbicides used only in conjunction with integrated + sustainable roadside/railway vegetation management plans	Yes
Increase number of employees trained for herbicide application to allow more selective application	Yes, by appropriate agencies
Integrated pest management (IPM) implemented for all maintenance projects + construction sites	Yes, by appropriate agencies
Ongoing training for employees + technical assistance for municipalities on organic/IPM practices established	Yes, by appropriate agencies

<b>Objective: Protect, preserve + enhance woodland + urban tree coverage</b>	
<b>Indicator</b>	<b>Contribution</b>
2 to 1 tree replacement policy implemented where woodland preservation desired	Yes
Mature, healthy tree preservation is maximized in maintenance and project design where feasible	Yes
Trees and naturalized landscaping emphasized in revised Project Development + Design Guide	Yes
Sustainable roadside woodland management plan established for construction and maintenance	Working towards - Will in any future contracts
Urban street tree coverage enhanced during improvement projects	Not Applicable - Not urban area
Coordinated tree planting policy established to encourage locally supported urban forestry practices	Not Applicable - Not urban area
100,000 trees planted along roadways as part of MassDOT's Complete Streets practices	Not Applicable - Not RTA applicable

**Goal 2: Enhance Ecological Performance of MassDOT Impacted Land**

<b>Objective: Increase habitat preservation + enhancements</b>	
<b>Indicator</b>	<b>Contribution</b>
Proactively coordinate project development with MA Department of Fish + Game	Not Applicable - Not MassDOT land
Restored + maintained areas increased for non-urban construction projects	Not Applicable - Not MassDOT land
25 nest boxes installed at appropriate locations	Not Applicable - Not MassDOT land
Surplus land with high natural resource value evaluated for transfer to appropriate state agencies	Not Applicable - No surplus land
Grassland and/or Woodland Management Plans in place for all appropriate facilities	Working towards
Wildlife + endangered species training program provided for applicable employees	Not Applicable, planning commission responsibility
Ten rare species habitat management/ enhancement projects initiated within right-of-way	Yes – planning commission staff are trained & involved in any VTA project
<b>Objective: Increase wildlife accommodation along ROWs + facilities</b>	
<b>Indicator</b>	<b>Contribution</b>
Wildlife hazard mitigation plan(s) implemented for all facilities	Working towards
Reptile + amphibian + fish passage structures incorporated into maintenance activities	Working towards - Will be in future contracts
Project forms revised to include wildlife accommodations measures early in design review	Yes
Wildlife fencing along ROWs/properties within all critical habitat areas evaluated + installed	Yes

<b>Objective: Decrease quantity of invasive + noxious species</b>	
<b>Indicator</b>	<b>Contribution</b>
Planting of all listed noxious or invasive species prohibited	Yes
All stockpiled materials screened for noxious or invasive species	Yes
Transportation of cut wood materials limited to avoid beetle + other pest transportation	Yes
Aggressive species early detection + rapid response program in place	Not Applicable, planning commission responsibility
Invasive species control on sites are managed with minimal adverse impact on other species	Yes
Active invasive species management programs in place within priority habitat areas	Yes
All maintenance crews trained on invasive species detection	Yes
<b>Objective: Decrease outdoor light pollution</b>	
<b>Indicator</b>	<b>Contribution</b>
New lighting designed to conserve energy + avoid light pollution	Yes
Light shields installed in coordination with roadway + parking lot lighting fixture retrofits	Yes

## 6.24 Materials

Material goals include using environmentally friendly products, using innovative materials and construction techniques that leave smaller environmental footprints, and having green facilities. There are 64 indicators for materials but only 50 (78%) are applicable to VTA. VTA is meeting 36 (72%), working towards 12 (24%) and not meeting 2 (4%) of the applicable material indicators as seen in Figure 77. Figure 78 outlines the material indicators by implementation time and level of achievement. There are 14 indicators in the materials theme which are not applicable to VTA. For the applicable indicators 29 are short term indicators, 18 are medium-term, and 3 long-range. Of those that are applicable to VTA they have met 22 (76%) of the immediate implementation (2013) indicators, and are working towards or meeting 17 (94%) of the medium-term (2015) indicators and 3 (100%) of the long-range indicators.

VTA uses a cleaning product called “Greening the Cleaning” which are products made from naturally-occurring plant and mineral based ingredients and free of harsh chemicals known to cause health issues.





Figure 76. Environmentally Friendly Cleaning Products

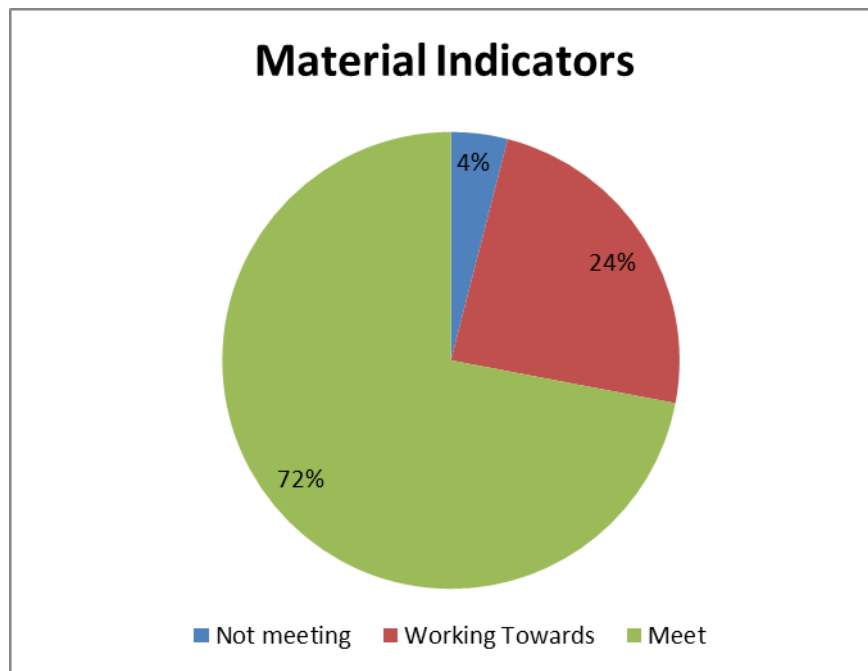


Figure 77. Materials Air Indicators Level of Attainment

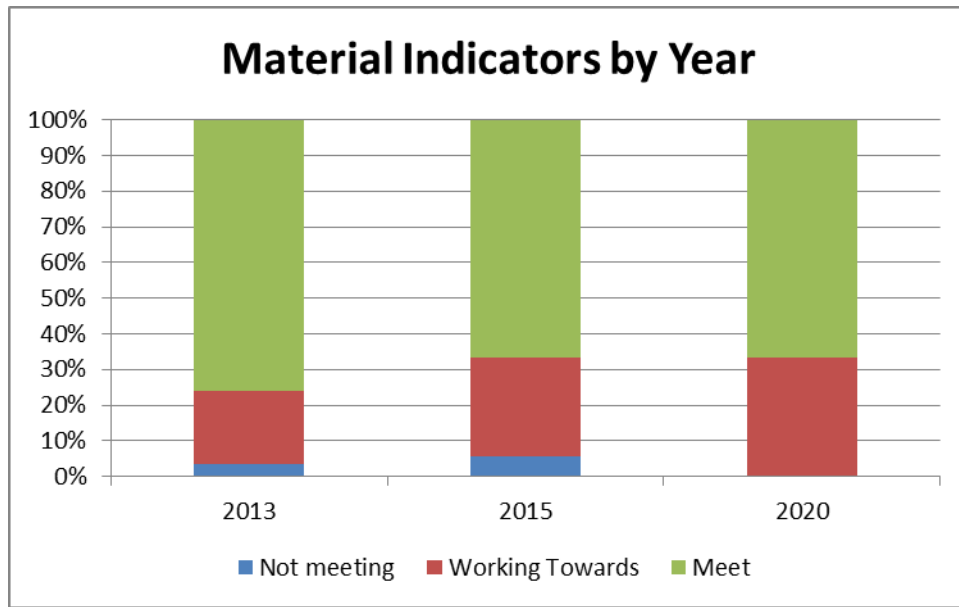


Figure 78. Material Indicators Attainment by Year

Table 10. Material Goal Achievement

Goal 1: Purchase Environmentally Preferred Products	
Objective: Implement an environmentally preferred materials purchasing program	
Indicator	Contribution
Environmentally preferred materials purchasing programs implemented in collaboration with OSD	Yes, when appropriate. VTA procures & sources many green products internally.
Low or no volatile organic compound furniture + flooring purchased	Yes
100% recycled content paper products purchased	Yes
Reclaimed + recycled materials utilized for landscaping + earthwork	Yes
Only refrigerators with low Global Warming Potential (GWP) refrigerants and insulation purchased	Yes
Sustainable Forestry Certified wood for permanent or temporary construction utilized	Yes
Standards for recycled content of traffic control/safety devices developed	Not Applicable - No traffic control devices here
Sustainability practices integrated into all construction and service contract evaluation criteria	Yes

<b>Objective: Purchase energy efficient equipment</b>	
<b>Indicator</b>	<b>Contribution</b>
Only Energy Star or Electronic Product Environmental Assessment Tool certified electronic products purchased	Yes
Total electronic appliances within office locations reduced	No
Energy efficient criteria utilized for shop equipment + machinery purchases	Yes
<b>Objective: Use environmentally friendly cleaning products + procedures</b>	
<b>Indicator</b>	<b>Contribution</b>
Maintenance products + procedures utilized that pose least harm to humans + the environment	Yes
Protocols for disposal of all cleaning product waste established	Yes
Environmentally friendly cleaning products purchased when available	Yes
Environmental friendly cleaning products required to be used within vendor service contracts	Yes
<b>Objective: Reduce hazardous chemical use in operations + maintenance</b>	
<b>Indicator</b>	<b>Contribution</b>
Hazardous materials substitution program developed	Yes
Hazardous materials spill prevention control and countermeasures plan created	Yes
Lead free wheels purchased and steel weighted wheels phased in to replace older wheels	Yes
Natural or organic fertilizers, pesticides, + landscaping materials purchased	Yes
Low or no volatile organic compound paints applied on indoor facilities	Yes
Purchasing lists + disposal protocols for engine service + maintenance standardized	Yes
Technology implemented reducing the quantity of salt applied to roadways proportional to weather conditions	Yes
<b>Objective: Increase opportunities for local vendors or locally sourced products sold at facilities</b>	
<b>Indicator</b>	<b>Contribution</b>
Vendor solicitation for MassDOT facilities written to encourage local ownership / sourced products	Yes
Lease language for MassDOT facilities written to encourage locally sourced products	Not Applicable - Not MassDOT facility
Local vendors + locally sourced products sold at MassDOT facilities doubled	Not Applicable - Not MassDOT facility

**Goal 2: Improve Life-Cycle Impacts of Investments**

**Objective: Reduce energy inputs into paving operations**

Indicator	Contribution
Warm asphalt mix chosen as the standard state specification and hot mix asphalt eliminated	Yes
Two pilots of cold in-place paving completed	Working towards, should a major paving project occur in the future
Standard specifications + guidelines for expansion of cold in-place paving established	Working towards, should a major paving project occur in the future
Two pilots of full depth reclamation advertised	Working towards, should a major paving project occur in the future
Standard specifications + guidelines for expansion of full depth reclamation projects established	Working towards, should a major paving project occur in the future
Research to increase the recycled content, reduce energy inputs, and improve vehicle efficiency of paving completed	Not Applicable - MassDOT responsibility

**Objective: Increase total volume of materials sourced within 200 miles of construction site**

Indicator	Contribution
Total weight/volume/cost of material purchased locally (within 200 miles) measured in all projects	Working towards – for the next project
Product source information added to bidding requirements	Yes
Cost share of locally sourced materials increased 20% on state funded projects	Working towards - When practical

**Objective: Increase % of recycled materials in paving + concrete installations**

Indicator	Contribution
20% of recycled paving material content used in road resurfacing projects	Yes
25% recycled paving material content used in road reconstruction projects	Not Applicable – we do not pave roads
The highest recycled content paving and base material available utilized for shared-use paths	Not Applicable – we do not pave SUP's
Use of recycled rubberized asphalt + rubberized asphalt sealer increased	Yes
Minimum 25% fly ash, slag concrete, or silica fume utilized	Working towards - When available
Innovative sustainable concrete construction techniques encouraged in contracts	Working towards - When available
20% recycled course aggregate concrete used in all suitable applications	Working towards – for the next project

Objective: Increase albedo factor in hardscapes, rooftops + paving	
Indicator	Contribution
Solar Reflectivity Index minimum of 78 instituted for all roofing projects	No - FAA will not allow solar at our facility
Two innovative roofing (green, vegetation or blue water) projects piloted	Working towards – for the next project
All new roofing installations utilize high measured albedo factor materials	Working towards – for the next project
Albedo factor increased in paving surfaces + hardscape materials	Working towards – for the next project
Urban roadways + parking lots designed to maximize shade coverage of asphalt + concrete surfaces	Not Applicable - Not urban
Solar Reflectivity Index of at least 30 required for paving projects	Yes
Objective: Design for deconstruction + reuse	
Indicator	Contribution
Road rehabilitation standards developed for reuse of existing installations	Not Applicable - When practical
Expertise in designing for deconstruction specified in all RFRs for design contracts	Yes - If we do deconstruction we will use it these in our RFR
Procurement criteria include incentives to contractor bids utilizing higher recycled content materials	Yes
Lifecycle analysis in design, project alternative + material selection included	Yes
Readily reusable + renewable materials encouraged in design specifications	Yes

Goal 3: Build Green Facilities for MassDOT	
Objective: Design all new facilities to green building standards	
Indicator	Contribution
New facilities funded or built by MassDOT over 20,000 sq. ft. designed to MA LEED Plus	Yes - We will if we build again
New facilities funded by MassDOT designed to LEED Gold or Net Zero Energy Building standard	Yes - We will if we build again
Objective: Retrofit existing facilities to meet environmental design criteria	
Indicator	Contribution
All window AC units removed from office buildings or replaced with Energy Star units	Yes
Three building retrofits to LEED Existing Buildings Operations + Maintenance (EBO+M) initiated	Yes – would include in future contracts
Air circulation/filtration of MassDOT owned indoor facilities improved	Not Applicable - Not MassDOT employees
Wildlife fencing along ROWs/properties within all critical habitat areas evaluated + installed	Not Applicable



<b>Objective: Relocate offices + encourage healthy transportation options</b>	
<b>Indicator</b>	<b>Contribution</b>
Offices in town or city centers relocated to be served by transit, walking + bicycling	Yes
Provide transit pass exchange for employees with subsidized parking benefits	Not Applicable – No paid parking
Free parking + take home vehicles for MassDOT urban office employees eliminated	Not Applicable - Not MassDOT employees
<b>Objective: Consolidate office + maintenance facilities where feasible</b>	
<b>Indicator</b>	<b>Contribution</b>
MassDOT office + maintenance facility consolidation opportunity study completed	Not Applicable
One office consolidation site piloted	Yes
Three pilot consolidation and/or cross utilization maintenance sites piloted	Yes

## 6.25 Planning, Policy & Design

Planning, policy and design goals are aimed at developing a multi-modal system designed to promote healthy transportation and livable communities. There are 56 indicators for planning, policy and design but only 24 (43%) are applicable to VTA. VTA is meeting 13 (54%), working towards 10 (42%) and not meeting 1 (4%) of the applicable indicators as seen in Figure 80. Figure 81 outlines the planning, policy and design indicators by implementation time and level of achievement. There are 32 indicators in the theme which are not applicable to VTA. For the applicable indicators 12 are short term indicators, 11 are medium-term, and 1 long-range. Of those that are applicable to VTA they have met 5 (42%) of the immediate implementation (2013) indicators, and are working towards or meeting 11 (100%) of the medium-term (2015) indicators and 1 (100%) of the long-range indicators.

VTA promotes healthy transportation by providing pedestrian and bike amenities in all new facility design. This helps promote Complete Streets and increase connectivity. All buses are equipped with bike racks.



Figure 79. VTA bike rack

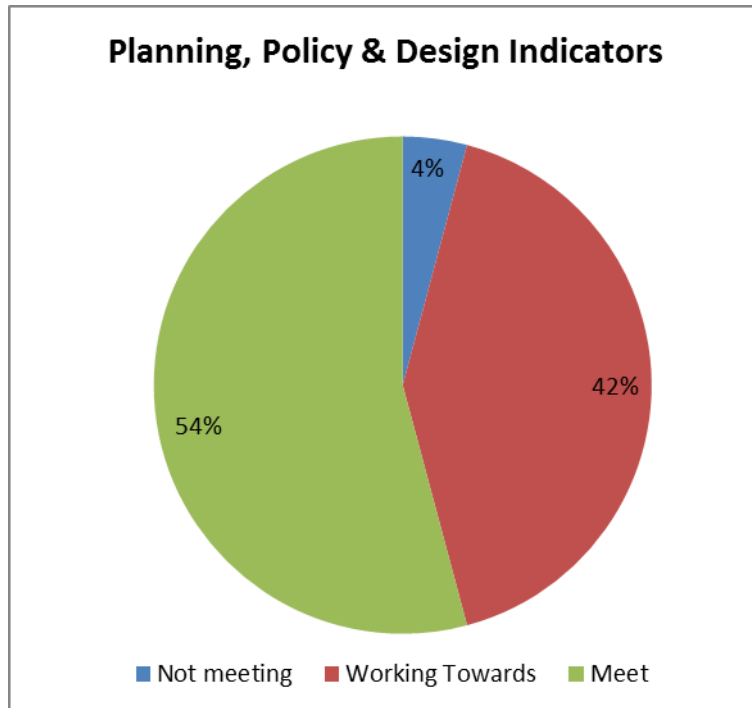


Figure 80. Planning Indicators Level of Attainment

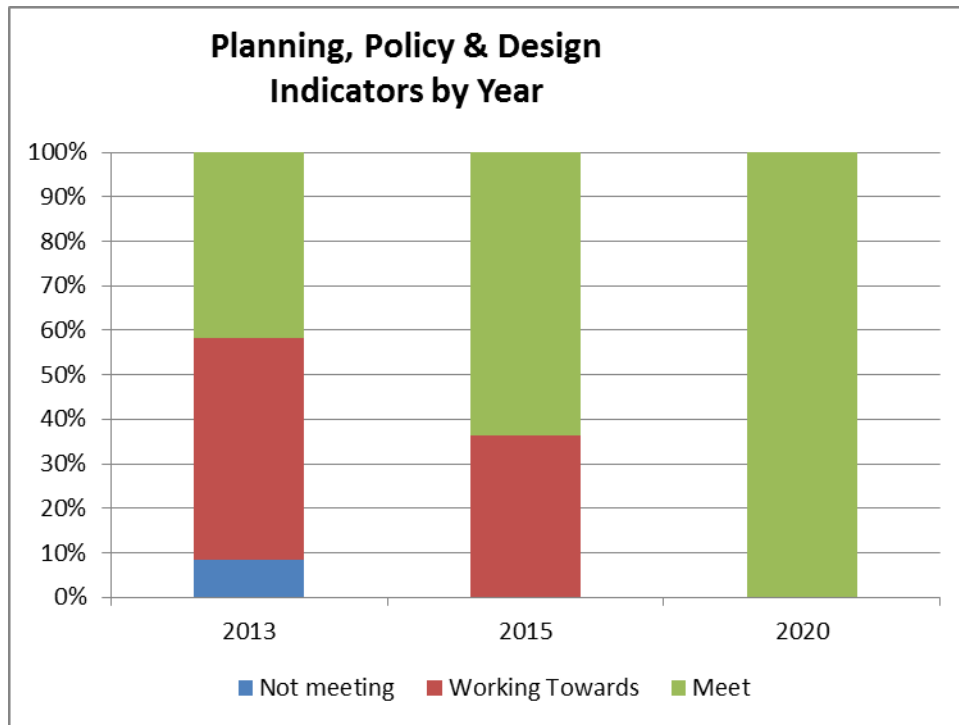


Figure 81. Planning Indicators Attainment by Year

Table 11. Planning, Policy & Design Goal Achievement

Goal 1: Design a Multi-Modal Transportation System	
Objective: Increase delivery of Complete Streets projects	
Indicator	Contribution
Bicycle + pedestrian facilities featured + prioritized in designs, rather than simply accommodated	Yes
Project forms + databases revised to track Complete Streets + sustainability measures	Not Applicable - planning commission responsibility
Update of Project Development + Design Guide underway to reflect evolution of Complete Streets	Yes – through planning commission
Surfaces and facilities of at-grade rail crossings improved for pedestrian + bicycle travel	Not Applicable - No rail road crossings in service area
All 'driveway' approaches to MassDOT airports, rail stations + MassDOT provide bicycle + pedestrian access	Yes

<b>Objective: Increase bicycle parking + access to transit</b>	
<b>Indicator</b>	<b>Contribution</b>
Transit stations with significant customer car parking (>50 spaces) have covered +/- secure bicycle parking	Not Applicable - Lots are not VTA owned
All MBTA + RTA buses equipped with bicycle racks	Yes
Study + pilot programs completed evaluating options for eliminating peak hour restrictions of bikes on transit	Not Applicable - We have no peak hour restrictions; though there are capacity issues on bike rack.
Bike stations at North, South, and Back Bay stations established with showers + locker facilities	Not Applicable - Do not operate these stations
High capacity bicycle coaches operated on all commuter rail lines + peak-hour access restrictions lifted	Not Applicable - Do not operate Commuter rail
Bicycle access to heavy rail lines expanded to all hours except two 1-hour peak periods	Not Applicable - Do not operate rail
<b>Objective: Improve traffic controls to reduce vehicle emissions, + to support walking + biking</b>	
<b>Indicator</b>	<b>Contribution</b>
Inventory of traffic signals + grade crossing signal conducted	Not Applicable - No traffic signals
All signals evaluated and adjusted for optimal operations for all users	Not Applicable - No traffic signals
<b>Objective: Improve transit system performance statewide</b>	
<b>Indicator</b>	<b>Contribution</b>
Bus stop consolidation on key routes assessed	Yes
All RTA's have conducted comprehensive service analysis to improve system connectivity + efficiency	Working towards - Undergoing RTP now
Opportunities for express bus lanes + regional bus services analyzed	Yes - And they are not an option
Transit operation efficiency improved while maintaining/increasing ridership	Working towards - Undergoing RTP now
Transit Signal Priority for all new traffic signals implemented	Not Applicable - No traffic signals
Payment + boarding system for MBTA light rail + vehicles + buses improved	Not Applicable – Not MBTA
Green Line extension + South Coast Rail service completed	Not Applicable - Do not operate rail

**Goal 2: Promote Healthy Transportation + Livable Communities**

**Objective: Encourage walking, biking, + transit as active transportation**

Indicator	Contribution
MassDOT Bay State Bike Week facilitated + promoted annually in partnership with MassBike	Working towards in conjunction with the planning commission
All office locations have visible bicycle parking locations for visitors near entrances	Working towards, primarily location yes .Close by, but not enough space at other locations
Selection of public meeting venues prioritizes locations with transit, pedestrian + bicycle access	Yes
Information on transit, bicycle + pedestrian travel provided on public meeting announcements	Working towards
MassDOT sidewalks + bicycle facilities are cleared of snow + ice simultaneously with vehicle lanes	Yes
Navigational signage to transit stations expanded along local roads and highways	Working towards - In some areas, yes. Not all areas is it appropriate to add additional signage, threatens rural character of the island
Employees + contractors required to use transit, walk, bike or carpool to meetings whenever location + service schedules allow	Yes
40% of elementary + middle schools reached through Safe Routes to Schools program	Yes

**Objective: Promote eco-driving + programs to reduce reliance on single occupancy vehicles**

Indicator	Contribution
Eco-driving promoted through digital display boards + customer facilities	No – digital display boards would not be accepted well here

**Expand commuter options programs**

Objective: Indicator	Contribution
Commuter options programs through digital displays promoted statewide	Not Applicable – MassDOT responsibility
Parking spots at major transit stations with parking reserved for car sharing	Not Applicable – MassDOT responsibility
Covered +/-or secure bicycle parking installed at major park + ride facilities	Not Applicable – not our parking lots
Secure indoor bicycle parking + shower facilities provided at all major MassDOT employment centers	Not Applicable – MassDOT responsibility

**Objective: Utilize surplus land, parking lots + air rights for transit-oriented developments**

Indicator	Contribution
All properties, including air-rights, studied for development feasibility	Not Applicable
Large parking lots at transit stations analyzed for TOD redevelopment in the Commuter Rail Master Plan	Not Applicable
Four new RFP's issued for land development	Not Applicable
At least two mixed use developments on MBTA properties initiated	Not Applicable - Not the MBTA

**Goal 3: Triple Bicycling, Transit + Walking Mode Share**

**Objective: Connect land use planning with transportation planning + investments**

Indicator	Contribution
Transit authorities participate in all MassDOT and MPO corridor studies	Working towards – MassDOT initiative
RTA's participate in MassDOT MEPA review and mitigation formation	Working towards
Land use + transportation planning strategies to support mode shift incorporated into 2016 RTPs	Yes
GreenDOT Implementation Plan activities incorporated into MPO's Unified Planning Work Programs	Working towards - When practical
Project evaluation criteria that prioritize mode shift, GreenDOT + GHG reduction adopted by MPOs	Yes
Complete Commuter Rail Master Plan to evaluate options to expand capacity + increase ridership along each line	Not Applicable - Do not operate commuter rail
Priority Development Areas (PDAs) + Priority Protection Areas (PPAs) approved by HED established in all MPOs	Not Applicable - No PDA or PPA in service area
Strategic regional visions for 'zero' SOV growth + GHG reduction adopted by MPOs	Not Applicable – planning commission responsibility
State-of-the-practice metric for measuring bicycle and pedestrian quality of roadways utilized in corridor planning + design	Working towards - MVC has standards of measurement

**Objective: Stabilize travel demand growth on roadways from single occupancy vehicles**

Indicator	Contribution
All rail stations are accessed by Complete Streets	Not Applicable - No rail stations

**Objective: Collect data regarding factors influencing mode choices + utilize better planning tools**

Indicator	Contribution
Person Miles Travelled (PMT) for all modes measured and/or estimated annually at state and regional levels	Not Applicable – planning commission responsibility
Public health impacts of major transportation projects considered in project selection criteria	Not Applicable – planning commission responsibility
New methods for collecting travel data for bicycles and pedestrians piloted	Not Applicable – planning commission responsibility
Scenario planning methods utilized by MassDOT and MPOs instead of traditional growth trend forecasts	Not Applicable – planning commission responsibility
Traffic model assumptions for road design revised to assume limited traffic growth rather than historic VMT growth trends	Not Applicable – planning commission responsibility
MassDOT conducts travel demand forecasts with an activity based model	Not Applicable - This is a MassDOT responsibility, not RTA



Objective: Increase training opportunities on GreenDOT and Mode Shift	
Indicator	Contribution
Coordinated information gateway for shuttles and inter-city bus travel implemented	Not Applicable - No gateway city or inter-city bus
Programs for healthy transportation education and travel training for young + elderly travelers developed statewide	Yes
Bay State Roads technical assistance offers materials on sustainability, mode shift, Complete Streets, and parking policies	Not Applicable - Not Bay State Roads

## 6.26 Waste

Waste goals aim to reduce the exposure to hazardous waste and minimize the disposal of waste. There are 33 indicators for waste but only 25 (76%) are applicable to VTA. VTA is meeting 18 (72%), working towards 6 (24%) and not meeting 1 (4%) of the applicable waste indicators as seen in Figure 83. Figure 84 outlines the waste indicators by implementation time and level of achievement. There are 8 indicators in the waste theme which are not applicable to VTA. For the applicable indicators 16 are short term indicators, 7 are medium-term, and 2 long-range. Of those that are applicable to VTA they have met 11 (69%) of the immediate implementation (2013) indicators, and are working towards or meeting 7 (100%) of the medium-term (2015) indicators and 2 (100%) of the long-range indicators.

VTA is minimizing waste by recycling items such as batteries, using less material, having single stream and installing trash bins.



Figure 82. Left: Battery Recycling, Right: Single Stream Recycling

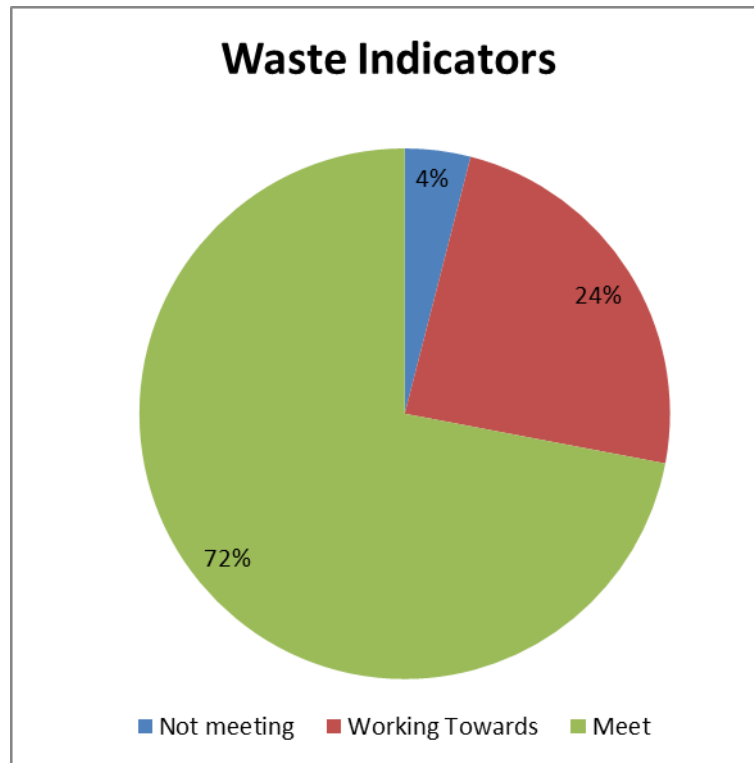


Figure 83. Waste Indicators Level of Attainment

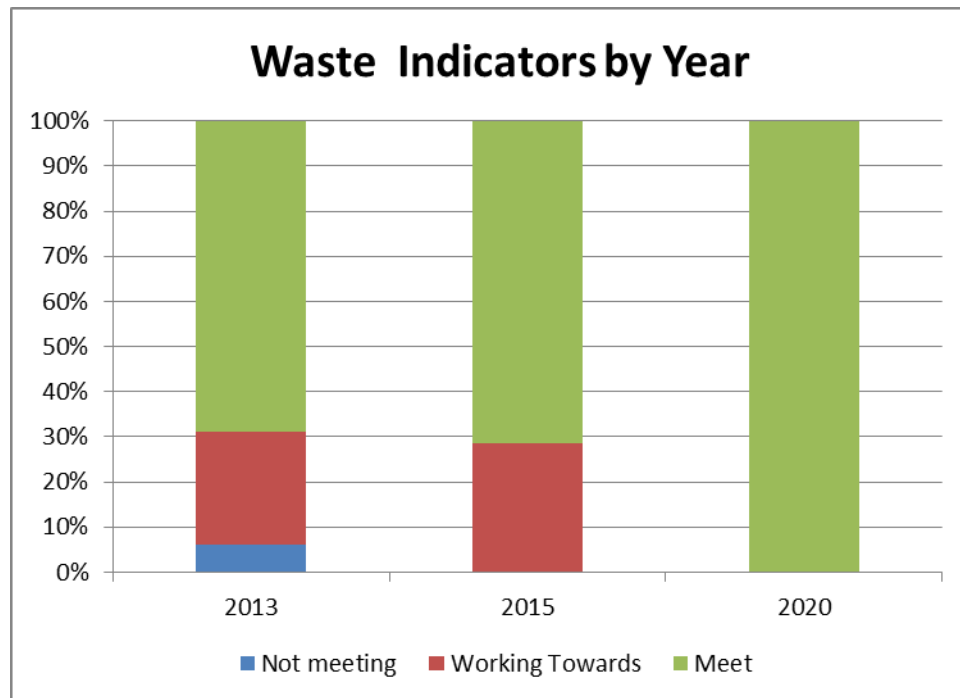


Figure 84. Waste Indicators Attainment by Year

**Table 12. Waste Goal Achievement**

<b>Goal 1: Achieve Zero Solid Waste Disposal</b>	
<b>Objective: Increase the diversion rate of office waste</b>	
<b>Indicator</b>	<b>Contribution</b>
Zero waste plan developed for MassDOT	Not Applicable - Not MassDOT
Full "single stream" recycling provided at all buildings	Yes
All electronics, cartridges, batteries, + accessories recycled	Yes
Employee education program on recycling + waste reduction underway	Yes
15% reduction in solid waste from offices achieved	Yes
Office building composting or biomass heating piloted at two facilities	Not Applicable - Not MassDOT
Waste reduction / recycling program emphasized in all janitorial service contracts	Working towards - Will add in future contracts
30% reduction in solid waste disposal achieved	Yes
<b>Objective: Eliminate litter accumulation in ROWs + stations</b>	
<b>Indicator</b>	<b>Contribution</b>
Litter control programs initiated in all corridors	Yes
Litter prevention information provided at all rest areas + stations	Working towards - Creating signage
<b>Objective: Provide "full-stream" recycling opportunities at all customer facilities</b>	
<b>Indicator</b>	<b>Contribution</b>
Container + paper recycling installed at all rest area, airports, transit stations + RMV branches	Working towards - We are not in charge at all stations, so compliance is difficult
Mobile electronics + license plate recycling drop off provided at key locations	Yes
<b>Objective: Decrease amount of waste generation during construction + maintenance</b>	
<b>Indicator</b>	<b>Contribution</b>
Waste management plans developed for all construction projects	Working towards - Will be in future projects
At least 65% of construction debris is reused or recycled	Not Applicable - Not an option in our service area
At least 80% of construction debris is reused or recycled	Not Applicable - Not an option in our service area
At least 90% of landscaping waste material is reused or composted	Not Applicable - Not an option in our service area
<b>Objective: Decrease paper use</b>	
<b>Indicator</b>	<b>Contribution</b>
Paperless office procedures and equipment piloted in all offices	Yes
Paper use is cut in half	Working towards - About 25%
A paper-free office program adopted + implemented	Yes
Other paper products consumption (paper towels, napkins, etc.) reduced in all facilities	Yes

Goal 2: Reduce all Exposure to Hazardous Waste	
Objective: Implement Environmental Management System	
Indicator	Contribution
EMS systems adopted + implemented for all divisions	Working towards - In progress
All waste is managed in compliance with a hazardous waste management plan	Yes
Metrics of recycling + disposals reported from all sites	Yes
EMS data from all Divisions compiled annually into a central performance management system	Yes - Through outside vendor
Best management practices for salt and sand storage in place at all depot facilities	Yes
Objective: Comply with waste ban + eliminate on-site storage	
Indicator	Contribution
100% compliance with state waste bans met at office + maintenance facilities	No
Long-term storage of hazardous waste minimized	Yes
Objective: Increase recycling rate of hazardous materials	
Objective: Indicator	Contribution
Refrigerants with high global warming potential from HVAC + refrigerators recycled	Yes
80% of all hazardous waste generated is recycled where possible	Yes
100% of hazardous waste with recycling potential is diverted	Yes
Objective: Evaluate + remediate brownfield sites	
Indicator	Contribution
An assessment of all brownfield properties is completed	Not Applicable - Not in brownfield site
Remediation / redevelopment of at least four properties underway	Not Applicable - Not in brownfield site
Remediation / redevelopment at all known brownfield sites initiated	Not Applicable - Not in brownfield site

## 6.27 Water

Water goals aim to use less water and improve water systems. Many of these are not applicable as there is no open water flow on any of the properties. There are 46 indicators for water but only 25 (54%) are applicable to VTA. VTA is meeting 16 (64%), working towards 7 (28%) and not meeting 2 (8%) of the applicable water indicators as seen in Figure 86. For the applicable indicators 13 are short term indicators, 8 are medium-term, and 4 long-range. Of those that are applicable to VTA they have met 8 (62%) of the immediate implementation (2013) indicators, and are working towards or meeting 8 (100%) of the medium-term (2015) indicators and 3 (75%) of the long-range indicators.

Where possible water has been conserved, such as with the reclamation system tank for the bus wash and drain which catches water after a washing and sends it to the holding tank to be reused.



Figure 85. Catch Drain in the Water Reclamation System

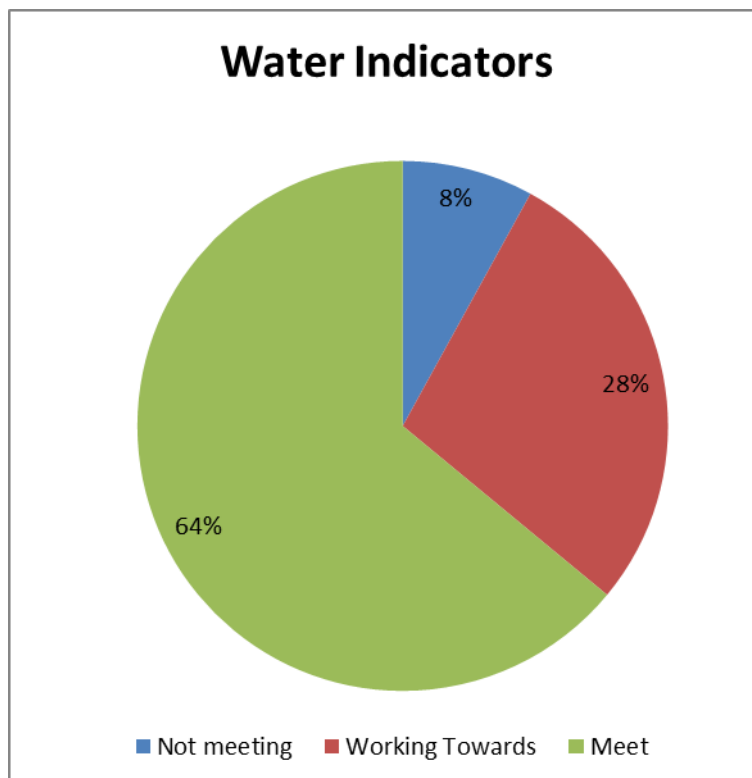


Figure 86. Water Indicators Level of Attainment

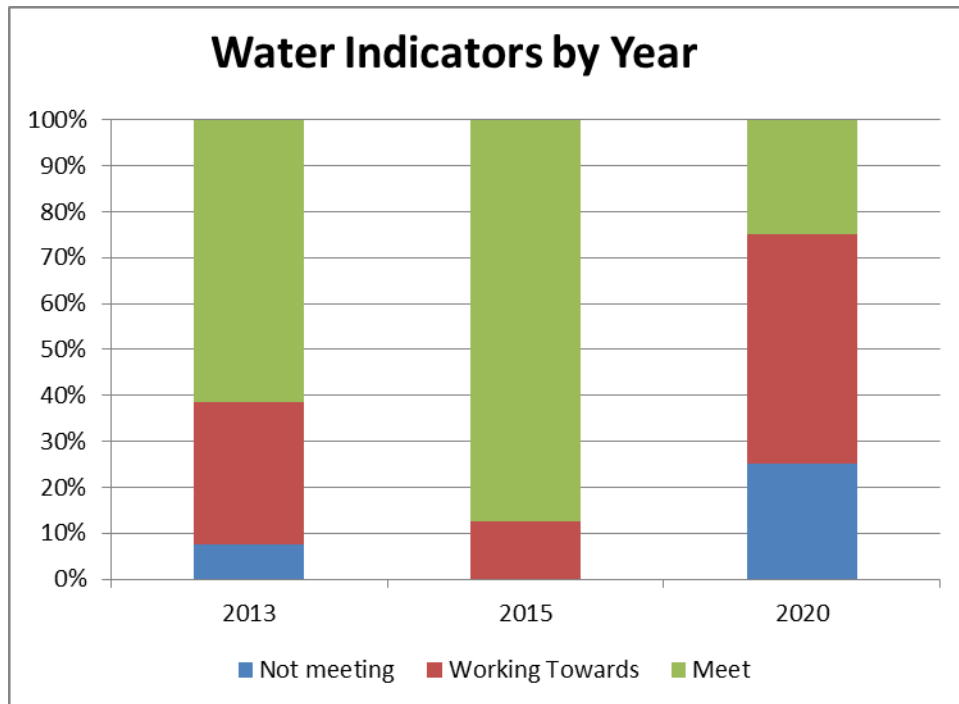


Figure 87. Water Indicators Attainment by Year

Table 13. Water Goal Achievement

Goal 1: Use Less Water	
Objective: Decrease potable water use in buildings	
Indicator	Contribution
The efficiency of all water fixtures in buildings evaluated	Working towards
Fixtures retrofitted to gain a 10% reduction in water use	Working towards
Plumbing system retrofitted to gain 20% reduction in water use	Working towards
Objective: Decrease water use for irrigation	
Indicator	Contribution
Water conservation integrated into vegetation management plans	Working towards - Irrigation system is automatic system
Potable water use for irrigation reduced by 25%	Yes
Objective: Increase utilization of recycled water + rainwater	
Indicator	Contribution
Water conservation practices at bus, vehicle, or airplane washing facilities required	Yes
All new vehicle/bus/rail vehicle washing facilities designed and built with recycled water technologies	Yes
All existing vehicle washing facilities evaluated for recycled or recaptured rain water alternatives	Yes
Study of rooftop rainwater use for toilets / HVAC of largest office facilities completed	No
Rain barrels or other means to reuse rainwater + disconnect drain spouts from sewage systems installed	Yes



Objective: Install innovative dual plumbing water systems in facilities	
Indicator	Contribution
Water use innovations required in all new building proposals	Working towards - Will in future buildings
Three new pilot structures or building retrofits utilizing dual plumbing completed	No

Goal 2: Improve Ecological Function of Water Systems	
Objective: Minimize impacts + enhance wetlands + impaired waters	
Indicator	Contribution
Preservation + enhancement of wetlands is adopted in design instead of replacement	Yes
Environmental benefits of impact mitigation through watershed planning improved	Yes
Natural buffers between wetland resources + transportation infrastructure increased whenever possible	Yes
Alternative deicer agents utilized in areas with wetlands, coldwater fisheries, and water supplies	Yes
Five wetland restoration projects not considered mitigation completed	Not Applicable - Not in wetland area
Objective: Adapt facilities for climate change resilience	
Indicator	Contribution
Climate change adaptation strategies initiated between local and federal parties	Not Applicable
Revised extreme precipitation data utilized for rainfall, flood flow + stormwater calculations	Not Applicable
Climate Adaptation Plan applicable to all MassDOT facilities adopted	Not Applicable – Not MassDOT
Statewide climate change vulnerability assessment for MassDOT facilities completed	Not Applicable - Not MassDOT
Critical roadway or rail segments targeted for culvert replacement + rearming for scour protection	Not Applicable - No roadway
Fish passage structures which meet state crossing standards included in maintenance activities	Not Applicable - No fishing structures onsite
All reconstruction projects crossing tidal habitats include measures to eliminate tidal flow restrictions	Not Applicable - No jurisdiction
Objective: Minimize impacts of ROWs + bridges on fluvial processes	
Objective: Indicator	Contribution
New roadways + bridges designed to maximize natural fluvial processes including tidal flushing	Not Applicable - No jurisdiction
At minimum 12 bridge replacement projects improving water flow under construction or completed	Not Applicable - No jurisdiction
All railroad bed reconstruction projects retrofitted with enhanced stream crossing standards	Not Applicable - Do not operate rail
The standards within MA Stream Crossing Handbook utilized in all project development processes	Not Applicable - Would be in future contracts
A minimum of five culverts redesigned + rebuilt for improved fish migration	Not Applicable - Would be in future contracts
All projects crossing tidal habitats evaluated for restriction of tidal flow	Not Applicable - Would be in future contracts

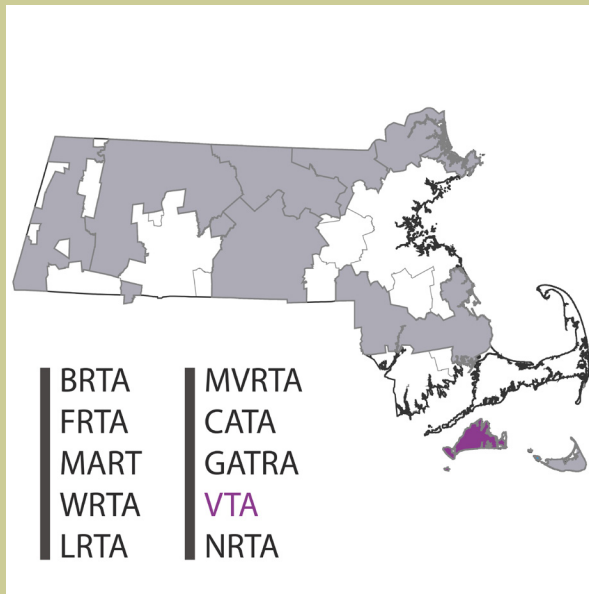
<b>Objective: Reduce stormwater volumes + increase permeable surface areas</b>	
<b>Indicator</b>	<b>Contribution</b>
Environmentally sensitive site design in new construction projects utilized	Yes
Post peak discharge rates held to less than pre-project discharge rates to the maximum extent possible	Yes
All projects designed to remove solids + pollutants to the maximum extent possible	Yes
All projects designed to include measures to increase infiltration + reduce stormwater volumes	Yes
Permeable paving or other infiltration installations included in parking lot resurfacing projects	Yes
Design charrette conducted for creating "green roof" bus shelters for the MBTA and/or major RTA	Not Applicable – not the MBTA or a major RTA
Green roof installed on at least one large bus or rail maintenance garage	Not Applicable – no large facilities
<b>Objective: Decrease non-point source pollutant discharges</b>	
<b>Indicator</b>	<b>Contribution</b>
All structural best management practices inspected annually + cleaned as necessary	Yes
Illicit discharges from MassDOT structures eliminated upon detection	Not Applicable - Not MassDOT
Long-term pollution prevention programs implemented at all maintenance sites	Yes
Environmentally sensitive design / Low Impact Design (LID) utilized in all construction projects	Working towards - Will be in future projects
New best management practices installed at all facilities identified by Impaired Waters Program	Working towards - Will be in future projects
Phytotechnology as part of stormwater evaluation + constructed stormwater controls utilized	Not Applicable – planning commission responsibility
Assessment protocol developed to evaluate water quality functions of roadside vegetation	Not Applicable – planning commission responsibility
Stormwater 'Low Impact Design' integrated into revised Project Development + Design Guide	Not Applicable - MassDOT responsibility
Commuter ferries follow best practices for fuel handling, bilge water, sanitary waste + trash disposal	Not Applicable - Do not operate ferries

## 6.2 Conclusion

With over 300 indicators, as identified in the GreenDOT policy, 62% are applicable to VTA. Overall, VTA is meeting 70% of those. They are continuously working hard to achieve the indicators and have achieved many indicators ahead of schedule. Some of the indicators which are applicable are joint responsibilities of VTA and MassDOT, the planning commission or the town and they must work collaboratively to achieve success. Additionally many of the indicators just do not apply because they are specific to the MBTA; rail; require there has been or will be new construction; they are for MassDOT owned facilities, or they are for environmentally sensitive land areas.

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# Chapter 7

## Recommendations

**AECOM / URS**  
**TMD**  
Burke & Company



## 7. RECOMMENDATIONS

### 7.1 Introduction

Recommendations were developed using a cumulative process that incorporated public outreach, a diverse steering committee, operational input from VTA, and analysis of existing transit service and the local/regional market. Strategies to improve the system were developed based on the goals and objectives outlined at the beginning of the plan. The recommendations are intended to better align service with local and regional demand using a three phase process that will serve to strengthen the VTA system and attract more riders. A phased approach was used in order to establish the immediacy and prioritization of needs and was based on an incremental approach and available resources.

- Phase 1 – implement immediately
- Phase 2 – implement as resources and funding are available
- Phase 3 – implement as resources and funding are available

To be able to evaluate whether or not transit services are meeting system goals and objectives, an effective monitoring program should first be in place. A service monitoring program is important both in terms of gauging whether the goals of the community are being accomplished with the service and that the service is both effective and efficient. Without specific measures, success is difficult to measure from year to year. Service monitoring should be part of the daily operation and be based on specific data collection procedures. Data collection is essential to evaluating the service performance and determining if changes should be made in the service delivery. To assist in developing a service monitoring program, recommended service guidelines and performance measures have been developed.

### 7.2 Strategies for Service Recommendation

For transportation planning purposes, a goal is defined as a purpose or need that should be attained to address a transportation issue. An objective is a specific, measurable method or activity that is designed to achieve the identified goal. The goals and objectives were developed at the onset of the planning process with VTA and have guided the development of the plan throughout.

#### **Goal #1: Determine Service Saturation Levels Needed to Attract More Choice Riders**

**Objective 1.a:** Increase the number of choice riders

**Objective 1.b:** Examine how level of service relates to choice ridership

**Objective 1.c:** Decrease vehicular traffic by increasing ridership



**Goal #2: Identify Unmet or Latent Service Demands in the Off Season**

**Objective 2.a** Identify affordable housing locations where potential riders reside

**Objective 2.b** Work with the community to identify transit-dependent and/or underserved populations

**Objective 2.c** Implement service to meet the demands of these individuals

**Goal #3: Improve Bus Stop Infrastructure**

**Objective 3.a** Work with the communities to require that new infrastructure accommodates bus service in the initial design

**Objective 3.b** Inventory the current bus stops for passenger amenities

**Objective 3.c** Install more bus pullouts, benches, trash receptacles, proper lighting and way finding information at key bus stops

**Goal #4: Educate the Business Community on the Benefits of Public Transit**

**Objective 4.a** Meet with businesses to explain the benefits of transit on the Island

**Objective 4.b** Encourage businesses to promote VTA services

**Objective 4.c** Work with businesses to develop transit-friendly policies

**Goal #5: Improve Environmental Sustainability**

**Objective 5.a** Reduce the carbon footprint of the system

**Objective 5.b** Obtain grant funding to install compressed natural gas infrastructure or other cleaner fuels

**Objective 5.c** Transition the fleet to alternative fuel sources such as compressed natural gas

**Objective 5.d** Promote transit-oriented development

**Goal #6: Minimize Auto Use on the Island**

**Objective 6.a** Increase frequency and service options to make transit an attractive transportation alternative

**Objective 6.b** Provide rider-friendly and accessible marketing material

**Objective 6.c** Use technology to make bus use more convenient

**Goal #7: Expand Ability to Meet Resident, Worker, and Tourist Mobility Needs**

**Objective 7.a** Improve existing services and implement new ones that meet the demands of present and untapped customers

**Objective 7.b** Promote services through marketing efforts in order to increase awareness of options

**Objective 7.c** Work with the community to identify transit-dependent and/or underserved populations



## **Goal #8: Obtain Funding Sources Through the Development of Regional Impacts**

**Objective 8.a** Require communities to approve transit-friendly development designs

**Objective 8.b** Encourage transit impact fees as part of development review

Aside from the goals and objectives several other strategies/guiding principles were used in designing recommendations:

8. **Simplify** – Routes should be designed along main corridors with minimal schedule deviations.
9. **Service should match demand** – The denser (both in terms of employment and population) areas should have a higher level of service with either higher frequency routes or multiple lower frequency routes. Major corridors often warrant higher frequencies.
10. **Standardized frequency** – Frequencies should be standardized and where possible clock-face schedules should be established to create 10, 15, 30, 60 and 120 minute headways.
11. **Priority to existing ridership** – Service should be increased in areas that warrant it over servicing new areas if limited resources are available.
12. **Connections** – No route should be designed in isolation. If possible it should connect to at least one hub. Where connections to hubs are not possible the route should connect with at least one other route to facilitate transfers. Routes should be designed to maximize transfer opportunities.
13. **Efficiency** – Where possible routes should be designed to be the most efficient. Decisions to deviate off the main corridor and add time to the route are only warranted where key destinations are too far off the main road, there are a lack of pedestrian facilities, transfers can be made, or the benefit (due to demand) of servicing the deviation outweighs the additional time incurred to others on the route.
14. **Consistency** – Routes should travel the same path and service the same locations on each trip to provide consistent service; this may not be feasible for some routes due to schedule limitations and deadhead mileage.

## **7.3 Recommendations Overview**

Recommendations are categorized by route and phase. A three phase process was used in order to prioritize recommendations. Priority was based on demand, route performance, public feedback and resource availability. In Phase 1 consistent schedules with standard frequencies have been established. In Phase 2 a new route has been implemented and peak season frequency has been improved. In Phase 3 peak service frequencies are further improved. The timeframe for each phase is based on available

capital and operating resources. In general Phase 1 can be implemented immediately in year 1, but Phase 2 and Phase 3 can only be implemented as resources become available.<sup>29</sup>

**Phase 1:**

- Standardize off season frequency
- Create consistent schedules
- Improve off season frequency
- Begin service earlier on key routes to facilitate transfer to early morning Steamship Authority boats

**Phase 2:**

- Investigate the new Chappaquiddick Island service
- Improve in-season frequency

**Phase 3**

- Improve in-season frequency

A summary of the overall route recommendations is in Table 14; Table 15 breaks down the recommendations by phase and Table 16 outlines the pros and cons of each. Figure 88 - Figure 88 are maps depicting changes for the peak, shoulder and off seasons. For detailed individual route recommendation profiles see section 7.7.

Other recommendations for VTA that are not specific to a route are fare and information dissemination related. VTA should explore alternative fare collection methods such as a Smartcard reader, mobile ticketing or the Uband technology. This will allow riders to pre-pay fares and improve boarding speeds. This is particularly important in the summer months at high volume locations that do not have ticket sellers. VTA could also explore the innovative fare technology such as that administered in Helsinki which links multiple transportation modes into one easy payment. VTA could design packages that are geared towards tourists which might include two Steamship Authority ferry trips, 7 days of transport on VTA, a predetermined number of miles or rides with a certain taxi company and a bike rental for a certain number of hours. For residents it might include a monthly bus pass for VTA, a certain number of ferry rides, trips on the Cape Cod Transit Authority, taxi rides, and Zipcar usage. This would require coordination among many parties but would improve the transportation on the island, passenger experience and allow VTA to pave the way in transit innovation.

VTA should also consider implementing Automatic Passenger Counters (APC) on board their vehicles since many routes are interlined and it can be difficult to determine which routes have higher ridership.

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<sup>29</sup> It should be noted that some of these recommendations are dependent on the weather. Service fluctuates between fair weather days and is adjusted accordingly to meet the demands of the riders.



APCs would also allow VTA to track ridership by location to better match the demand to service, particularly in the winter months. In addition to APC technology VTA should implement real-time tracking. The real time information should be available through mobile technology and dynamic message signs at major hubs and stations such as the Vineyard Haven, Edgartown, West Tisbury Center and Oak Bluffs. This will allow passengers to see when the next bus will arrive and to plan their schedule accordingly. Real time technology has shown to improve passenger satisfaction and perception of the transit agency, reduce anxiety during wait time, reduce customer complaints and help VTA monitor where the vehicles are. The cost for this technology varies by the type of system implemented, fleet size and which amenities are chosen.



Table 14. Service Recommendations

VTA Proposed Service Recommendations		Peak Season (July/Aug)						Shoulder Season (May/June & Sept/Oct) <sup>1</sup>						Off Season (Oct-April)					
Route	Name	Ridership	Productivity	Existing		Proposed		Ridership	Productivity	Existing		Proposed		Ridership	Productivity	Existing		Proposed	
				Frequency	Span	Frequency	Span			Frequency	Span	Frequency	Span			Frequency	Span	Frequency	Span
1	Edgartown - Vineyard Haven Road	1,734	31.89	20-30	5:37 AM - 1:45 AM	15-30	5:37 AM - 1:45 AM	883	24.69	30	6:30 AM - 12:56 AM	30	5:30 AM - 12:56 AM	297	11.01	30-60	6:25AM - 10:29PM	30	5:25AM - 10:25 PM
2	West Tisbury - Vineyard Haven via Old Cty Rd.	99	9.55	90	7:51 AM - 7:50 PM	45	7:51 AM - 7:50 PM	57	5.58	90	7:51 AM - 7:50 PM	90	7:51 AM - 7:50 PM	15	3.03	varies (100 min avg)	6:54AM - 6:25PM	120	7:13AM - 6:28PM
3	Vineyard Haven - West Tisbury via State	1427	19.59	60	7:07 AM - 11:59 PM	30/60	7:07 AM - 11:59 PM	628	10.59	60	7:07 AM - 8:59 PM (11:59 PM F/Sa)	60	7:07 AM - 8:59 PM (11:59 PM F/Sa)	83	3.42	varies (70 min avg)	6:06 AM (9:09AM Su) - 7:32 PM	90	6:15 AM (8:55AM Su) - 7:35 PM
4	West Tisbury - Chilmark - Menemsha			60	7:40 AM - 12:32 AM	60	7:40 AM - 12:32 AM			60	7:40 AM - 7:38 PM (12:32 AM F/Sa)	60	7:40 AM - 7:38 PM (12:32 AM F/Sa)			varies (170 min avg)	7:09 AM (8:21 AM Su) - 6:19 PM	120	8:28 AM - 7:10 PM
5	West Tisbury - Chilmark - Aquinnah			60	6:38 AM - 12:08 AM	30/60	6:38 AM - 12:08 AM			60	6:38 AM - 8:32 PM (12:08 AM F/Sa)	60	6:38 AM - 8:32 PM (12:08 F/Sa)			varies (120 min avg)	6:25 AM (8:46AM Su)- 6:38 PM	90	6:40 AM (8:10AM Su)- 7:22 PM
6	Edgartown - Airport - West Tisbury			60	6:25 AM - 12:42 AM	30/60	6:25 AM - 12:42 AM			60	6:25 AM -9:36 PM (11:36 PM F/Sa)	60	6:25 AM -9:36 PM (11:36 PM F/Sa)			varies (90 min avg)	6:40AM (7:43 AM Su) - 7:43PM	60/90	6:40 AM - ( 7:40 AM Su) 7:06 PM
7	Oak Bluffs - Airport via County Road / Barnes Road	191	14.76	60	6:55 AM - 11:50 PM	60	6:55 AM - 11:50 PM	108	8.38	60	6:55 AM - 7:50 PM (11:50 F/Sa)	60	6:55 AM - 7:50 PM (11:50 F/Sa)	22	5.43	varies (90 min avg)	7:22 AM (10:44 AM Su) - 5:44 PM	90	7:57 AM (10:57 AM Su) - 5:38 PM
8	South Beach Route	518	24.65	15-30	7:00 AM - 10:24 PM	15-30	7:00 AM - 10:24 PM	117	14.38	30	7:00 AM - 5:54 PM	30	7:00 AM - 5:54 PM	9	3.01	varies (90 min avg)	8:19 AM (10:00 AM Su) - 5:42 PM	90	9:25 AM - 5:55 PM
9	Oak Bluffs - Hospital - Airport via Barnes Road & County Road	229	13.97	60	6:28 AM - 12:23 AM	60	6:28 AM - 12:23 AM	99	7.26	60	6:28 AM - 8:23 PM (12:23 AM F/Sa)	60	6:28 AM - 8:23 PM (12:23 AM F/Sa)	22	4.27	varies (90 min avg)	7:02 AM (11:05 AM Su)- 6:39 PM	90	7:10AM (11:10 AM Su)- 6:27 PM
10	Tisbury Park & Ride	415	24.63	15	5:30 AM - 10:38 PM	15	5:30 AM - 10:38 PM	368	22.01	15	5:30 AM - 10:38 PM	15	5:30 AM - 10:38 PM	248	13.89	15	5:30 AM - 9:23 PM (10:38 PM F/Sa/Su)	15	5:30 AM - 9:30 PM (10:30 PM F/Sa/Su)
10A	West Chop Loop	22	8.43	90	6:50 AM - 7:17PM	45	6:50 AM - 7:17PM	11	4.23	90	6:50 AM - 7:17PM	90	6:50 AM - 7:17PM	7	2.68	varies (80 min avg)	7:30 AM (8:54 AM Su) - 6:05 PM	120	7:25 AM (9:45 AM Su) - 6:00 PM
11	Downtown Edgartown	319	19.12	15	6:50 AM - 11:15 PM	15	6:50 AM - 11:15 PM	59	7.24	30	8:07 AM - 6:00 PM	30	8:07 AM - 6:00 PM			---	---	---	---
12	Chilmark In Town / Sunset Bus	34	3.66	20-30	10:35 AM - 8:41 PM	20-30	10:35 AM - 8:41 PM			---	---	---	---			---	---	---	---
13	Edgartown – Oak Bluffs – Vineyard Haven via Beach Roads	4,463	61.2	15-30	6:15 AM - 2:45 AM	10-30	5:15 AM - 2:45 AM	1905	44.68	30	6:15 AM - 12:25 AM (1:25 AM F/Sa)	30	6:15 AM - 12:25 AM (1:25 AM F/Sa)	292	11.25	30-60	6:15 AM - 9:44 PM (10:57 Fri/Sat)	30	6:15 AM - 9:44 PM (10:57 Fri/Sat)
14	Chappaquiddick Circulator			---	---	60/ Dial-a-ride	7:00 AM - 7:00 PM			---	---	---	---			---	---	---	---

<sup>30</sup> It should be noted that peak frequency is in effect for holiday weekends (Memorial Day, Labor Day & Columbus Day)



Table 15. Recommendations by Phase

Bus Route	Alignment	Schedule	Phase 1	Phase 2	Phase 3
1 - Edgartown - Vineyard Haven Road	No Change	-Shoulder and off seasons begin earlier at 5:25AM -30 min frequency all day off season -15 min frequency midday peak season	-Adjust service hours -Improve off season frequency	-Peak season frequency	
2 - West Tisbury - Vineyard Haven via Old City Rd.	West Tisbury to SSA terminal via State Rd Lambert Cove Rd. and back on all trips during winter service	-120 minute frequency off season -Adjust off season hours 7:13AM - 6:28 PM -Improve peak season service frequency 45 min	-Off season frequency -Off season hours -Alignment		- Peak season frequency
3 - Vineyard Haven - West Tisbury via State	West Tisbury to Vineyard Haven SSA terminal via State Rd heading south and Old County Rd heading north on all trips during Winter service.	-90 minute frequency off season -Adjust off season hours 6:15 AM - 7:35 PM -Improve peak season midday service frequency to 30 min	-Off season frequency -Off season hours -Alignment	-Improve peak season frequency	
4 - West Tisbury - Chilmark - Menemsha	Alternate service between West Tisbury Town Hall or Menemsha Beach on Winter trips	-120 minute frequency off season -Adjust off season hours 8:28AM - 7:10 PM	-Adjust off season service alignment -Off season frequency -Off season r hours		
5 - West Tisbury - Chilmark - Aquinnah	All trips will depart from West Tisbury Town Hall during winter service	-90 minute frequency off season -Adjust off season hours 6:40AM - 5:52 PM -Improve peak season midday service frequency to 30 min	-Off season frequency -Off season hours -Alignment	-Peak season frequency	
6 - Edgartown - Airport - West Tisbury	All trips will go from West Tisbury to Edgartown via the airport	-60 min frequency AM and PM peaks, 90 min mid-day for off season -Adjust off season hours 6:40AM - 7:06PM -Improve peak season midday service frequency to 30 min	-Off season frequency -Off season hours -Alignment	-Peak season frequency	
7 - Oak Bluffs - Airport via County Road / Barnes Road	Exclusively use Barnes Rd. Hospital - New York Ave - Oak Bluffs - in town tour	-90 minute frequency off season -Adjust off season hours 7:57 AM - 5:38 PM	-Off season frequency -Off season hours -Alignment		
8 South Beach Route	No Change	-90 minute frequency off season -Adjust off season hours 9:25 AM - 5:25 PM	-Off season frequency -Off season hours		
9 Oak Bluffs - Hospital - Airport via Barnes Road & County Road	Exclusively use County Road, the Hospital, Vineyard Ave, Library, Town Hall, Airport. Woodside would be on request only.	-90 minute frequency off season -Adjust off season hours 7:10 AM - 6:27 PM	-Off season frequency -Off season hours -Alignment		
10 Tisbury Park & Ride	No change	No Change			
10A West Chop Loop	No Change	-120 minute frequency off season -Adjust off season hours 7:45 AM - 6:00 PM			-Peak season frequency
11 Downtown Edgartown	No change	No Change			
12 Chilmark In Town / Sunset Bus	No change	No Change			
13 Edgartown – Oak Bluffs – Vineyard Haven via Beach Roads	No Change	-Begin service year round earlier at 5:15 -30 min frequency all day off season -10 min frequency midday peak season	-Begin service earlier -Off season frequency	-Peak season frequency	
14 Chappaquiddick Circulator	New route- Circulator on Chappaquiddick Island	-Service 7 AM - 7 PM with peak times 10 AM - 5PM in circulator mode, else a dial-a-ride		-Implement Service	

Table 16. Pros and Cons to VTA Recommendations

<b>VTA Proposed Service Recommendations</b>			
<b>Route</b>	<b>Name</b>	<b>Pros</b>	<b>Cons</b>
1	Edgartown - Vineyard Haven Road	Increased service in off season and peak season; service begins earlier in shoulder and off season to make early morning ferry connections	
2	West Tisbury - Vineyard Haven via Old Cty Rd.	Consistent headway; Improved transfers to RT 4 and Rt 10A	Miss some SSA ferry connections; Decrease in transfers to Rt 6
3	Vineyard Haven - West Tisbury via State	Consistent headway; Improved transfers with Rt 6; Same bus connection to Rt 5; more trips daily	Miss some SSA ferry connections;
4	West Tisbury - Chilmark - Menemsha	Consistent headway; Same bus connection to Rt 2; more trips daily; extended service hours	Services Chilmark CC or Menemsha Beach on each trip but not both
5	West Tisbury - Chilmark - Aquinnah	Consistent headway; Same bus connection to Rt 3; Improved connections to Rt 6.; more trips daily; extended service hours	
6	Edgartown - Airport - West Tisbury	Improved transfers with Rt 3, 5, 7, 9; simplify alignment; consistent headway	Service ends earlier
7	Oak Bluffs - Airport via County Road / Barnes Road	Improved transfers with Rt 6 and Rt 1; simplify alignment	Tight Schedule; 1 less outbound trip
8	South Beach Route	Consistent frequency	One less trip: shorter service hours
9	Oak Bluffs - Hospital - Airport via Barnes Road & County Road	Improved transfers from RT 6, Consistent frequency; one more outbound trip	Tight Schedule; Woodside serviced on demand only.
10	Tisbury Park & Ride	No Recommendations	No Recommendations
10A	West Chop Loop	Consistent headway; improved connections with RT 2	Less trips; miss some SSA ferry connections
11	Downtown Edgartown	No Recommendations	No Recommendations
12	Chilmark In Town / Sunset Bus	No Recommendations	No Recommendations
13	Edgartown – Oak Bluffs – Vineyard Haven via Beach Roads	Increased service in off season and peak season; service begins earlier to make early morning ferry connections	
14	Chappaquiddick Circulator	New service	Specialty equipment required

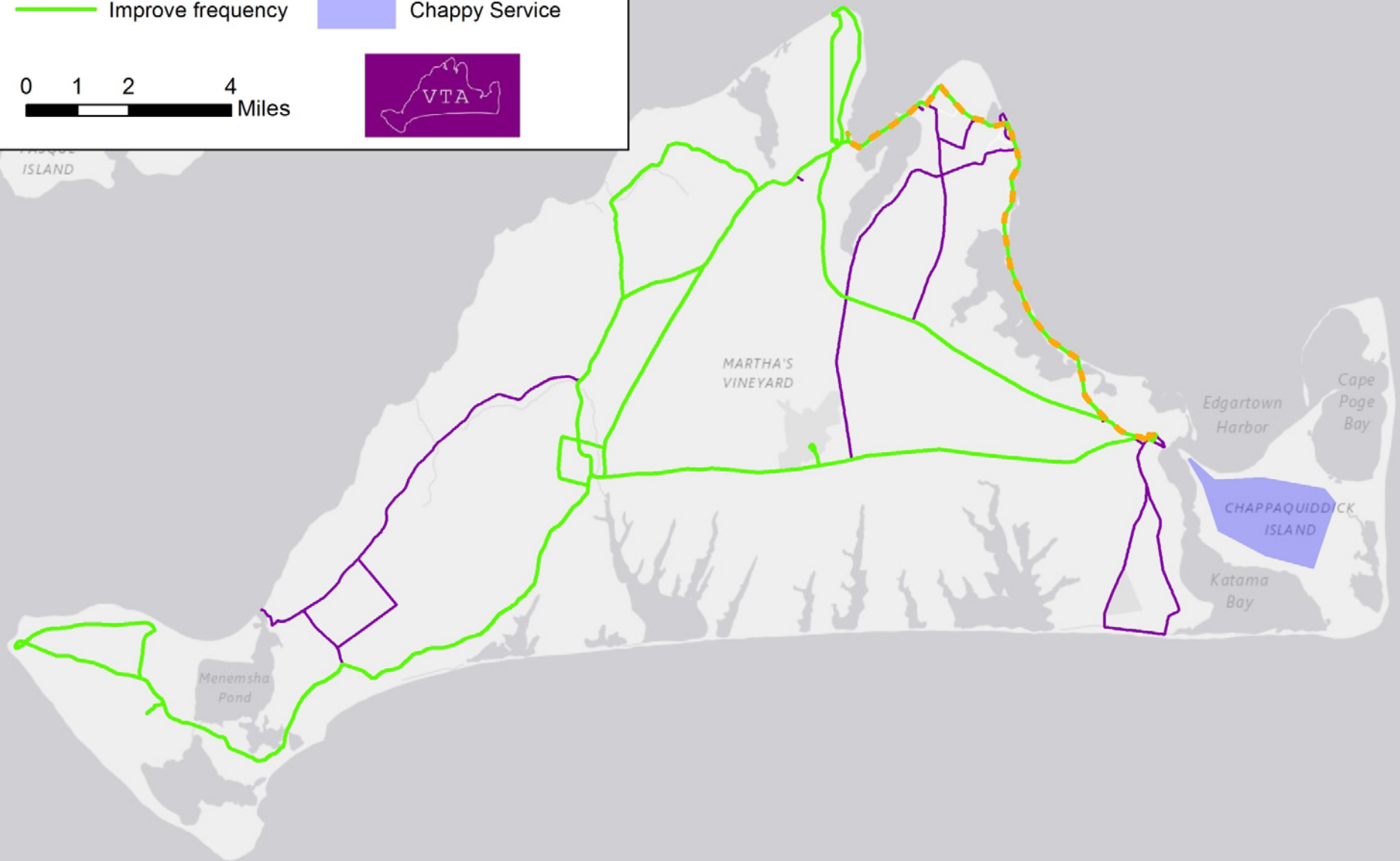


# Peak Season Service Improvements

Figure 88. Peak Season

- Adjust service hours
- Improve frequency
- No change
- Chappy Service

0 1 2 4 Miles



# Off Season Service Improvements

- Standardize frequency
- Improve frequency
- Adjust service hours
- No change

Figure 89. Off Season

0 1 2 4 Miles



# Shoulder Season Service Improvements

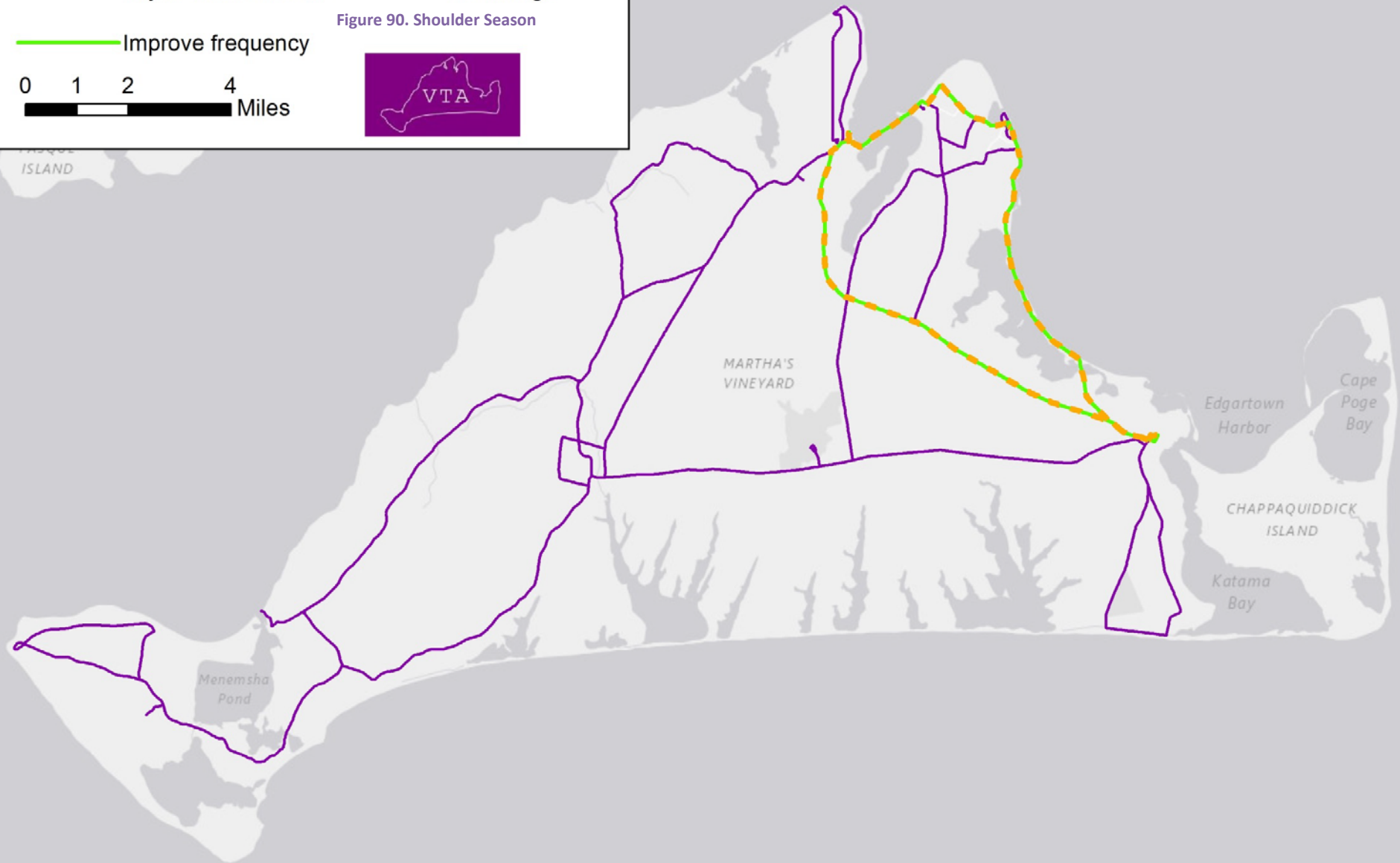
Adjust service hours

No change

Improve frequency

0 1 2 4 Miles

Figure 90. Shoulder Season



## 7.4 Cost Estimation

### 7.41 Operating Costs

Operating costs are based on the average cost per hour of \$62.73. The cost can be adjusted by implementing some but not all recommendations therefore the final costs may differ slightly from what is proposed. Figure 91 charts the total operational cost for the existing system and the additional costs associated with the service improvements in each phase. For a breakdown of the cost/savings for each route and phase see Table 17.

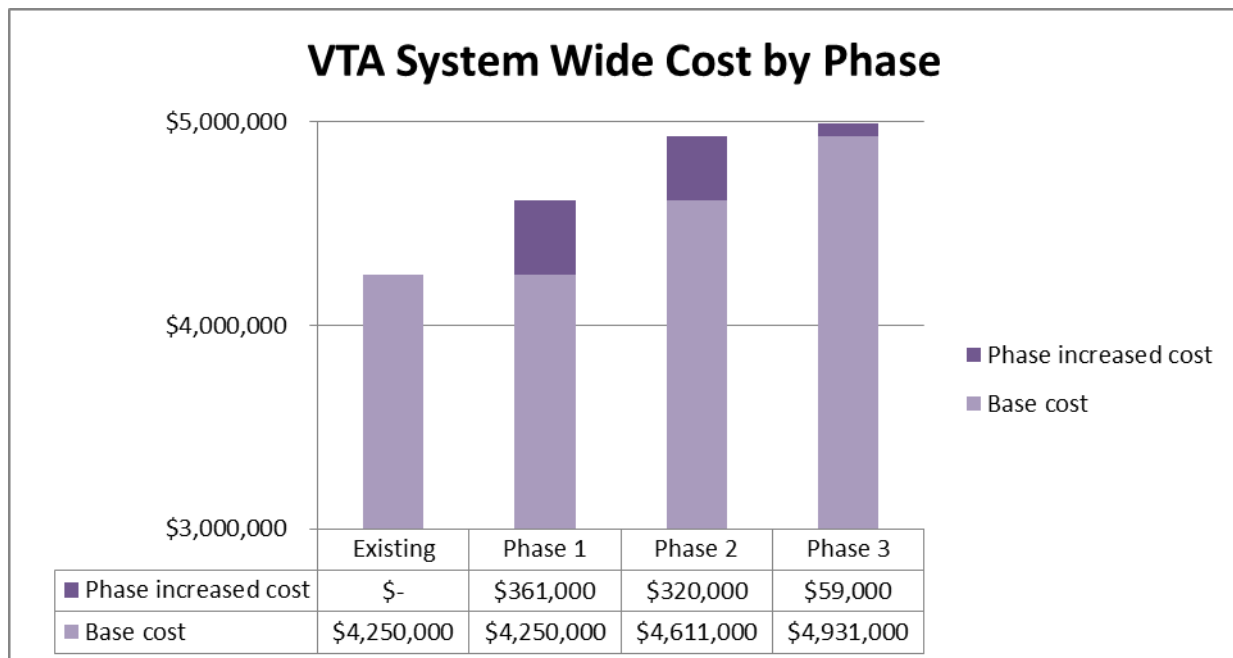


Figure 91. Cost by Phase

**Table 17. Cost by Phase and Route**

Route	Phase 1	Phase 2	Phase 3
1	\$131,000	\$56,000	\$0
2	\$6,000	\$0	\$49,000
3	\$44,000	\$63,000	\$0
4	\$10,000	\$0	\$0
5	\$49,000	\$18,000	\$0
6	\$5,000	\$62,000	\$0
7	\$32,000	\$0	\$0
8	-\$6,000	\$0	\$0
9	\$13,000	\$0	\$0
10	\$0	\$0	\$0
10A	-\$11,000	\$0	\$10,000
11	\$0	\$0	\$0
12	\$0	\$0	\$0
13	\$88,000	\$65,000	\$0
22	\$0	\$56,000	\$0
Total	\$361,000	\$320,000	\$59,000

#### 7.42 Capital Costs

Capital costs include vehicle and infrastructure costs. VTA currently has a fleet of 32 buses to provide fixed route service. In peak service there are currently 28 vehicles in use, Phase 1 was designed with this constraint (Figure 92). In Phase 2 a special vehicle that is designed to operate on uneven terrain will need to be purchased for the Chappaquiddick shuttle, as many of the roads are unpaved. Phases 2 and 3 will require additional vehicles and the procurement process can take up to two years from the time the process begins until the vehicles are delivered and put into service. In order for Phase 3 improvements to be implemented and to maintain their current spare ratio (14%) the VTA fleet would need to expand from 32 to 40 vehicles as 35 would be needed during the peak. It is recommended that VTA increase their spare ratio to 20% (the national standard), this would require 42 vehicles in Phase 3. VTA must begin to plan now for future expansion of the fleet.

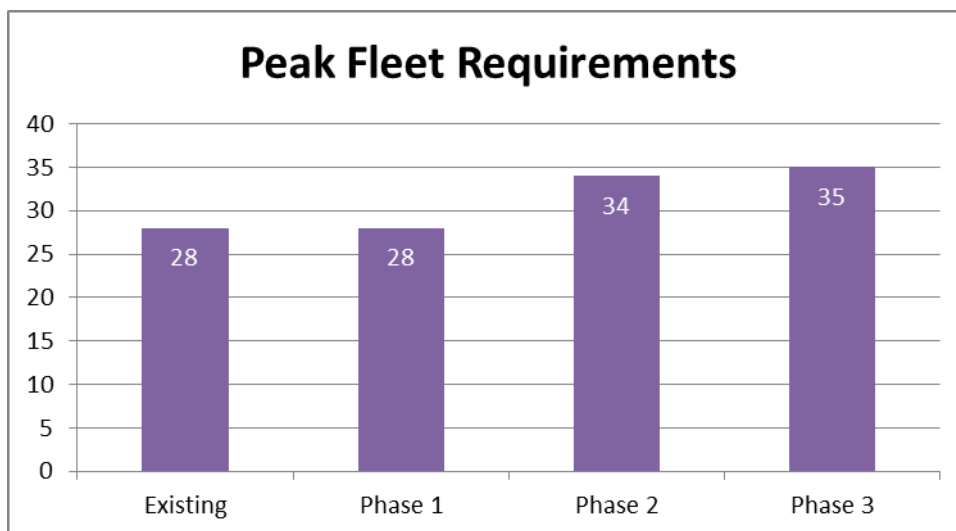


Figure 92. Fleet Requirements by Phase

## 7.5 Recommended Service Guidelines

In order to establish service guidelines in the pursuit of establishing a monitoring program in the future, service must first be monitored and data collected. Routes should be defined by the function they serve in order to accurately measure the health of a route. Four types of routes are recommended for VTA: (1) Down Island, (2) Seasonal, (3) Community Circulators, (4) Up Island. Each route type will have in turn different performance measures to monitor existing service and evaluate new service. Table 18 provides an overview of the suggested route type and pairing for existing and recommended VTA routes.

**Down Island Routes** – These are routes that are primarily located on the eastern half of the island which exhibits more suburban characteristics. These routes run on major collectors, connecting communities and have high ridership.

**Seasonal Routes**- These routes have a seasonal demand and do not operate year round. They can operate during either one or two seasons.

**Community Circulator Routes** – These routes operate primarily in one community on the up island side of Martha's Vineyard and act as circulators with connections to other routes.

**Up Island Routes** – These routes are primarily located on the western half of the island which is less dense and has rural characteristics.

Table 18. VTA Route Types

Route Type	Routes
Down Island	1, 10, 13
Seasonal	11, 12, 14
Community Circulator	7, 8, 9, 10A
Up Island	2, 3, 4, 5, 6



Categories of data to be collected and used in the monitoring program include the following, which are discussed in detail below:

- Ridership
- On-time performance
- Financial
- Service levels – span and frequency

Passenger boarding data should be collected continually on a time-specific basis. There is a trade-off between data collection efforts and the value of information. It is just as easy to collect too much data as it is to collect insufficient data. Passenger boardings should be recorded daily by route, fare category, and by trip; this information can often be generated through farebox reports or APCs. APCs include capabilities such as recording each passenger by location as they board and alight. However, even without the benefit of APCs, passenger data can still be collected and recorded by drivers for numerous variables.

With any transit system, it is important to monitor on-time performance. An on-time performance goal should be established (e.g. an attainable on-time goal of 95 percent may be considered). Minor adjustments to routes may be needed to ensure that schedule and headway adherence can be maintained. If automatic vehicle location (AVL) software is not available to track on-time performance, drivers should report actual arrival and departure times at designated bus stops along the routes and at major stops. The dispatcher should then record this information so that the number of trips running late can be determined. It should be emphasized that drivers should not leave prior to a scheduled stop time to make up time along a route. Leaving early could cause riders to miss a bus.

It is also important to establish minimum levels of service for each route type. These include service span and frequency. Table 19 below outlines suggested minimum service spans for each route type. Service can begin earlier or end later if demand warrants. Adjustments to the times can also be made based on the hours of centers served and the passengers needs but should be within the financial capacity of VTA.

**Table 19. Minimum Service Spans**

Season	Down Island	Seasonal	Circulator	Up Island
<b>Peak (Summer)</b>	5:30AM – 1:30AM	10 Hrs. of service	6:30 AM – 10:30 PM	7:30 AM -12:00 AM
<b>Shoulder</b>	5:30AM – 12:00AM	10 Hrs. of service	6:30 AM – 7:00 PM	7:30 AM – 8:00 PM
<b>Off (Winter)</b>	5:30AM – 10:00PM	---	7:00 AM – 6:00 PM	8:00 AM – 6:30 PM

Frequency often has a direct correlation with ridership; higher levels are more attractive to riders but cost more to operate; therefore it is critical to establish frequencies that are high enough to attract riders but not so high that the subsidy is greater than the need. Higher frequency routes require more vehicles and drivers. Clock-face schedules should be used except for under unique circumstances. These circumstances can include trips that are: designed to meet work shifts, ferries or school bell times; that include clock-face schedules that would require excessive recovery time (inefficient service); or that disallow interlining with other routes or miss key transfers. The frequencies outlined for VTA in Table 20 represent minimums based on the service spans in Table 19 but can have variations throughout the day such as added service during the peak hours or reduced service at night.

**Table 20. Minimum Frequencies**

Season	Down Island	Seasonal	Circulator	Up Island
<b>Peak (Summer)</b>	30 min	15 min	60 min	60 min
<b>Shoulder</b>	30 min	30 min	60 min	60 min
<b>Off (Winter)</b>	30 min	---	90 min	90 min

### 7.51 New Service Warrants

VTA often receives requests for new service; new service warrants will help VTA evaluate proposals and determine service levels. Section 7.63 outlines how to monitor and measure new services. The development of the new services should follow the new service warrants and after 2 years be able to meet or exceed the performance measures outlined in Section 7.63.

When analyzing new service requests and proposals the following should be considered:

- **Area coverage** – When service is proposed the new route should be evaluated for its ability to connect to other routes, meet service thresholds, and operate cost effectively.
- **Transit dependent populations** – The presence of transit dependent populations should be considered when evaluating new service proposals. If there is a high but remote transit dependent population, alternative service types such as Dial-A-Ride or flex routes might be warranted.
- **Special markets** – New service is often proposed for special markets such as a new shopping center, island gateways, or employment centers. These markets often produce demand but the cost to service them can be high and ridership potential undetermined. VTA should work with these destinations to secure some dedicated funding which can help bring down the cost of the route.

## 7.6 Performance Measures

Performance measures serve as a guide to evaluate the success of a transit service. Performance measures include the types of data to be collected and give the tools necessary to identify transit system opportunities and deficiencies. Performance measures should:

- Be easily measurable
- Have a clear and intuitive meaning so that it is understandable to those who will use it and to non-transportation professionals
- Be acceptable and useful to transportation professionals
- Be comparable across time and between geographical areas
- Have a strong functional relationship to actual system operations so that once changes occur in service operations, changes to the system can readily be determined
- Provide the most cost-effective means of data collection
- Where appropriate, be based on statistically sound measurement techniques
- Be consistent with measures identified for other systems

Recommended performance measures to monitor existing and future routes could include:

- **Passengers/Hour:** Number of total monthly and annual passengers divided by the corresponding revenue-hours.
- **Subsidy/Passenger:** Total expenses minus fare revenue divided by ridership.
- **Farebox Recovery:** The percentage of operating costs covered by fares collected, calculated by the fares collected divided by the cost to operate the route.
- **Cost/Revenue-Hour:** An excellent indicator of efficiency is cost per revenue-hour of service. Costs per hour should be analyzed by route and compared to overall system averages.
- **Late Trips:** The percentage of fixed-route trips which operate late or are missed should be recorded and reported. The recommended standard for late trips is any trip that is more than five minutes behind schedule.
- **Service/Road Calls:** the number of service/road calls divided by the number of revenue miles. This measure is typically measured for the entire system and not individual routes. This monitors routine maintenance and vehicle performance.
- **Accidents/100,000 miles:** Measure of driver safety. There must be a standard practice for defining what an accident is.

### 7.61 Service Benchmarks

The aforementioned performance measures can be used to create benchmarks for service operation. The benchmarks will help VTA track progress and set goals for the performance of the route. These benchmarks should be seen as short-term goals that should be re-evaluated at set intervals—at least every five years—to ensure that the expectations for the route are consistently evolving. If a specific benchmark has been greatly exceeded during the first two years of operation, the criteria should be changed to provide a progressive target for the service. The following benchmarks were determined by the base type of service, national best standards and the current performance.

#### Passengers per Hour

Passengers per hour measures ridership as a function of the amount of service provided and will vary based on the type of route. Table 21 outlines the threshold for route/service types which can be used to monitor the route. As system-wide service improves these values should be adjusted to reflect the change and reevaluated every 3 - 5 years. They are based on current performance and best practices. If

routes are performing at 75% or more below the benchmark then the route may need to be evaluated to determine remedies to improve performance.

**Table 21. Passenger per Hour**

Route Type	Peak (Summer)	Shoulder	Off (Winter)
<b>Down Island</b>	27	21	8
<b>Seasonal</b>	7	7	--
<b>Community Circulator</b>	10	6	3
<b>Up Island</b>	12	6	3

### **Subsidy per Passenger**

Subsidy per passenger measures the cost of providing service, taking into account fare revenue collected. As with passengers per hour, as system-wide service improves these values should be adjusted to reflect improvements and should be reevaluated every 3 - 5 years. VTA should strive to have a subsidy per passenger less than **\$2.50** on all routes. If subsidies are more than 50% higher than the benchmark and the route does not have a dedicated source of funding, then the route may need to be evaluated to determine remedies to improve performance.

### **Cost per Revenue Hour**

Cost per revenue hour by route should be related to the average of the system so that it can change as service is added or subtracted or funding sources change. Table 22 provides a guideline for monitoring this benchmark.

**Table 22. Cost per Hour Performance Standard Criteria**

Performance	Percentage of Average	Action
<b>Very Low</b>	0%-50%	Immediate action
<b>Low</b>	51%- 75%	Subject to review
<b>Average</b>	75%-150%	No action needed
<b>High</b>	150%+	Evaluate for service improvements

For those routes performing under 50% immediate actions are listed in section 7.62. Routes falling within the 50%-75% range are routes that are candidates for monitoring service. Routes falling within the 75%-150% range are routes that are performing well and require no action. 150%+ routes indicate high performing routes which may benefit from increased service.

### **Farebox Recovery**

Farebox recovery ratios are typically higher for transit systems such as VTA with high levels of tourism and limited capacity for sprawl. VTA should strive to continue to meet or exceed a system wide farebox recovery ratio of **20%**. System-wide VTA regularly meets and exceeds this goal with an overall fare box recovery ratio of 34.4%.



### **Late Trips**

Late trips measure on-time performance and help evaluate a vehicle's adherence to a schedule. A trip is considered on-time if it departs a timepoint no more than five minutes late; no trips should leave early. The recommended best practice for on-time performance nationwide is **95%**; VTA should continue to strive and surpass this benchmark. System-wide VTA regularly meets and exceeds this goal year round.

### **Service/Road Calls**

Vehicle breakdowns are inevitable. This measure tracks the distance traveled between mechanical breakdowns. Although frequent occurrences can create disruptions in a transit system, it is important to track the frequency and type of mechanical failures of each vehicle in addition to monitoring a fleet's age. Monitoring of vehicle breakdowns is one method of reducing system disruptions and may allow an agency to improve monitoring of vehicle replacement schedules and preventative maintenance practices. Data collection efforts should include date, time of day, type of failure, age of vehicle, vehicle number, vehicle mileage, and how the situation was rectified. Monitoring of these items will allow VTA to recognize patterns in repeated types of mechanical breakdowns; breakdowns related to vehicle type, age or mileage; and assist with preventative maintenance programs. Wheelchair lift failures should also be monitored. VTA should strive for **20,000 miles** between road calls.

### **Accidents per 100,000 Miles**

The FTA suggests that at a minimum transit providers strive towards the goal of six accidents or less per 100,000 miles. VTA should seek to exceed that minimum with no more than **three (3) accidents per 100,000 miles**. The measure can be calculated by dividing the number miles by the number of accidents in a given time period. Values lower than 33,333 indicate that the indicator is not being met.

## **7.62 Action for Low Performing Routes**

If routes are not meeting at least two out of the three main indicators (passenger per hour, subsidy per passenger, farebox recovery) or fall below the minimum suggested values (\$2.50 subsidy per passenger, 75% of the passenger per hour by service type or "very low" performance score for cost per hour), they should be evaluated for possible modification. The following actions may help improve route performance:

**Change service level** – Some low performing routes may not warrant increased service frequency; yet routes with very few trips may not attract riders. High frequency routes that are low performing should be evaluated for service changes. Low frequency routes can be evaluated for trip additions to determine if the low performance is related to minimal service. This analysis should be done in conjunction with outreach to determine if extra trips would garner higher ridership.

**Segment identification** – A segment level analysis of a route might highlight a portion of the route that causes the overall poor performance. This segment can be modified to help improve the overall route.

**Marketing** – Marketing can help raise the public awareness of a route. Ridership can be poor because the public lacks knowledge of the service. A marketing/educational campaign can help improve performance statistics.

**Public outreach** – On-board surveys or rider interviews can help gain information about how the route can be improved.

**Span identification** – Evaluating the performance at different time periods throughout the day may help identify time periods or trips that garner very little ridership. For example the last trip of the day may have very low productivity and bring down the performance of the entire route.

**Subsidy reduction** – If the subsidy per passenger is high one way to reduce it is to explore cost sharing partnerships with external funding sources. Examples include schools/colleges, large housing complexes, shopping centers, and places of employment. Another method is to work with local employment centers to coordinate the sale of passes with employee incentives.

**Discontinuation** – Discontinuation is the last option for dealing with a low-performing route and should only be implemented once other measures have been tried but the route is still under performing. A whole route or segment can be discontinued. Routes should not be discontinued until other remedial actions have been tried and the service has been monitored for at least sixth months and there is still no improvement on the route.

### 7.63 New Service Performance Evaluation

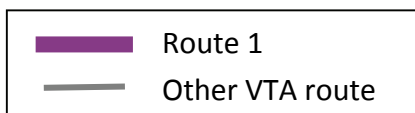
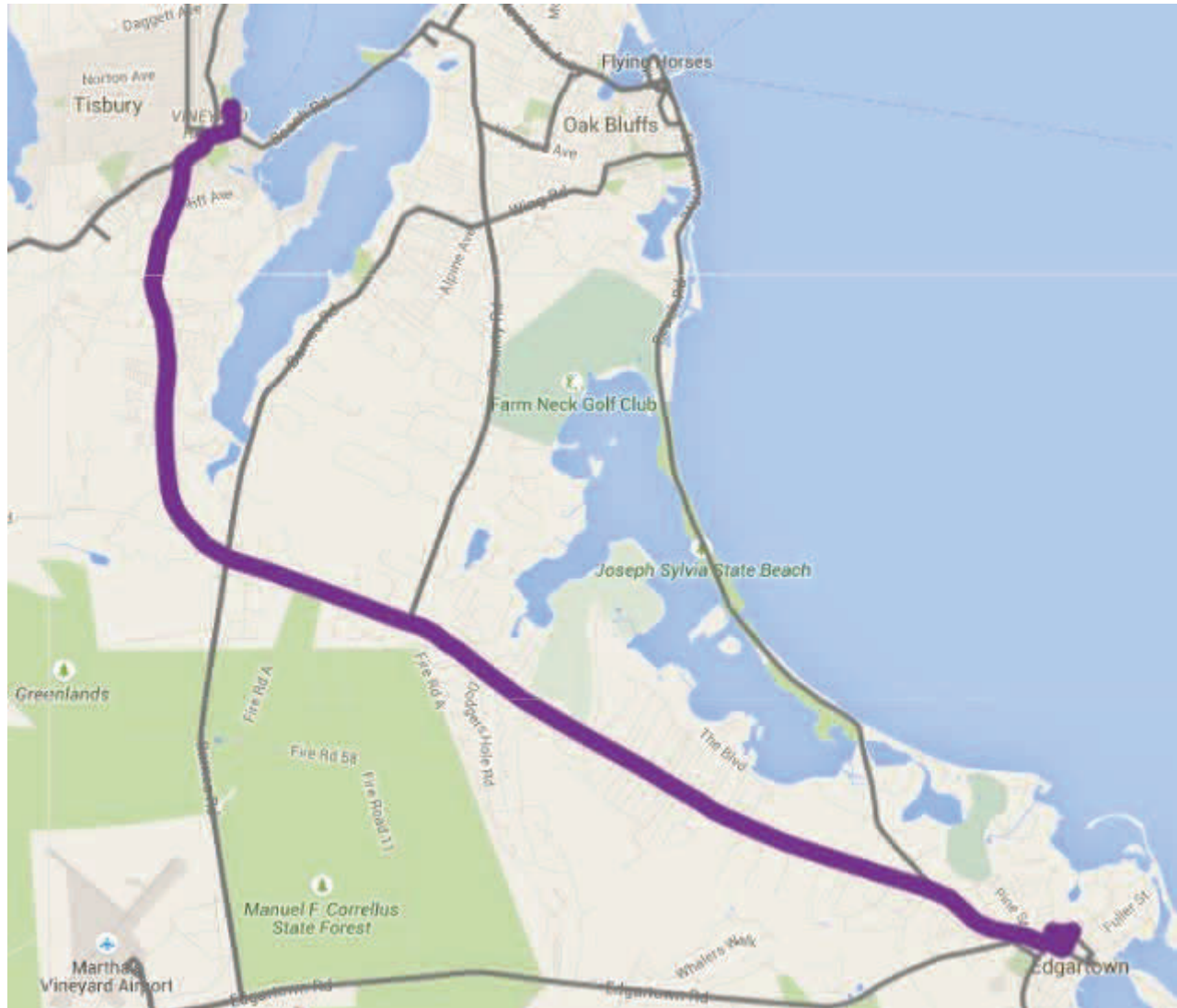
Once a new route or service has been implemented, it should be monitored for an initial period to evaluate its performance. At the onset the route may not meet the benchmarks set forth for existing routes, but as the service becomes more popular it may. New services should be implemented for a period of at least one year in order to garner ridership and monitor monthly fluctuations. While minor changes such as timing can be made to the route within the initial period, large changes should be avoided. On-time data should be checked randomly to ensure that performance remains acceptable; a new service that has low on-time performance will have a difficult time attracting ridership. Approximately halfway through the initial period (6 months) a passenger survey of the route should be conducted to understand the effectiveness of the route. The route should continue to be monitored as a 'new route' beyond one year if ridership has had continual growth. Once ridership has plateaued the route can be evaluated against the aforementioned benchmarks with the other routes.

## 7.7 Recommendation Profiles

The following route profiles depict the proposed recommendation changes.



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# Route 1

Edgartown - Vineyard Haven Road

REGIONAL TRANSIT PLAN  
Martha's Vineyard Transit Authority



## Current Route Performance

Ridership	Route 1	System Average
Daily Peak Season Ridership	17.34	675
Daily Shoulder Season Ridership	883	325
Daily Off Season Ridership	297	80

Productivity	Route 1	System
Peak Season Productivity (pax/hours)	31.89	30.9
Shoulder Productivity (pax/hours)	24.69	20.2
Off Season Productivity (pax/hours)	11.01	8.7

## Proposed Service Changes

	Current	Proposed
Season Operated	All	All
Route Length (miles)	15.7	15.7
Cycle Time Peak Season	60-80 min	60-90
Cycle Time Shoulder	60 min	60 min
Cycle Time Off Season	60 min	60 min
Peak Season Headway	20-30 min	15-30 min
Shoulder Season Headway	30 min	30 min
Off Season Headway	30-60 min	30 min
Hours of Operations Peak	5:37 AM—1:45 AM	5:37 AM—1:45 AM
Hours of Operation Shoulder	6:30 AM—12:56 AM	5:30 AM—12:56 AM
Hours of Operation Off Season	6:25 AM—10:29PM	5:25AM—10:25PM

### Alignment Changes:

None

### Environmental Justice Policy:

Unknown

### Phase 1:

- Adjust Service Hours
- Off season frequency

### Phase 2:

- Improve peak season frequency

### Phase 3:

- None

### ADA Impact:

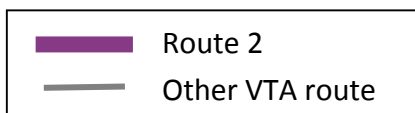
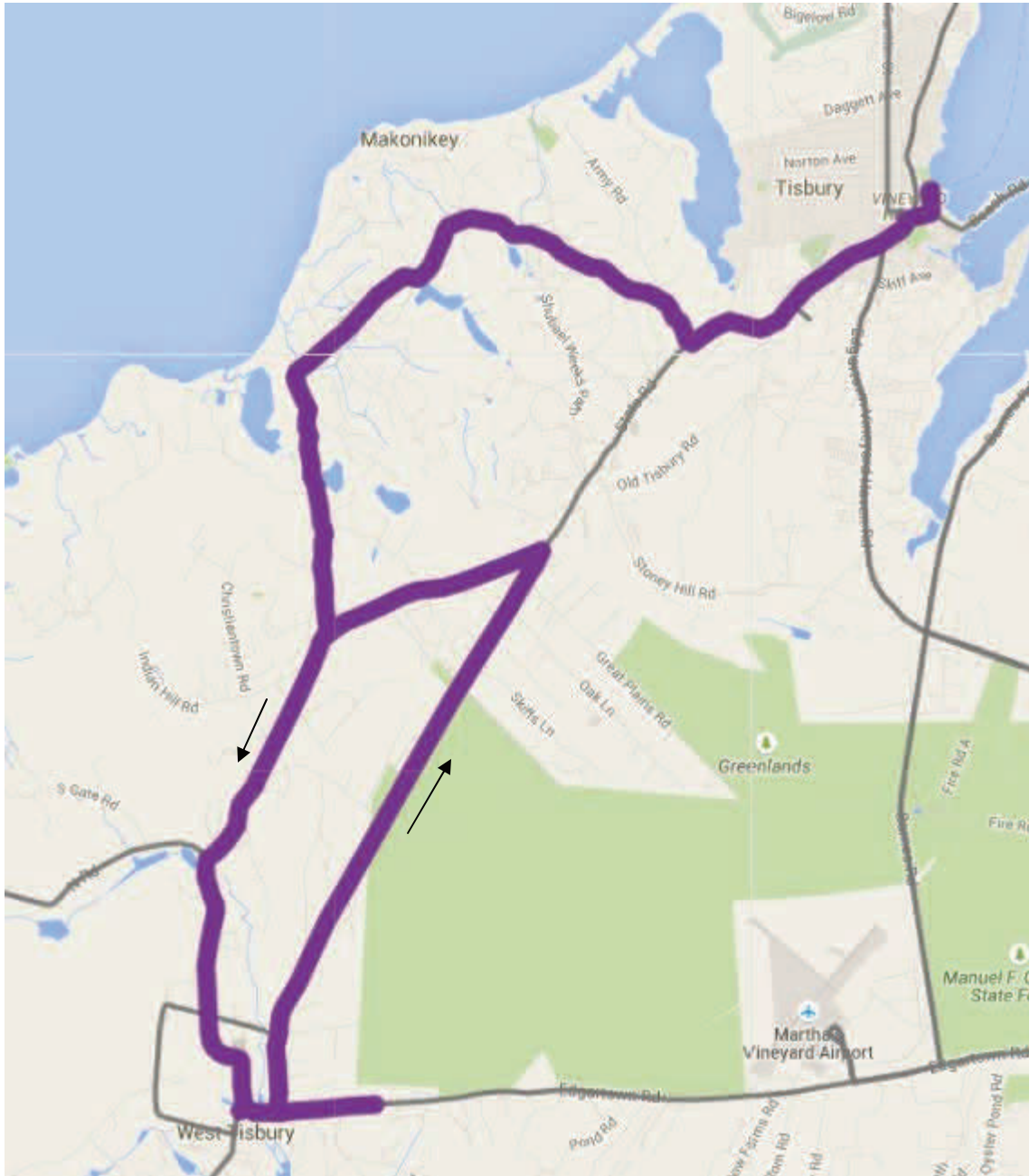
Service during shoulder and off season will need to begin 1 hour earlier.

### Financial

	Phase 1	Phase 2	Phase 3
Annual Change in Revenue Hours	+2,084	+890	0
Annual Change in Revenue Miles	+31,244	+4,722	0
Estimate Change in Cost	+\$131,000	+\$56,000	0
Additional vehicle requirements (peak):	0	2	0
Capital Requirement: Other	None		

### Other Notes:

Starting earlier in the shoulder and off-season will create connections to the early ferries from the Edgartown Park and Ride. This route has one of the highest ridership during the off-season and warrants additional service.





# Route 2

West Tisbury - Vineyard Haven via Old Cty Rd.

REGIONAL TRANSIT PLAN  
Martha's Vineyard Transit Authority



## Current Route Performance

Ridership	Route 2	System Average
Daily Peak Season Ridership	99	675
Daily Shoulder Season Ridership	57	325
Daily Off Season Ridership	15	80

Productivity	Route 2	System Average
Peak Season Productivity (pax/	9.55	30.9
Shoulder Productivity (pax/hours)	5.58	20.2
Off Season Productivity (pax/hours)	3.03	8.7

## Proposed Service Changes

	Current	Proposed
Season Operated	All	All
Route Length (miles)	20.1	20.1
Cycle Time Peak Season	62 min	62 min
Cycle Time Shoulder	62 min	62 min
Cycle Time Off Season	60 min	60 min
Peak Season Headway	90 min	45 min
Shoulder Season Headway	90 min	90 min
Off Season Headway	varies (100 min avg)	120 min
Hours of Operations Peak Season	7:51 AM—7:50 PM	7:51 AM—7:50 PM
Hours of Operation Shoulder	7:51 AM—7:50 PM	7:51 AM—7:50 PM
Hours of Operation Off Season	6:54 AM—6:25 PM	7:13 AM—6:28 PM

### Alignment Changes:

This route will travel between the VH SSA terminal and the West Tisbury Town Hall on all trips via Lambert Rd.

### Environmental Justice Policy:

Unknown

### Phase 1:

- Off season frequency
- Off season hours
- Alignment

### Phase 2:

- None

### Phase 3:

- Improve peak season frequency

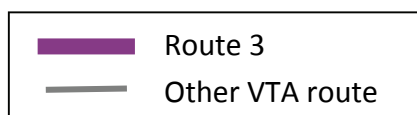
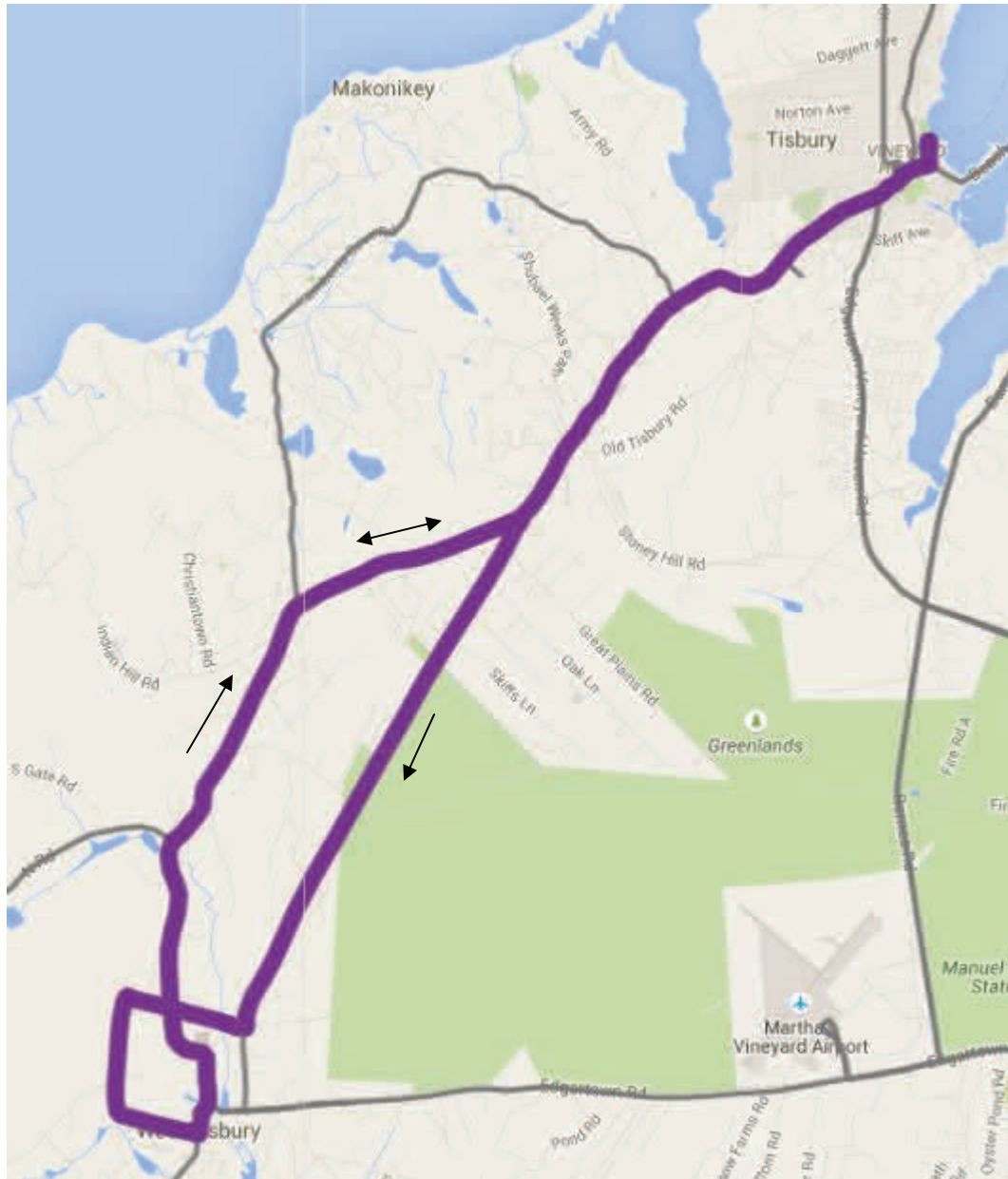
### ADA Impact:

Minimal impact due to slight change in service hours.

Financial	Phase 1	Phase 2	Phase 3
Annual Change in Revenue Hours	+88	0	+777
Annual Change in Revenue Miles	+1,961	0	+12,078
Estimate Change in Cost	+\$6,000	0	+\$49,000
Additional vehicle requirements (peak):	0	0	0
Capital Requirement: Other	None		

### Other Notes:

In the off season this route will be interlined with the Routes 4 and 10A to create consistent frequencies. One trip has been added.







# Route 3

Vineyard Haven - West Tisbury via State

REGIONAL TRANSIT PLAN  
Martha's Vineyard Transit Authority



## Current Route Performance

Ridership	Route 3	System Average
Daily Peak Season Ridership	356	675
Daily Shoulder Season Ridership	157	325
Daily Off Season Ridership	21	80

Productivity	Route 3	System Average
Peak Season Productivity (pax/hours)	19.59	30.9
Shoulder Productivity (pax/hours)	10.59	20.2
Off Season Productivity (pax/hours)	3.42	8.7

## Proposed Service Changes

	Current	Proposed
Season Operated	All	All
Route Length (miles)	14.4	14.4
Cycle Time Peak Season	58 min	58 min
Cycle Time Shoulder	58 min	58 min
Cycle Time Off Season	44 min	45 min
Peak Season Headway	60 min	30/60 min
Shoulder Season Headway	60 min	60 min
Off Season Headway	varies (70 min avg)	90 min
Hours of Operations Peak Season	7:07 AM—11:59 PM	7:07 AM—11:59 PM
Hours of Operation Shoulder	7:07 AM—8:59 PM	7:07 AM—8:59 PM
Hours of Operation Off Season	6:06 AM—7:32 PM	6:15 AM—7:35 PM

### Alignment Changes:

This route will travel between the VH SSA terminal and the West Tisbury Town Hall on all trips via State Road. It will service West Tisbury Business District on all trips in both directions.

### Environmental Justice Policy:

Unknown

### Phase 1:

- Off season frequency
- Off season hours
- Alignment

### Phase 2:

- Improve peak season frequency

### Phase 3:

- None

### ADA Impact:

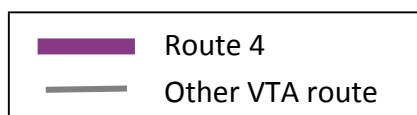
Minimal impact due to slight change in service hours

### Financial

	Phase 1	Phase 2	Phase 3
Annual Change in Revenue Hours	+705	+998	0
Annual Change in Revenue Miles	+13,900	+10,815	0
Estimate Change in Cost	+\$44,000	+\$63,000	0
Additional vehicle requirements (peak):	0	0	0
Capital Requirement: Other	None		

### Other Notes:

In the off season this route will be interlined with the Route 5 to create consistent frequencies. This will also create a one seat ride from Aquinnah to Vineyard Haven. It has been timed to transfer with the Route 6 at West Tisbury. Three (3) trips from VH to West Tisbury and 5 trips from West Tisbury to VH have been added.





# Route 4

West Tisbury - Chilmark - Menemsha

REGIONAL TRANSIT PLAN

Martha's Vineyard Transit Authority



## Current Route Performance

Ridership	Route 4	System Average
Daily Peak Season Ridership	356	675
Daily Shoulder Season Ridership	157	325
Daily Off Season Ridership	21	80

Productivity	Route 4	System Average
Peak Season Productivity (pax/hours)	19.59	30.9
Shoulder Productivity (pax/hours)	10.59	20.2
Off Season Productivity (pax/hours)	3.42	8.7

## Proposed Service Changes

	Current	Proposed
Season Operated	All	All
Route Length (miles)	20.1	20.1
Cycle Time Peak Season	58 min	58 min
Cycle Time Shoulder	58 min	58 min
Cycle Time Off Season	50 min	42 min
In-season Headway	60 min	60 min
Shoulder Season Headway	60 min	60 min
Off-Season Headway	varies (170 min avg)	120 min
Hours of Operations Peak Season	7:40 AM—12:32 AM	7:40 AM—12:32 AM
Hours of Operation Shoulder	7:40 AM—7:38 PM	7:40 AM—7:38 PM
Hours of Operation Off Season	7:09 AM—6:19 PM	8:28 AM—7:10 PM

### Alignment Changes:

This route will service either Chilmark Community Center or Menemsha beach but not both on each trip. This route will not service West Tisbury business district.

### Environmental Justice Policy:

Unknown

### Phase 1:

- Off season frequency
- Off season hours
- Adjust off season alignment

### Phase 2:

- None

### Phase 3:

- None

### ADA Impact:

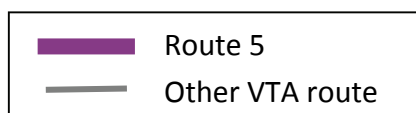
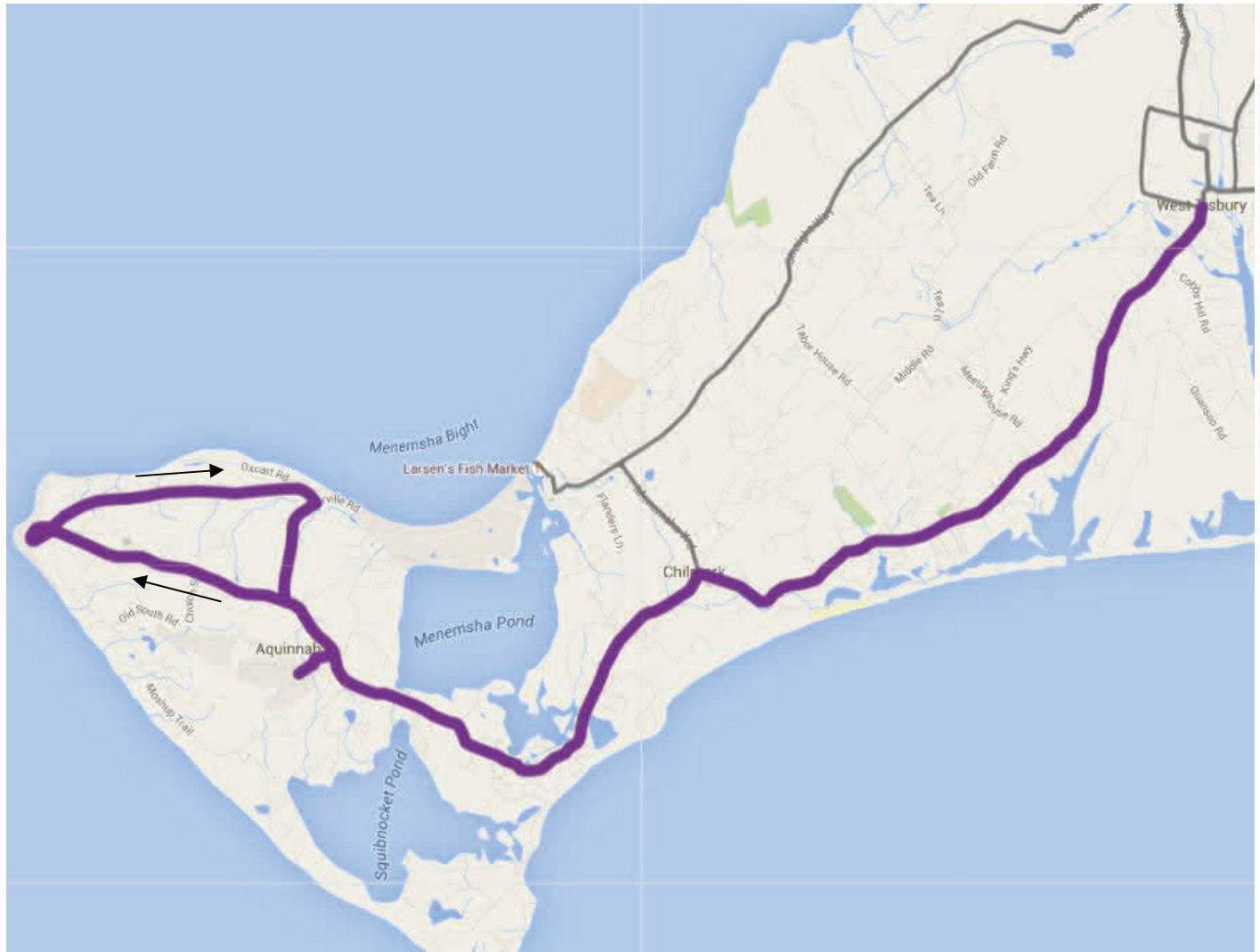
Minimal impact due to slight change in service hours

### Financial

	Phase 1	Phase 2	Phase 3
Annual Change in Revenue Hours	+162	0	0
Annual Change in Revenue Miles	+3,197	0	0
Estimate Change in Cost	+\$10,000	0	0
Additional vehicle requirements (peak):	0	0	0
Capital Requirement: Other	None		

### Other Notes:

In the off season this route will be interlined with the Routes 2 and 10A to create consistent frequencies. 1.5 trips have been added to this route.





# Route 5

West Tisbury - Chilmark - Aquinnah

REGIONAL TRANSIT PLAN  
Martha's Vineyard Transit Authority



## Current Route Performance

Ridership	Route 5	System Average
Daily Peak Season Ridership	356	675
Daily Shoulder Season Ridership	157	325
Daily Off Season Ridership	21	80

Productivity	Route 5	System Average
Peak Season Productivity (pax/hours)	19.59	30.9
Shoulder Productivity (pax/hours)	10.59	20.2
Off Season Productivity (pax/hours)	3.42	8.7

## Proposed Service Changes

	Current	Proposed
Season Operated	All	All
Route Length (miles)	24.0	24.0
Cycle Time Peak Season	46 min	46 min
Cycle Time Shoulder	46 min	46 min
Cycle Time Off Season	42 min	42 min
Peak Season Headway	60 min	30/60 min
Shoulder Season Headway	60 min	60 min
Off Season Headway	varies (120 min avg)	90 min
Hours of Operations Peak Season	6:38 AM—12:08 AM	6:38 AM—12:08 AM
Hours of Operation Shoulder	6:38 AM—8:32 PM	6:38 AM—8:32 PM
Hours of Operation Off Season	6:25 AM—6:38 PM	6:40 AM—7:22 PM

### Alignment Changes:

This route will run from West Tisbury to Aquinnah on every trip.

### Environmental Justice Policy:

Unknown

### Phase 1:

- Off season frequency
- Off season hours
- Adjust off season alignment

### Phase 2:

- Improve peak season frequency

### Phase 3:

- None

### ADA Impact:

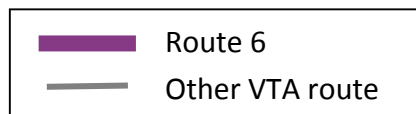
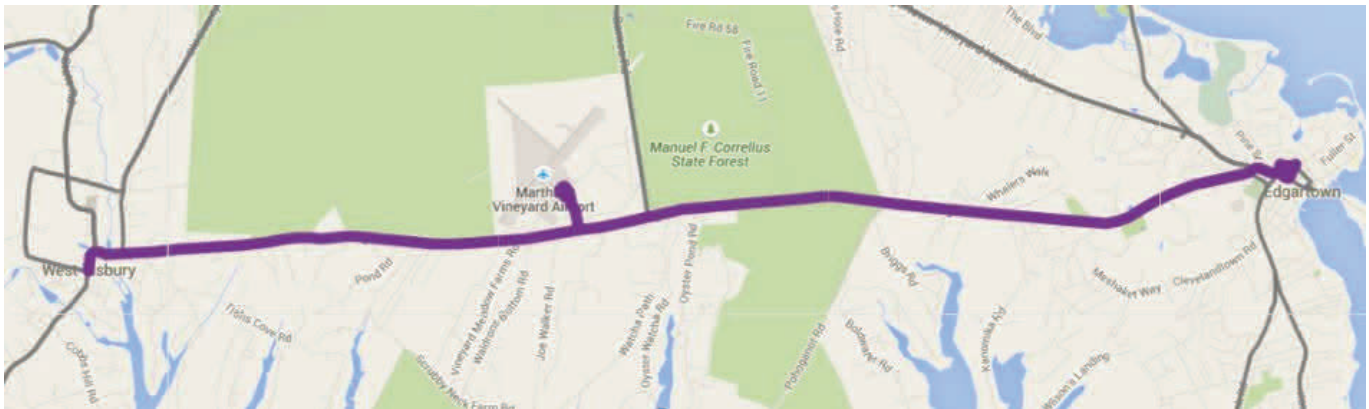
Minimal impact due to slight change in service hours

### Financial

	Phase 1	Phase 2	Phase 3
Annual Change in Revenue Hours	+779	+286	0
Annual Change in Revenue Miles	+15,357	+18,030	0
Estimate Change in Cost	+\$49,000	+\$18,000	0
Additional vehicle requirements (peak):	0	1	0
Capital Requirement: Other	None		

### Other Notes:

In the off season this route will be interlined with the Route 3 to create consistent frequencies. One trip to West Tisbury and 4 to Aquinnah have been added.







# Route 6

West Tisbury - Chilmark - Aquinnah

## REGIONAL TRANSIT PLAN

Martha's Vineyard Transit Authority



### Current Route Performance

Ridership	Route 5	System Average
Daily Peak Season Ridership	356	675
Daily Shoulder Season Ridership	157	325
Daily Off Season Ridership	21	80

Productivity	Route 5	System Average
Peak Season Productivity (pax/hours)	19.59	30.9
Shoulder Productivity (pax/hours)	10.59	20.2
Off Season Productivity (pax/hours)	3.42	8.7

### Proposed Service Changes

	Current	Proposed
Season Operated	All	All
Route Length (miles)	18.7	18.7
Cycle Time Peak Season	46 min	46 min
Cycle Time Shoulder	46 min	46 min
Cycle Time Off Season	54 min	60 min
Peak Season Headway	60 min	30 min
Shoulder Season Headway	60 min	60 min
Off Season Headway	varies (90 min avg)	60/90 min
Hours of Operations Peak Season	6:25 AM—12:42 AM	6:25 AM—12:42 AM
Hours of Operation Shoulder	6:25 AM—9:36 PM	6:25 AM—9:36 PM
Hours of Operation Off Season	6:40 AM—7:43 PM	6:40 AM—7:06 PM

#### Alignment Changes:

This route will run from West Tisbury to Edgartown via the Airport on every trip.

#### Environmental Justice Policy:

Unknown

#### Phase 1:

- Off season frequency
- Off season hours
- Adjust off season alignment

#### Phase 2:

- Improve peak season frequency

#### Phase 3:

- None

#### ADA Impact:

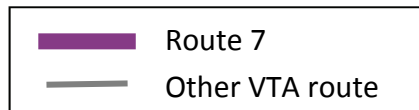
Minimal impact due to slight change in service hours

#### Financial

	Phase 1	Phase 2	Phase 3
Annual Change in Revenue Hours	+83	+982	0
Annual Change in Revenue Miles	+1,638	+17,531	0
Estimate Change in Cost	+\$5,000	+\$61,000	0
Additional vehicle requirements (peak):	0	1	0
Capital Requirement: Other	None		

#### Other Notes:

In the off season this route will be interlined with the Route 8 to create consistent frequencies. It is timed to facilitate transfer to the Route 1 and 13 in Edgartown, the 7/9 at the Airport and the Route 5 in West Tisbury.





# Route 7

Oak Bluffs - Airport via County Road / Barnes Road



## Current Route Performance

Ridership	Route 7	System Average
Daily Peak Season Ridership	191	675
Daily Shoulder Season Ridership	108	325
Daily Off Season Ridership	22	80

Productivity	Route 7	System
Peak Season Productivity (pax/hours)	14.76	30.9
Shoulder Productivity (pax/hours)	8.38	20.2
Off Season Productivity (pax/hours)	5.43	8.7

## Proposed Service Changes

	Current	Proposed
Season Operated	All	All
Route Length (miles)	16.5	17.7
Cycle Time Peak Season	46 min	46 min
Cycle Time Shoulder	46 min	46 min
Cycle Time Off Season	54 min	41 min
Peak Season Headway	60 min	60 min
Shoulder Season Headway	60 min	60 min
Off Season Headway	varies (90 min avg)	90 min
Hours of Operations Peak Season	6:55 AM—11:50 PM	6:55 AM—11:50 PM
Hours of Operation Shoulder	6:55 AM—7:50 PM	6:55 AM—7:50 PM
Hours of Operation Off Season	7:22 AM—5:44 PM	7:57 AM—5:38 PM

### Alignment Changes:

This route is realigned to use Barnes Road both inbound and outbound in order to create linear service along the corridor. Heading towards the airport it would do the inbound tour and heading towards Oak Bluffs it would service the Hospital and New York Ave. to get into downtown.

### Environmental Justice Policy:

Unknown

### Phase 1:

- Off season frequency
- Off season hours
- Alignment adjustment

### Phase 2:

- None

### Phase 3:

- None

### ADA Impact:

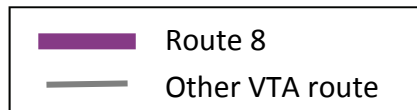
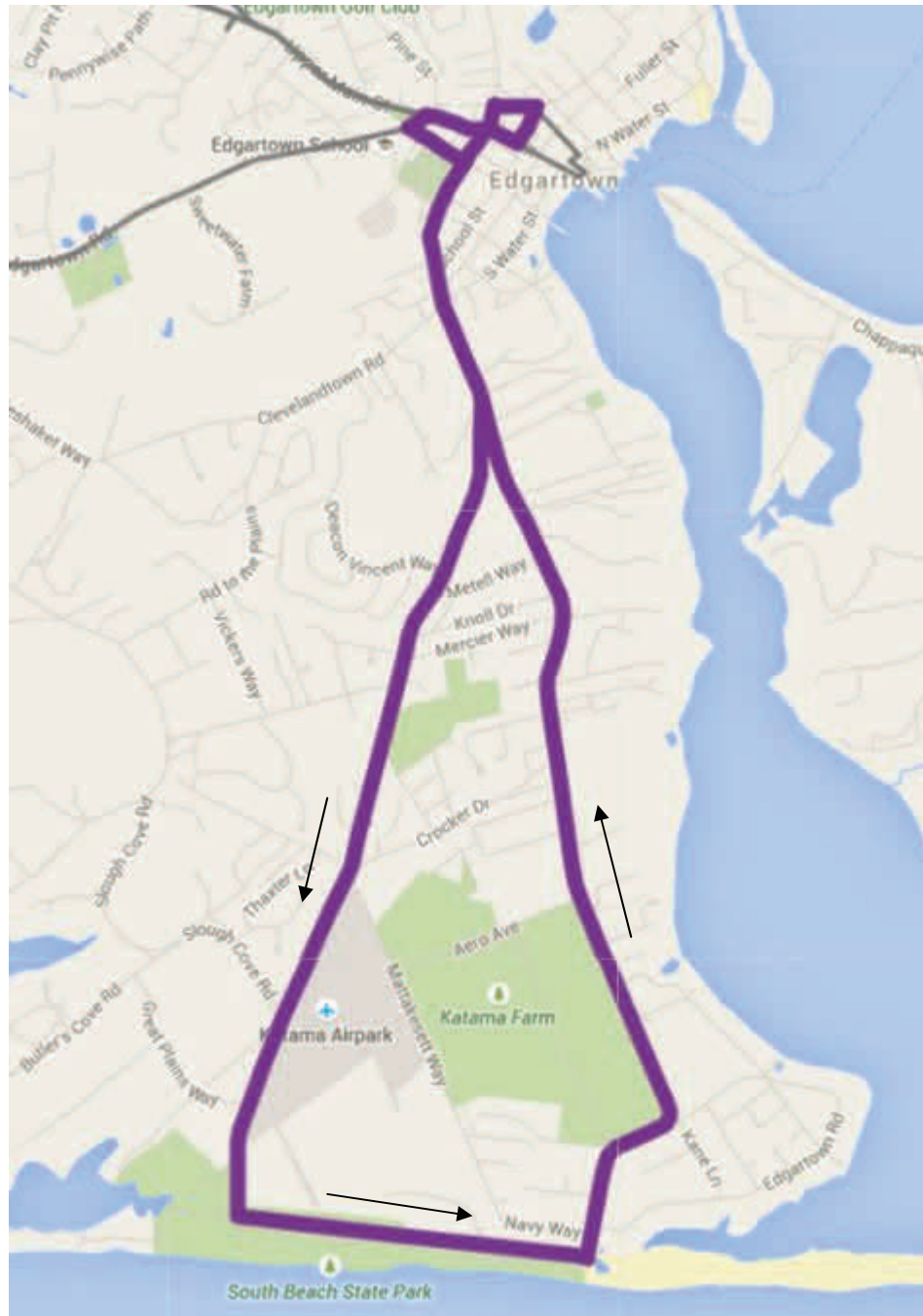
Minimal impact due to slight change in service hours

### Financial

	Phase 1	Phase 2	Phase 3
Annual Change in Revenue Hours	+514	0	0
Annual Change in Revenue Miles	+9,672	0	0
Estimate Change in Cost	+\$32,000	0	0
Additional vehicle requirements (peak):	0	0	0
Capital Requirement: Other	None		

### Other Notes:

In the off-season this route will be interlined with the Route 9 to create consistent frequencies. It is timed to facilitate transfers to and from the Route 1 (to Route 1 heading west, from Route 7 heading towards the airport), and the 6 at the airport. This route should be renamed "Oak Bluffs—Airport via Barnes Road"





# Route 8

## South Beach Route

### Current Route Performance

Ridership	Route 8	System Average
Daily Peak Season Ridership	518	675
Daily Shoulder Season Ridership	117	325
Daily Off Season Ridership	9	80

Productivity	Route 8	System Average
Peak Season Productivity (pax/hours)	24.65	30.9
Shoulder Productivity (pax/hours)	14.38	20.2
Off Season Productivity (pax/hours)	3.01	8.7

### Proposed Service Changes

	Current	Proposed
Season Operated	All	All
Route Length (miles)	7.6	7.6
Cycle Time Peak Season	24 min	24 min
Cycle Time Shoulder	24 min	24 min
Cycle Time Off Season	24 min	30 min
Peak Season Headway	15-30 min	15-30 min
Shoulder Season Headway	60 min	60 min
Off Season Headway	varies (90 min avg)	90 min
Hours of Operations Peak Season	7:00 AM—10:24 PM	7:00 AM—10:24 PM
Hours of Operation Shoulder	7:00 AM—5:54 PM	7:00 AM—5:54 PM
Hours of Operation Off Season	8:19 AM—5:42 PM	9:25 AM—5:55 PM

#### Alignment Changes:

No changes

#### Environmental Justice Policy:

Unknown

#### Phase 1:

- Off season frequency
- Off season hours

#### Phase 2:

- None

#### Phase 3:

- None

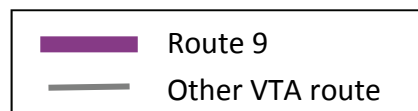
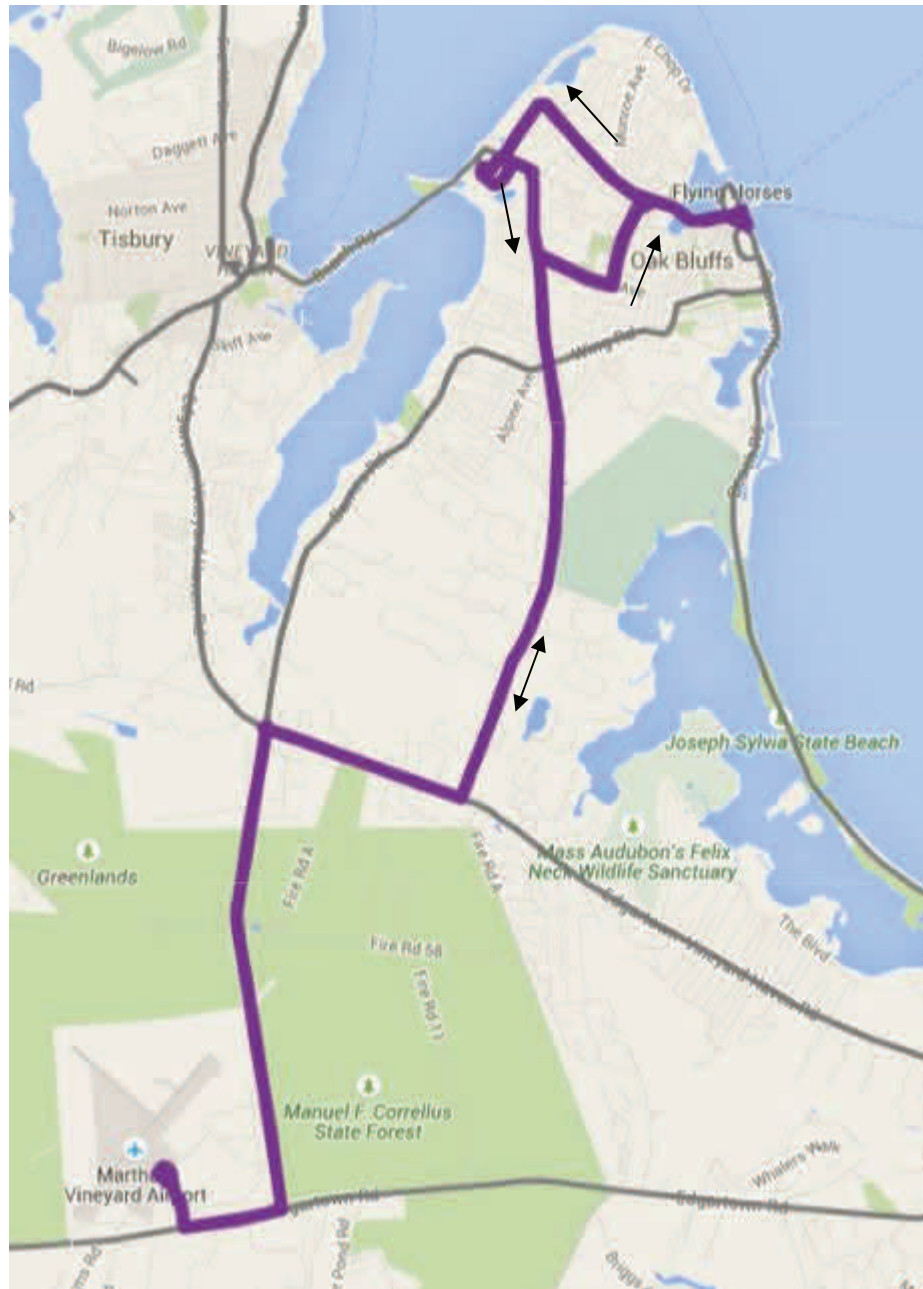
#### ADA Impact:

Minimal impact due to slight change in service hours

Financial	Phase 1	Phase 2	Phase 3
Annual Change in Revenue Hours	-91	0	0
Annual Change in Revenue Miles	-1,602	0	0
Estimate Change in Cost	-\$6,000	0	0
Additional vehicle requirements (peak):	0	0	0
Capital Requirement: Other	None		

#### Other Notes:

In the off season this route will be interlined with the Route 6 to create consistent frequencies. It is timed to facilitate transfers in Edgartown to the Routes 1 and 13.







# Route 9



Oak Bluffs - Hospital - Airport via Barnes Road & County Road

## Current Route Performance

Ridership	Route 9	System Average
Daily Peak Season Ridership	229	675
Daily Shoulder Season Ridership	99	325
Daily Off Season Ridership	22	80

Productivity	Route 9	System Average
Peak Season Productivity (pax/	13.97	30.9
Shoulder Productivity (pax/hours)	7.26	20.2
Off Season Productivity (pax/hours)	4.27	8.7

## Proposed Service Changes

	Current	Proposed
Season Operated	All	All
Route Length (miles)	16.5	17.1
Cycle Time Peak Season	52 min	52 min
Cycle Time Shoulder	52 min	52 min
Cycle Time Off Season	46 min	49 min
Peak Season Headway	60 min	60 min
Shoulder Season Headway	60 min	60 min
Off Season Headway	varies (90 min avg)	90 min
Hours of Operations Peak	6:28 AM—12:23 AM	6:28 AM—12:23 AM
Hours of Operation Shoulder	6:28 AM—8:23 PM	6:28 AM—8:23 PM
Hours of Operation Off Season	7:02 AM—6:39 PM	7:10 AM—6:27 PM

### Alignment Changes:

This route is realigned to use Country Road both inbound and outbound in order to create linear service along the corridor. Woodside Village will be made an on-request stop only when heading towards the airport. Heading towards Oaks Bluffs it goes Country Road— Vineyard Ave. — the library — Vineyard Haven. On the return it goes to the hospital and then Country Road with Woodside on request only.

### Environmental Justice Policy:

Unknown

### Phase 1:

- Off season frequency
- Off season hours
- Adjust alignment

### Phase 2:

- None

### Phase 3:

- None

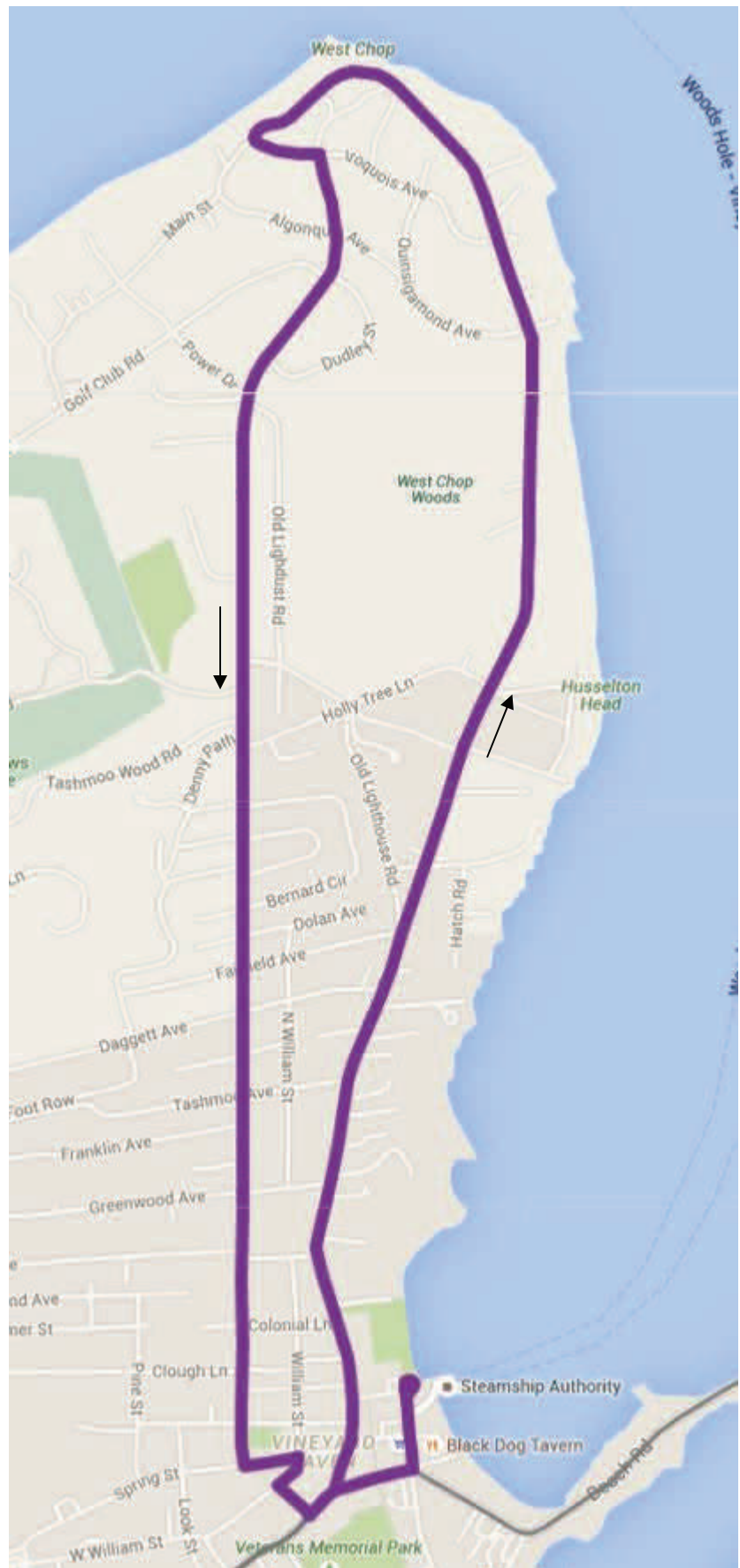
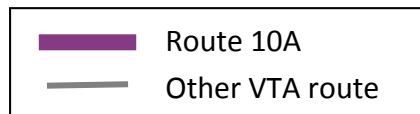
### ADA Impact:

Minimal impact due to slight change in service hours

Financial	Phase 1	Phase 2	Phase 3
Annual Change in Revenue Hours	+210	0	0
Annual Change in Revenue Miles	+2,586	0	0
Estimate Change in Cost	+\$13,000	0	0
Additional vehicle requirements (peak):	0	0	0
Capital Requirement: Other	None		

### Other Notes:

In the off season this route will be interlined with the Route 7 to create consistent frequencies. It is timed to facilitate transfers at the airport with the Route 6.





# Route 10A

West Chop Loop

REGIONAL TRANSIT PLAN  
Martha's Vineyard Transit Authority



## Current Route Performance

Ridership	Route 10A	System Average
Daily Peak Season Ridership	22	675
Daily Shoulder Season Ridership	11	325
Daily Off Season Ridership	7	80

Productivity	Route 10A	System Average
Peak Season Productivity (pax/hours)	8.43	30.9
Shoulder Productivity (pax/hours)	4.23	20.2
Off Season Productivity (pax/hours)	2.68	8.7

## Proposed Service Changes

	Current	Proposed
Season Operated	All	All
Route Length (miles)	16.5	17.1
Cycle Time Peak Season	15 min	15 min
Cycle Time Shoulder	15 min	15 min
Cycle Time Off Season	15 min	15 min
Peak Season Headway	90 min	45 min
Shoulder Season Headway	90 min	90 min
Off Season Headway	varies (80 min avg)	120 min
Hours of Operations Peak Season	6:50 AM—7:17 PM	6:50 AM—7:17 PM
Hours of Operation Shoulder	6:50 AM—7:17 PM	6:50 AM—7:17 PM
Hours of Operation Off Season	7:30 AM—6:05 PM	7:25 AM—6:00 PM

### Alignment Changes:

No changes

### Environmental Justice Policy:

Unknown

### Phase 1:

- Off season frequency
- Off season hours

### Phase 2:

- None

### Phase 3:

- Improve peak season frequency

### ADA Impact:

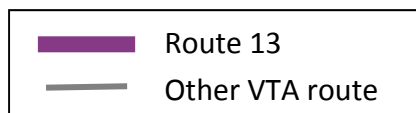
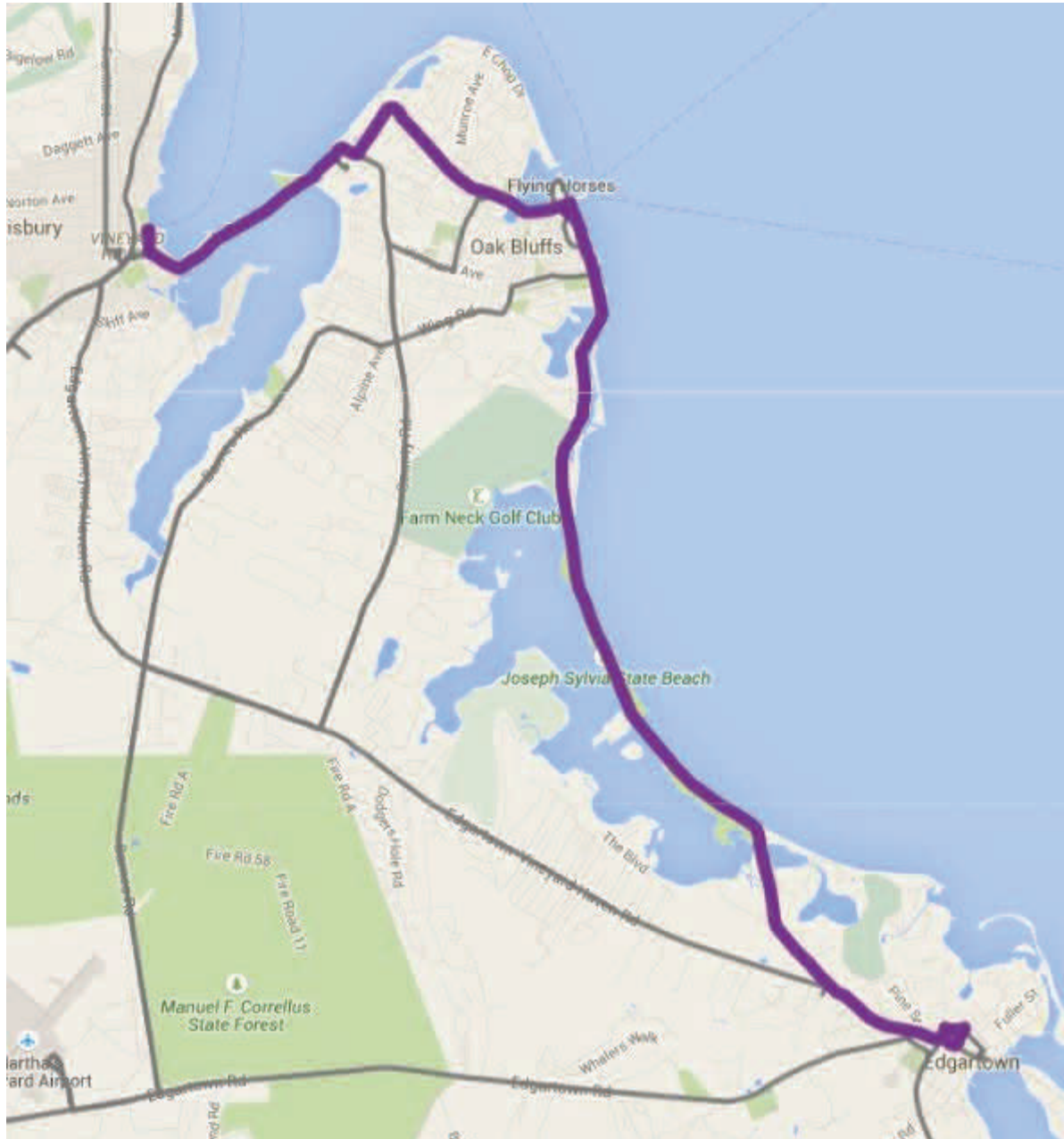
Minimal impact due to slight change in service hours

### Financial

	Phase 1	Phase 2	Phase 3
Annual Change in Revenue Hours	-183	0	+167
Annual Change in Revenue Miles	-3,169	0	+2,892
Estimate Change in Cost	-\$11,000	0	+\$10,000
Additional vehicle requirements (peak):	0	0	1
Capital Requirement: Other	None		

### Other Notes:

In the off season this route will be interlined with the Routes 2 and 4 to create consistent frequencies. It is timed to facilitate transfers at the airport with the Route 6.





# Route 13

Edgartown—Oak Bluffs—Vineyard Haven via Beach Roads

REGIONAL TRANSIT PLAN

Martha's Vineyard Transit Authority



## Current Route Performance

Ridership	Route 13	System Average
Daily Peak Season Ridership	4,463	675
Daily Shoulder Season Ridership	1,905	325
Daily Off Season Ridership	292	80

Productivity	Route 13	System Average
Peak Season Productivity (pax/hours)	61.2	30.9
Shoulder Productivity (pax/hours)	44.68	20.2
Off Season Productivity (pax/hours)	11.25	8.7

## Proposed Service Changes

	Current	Proposed
Season Operated	All	All
Route Length (miles)	17.8	17.8
Cycle Time Peak Season	60-105 min	60-105 min
Cycle Time Shoulder	60 min	60 min
Cycle Time Off Season	50 min	50 min
Peak Season Headway	15-30 min	10-30 min
Shoulder Season Headway	30 min	30 min
Off Season Headway	30-60 min	30 min
Hours of Operations Peak Season	6:15 AM—2:45 AM	5:15 AM—2:45 AM
Hours of Operation Shoulder	6:15 AM—12:25 AM	5:15 AM—12:25 AM
Hours of Operation Off Season	6:15 AM—9:44 PM	5:15 AM—9:44 PM

### Alignment Changes:

No changes

### Environmental Justice Policy:

Unknown

### Phase 1:

- Begin service earlier year round
- Improve off season frequency

### Phase 2:

- Improve peak season frequency

### Phase 3:

- None

### ADA Impact:

Minimal impact due to slight change in service hours

Financial	Phase 1	Phase 2	Phase 3
Annual Change in Revenue Hours	+1,146	+1,039	0
Annual Change in Revenue Miles	+26,181	+12,636	0
Estimate Change in Cost	+\$88,000	+\$65,000	0
Additional vehicle requirements (peak):	0	1	0
Capital Requirement: Other	None		

### Other Notes:

Starting earlier in the shoulder and off season will create connections to the early ferries. This route has the highest ridership during the peak season and warrants additional service.



- Paved Roadway
- Possible flex zone





# Route 14

Chappaquiddick Circulator

REGIONAL TRANSIT PLAN  
Martha's Vineyard Transit Authority



## Current Route Performance

Ridership	Route 14	System Average
Daily Peak Season Ridership	N/A	675
Daily Shoulder Season Ridership	N/A	325
Daily Off Season Ridership	N/A	80

Productivity	Route 14	System
Peak Season Productivity (pax/	N/A	30.9
Shoulder Productivity (pax/hours)	N/A	20.2
Off Season Productivity (pax/hours)	N/A	8.7

## Proposed Service Changes

	Current	Proposed
Season Operated	N/A	Peak season
Route Length (miles)	N/A	Flex zone
Cycle Time Peak Season	N/A	60 min
Cycle Time Shoulder	N/A	N/A
Cycle Time Off Season	N/A	N/A
Peak Season Headway	N/A	60 min/ flex zone
Shoulder Season Headway	N/A	N/A
Off Season Headway	N/A	N/A
Hours of Operations Peak Season	N/A	7:00 AM—7:00 PM
Hours of Operation Shoulder	N/A	N/A
Hours of Operation Off Season	N/A	N/A

### Alignment Changes:

This area will be served using a flex zone from 7AM-10AM and 5PM-7PM and circulate as a fixed route from 10AM - 5PM.

### Environmental Justice Policy:

Unknown

### Phase 1:

-None

### Phase 2:

-Implement route

### Phase 3:

-None

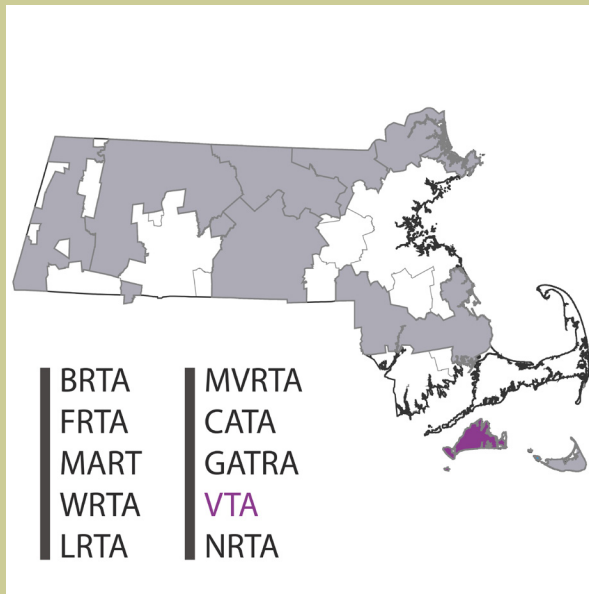
### ADA Impact:

ADA service will be covered by the flex zone service

Financial	Phase 1	Phase 2	Phase 3
Annual Change in Revenue Hours	0	+900	0
Annual Change in Revenue Miles	0	+9,000	0
Estimate Change in Cost	0	+\$56,000	0
Additional vehicle requirements (peak):	0	1	0
Capital Requirement: Other	Special vehicle for terrain		

### Other Notes:

This route will help alleviate parking issues around the ferry terminal. A special vehicle must be purchased that is capable of operating on unpaved roadways.



# Chapter 8

## Conclusion

**AECOM / URS**  
**TMD**  
Burke & Company



## 8. CONCLUSION

Recommendations were developed using a cumulative process that incorporated public outreach, a diverse steering committee, operational input from VTA, an analysis of existing transit service and the regional market. Strategies to improve the system were developed based on the goals and objectives outlined in Chapter 2.

The proposed recommendations will help improve mobility on Martha's Vineyard and improve transit service. The three phase approach allows VTA to plan for future service and seek the necessary funding and equipment that would be needed. Phase 1 would require an 8.5% increase in funding, while Phases 2 would require a 7.5% (in addition to the 8.5% from Phase 1) and Phase 3 would require a 1.3% increase in addition to the increases in previous phases (Table 23). In Phase 1 consistent schedules with standard frequencies have been established. In Phase 2 a new route has been implemented and peak season frequency has been improved. In Phase 3 peak season service frequencies are further improved. These improvements would help VTA achieve their goals and objectives of increasing choice riders, identify unmet demands in the off season, minimize auto use on the island, increase service and expand their ability to meet resident, worker and tourist mobility needs

**Table 23. Phase Requirements for Proposed Recommendations**

Phase	Additional funding needed	New cost of service	Percent increase from previous
<b>Phase 1</b>	\$361,000	\$4,611,000	8.5%
<b>Phase 2</b>	\$320,000	\$4,931,000	7.5%
<b>Phase 3</b>	\$59,000	\$4,710,000	1.3%
<b>Total</b>	<b>\$740,000</b>	<b>N/A</b>	<b>17.4%</b>

Service guidelines have been established to monitor service in the future with performance measures to evaluate a route's health. Recommended performance measures to monitor existing and future routes include:

- **Passengers/Hour:** Number of total monthly and annual passengers divided by the corresponding revenue-hours.
- **Subsidy/Passenger:** Total expenses minus fare revenue divided by ridership.
- **Farebox Recovery:** The percentage of operating costs covered by fares collected, calculated by the fares collected divided by the cost to operate the route.
- **Cost/Revenue-Hour:** An excellent indicator of efficiency is cost per revenue-hour of service. Costs per hour should be analyzed by route and compared to overall system averages.



- **Late Trips:** The percentage of fixed-route trips which operate late or are missed should be recorded and reported. The recommended standard for late trips is any trip that is more than five minutes behind schedule.
- **Service/Road Calls:** the number of service/road calls divided by the number of revenue miles. This measure is typically measured for the entire system and not individual routes. This monitors routine maintenance and vehicle performance.
- **Accidents/100,000 miles:** Measure of driver safety. There must be a standard practice for defining what an accident is.

The performance measures can be used to create benchmarks for service operation. The benchmarks will help VTA track progress and set goals for the performance of the route. They will also assist VTA in measuring the impact of the proposed recommendations on service. The recommendations include establishing clockface frequencies on all routes, improving frequencies, servicing new areas and modifying alignments (Table 24).

**Table 24. Summary of Proposed Recommendations**

Recommendation	Phase	Routes Impacted
<b>Begin service earlier</b>	Phase 1	1, 13
<b>Standardize off season frequency</b>	Phase 1	2, 3, 4, 5, 6, 7, 8, 9, 10A
<b>Standardize off season trip pattern</b>	Phase 1	2, 3, 4, 5, 6, 7, 9
<b>Adjust alignment</b>	Phase 1	7, 9
<b>Improve off season frequency</b>	Phase 1	1, 13
<b>Improve peak season frequency</b>	Phase 2	1, 3, 5, 6, 13
<b>Implement new service</b>	Phase 2	22
<b>Improve peak season frequency</b>	Phase 3	2, 10A

Note the following has changed during the progress of this report, these updates are reflected in Table 25.

**Table 25. Updated Recommendations<sup>31</sup>**

Route	Change	Cost	Hours	Miles
<b>1- Edgartown - Vineyard Haven Road</b>	During the shoulder season 20 minute peak service (10AM-6PM), 30 at night	+\$55,000	+880	+14,328
<b>13- Edgartown – Oak Bluffs – Vineyard Haven via Beach Roads</b>	During the shoulder season 20 minute peak service (10AM-6PM), 30 at night	+\$70,000	+1,114	+15,808

<sup>31</sup> These values have not been included in Table 23

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# Appendix A

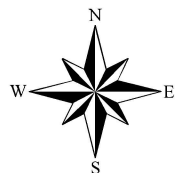
## Market Demand Maps

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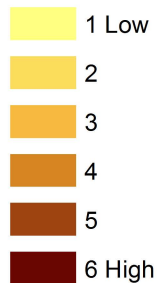




## Route 1



### Level of Potential Transit Demand



○ Bus Stop

— Route 1

— Other VTA Bus Route

■ 1/4 Mile buffer

✚ Hospital

🏫 School

P Park and Ride

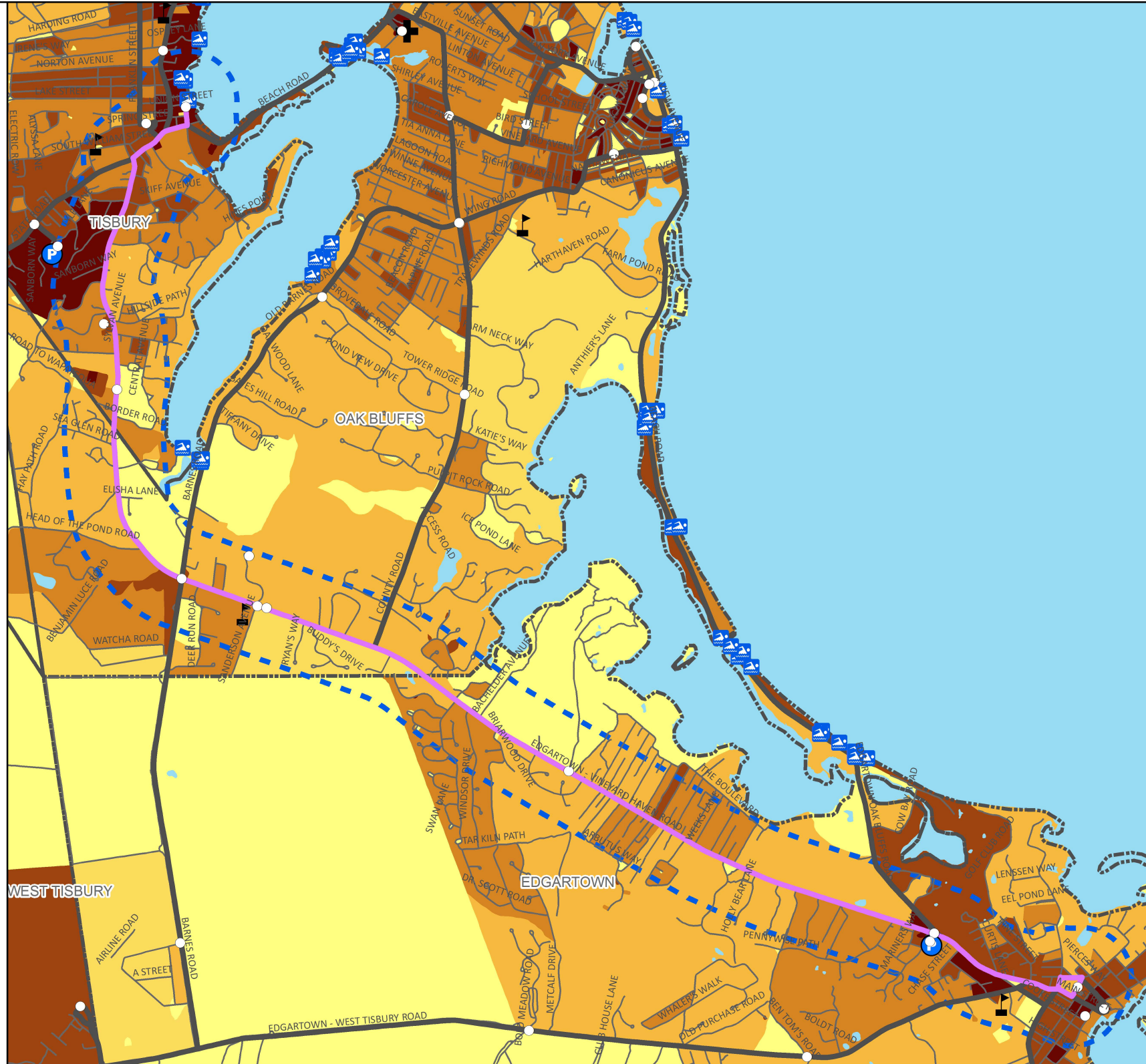
🏖️ Public Beach Access

0 0.25 0.5 1 Miles

### Summer

Demand is based on the household density, percentage of commercial/industrial lands, proximity to schools, park and ride lots, hospitals, and number of beach access points

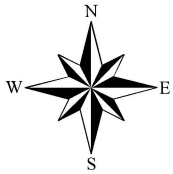
URS







## Route 2



### Level of Potential Transit Demand

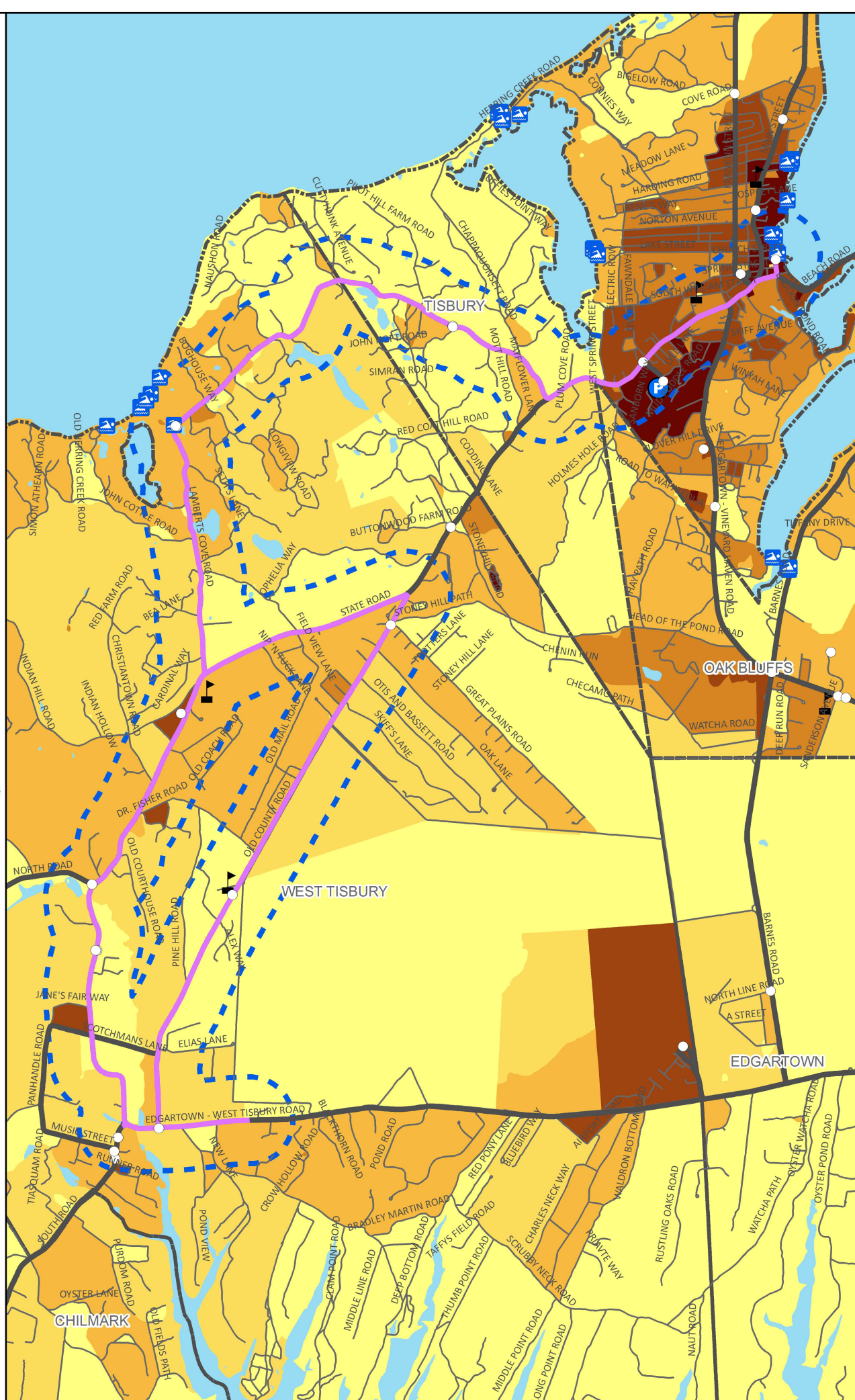


- Bus Stop
- Route 2
- Other VTA Bus Route
- 1/4 Mile buffer
- ⛶ Hospital
- 🏫 School
- P Park and Ride
- 🏖 Public Beach Access

0 0.3 0.6 1.2 Miles

### Summer

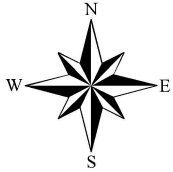
Demand is based on the household density, percentage of commercial/industrial lands, proximity to schools, park and ride lots, hospitals, and number of beach access points



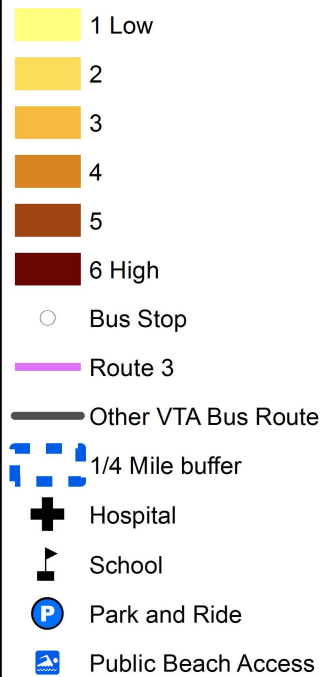




## Route 3



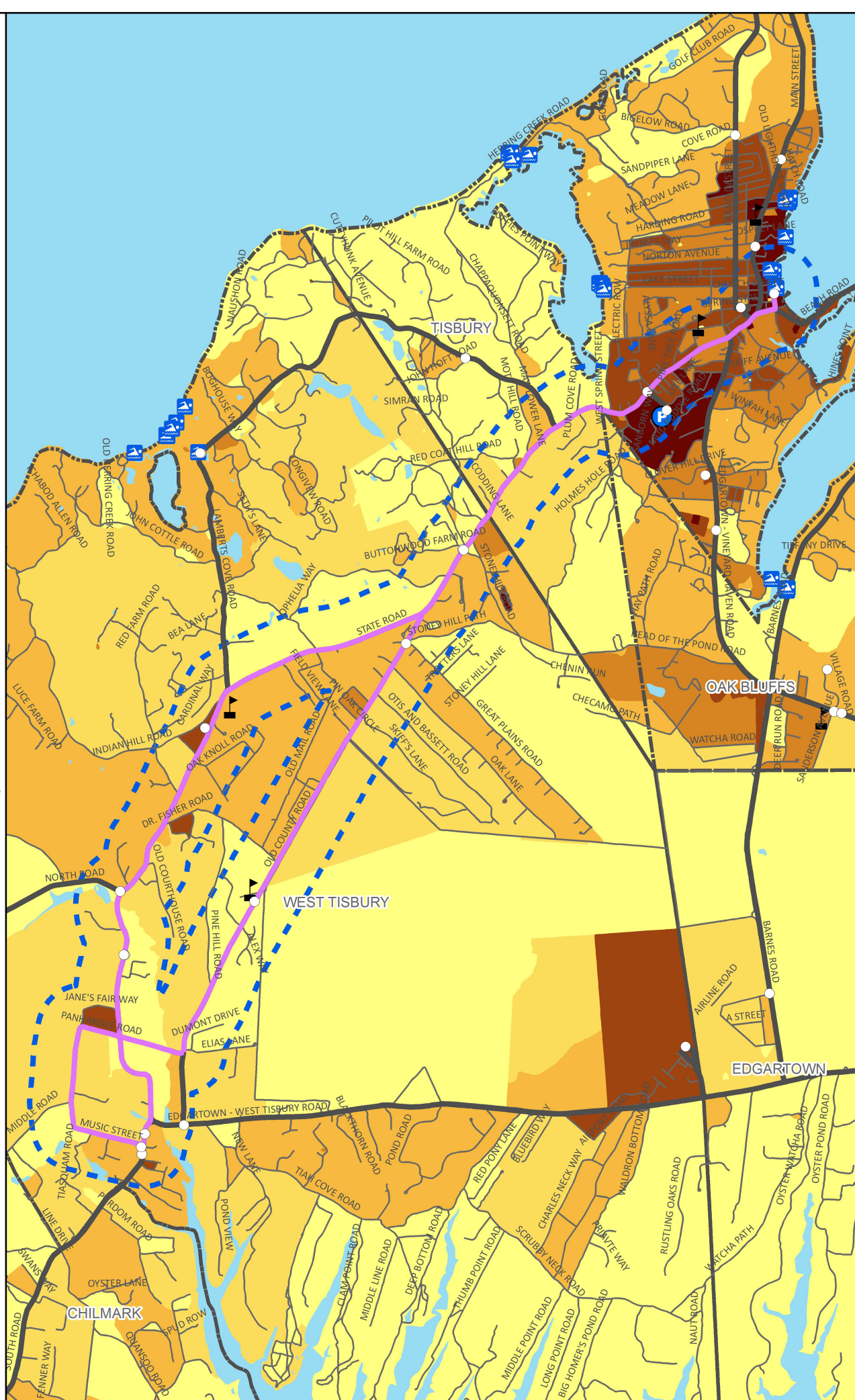
### Level of Potential Transit Demand



0 0.3 0.6 1.2 Miles

### Summer

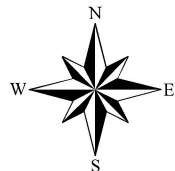
Demand is based on the household density, percentage of commercial/industrial lands, proximity to schools, park and ride lots, hospitals, and number of beach access points



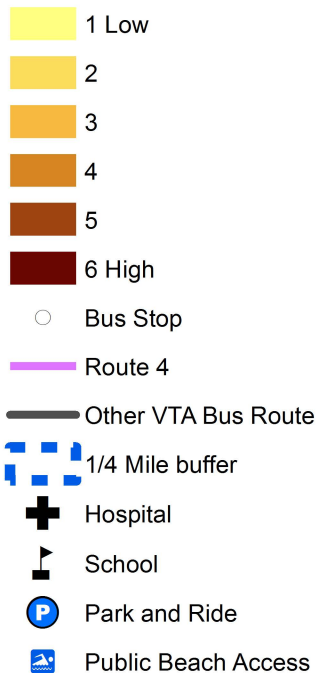




## Route 4



### Level of Potential Transit Demand



0 0.3 0.6 1.2 Miles

### Summer

Demand is based on the household density, percentage of commercial/industrial lands, proximity to schools, park and ride lots, hospitals, and number of beach access points

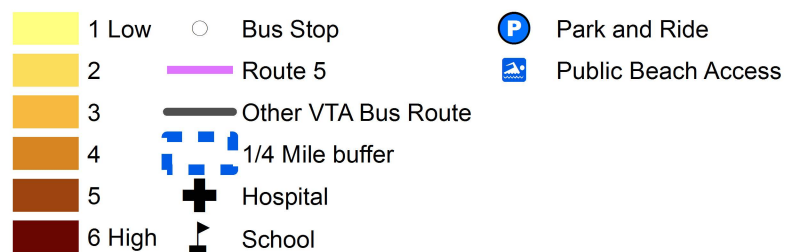
URS





## Route 5

### Level of Potential Transit Demand



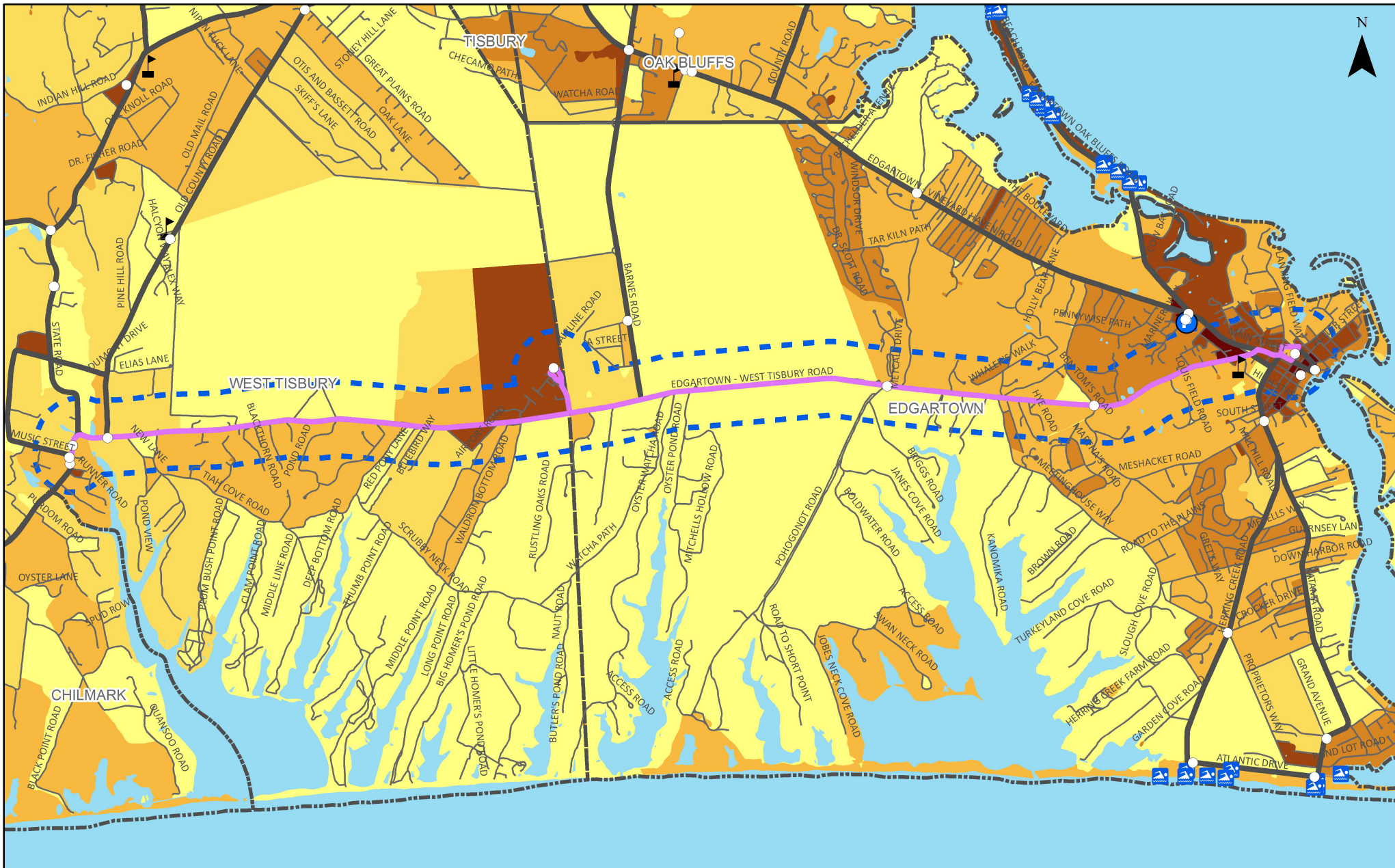
### Summer

Demand is based on the household density, percentage of commercial/industrial lands, proximity to schools, hospitals, park and ride lots, and number of beach access points



**URS**





## Route 6

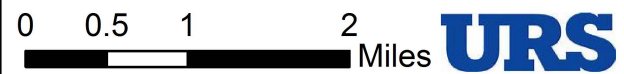
### Level of Potential Transit Demand

- |  |        |  |                     |  |                     |
|--|--------|--|---------------------|--|---------------------|
|  | 1 Low  |  | Bus Stop            |  | Park and Ride       |
|  | 2      |  | Route 6             |  | Public Beach Access |
|  | 3      |  | Other VTA Bus Route |  |                     |
|  | 4      |  | 1/4 Mile buffer     |  |                     |
|  | 5      |  | Hospital            |  |                     |
|  | 6 High |  | School              |  |                     |



### Summer

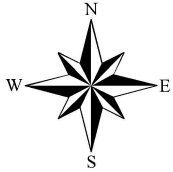
Demand is based on the household density, percentage of commercial/industrial lands, proximity to schools, park and ride lots, hospitals, and number of beach access points



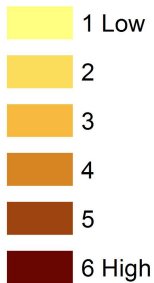




## Route 7



### Level of Potential Transit Demand

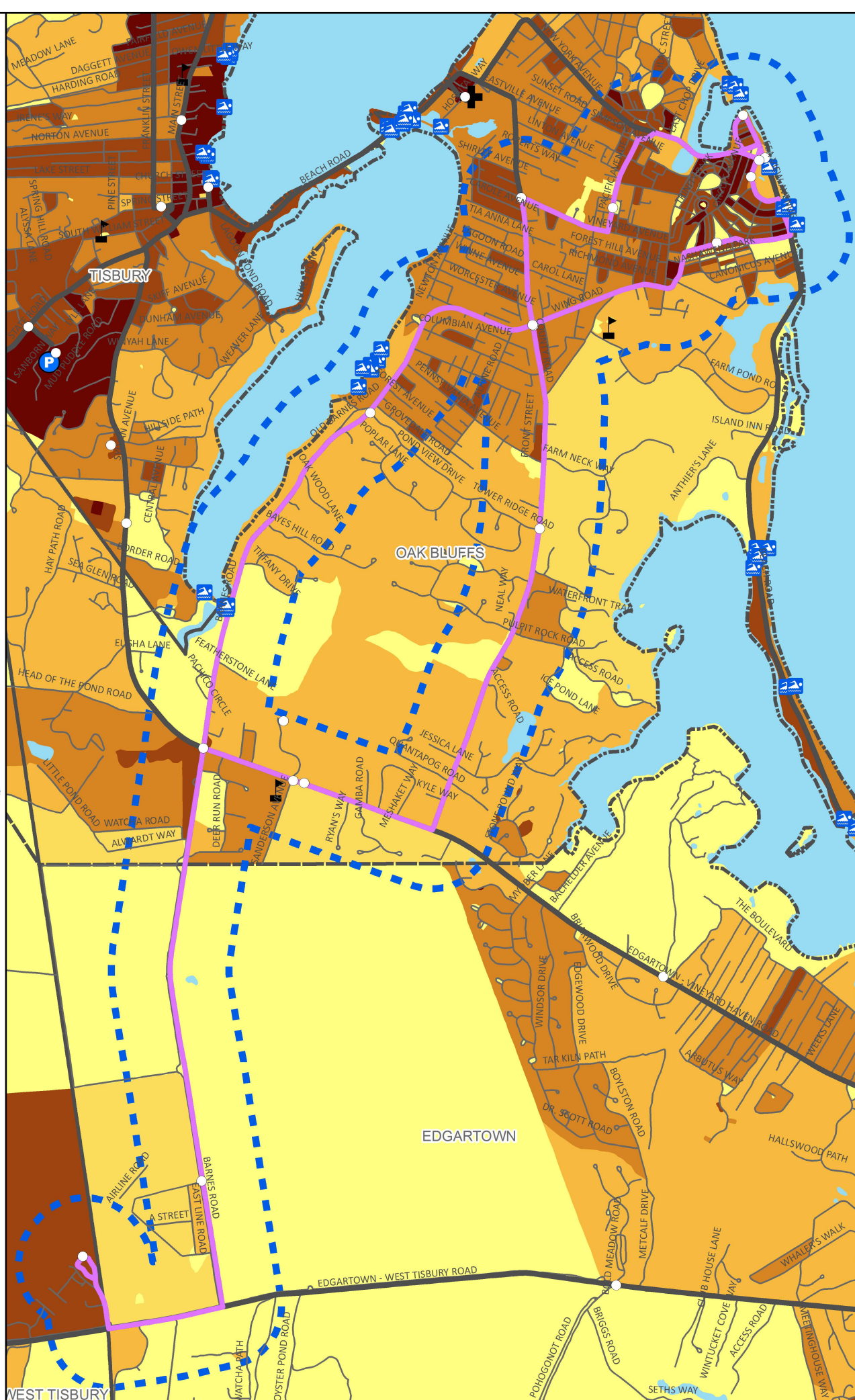


- Bus Stop
- Route 7
- Other VTA Bus Route
- 1/4 Mile buffer
- ✚ Hospital
- 🏫 School
- Ⓟ Park and Ride
- 🏖️ Public Beach Access

0 0.2 0.4 0.8 Miles

### Summer

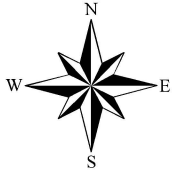
Demand is based on the household density, percentage of commercial/industrial lands, proximity to schools, park and ride lots, hospitals, and number of beach access points



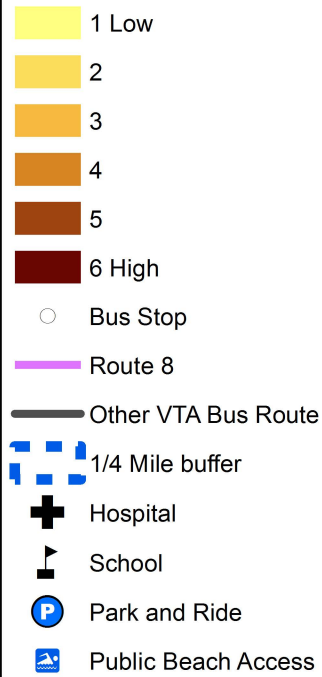




## Route 8



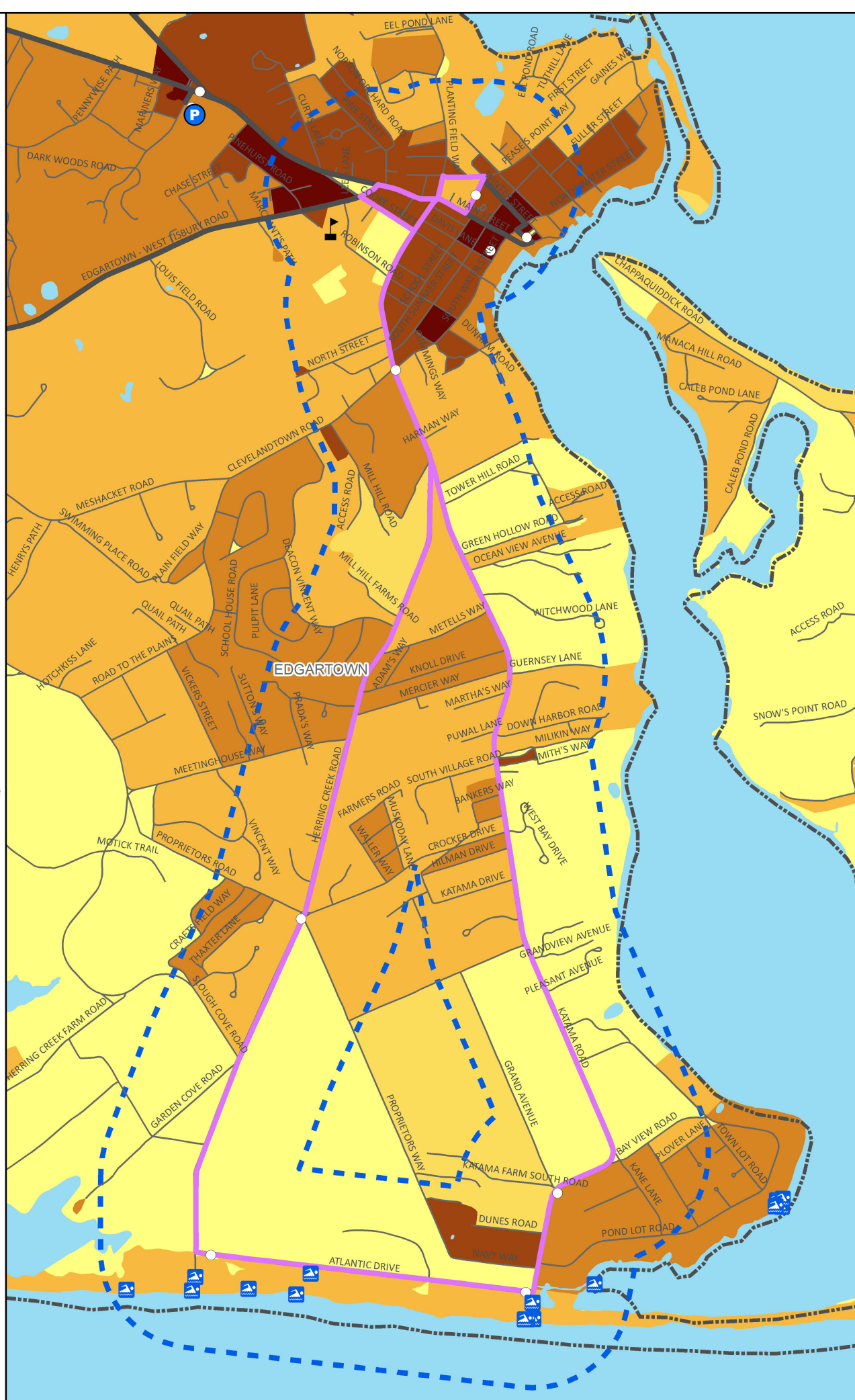
### Level of Potential Transit Demand



0 0.1250.25 0.5 Miles

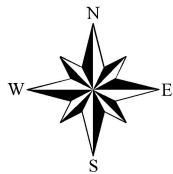
### Summer

Demand is based on the household density, percentage of commercial/industrial lands, proximity to schools, park and ride lots, hospitals, and number of beach access points

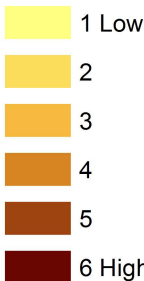




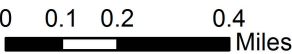
# Route 10A



## Level of Potential Transit Demand

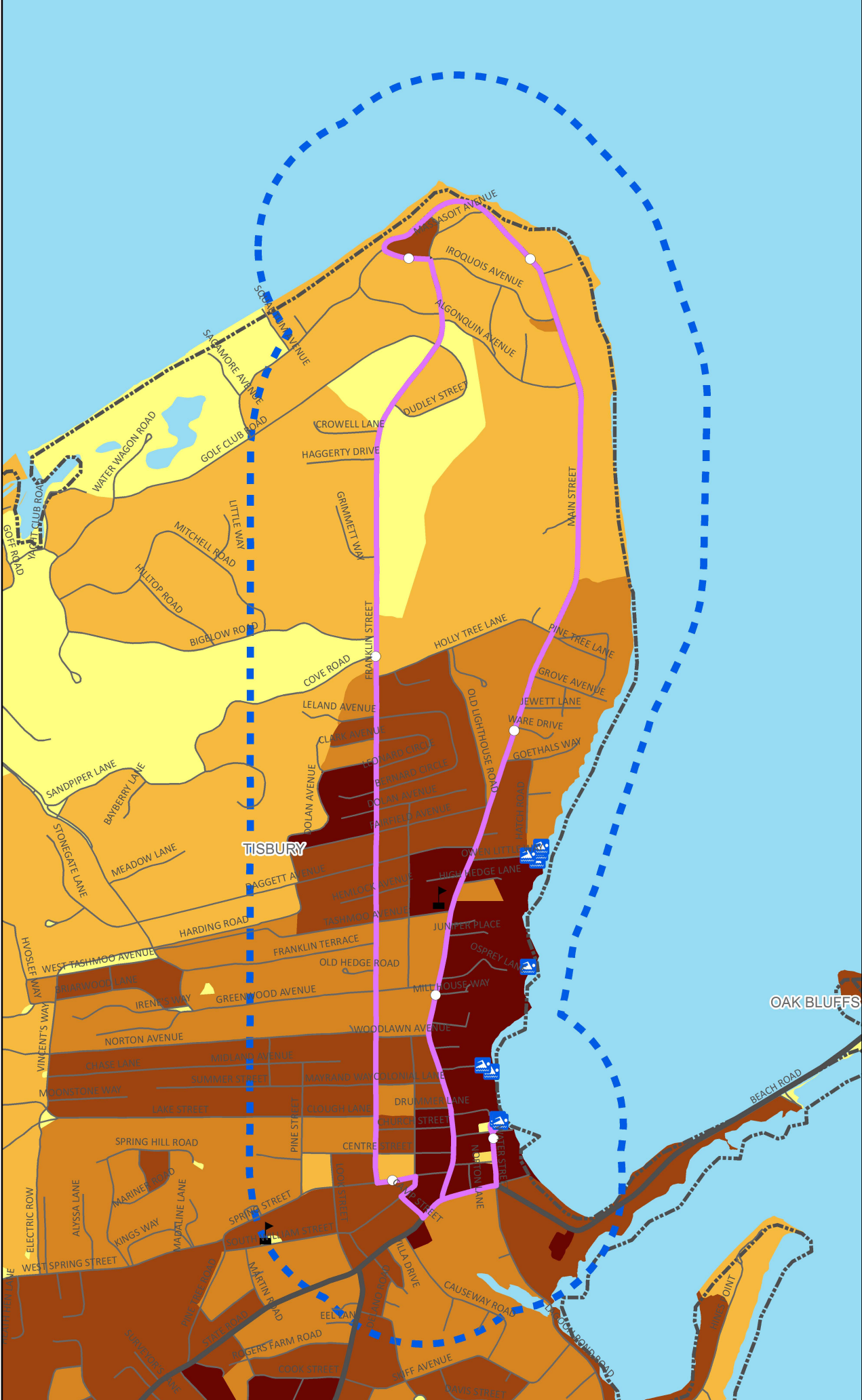


- Bus Stop
- Route 10A
- Other VTA Bus Route
- 1/4 Mile buffer
- ⛶ Hospital
- 🏫 School
- P Park and Ride
- Public Beach Access



## Summer

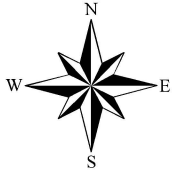
Demand is based on the household density, percentage of commercial/industrial lands, proximity to schools, park and ride lots, hospitals, and number of beach access points



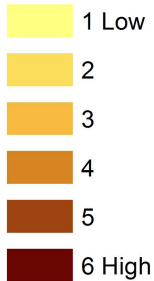




## Route 9



### Level of Potential Transit Demand

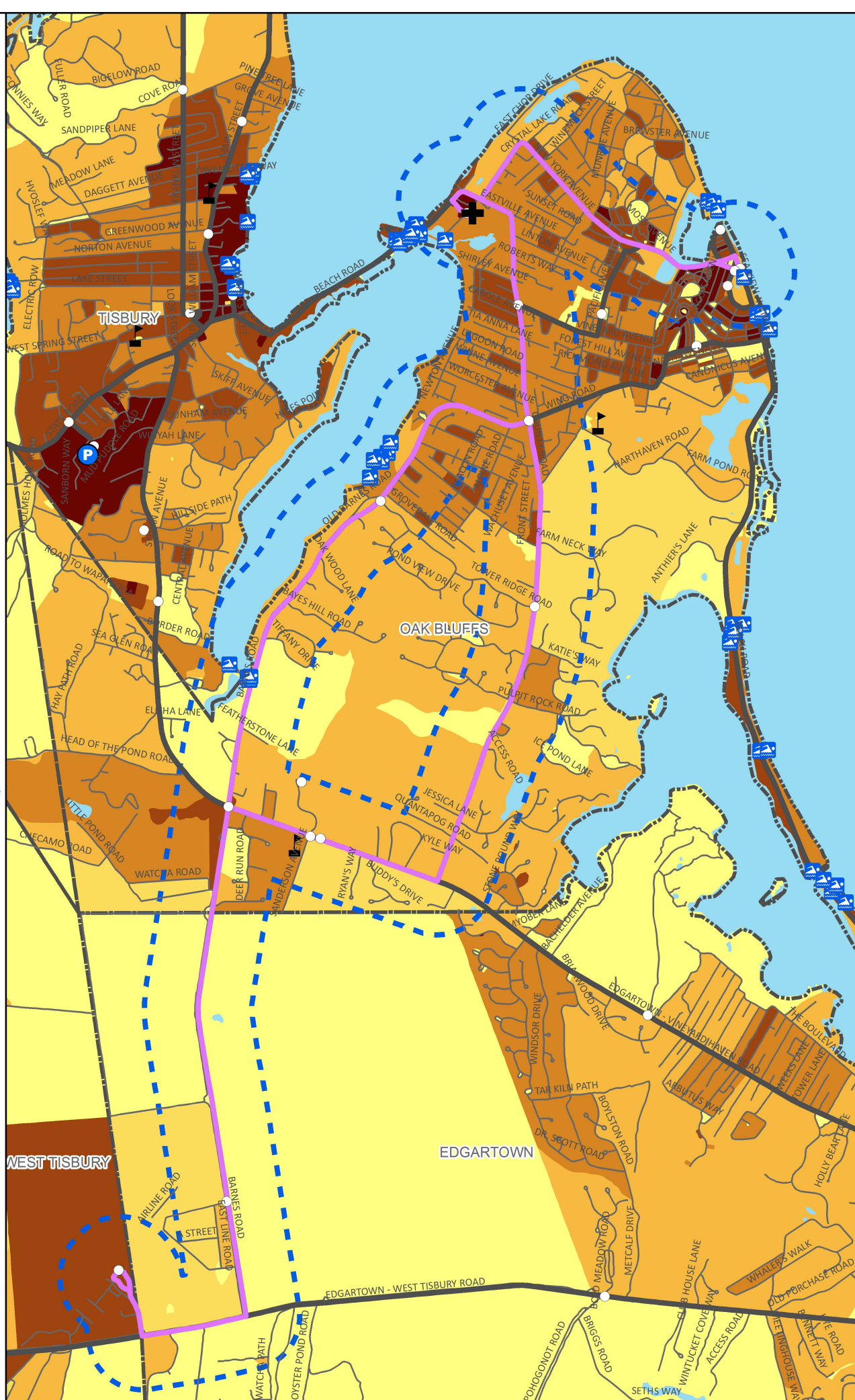


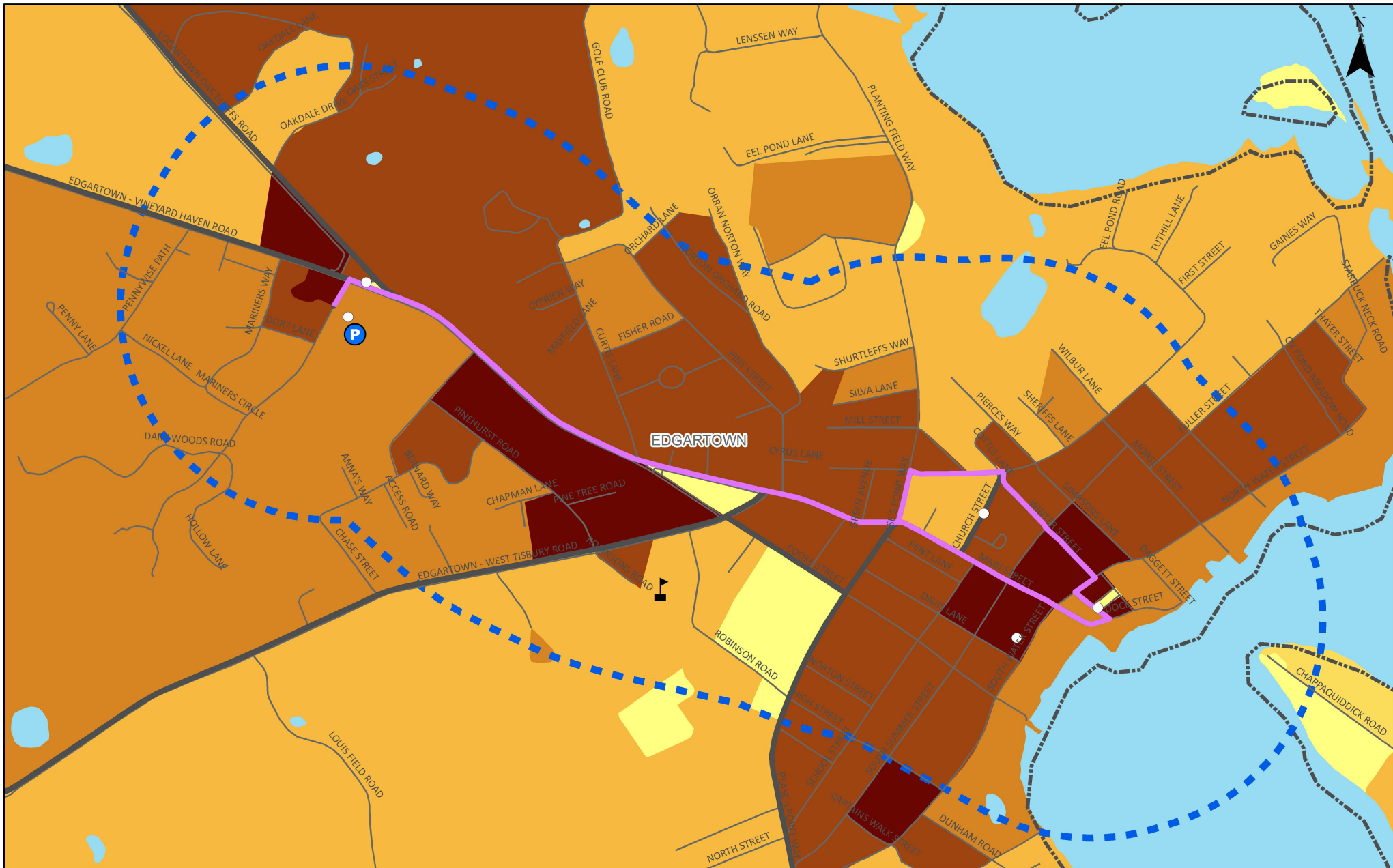
- Bus Stop
- Route 9
- Other VTA Bus Route
- 1/4 Mile buffer
- ⛶ Hospital
- 🏫 School
- P Park and Ride
- Public Beach Access

0 0.2250.45 0.9 Miles

### Summer

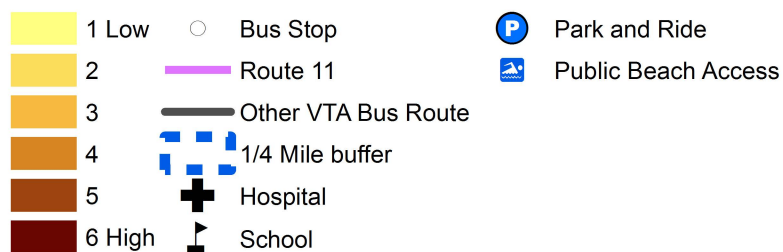
Demand is based on the household density, percentage of commercial/industrial lands, proximity to schools, park and ride lots, hospitals, and number of beach access points





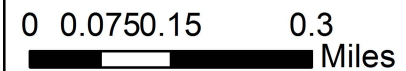
## Route 11

### Level of Potential Transit Demand



### Summer

Demand is based on the household density, percentage of commercial/industrial lands, proximity to schools, park and ride lots, hospitals, and number of beach access points

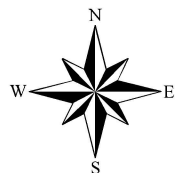


**URS**

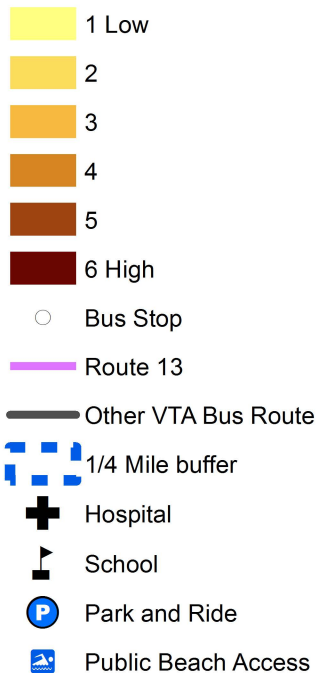




## Route 13



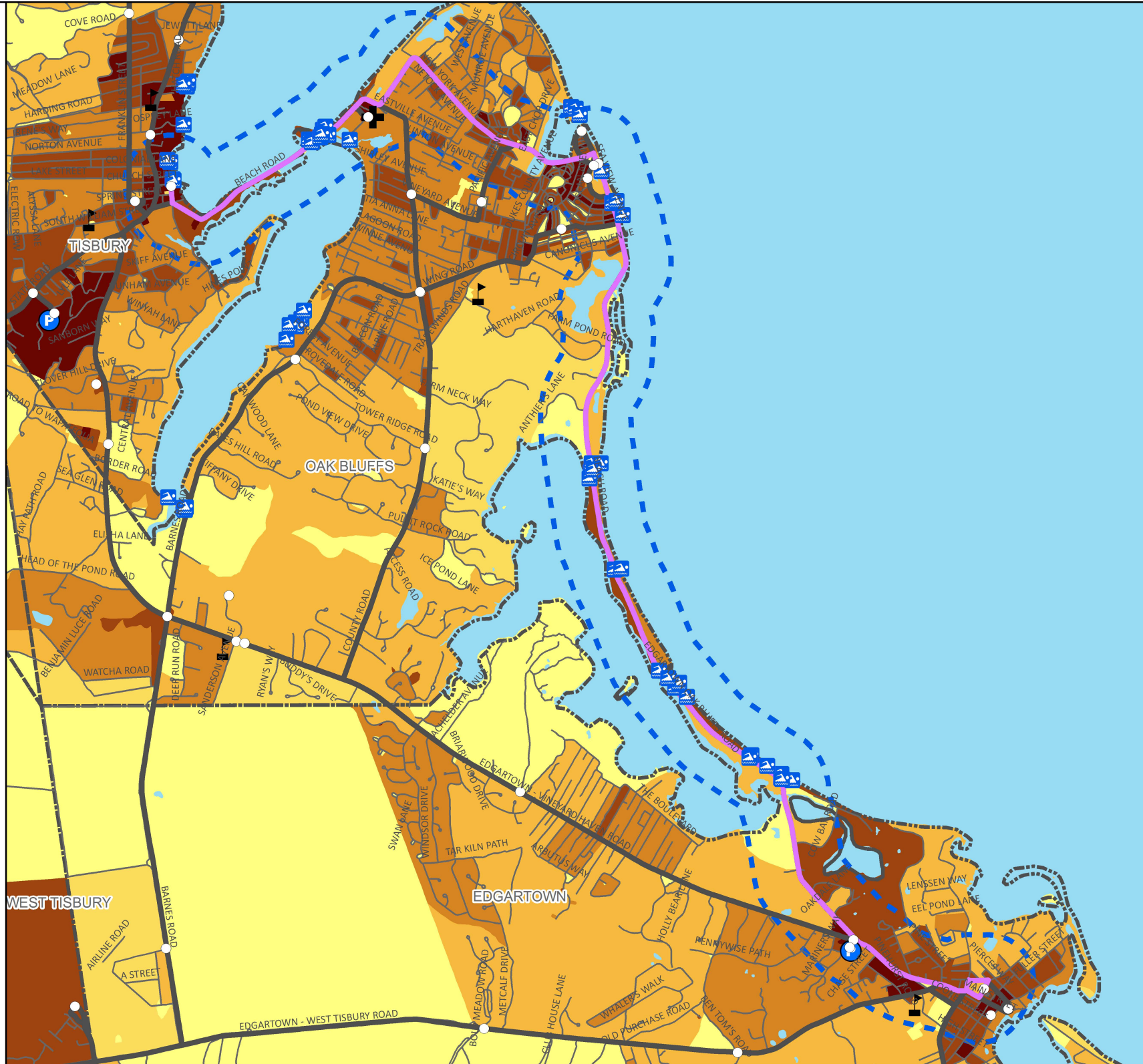
### Level of Potential Transit Demand



0 0.2750.55 1.1  
Miles

### Summer

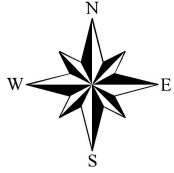
Demand is based on the household density, percentage of commercial/industrial lands, proximity to schools, park and ride lots, hospitals, and number of beach access points



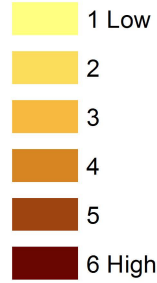




## Route 1



### Level of Potential Transit Demand



○ Bus Stop

✚ Hospital

🏫 School

P Park and Ride

— Route 1

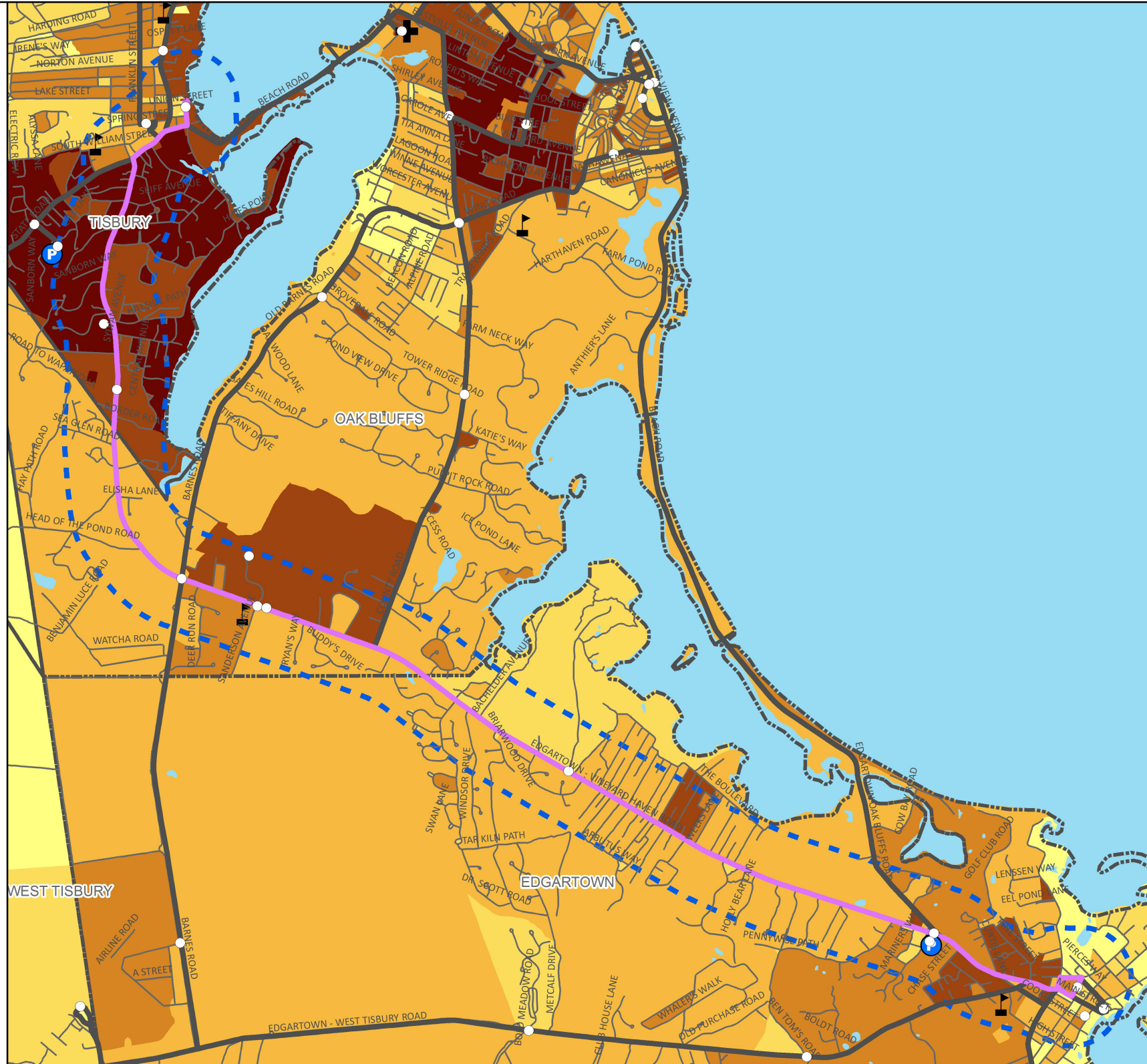
— Other VTA Bus Route

▤ 1/4 Mile buffer

0 0.25 0.5 1 Miles

### Winter

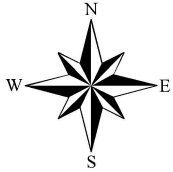
Demand is based on the population density, employment density, percent of vehicleless households, proximity to schools park and ride lots, hospitals, median household income, elderly population and the percent of households with people with



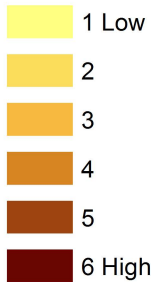




## Route 2



### Level of Potential Transit Demand

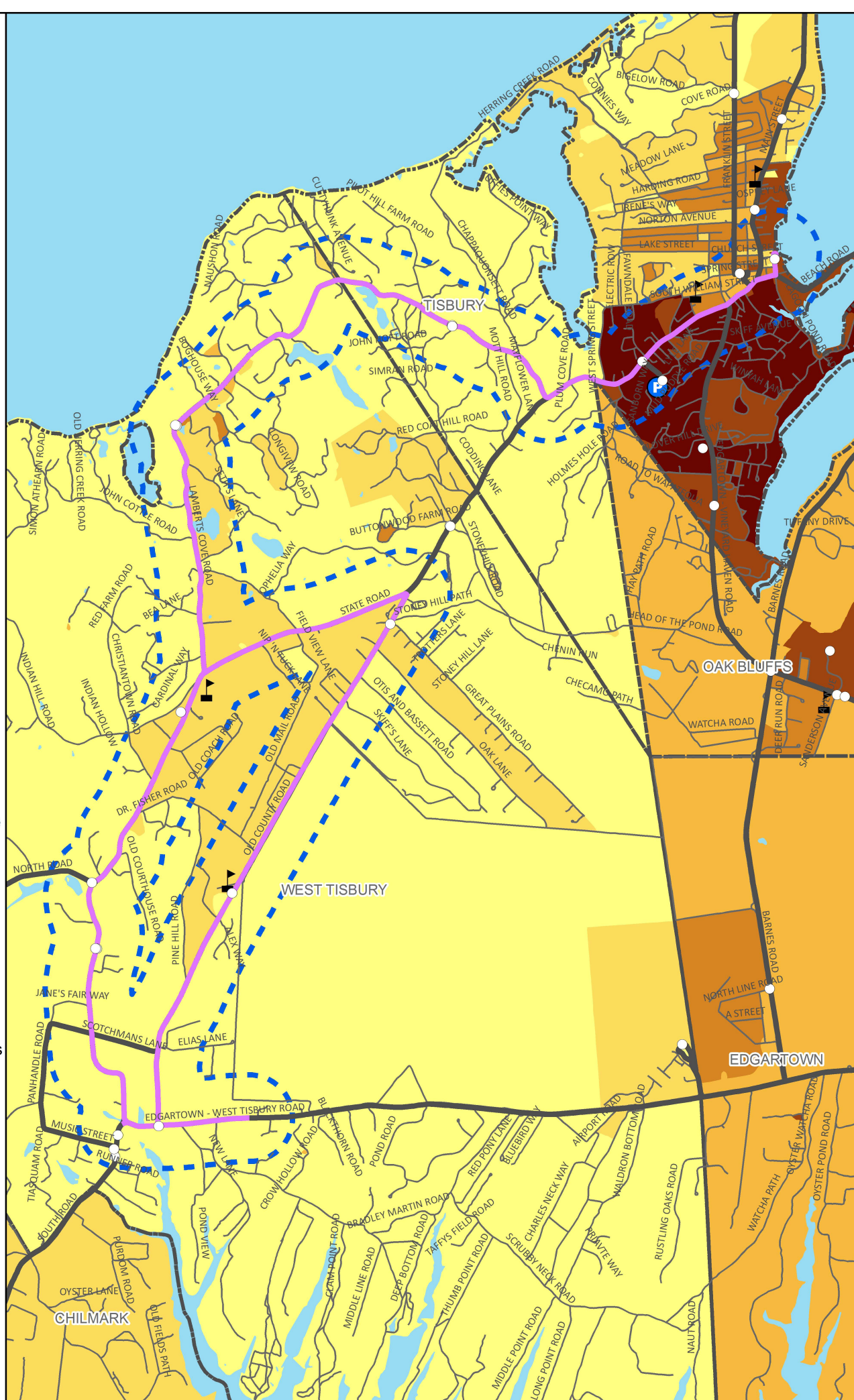


- Bus Stop
- Route 2
- Other VTA Bus Route
- - - 1/4 Mile buffer
- ⛶ Hospital
- 🏫 School
- 🅑🅖 Park and Ride

0 0.3 0.6 1.2 Miles

### Winter

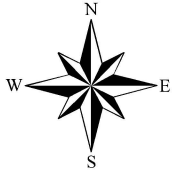
Demand is based on the population density, employment density, percent of vehicleless households, proximity to schools park and ride lots, hospitals, median household income, elderly population and the percent of households with people with disabilities.



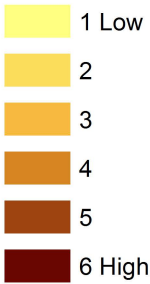




## Route 3



### Level of Potential Transit Demand

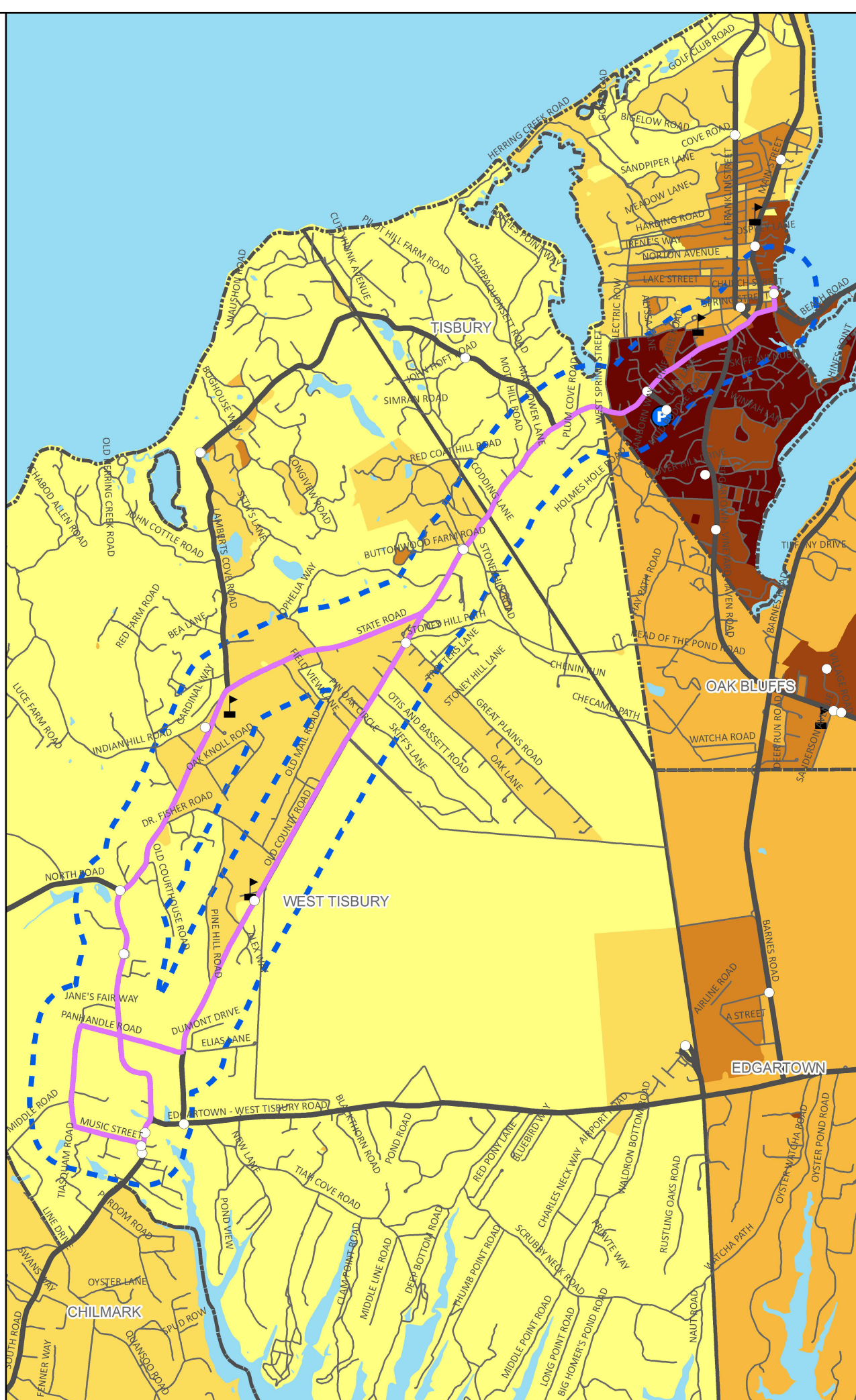


- Bus Stop
- Route 3
- Other VTA Bus Route
- - - 1/4 Mile buffer
- ⛶ Hospital
- 🎓 School
- P Park and Ride

0 0.3 0.6 1.2 Miles

### Winter

Demand is based on the population density, employment density, percent of vehicleless households, proximity to schools park and ride lots, hospitals, median household income, elderly population and the percent of households with people with disabilities.







1 Low

2

3

4

5

6 High

- Bus Stop

Route 4

— Other VTA Bus Route

1/4 Mile buffer

**+** Hospital

 School

**P** Park and Ride

0 0.3 0.6 1.2 Miles

## Winter

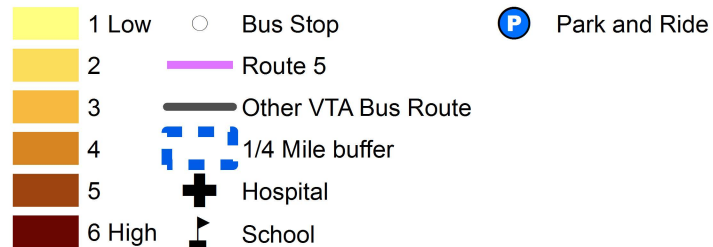
Demand is based on the population density, employment density, percent of vehicleless households, proximity to schools park and ride lots, hospitals, median household income, elderly population and the percent of households with people with disabilities.





## Route 5

### Level of Potential Transit Demand



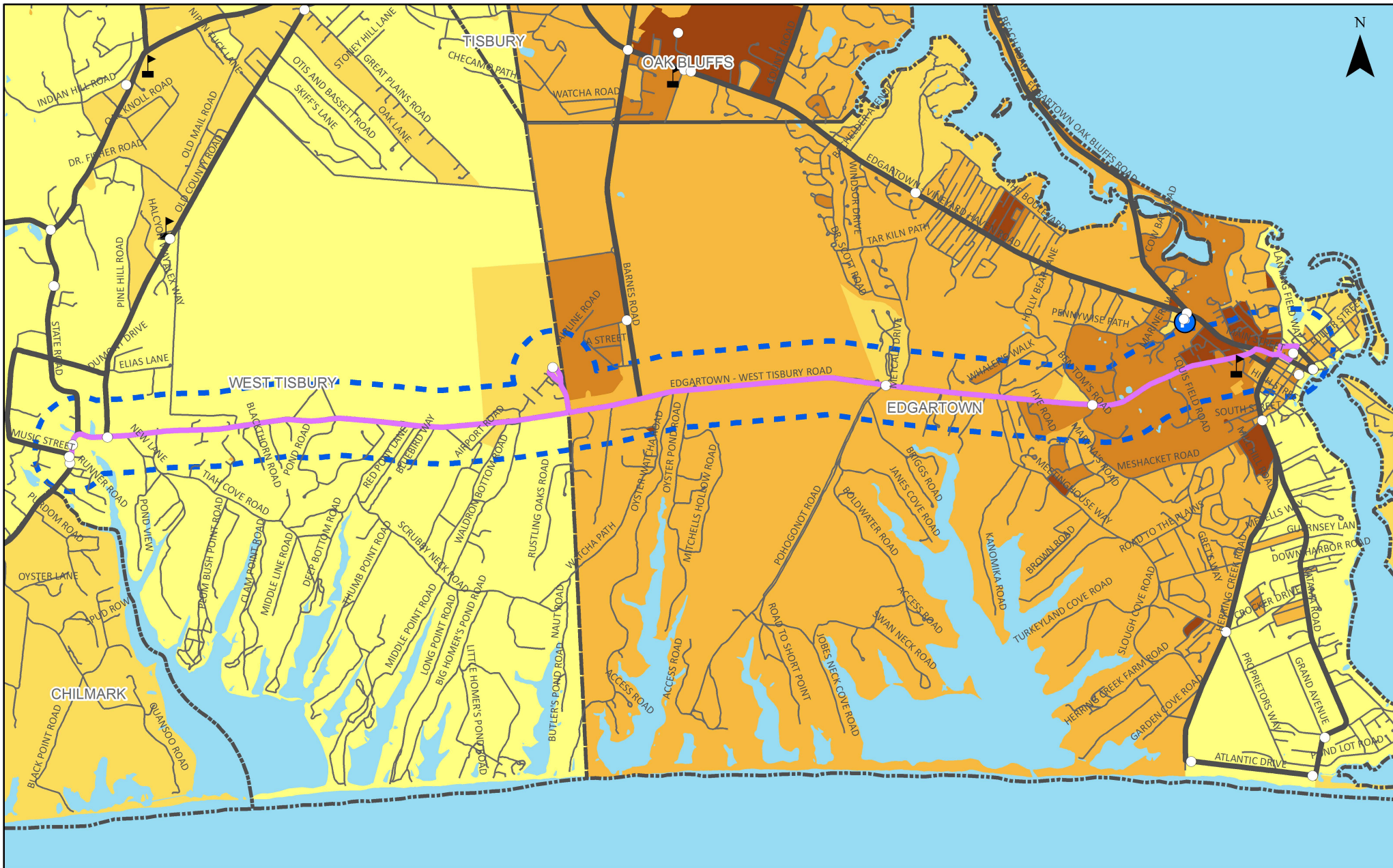
### Winter

Demand is based on the population density, employment density, percent of vehicleless households, proximity to schools park and ride lots, hospitals, median household income, elderly population and the percent of households with people with disabilities.



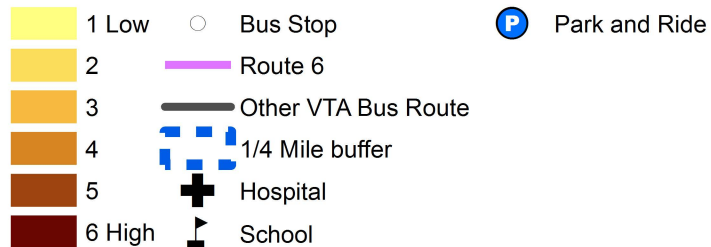
**URS**





**Route 6**

### Level of Potential Transit Demand



N



### Winter

Demand is based on the population density, employment density, percent of vehicleless households, proximity to schools park and ride lots, hospitals, median household income, elderly population and the percent of households with people with disabilities.

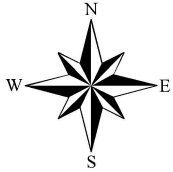


**URS**

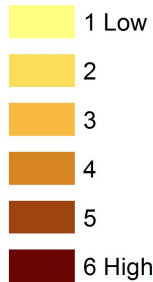




## Route 7



### Level of Potential Transit Demand



○ Bus Stop

— Route 7

— Other VTA Bus Route

--- 1/4 Mile buffer

✚ Hospital

🏫 School

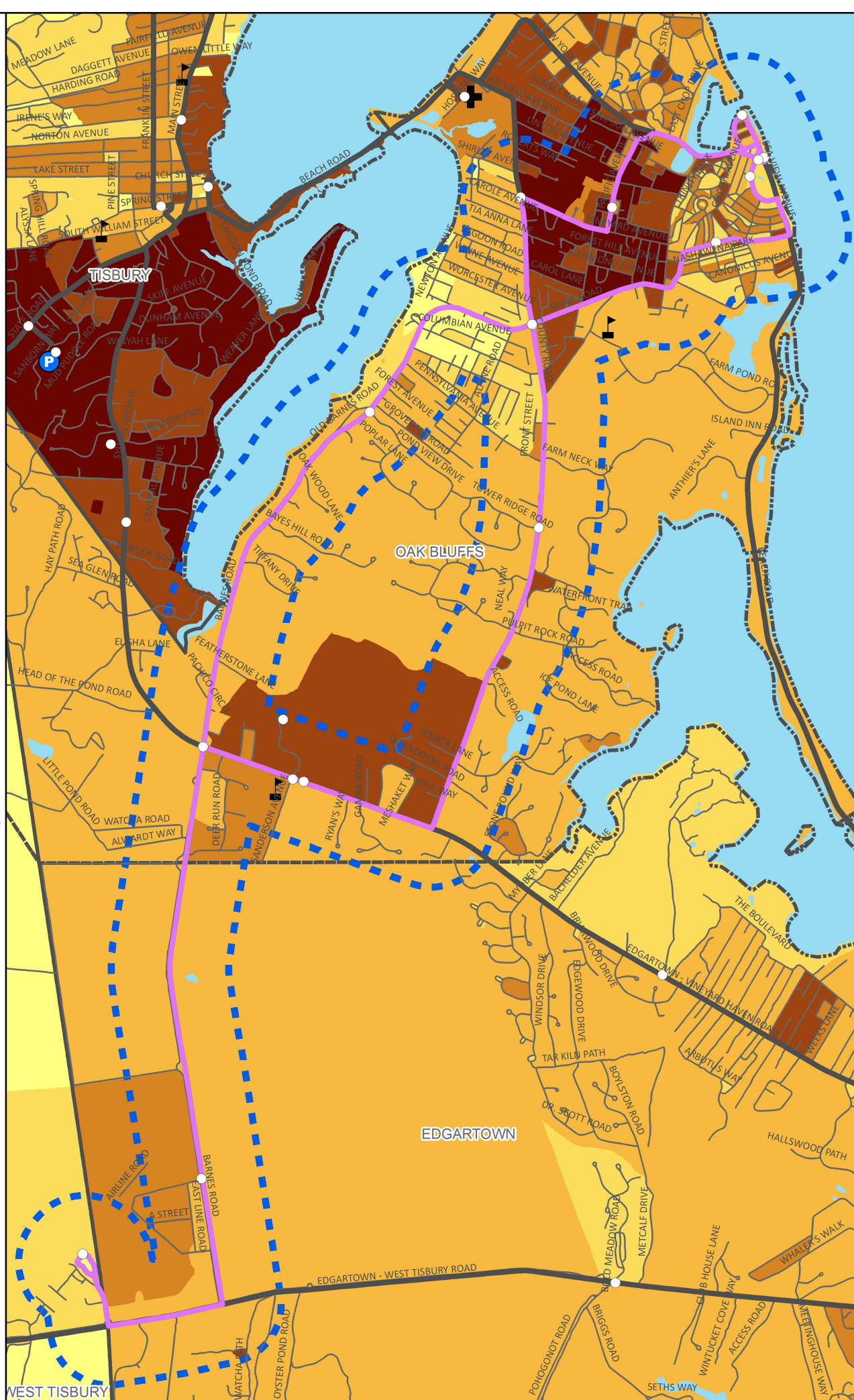
P Park and Ride

0 0.2 0.4 0.8 Miles

### Winter

Demand is based on the population density, employment density, percent of vehicleless households, proximity to schools park and ride lots, hospitals, median household income, elderly population and the percent of households with people with disabilities.

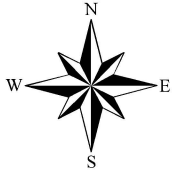
URS



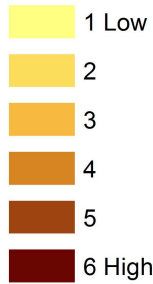




## Route 8



### Level of Potential Transit Demand



○ Bus Stop

— Route 8

— Other VTA Bus Route

--- 1/4 Mile buffer

✚ Hospital

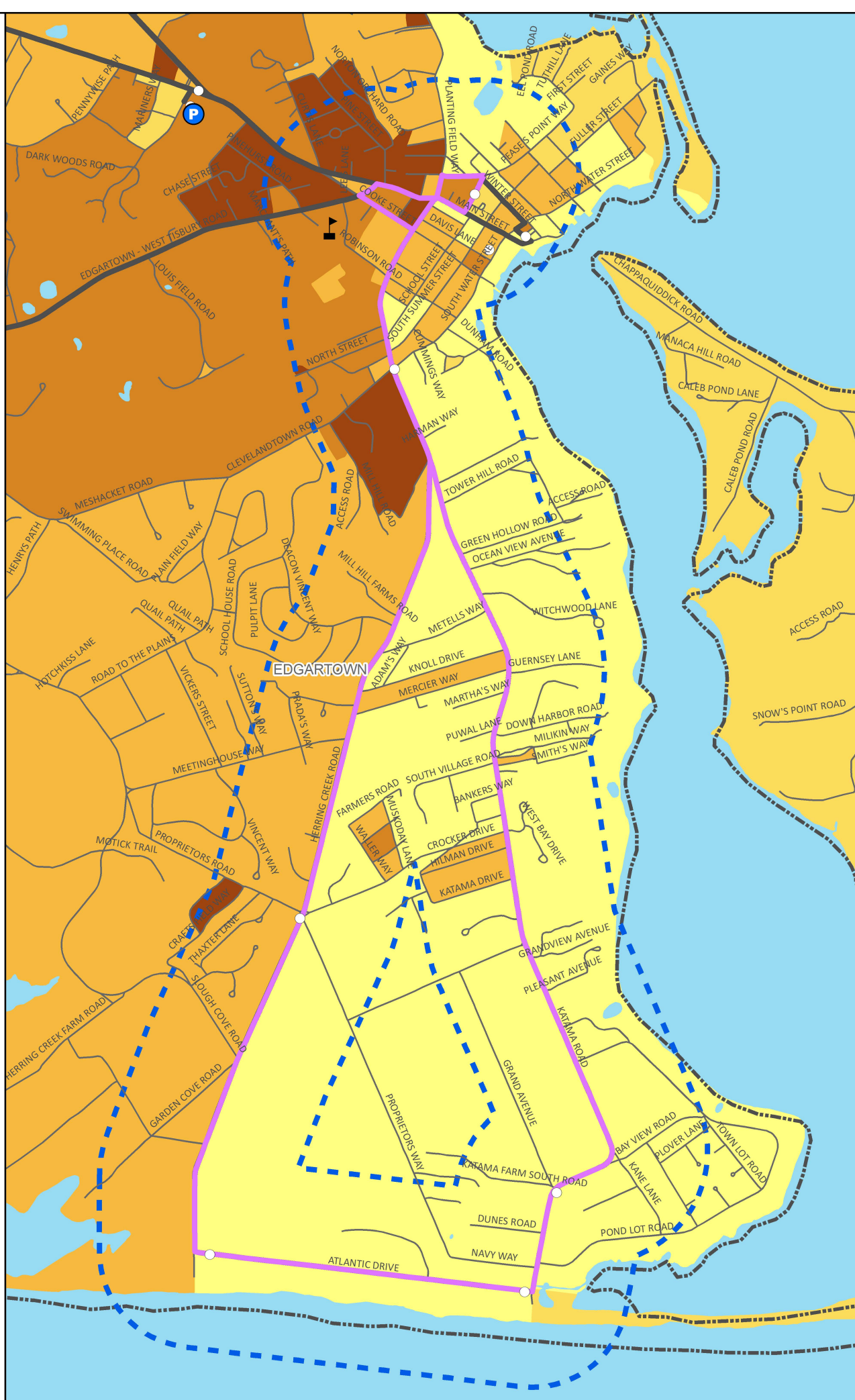
🏫 School

Ⓟ Park and Ride

0 0.1250.25 0.5  
Miles

### Winter

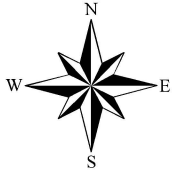
Demand is based on the population density, employment density, percent of vehicleless households, proximity to schools park and ride lots, hospitals, median household income, elderly population and the percent of households with people with disabilities.



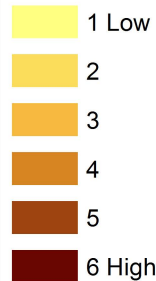




## Route 9



### Level of Potential Transit Demand

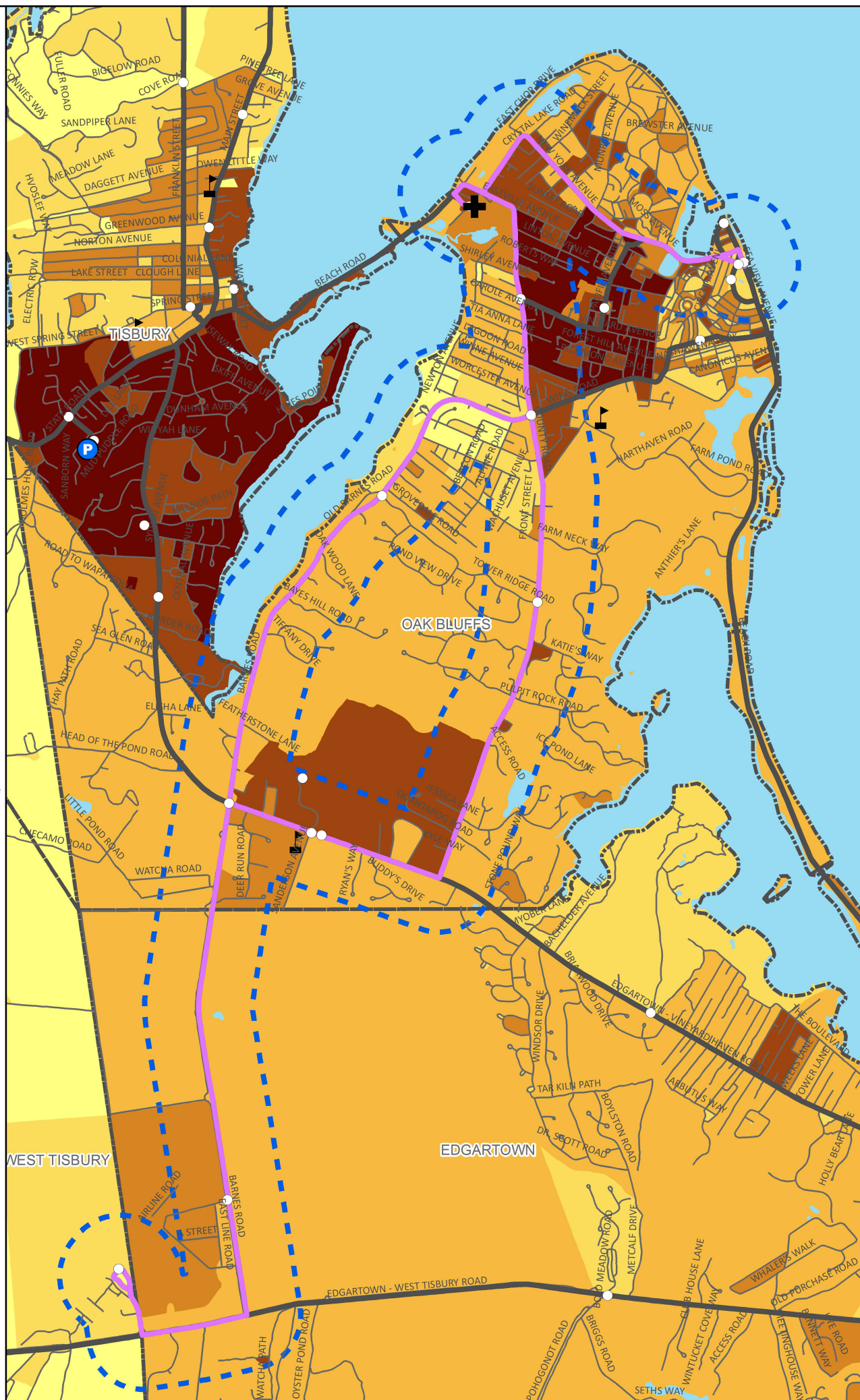


- Bus Stop
- Route 9
- Other VTA Bus Route
- - - 1/4 Mile buffer
- ⛶ Hospital
- 🏫 School
- P Park and Ride

0 0.2250.45 0.9  
Miles

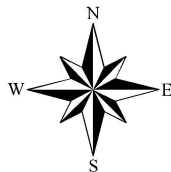
### Winter

Demand is based on the population density, employment density, percent of vehicleless households, proximity to schools park and ride lots, hospitals, median household income, elderly population and the percent of households with people with disabilities.

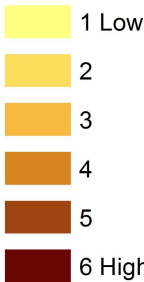




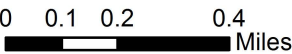
# Route 10A



## Level of Potential Transit Demand

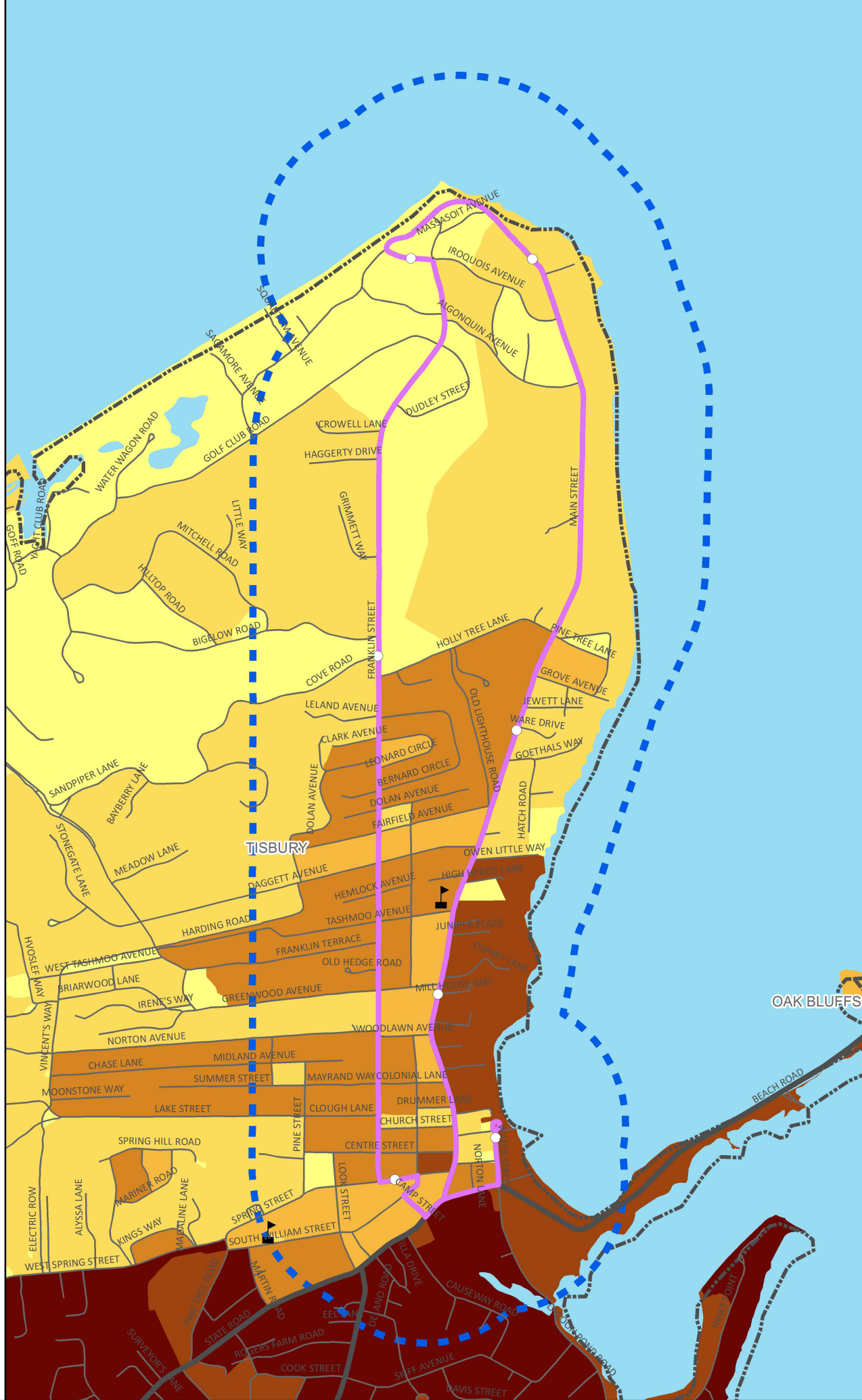


- Bus Stop
- Route 10A
- Other VTA Bus Route
- 1/4 Mile buffer
- ⛶ Hospital
- 🏫 School
- Ⓟ Park and Ride



## Winter

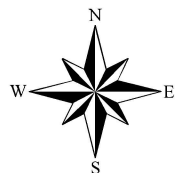
Demand is based on the population density, employment density, percent of vehicleless households, proximity to schools park and ride lots, hospitals, median household income, elderly population and the percent of households with people with disabilities.



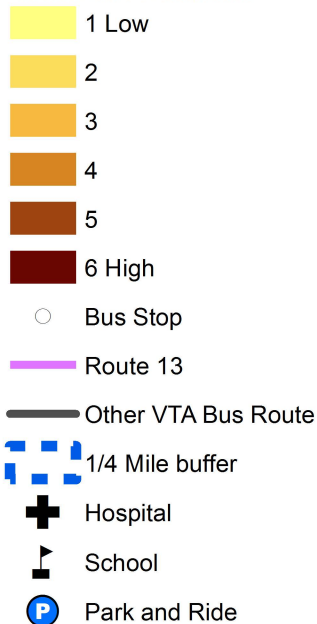




## Route 13



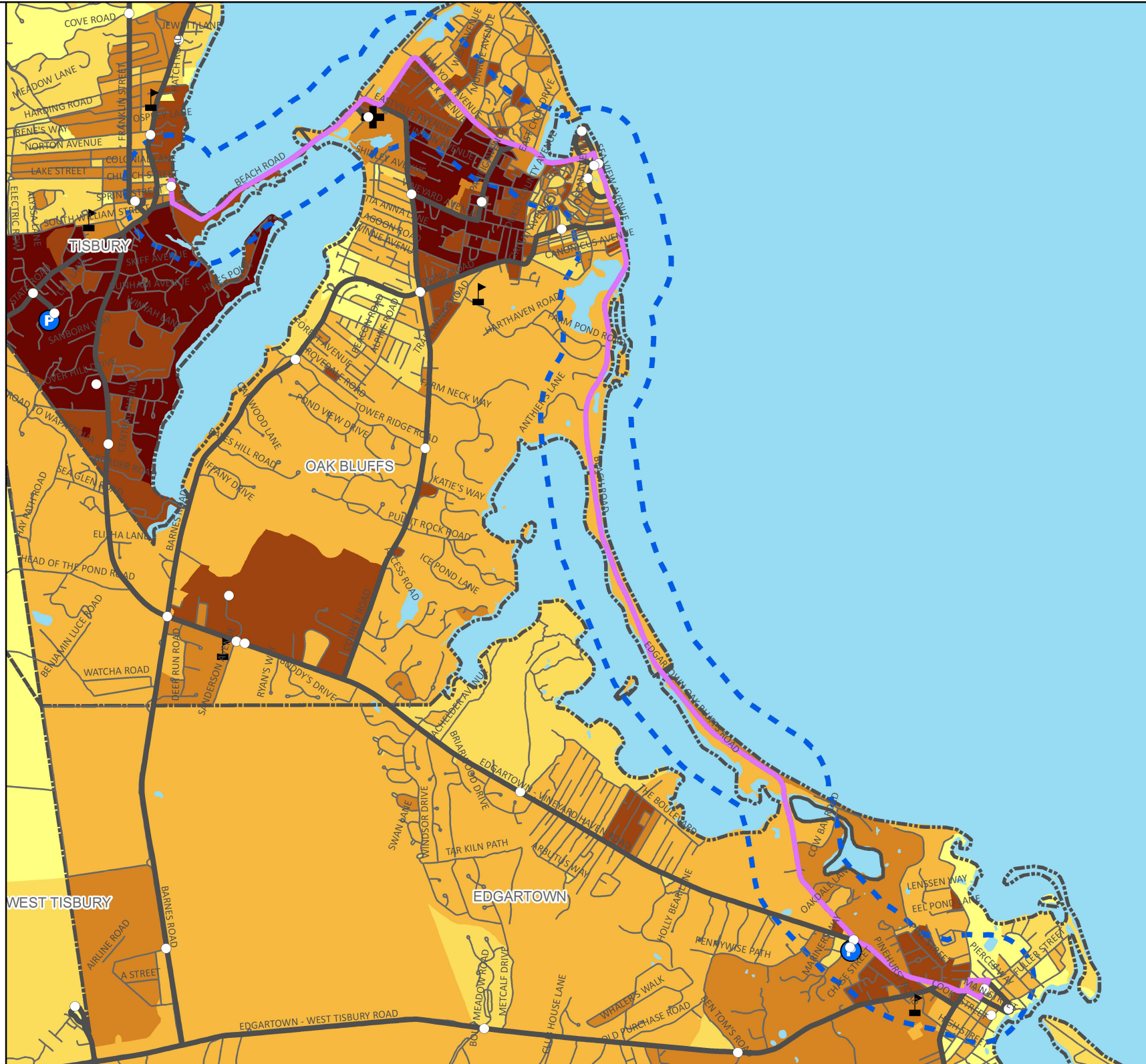
### Level of Potential Transit Demand



0 0.2750.55 1.1  
Miles

### Winter

Demand is based on the population density, employment density, percent of vehicleless households, proximity to schools park and ride lots, hospitals, median household income, elderly population and the percent of households with people with disabilities.



# Appendix B

## Recommendation Memo

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**Client:** Martha's Vineyard Transit Authority (VTA)  
**Project Name:** Comprehensive Service Assessment  
**Issue Date:** June 18, 2015  
**To:** Angie Grant and VTA  
**From:** Stephen Gazillo, *URS Corporation*

---

## **VTA Comprehensive Service Assessment – Recommendations**

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The following outlines the recommendations and alternatives to improve service for VTA based on the comments received from the April 2015 workshop and follow up input.

### **Route 1**

The following is recommended for Route 1 service:

In *Phase 1* during the off-season Route 1 should service the Edgartown Park and Ride on all trips. In the off-season service should start earlier at 5:25 in order to create connections to the ferries from the Edgartown Park and Ride. Consistent 30 minute all day service (leave Church St. Edg stop at 0:25 and 0:55 and then VH SSA stop terminal at 0:25 and 0:55), with 2 dedicated vehicles, should be established in the off-season as this route has the highest ridership in the off-season. Dedicated vehicles will allow for the creation of time transfers at the VH SSA terminal and Church St. Edg.

In *Phase 2* the Study Team recommends improving the midday frequency to 15 minutes for the summer (this requires 2 additional buses). The X bus should remain on fair weather days, weekends and holidays.

There are no recommendations for *Phase 3*.

### **Route 2**

The following is recommended for Route 2 service:

In *Phase 1* winter service frequency would be standardized to 120 minutes. The Route 2 would interline with the 4 and 10A. To accommodate the new frequency and interline the new hours will be 7:13 AM to 6:28 PM. By standardizing the frequency and interlining the route will run between the VH SSA terminal to West Tisbury Town Hall on all trips increasing the number of trips from 5 to 6 that head south on Lambert rd. to West Tisbury Town Hall and from 5 to 6 that head north. The Route 2 schedule would be as follows:

Depart W. Tisbury Town Hall	7:13 AM	9:13 AM	11:13 AM	1:13 PM	3:13 PM	5:13 PM
Arrive VH SSA*	7:45 AM	9:45 AM	11:45 AM	1:45 PM	3:45 PM	5:45 PM
Next rt 1	7:55 AM	9:55 AM	11:55 AM	1:55 PM	3:55 PM	5:55 PM
Next rt 13	7:55 AM	9:25 AM	11:25 AM	1:25 PM	3:25 PM	5:25 PM
Next 10A (same bus)	7:45 AM	9:45 AM	11:45 AM	1:45 PM	3:45 PM	5:45 PM
Next SSA departure	8:15 AM	10:45 AM	12:00 PM	2:30 PM	3:45 PM	6:15 PM
Departs VH SSA	8:00 AM	10:00 AM	12:00 PM	2:00 PM	4:00 PM	6:00 PM
Arrives W. Tisbury Town Hall	8:28 AM	10:28 AM	12:28 PM	2:28 PM	4:28 PM	6:28 PM
Last SSA Arrival	7:45 AM	9:00 AM	11:30 AM	2:00 PM	3:15 PM	5:45 PM
Next rt 4 (same bus)	8:28 AM	10:28 AM	12:28 PM	2:28 PM	4:28 PM	6:28 PM
Next Rt 6 to Airport	8:52 AM	11:22 AM	1:22 PM	2:52 PM	5:52 PM	6:52 PM

There are no recommendations for *Phase 2*. In *Phase 3* service should be increased to every 45 minutes in the peak season (interline with 10A will remain as its frequency will improve as well). This will increase service to West Tisbury where events are held. One additional vehicle will be needed for the Route 2/10A interline.

## Route 3

The following is recommended for Route 3 service:

In *Phase 1* winter service frequency would be standardized to 90 minutes. The Route 3 would interline with the 5. By standardizing the frequency and interlining the route will run between the VH SSA terminal to West Tisbury Town Hall on all trips increasing the number of trips from 7 to 10 that head south to West Tisbury Town Hall and from 4 to 9 that head north. To accommodate the new frequency and interline the new hours will be 6:15 AM to 8:10 PM. The Route 3 schedule would be as follows:

To Tisbury										
Depart W. Tisbury Town Hall	7:25 AM	8:55 AM	10:25 AM	11:55 AM	1:25 PM	2:55 PM	4:25 PM	5:52 PM	6:37 AM	
Arrives VH SSA	7:45 AM	9:15 AM	10:45 AM	12:15 PM	1:45 PM	3:15 PM	4:45 PM	6:12 PM	7:07 AM	
Next rt 1	7:55 AM	9:25 AM	10:55 AM	12:25 PM	1:55 PM	3:25 PM	4:55 PM	6:25 PM	7:55 PM	
Next rt 13	7:55 AM	9:25 AM	10:55 AM	12:25 PM	1:55 PM	3:25 PM	4:55 PM	6:25 PM	7:55 PM	
Next 10A		9:45 AM	11:45 AM	1:45 PM	---	3:45 PM	5:45 PM	---	---	
Next SSA departure	8:15 AM	9:30 AM	10:45 AM	1:15 PM	2:30 PM	3:45 PM	5:00 PM	6:15 PM	8:30 PM	
To West Tisbury										
Departs VH SSA	6:15 AM	7:45 AM	9:15 AM	10:45 AM	12:15 PM	1:45 PM	3:15 PM	4:45 PM	6:12 PM	7:10 PM
Arrives W. Tisbury Town Hall	6:40 AM	8:10 AM	9:40 AM	11:10 AM	12:40 PM	2:10 PM	3:40 PM	5:10 PM	6:37 PM	7:35 PM
Last SSA Arrival	---	7:45 AM	9:00 AM	10:15 AM	11:30 AM	12:45 PM	2:00 PM	4:30 PM	5:45 PM	7:00 PM
Next Rt 4	---	8:28 AM	10:28 AM	12:28 PM	---	2:28 PM	4:28 PM	6:28 PM	---	---
Next Rt 5 (Same bus)	6:40 AM	8:10 AM	9:40 AM	11:10 AM	12:40 PM	2:10 PM	3:40 PM	5:10 PM	---	---
Next Rt 6	6:52 AM	8:52 AM	10:22 AM	11:52 AM	1:22 PM	2:52 PM	4:22 PM	5:52 PM	6:52 PM	---

In *Phase 2*, service should be increased to every 30 minutes in the peak season between 9:30 AM and 7 PM. There are no recommendations for *Phase 3*.

## Route 4

The following is recommended for Route 4 service:

In *Phase 1* winter service frequency would be standardized to every 120 minutes. The Route 4 would interline with the 2 and 10A. By standardizing the frequency and interlining the route will either service Chilmark Community Center or Menemsha beach but not both on each trip. The number of trips on this route has increased from 4.5 to 6. This route will not service WT business district but interlines with the rt 2 which will. To accommodate the new frequency and interline the new hours will be 8:28 AM to 7:10 PM. The Route 4 schedule would be as follows:

To Chilmark						
Depart W. Tisbury Town Hall	8:28 AM	10:28 AM	12:28 PM	2:28 PM	4:28 PM	6:28 PM
Arrive Chilmark Community Center	8:49 AM	---	12:49 PM	---	4:49 PM	---
Arrive Menemsha Beach	---	10:49 AM	---	2:49 PM	---	6:49 PM
To Menemsha						
Depart Chilmark Community Center	8:49 AM	---	12:49 PM	---	4:49 PM	---
Depart Menemsha Beach	---	10:49 AM	---	2:49 PM	---	6:49 PM
Arrives W. Tisbury Town Hall	9:10 AM	11:10 AM	1:10 PM	3:10 PM	5:10 PM	7:10 PM
Next rt 2 (same bus)	9:13 AM	11:13 AM	1:13 PM	3:13 PM	5:13 PM	---
Next rt 6	10:22 AM	11:52 AM	1:22 PM	4:22 PM	5:52 PM	---

There are no recommendations for *Phase 2* or *Phase 3*.

## Route 5

The following is recommended for Route 5 service:

In *Phase 1* winter service frequency would be standardized to 90 minutes. The Route 5 would interline with the 3. By standardizing the frequency and interlining the route will run between West Tisbury Town Hall and Aquinnah on all trips increasing the number of trips from 7 to 8 that head North to West Tisbury Town Hall and from 4 to 8 that head south. To accommodate the new frequency and interline the new hours will be 6:23 AM to 7:05 PM. The Route 5 schedule would be as follows:

To Aquinnah								
Depart W. Tisbury Town Hall	6:40 AM	8:10 AM	9:40 AM	11:10 AM	12:40 PM	2:10 PM	3:40 PM	5:10 PM
Aquinnah	7:01 AM	8:31 AM	10:01 AM	11:31 AM	1:01 PM	2:31 PM	4:01 PM	5:31 PM
To West Tisbury								
Aquinnah	7:01 AM	8:31 AM	10:01 AM	11:31 AM	1:01 PM	2:31 PM	4:01 PM	5:31 PM
Arrives W. Tisbury Town Hall	7:22 AM	8:52 AM	10:22 AM	11:52 AM	1:22 PM	2:52 PM	4:22 PM	5:52 PM
Next Rt 2	---	9:13 AM	11:13 AM	1:13 PM	---	3:13 PM	5:13 PM	---
Next Rt 3 (Same bus)	7:25 AM	8:55 AM	10:25 AM	11:55 AM	1:25 PM	2:55 PM	4:25 PM	5:55 PM
Next Rt 4	8:28 AM	---	10:28 AM	12:28 PM	2:28 PM	---	4:28 PM	6:28 PM
Next Rt 6	7:52 AM	8:52 AM	10:22 AM	11:52 AM	1:22 PM	2:52 PM	4:22 PM	5:52 PM

In *Phase 2*, service should be increased to every 30 minutes in the peak season. There are no recommendations for *Phase 3*.

## Route 6

The following is recommended for Route 6 service:

In *Phase 1* this route should be interlined exclusively with the Route 8 in the off-season in order to create consistent 90 minute headways throughout the mid-day. During the AM and PM peak the headway would be 60 minutes. One vehicle could be used for the interline and the cycle time on the Route 6 service would be 60 minutes (30 on Route 8). It should be timed to leave Church St. Edg. at the same time as the Route 13 and Route 1. It would depart Church St. Edg. every 90 minutes in the mid day on either the 0:25 or 0:55 and arrive at West Tisbury Center at either 0:22 or 0:52 (it would go to West Tisbury Town Hall on every trip as opposed to the current schedule where it is only goes to the Airport on certain trips). It would get to the airport at 0:38/0:08 heading west and would leave at 0:40/0:10. Heading east it would get to the airport at 0:36 or 0:06 and layover for 4 minutes until 0:10 or 0:40. This will allow for transfers from the Route 7 and to the Route 9. The timing on this route allows for transfers to the Route 7 (coming from West Tisbury) at the Airport on all trips and from either the Route 7 or 9 (heading towards West Tisbury).

To accommodate the new frequency and interline the new hours will be 6:40 AM to 7:06 PM. The Route 6 schedule would be as follows:

Depart Edgartown	---	7:25 AM	8:25 AM	9:55 AM	11:25 AM	12:55 PM	2:25 PM	3:55 PM	5:25 PM	6:25 PM
Arrive Airport	---	7:38 AM	8:38 AM	10:08 AM	11:38 AM	1:08 PM	2:38 PM	4:08 PM	5:38 PM	6:38 PM
Depart Airport	6:40 AM	7:40 AM	8:40 AM	10:10 AM	11:40 AM	1:10 PM	2:40 PM	4:10 PM	5:40 PM	6:40 PM
Arrive West Tisbury	6:52 AM	7:52 AM	8:52 AM	10:22 AM	11:52 AM	1:22 PM	2:52 PM	4:22 PM	5:52 PM	6:52 PM
Next Rt 5	7:22 AM	---	8:52 AM	10:22 AM	11:52 AM	1:22 PM	2:52 PM	4:22 PM	5:52 PM	---
Next Rt 4	---	8:28 AM	10:28 AM	---	12:28 PM	2:28 PM	4:28 PM	---	6:28 PM	---
Next rt 2	7:13 AM	---	9:13 AM	11:13 AM	1:13 PM	---	3:13 AM	5:13 AM	---	---
Next Rt 3	7:25 AM	---	8:55 AM	10:25 AM	11:55 AM	1:25 PM	2:55 PM	4:25 PM	5:55 PM	7:25 PM
Next Rt 7 or 9 (airport)	---	7:57 AM	8:40 AM	10:10 AM	11:40 AM	1:10 PM	2:40 PM	4:10 PM	5:40 PM	---
Depart West Tisbury	6:52 AM	7:52 AM	8:52 AM	10:22 AM	11:52 AM	1:22 PM	2:52 PM	4:22 PM	5:52 PM	6:52 PM
Arrive Airport	7:06 AM	8:06 AM	9:06 AM	10:36 AM	12:06 PM	1:36 PM	3:06 PM	4:36 PM	6:06 PM	7:06 PM
Depart Airport	7:10 AM	8:10 AM	9:10 AM	10:40 AM	12:10 PM	1:40 PM	3:10 PM	4:40 PM	6:10 PM	---
Arrive Edgartown	7:21 AM	8:21 AM	9:21 AM	10:51 AM	12:21 PM	1:51 PM	3:21 PM	4:51 PM	6:21 PM	---
Next rt 1	7:25 AM	8:25 AM	9:25 AM	10:55 AM	12:25 PM	1:55 PM	3:25 PM	4:55 PM	6:25 PM	---
Next rt 13	7:25 AM	8:25 AM	9:25 AM	10:55 AM	12:25 PM	1:55 PM	3:25 PM	4:55 PM	6:25 PM	---
Next rt 8 (same bus)	---	---	9:25 AM	10:55 AM	12:25 PM	1:55 PM	3:25 PM	4:55 PM	---	---

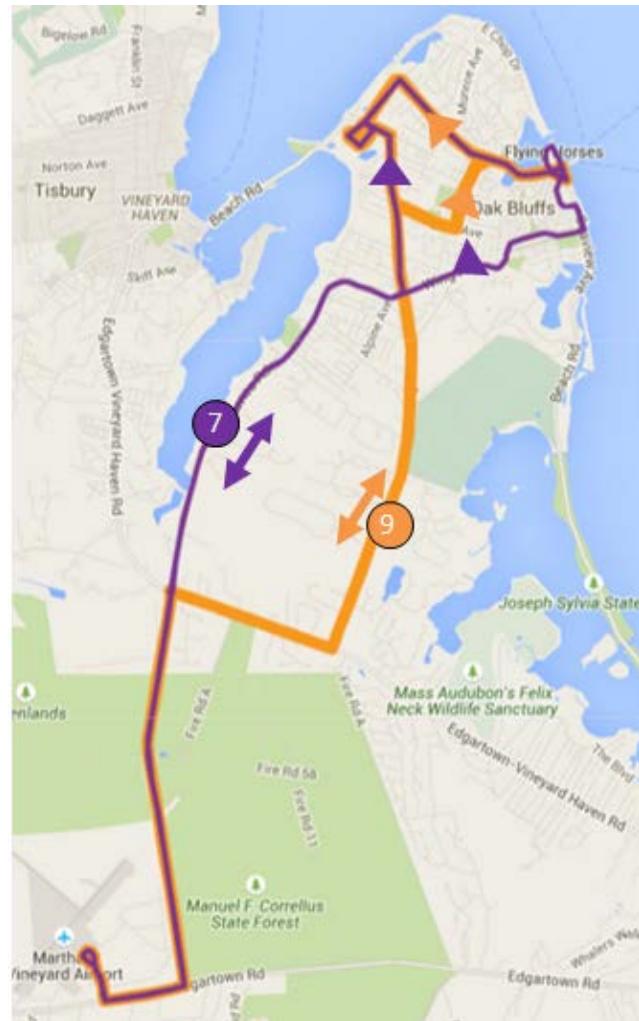
Phase 2 service should be increased to 30 minutes in the peak season. There are no recommendations for Phase 3.



## Route 7

The following is recommended for Route 7 service:

In *Phase 1* this route should be realigned to use Barnes Road both inbound and outbound in order to create linear service along the corridor. Heading towards the airport it would do the inbound tour and use Barnes Road. Heading towards oak Bluffs it would use Barnes Road to the Hospital and New York Ave to get into downtown. This route should be interlined exclusively with the Route 9 in the off-season in order to create consistent 90 minute headways throughout the day. One vehicle could be used for the interlining and the cycle time on the Route 7 would be 41 minutes (49 on Route 9). The airport should be serviced on every trip as opposed to the current schedule where the airport is not serviced on inbound trips in the PM and or outbound trips mid-day. The timing of the route should be such that it gets to the Roundabout (heading in either direction) at either 0:03 or 0:33, to create transfers with the Route 1 bus. The bus would then go to the airport and become the Route 7 departing at 0:10 or 0:40. This will allow for transfers with the Route 6.



Airport	Round about	Arrive Ocean Park	Depart Ocean Park	Round About	Airport
0:27	0:33 Transfer to Rt 1 at 0:37	0:45	0:50	1:03 Transfer to Rt 1 1:03	1:08 Transfer to 6

To accommodate the new frequency and interline the new hours will be 7:57 AM to 5:38 PM. The Route 7 schedule would be as follows:

To Oak Bluffs							
Depart Airport	7:57 AM	9:27 AM	10:57 AM	12:27 PM	1:57 PM	3:27 PM	4:57 PM
Round About	8:02 AM	9:32 AM	11:02 AM	12:32 PM	2:02 PM	3:32 PM	5:02 PM
Arrive Oak Bluffs	8:15 AM	9:45 AM	11:15 AM	12:45 PM	2:15 PM	3:45 PM	5:15 PM
Next route 1 to Tisbury							
(round about)	8:37 AM	10:07 AM	11:37 AM	1:07 PM	2:37 PM	4:07 PM	5:37 PM
Next Rt 13 to West Tisbury	8:54 AM	9:54 AM	11:54 AM	12:54 PM	2:54 PM	3:54 PM	5:54 PM
To MV Airport							
Depart Oak Bluffs	8:20 AM	9:50 AM	11:20 AM	12:50 PM	2:20 PM	3:50 PM	5:20 PM
Round About	8:33 AM	10:03 AM	11:33 AM	1:03 PM	2:33 PM	4:03 PM	5:33 PM
Arrive Airport	8:38 AM	10:08 AM	11:38 AM	1:08 PM	2:38 PM	4:08 PM	5:38 PM
Next route 1 to Edgartown							
(round about)	8:33 AM	10:03 AM	11:33 AM	1:03 PM	2:33 PM	4:03 PM	5:33 PM
Next Rt 6 to West Tisbury	8:40 AM	10:10 AM	11:40 AM	1:10 PM	2:40 PM	4:10 PM	5:40 PM

There are no recommendations for *Phase 2 or 3*.

## Route 8

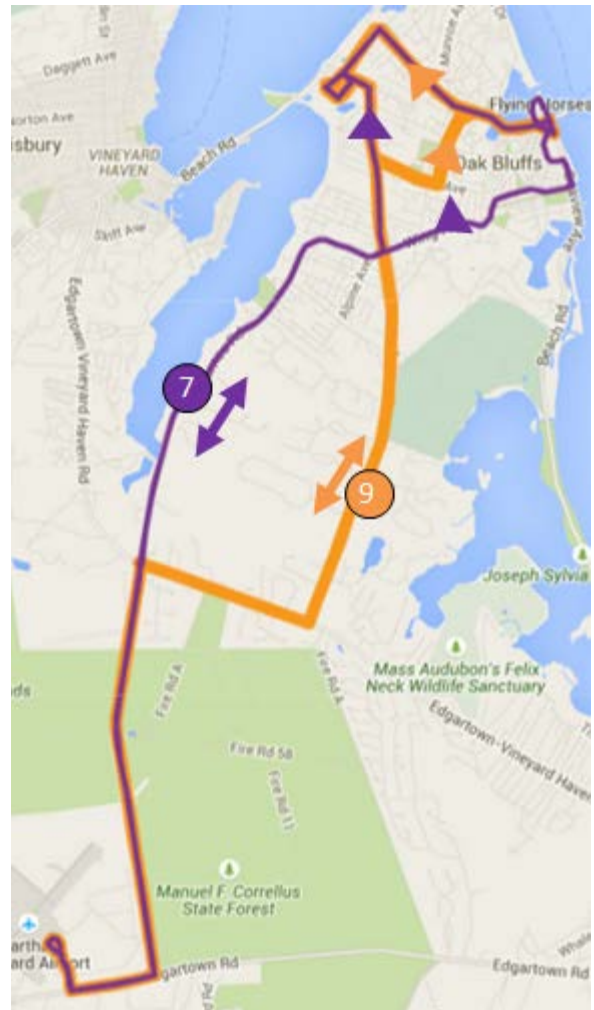
The following is recommended for Route 8 service:

In *Phase 1* this route should be interlined exclusively with the Route 6 in the off-season in order to create consistent 90 minute headways throughout the day. This route will run during the midday only with the first trip at 9:25 AM and the last trip at 4:55 PM, with a total of 6 trips. One vehicle could be used for interlining and the cycle time on Route 8 would be 30 minutes (60 on Route 6). It should be timed to leave Church St. Edg. at the same time as the Route 13 and Route 1. It would depart Church St. Edg. every 90 minutes on either the 0:25 or 0:55. There are no recommendations for *Phase 2 or 3*.

## Route 9

The following is recommended for Route 9 service:

In *Phase 1* this route should be realigned to use Country Road both inbound and outbound in order to create linear service along the corridor. In addition, Woodside village will be made an on-request stop only when heading towards the airport. Heading towards Oaks Bluffs the Route will follow Country Road, Vineyard Ave., the library and then Vineyard Haven. On the return the route would go to the hospital and then Country Road with Woodside on request. This route should be interlined exclusively with the Route 7 in the off-season in order to create consistent 90 minute headways throughout the day. One vehicle could be used for interlining and the cycle time on the Route 9 would be 49 minutes (41 on Route 7). The bus would then arrive at the airport and become the Route 7 departing at 0:27 or 0:57. There are no recommendations for *Phase 2 or 3*.



Airport	Round about	Arrive Ocean Park	Depart Ocean Park	Round About	Airport
1:10 Transfer from 6	1:15	1:30	1:31	1:52	1:57

To accommodate the new frequency and interline the new hours will be 7:10 AM to 6:27 PM. The Route 9 schedule would be as follows:

To Oak Bluffs								
Depart Airport	7:10 AM	8:40 AM	10:10 AM	11:40 AM	1:10 PM	2:40 PM	4:10 PM	5:40 PM
Round About	7:15 AM	8:45 AM	10:15 AM	11:45 AM	1:15 PM	2:45 PM	4:15 PM	5:45 PM
Arrive Oak Bluffs	7:30 AM	9:00 AM	10:30 AM	12:00 PM	1:30 PM	3:00 PM	4:30 PM	6:00 PM
Next route 1 to Tisbury (round about)	7:37 AM	9:07 AM	10:37 AM	12:07 PM	1:37 PM	3:07 PM	4:37 PM	6:07 PM
Next Rt 13 to West Tisbury	8:54 AM	9:54 AM	11:54 AM	12:54 PM	2:54 PM	3:54 PM	5:54 PM	6:54 PM
To MV Airport								
Depart Oak Bluffs	7:31 AM	9:01 AM	10:31 AM	12:01 PM	1:31 PM	3:01 PM	4:31 PM	6:01 PM
Round About	7:52 AM	9:22 AM	10:52 AM	12:22 PM	1:52 PM	3:22 PM	4:52 PM	6:22 PM
Arrive Airport	7:57 AM	9:27 AM	10:57 AM	12:27 PM	1:57 PM	3:27 PM	4:57 PM	6:27 PM
Next route 1 to Edgartown (round about)	8:03 AM	9:33 AM	11:03 AM	12:33 PM	2:03 PM	3:33 PM	5:03 PM	6:33 PM

## Route 10

No changes

## Route 10A

The following is recommended for Route 10A service:

In *Phase 1* winter service frequency would be standardized to 120 minutes. The Route 10A would interline with the 2 and 4. To accommodate the new frequency and interline the new hours will be 7:25 AM to 5:40 PM. The Route 10A would have trips at 7:45AM, 9:45AM, 11:45AM, 1:45PM, 3:45PM, and 5:45PM.

There are no recommendations for *Phase 2*.

In *Phase 3* service should be increased to every 45 minutes in the peak season.

## Route 11

No changes

## Route 12

This route has very low ridership (34 people a day, 3.44 passengers per revenue hour) but with the new parking lot it should become more productive.

## Route 13

The following is recommended for Route 13 service:

In *Phase 1* during the summer season X bus should be maintained between 10:00 AM and 7:00 PM to meet the increased demand for the arrivals of the Steamship Authority and Hy-Line ferries. These would not be on the schedule and would pick up the extra passengers from the ferries. To keep this route on schedule one additional vehicle should be added. Service year round should start one hour earlier in order to bring people to catch the first SSA boat to leave at 6:00 AM. Consistent 30 minute all day service should be established in the entire off-season<sup>1</sup> as this route has the highest ridership in the off-season. Off-season this route should be retimed so that it leaves Church St. Edg at the same time as the Route 1 (0:25 and 0:55) creating a timed transfer and pulse in Edgartown with the Route 13, 6, 8 and 1. In *Phase 2* the midday frequency should be increased to 10 minutes during the peak, this would require one additional bus (8 buses in total on this route). The X bus should remain on fair weather days, weekends and holidays. There are no recommendations for *Phase 3*.

## Route 22

The following is recommended for a new Route 22 service:

This is a proposed route for Phase 2. It would be a circulator on Chappaquiddick Island, during the peak season only. It would provide service between the ferry and residences. This would help alleviate parking issues around the ferry terminal area. Since there is no fueling station a cutaway would need to be brought over each day. VTA and the private ferry operator must work out an arrangement which would give the VTA vehicle priority boarding. This may be accomplished by scheduling an early trip (before 6 AM) ahead of time. This may be an additional fee but would guarantee early morning service to Chappaquiddick. Due to the limited roads a vehicle no larger than a cutaway should be used. A special vehicle will need to be acquired to handle the unpaved terrain. Service hours should be 7AM – 7PM with the peak times 10AM-5PM. This area may best be serviced using a Dial-a-Ride Zone (see the attached memo for more information on Dial-A-Ride) in the off-peak hours and circulate as a fixed route in the peak between 10 AM and 5 PM.

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<sup>1</sup> Currently there is 30 minute frequency October 14- November 29 and March 27 – May 1. October 15- March 26 is 60 min.





Bus Route	Alignment	Schedule	Phase 1	Phase 2	Phase 3
1 - Edgartown - Vineyard Haven Road	No Change	-Shoulder and winters seasons begin earlier at 5:25AM -30 min frequency all day off-season -15 min frequency midday summer season	-Adjust service hours -Improve winter frequency	-Improve Summer Frequency	
2 - West Tisbury - Vineyard Haven via Old Cty Rd.	West Tisbury to SSA terminal via State Rd Lambert Cove rd and back on all trips during winter service	-120 minute frequency winter season -Adjust winter hours 7:13AM - 6:28 PM -improve summer service frequency 45 min	-Winter frequency -Winter hours -Alignment		-Summer frequency
3 - Vineyard Haven - West Tisbury via State	West Tisbury to Vineyard Haven SSA terminal via State Rd heading south and Old County Rd heading north on all trips during Winter service.	-90 minute frequency winter season -Adjust winter hours 6:15 AM - 7:35 PM -Improve summer midday service frequency to 30 min	-Winter frequency -Winter hours -Alignment	-Improve Summer Frequency	
4 - West Tisbury - Chilmark - Menemsha	Alternate service between Tisbury Town Hall or Menemsha Beach on Winter trips	-120 minute frequency winter season -Adjust winter hours 8:28AM - 7:10 PM	-Adjust winter service alignment -Winter frequency -Winter hours		
5 - West Tisbury - Chilmark - Aquinnah	All trips will depart from West Tisbury Town Hall during winter service	-90 minute frequency winter season -Adjust winter hours 6:40AM - 5:52 PM -Improve summer frequency to 30 min	-Winter frequency -Winter hours -Alignment	-Summer frequency	
6 - Edgartown - Airport - West Tisbury	All trips will go from West Tisbury to Edgartown via the airport	-60 min frequency AM and PM peaks, 90 min mid-day for winter service -Adjust winter hours 6:40AM - 7:06PM -Improve Summer frequency to 30 min	-Winter frequency -Winter hours -Alignment	-Summer frequency	
7 - Oak Bluffs - Airport via County Road / Barnes Road	Exclusively use Barnes Rd. Hospital - New York Ave - Oak Bluff - in town tour	-90 minute frequency winter season -Adjust winter hours 7:57 AM - 5:38 PM	-Winter frequency -Winter hours -Alignment		
8 South Beach Route	No Change	-90 minute frequency winter season -Adjust winter hours 9:25 AM - 5:25 PM	-Winter frequency -Winter hours		
9 Oak Bluffs - Hospital - Airport via Barnes Road & County Road	Exclusively use County Road the hospital, vineyard ave, library, town, Airport. Woodside wood be on request only.	-90 minute frequency winter season -Adjust winter hours 7:10 AM - 6:27 PM	-Winter frequency -Winter hours -Alignment		
10 Tisbury Park & Ride	No change	No Change			
10A West Chop Loop	No Change	-120minute frequency winter season -Adjust winter hours 7:45 AM - 6:00 PM			-Summer frequency
11 Downtown Edgartown	No change	No Change			
12 Chilmark Inns / Sunset Bus	No change	No Change			
13 Edgartown – Oak Bluffs – Vineyard Haven via Beach Roads	No Change	-Begin service year round earlier at 5:15 -30 min frequency all day off-season -10 min frequency midday summer season	-Begin service earlier -Improve winter service frequency	-Improve Summer Frequency	
22 West Island Circulator	New route- Circulator on Chappaquiddick Island	-Service 7 AM - 7 PM with peak times 10 AM - 5PM in circulator mode, else a dial-a-ride		-Implement Service	

VTA Proposed Service Recommendations		Peak (July/Aug)						Shoulder (May/June & Sept/Oct)						Off Season (Oct-May)					
Route	Name	Ridership	Productivity	Existing		Proposed		Ridership	Productivity	Existing		Proposed		Ridership	Productivity	Existing		Proposed	
				Frequency	Span	Frequency	Span			Frequency	Span	Frequency	Span			Frequency	Span	Frequency	Span
1	Edgartown - Vineyard Haven Road	1,734	31.89	20-30	5:37 AM - 1:45 AM	15-30	5:37 AM - 1:45 AM	883	24.69	30	6:30 AM - 12:56 AM	30	5:30 AM - 12:56 AM	297	11.01	30-60	6:25AM - 10:29PM	30	5:25AM - 10:25 PM
2	West Tisbury - Vineyard Haven via Old Cty Rd.	99	9.55	45	7:51 AM - 7:50 PM	90	7:51 AM - 7:50 PM	57	5.58	90	7:51 AM - 7:50 PM	90	7:51 AM - 7:50 PM	15	3.03	varies (100 min avg)	6:54AM - 6:25PM	120	7:13AM - 6:28PM
3	Vineyard Haven - West Tisbury via State	1427	19.59	30/60	7:07 AM - 11:59 PM	60	7:07 AM - 11:59 PM	628	10.59	60	7:07 AM - 8:59 PM (11:59 PM F/Sa)	60	7:07 AM - 8:59 PM (11:59 PM F/Sa)	83	3.42	varies (70 min avg)	6:06 AM (9:09AM Su) - 7:32 PM	90	6:15 AM (8:55AM Su) - 7:35 PM
4	West Tisbury - Chilmark - Menemsha			60	7:40 AM - 12:32 AM	60	7:40 AM - 12:32 AM			60	7:40 AM - 7:38 PM (12:32 AM F/Sa)	60	7:40 AM - 7:38 PM (12:32 AM F/Sa)			varies (170 min avg)	7:09 AM (8:21 AM Su) - 6:19 PM	120	8:28 AM - 7:10 PM
5	West Tisbury - Chilmark - Aquinnah			30	6:38 AM - 12:08 PM	60	6:38 AM - 11:32 PM			60	6:38 AM - 8:32 PM (12:08 AM F/Sa)	60	6:38 AM - 8:32 PM (11:32 PM F/Sa)			varies (120 min avg)	6:25 AM (8:46AM Su) - 6:38 PM	90	6:40 AM (8:10AM Su) - 7:22 PM
6	Edgartown - Airport - West Tisbury			30	6:25 AM - 12:42 AM	60	6:25 AM - 12:42 AM			60	6:25 AM - 9:36 PM (11:36 PM F/Sa)	60	6:25 AM - 9:36 PM (12:42 AM F/Sa)			varies (90 min avg)	6:40AM (7:43 AM Su) - 7:43PM	60/90	6:40 AM - (7:40 AM Su) 7:06 PM
7	Oak Bluffs - Airport via County Road / Barnes Road	191	14.76	60	6:55 AM - 11:50 PM	60	6:55 AM - 7:50 AM	108	8.38	60	6:55 AM - 7:50 PM (11:50 F/Sa)	60	7:00 AM - 5:56 PM	22	5.43	varies (90 min avg)	7:22 AM (10:44 AM Su) - 5:44 PM	90	7:57 AM (10:57 AM Su) - 5:38 PM
8	South Beach Route	518	24.65	15-30	7:00 AM - 10:24 PM	15-30	7:00 AM - 10:00 PM	117	14.38	30	7:00 AM - 5:54 PM	30	7:00 AM - 10:00 PM	9	3.01	varies (90 min avg)	8:19 AM (10:00 AM Su) - 5:42 PM	90	9:25 AM - 5:55 PM
9	Oak Bluffs - Hospital - Airport via Barnes Road & County Road	229	13.97	60	6:28 AM - 12:23 PM	60	7:28 AM - 11:51 PM	99	7.26	60	6:28 AM - 8:23 PM (12:23 AM F/Sa)	60	7:28 AM - 7:23 PM (11:51 PM F/Sa)	22	4.27	varies (90 min avg)	7:02 AM (11:05 AM Su) - 6:39 PM	90	7:10AM (11:10 AM Su) - 6:27 PM
10	Tisbury Park & Ride	415	24.63	15	5:30 AM - 10:38 PM	15	5:30 AM - 10:38 PM	368	22.01	15	5:30 AM - 10:38 PM	15	5:30 AM - 10:38 PM	248	13.89	15	5:30 AM - 9:23 PM (10:38 PM F/Sa/Su)	15	5:30 AM - 9:30 PM (10:30 PM F/Sa/Su)
10A	West Chop Loop	22	8.43	45	6:50 AM - 7:17PM	90	6:50 AM - 7:17PM	11	4.23	90	6:50 AM - 7:17PM	90	6:50 AM - 7:17PM	7	2.68	varies (80 min avg)	7:30 AM (8:54 AM Su) - 6:05 PM	120	7:25 AM (9:45 AM Su) - 6:00 PM
11	Downtown Edgartown	319	19.12	15	6:50 AM - 11:15 PM	15	6:50 AM - 11:15 PM	59	7.24	30	8:07 AM - 6:00 PM	30	6:50 AM - 11:15 PM			---	---	---	---
12	Chilmark Inns / Sunset Bus	34	3.66	20-30	10:35 AM - 8:41 PM	20-30	9:34 AM - 5:41 PM			---	---	---	---			---	---	---	---
13	Edgartown – Oak Bluffs – Vineyard Haven via Beach Roads	4,463	61.2	30-Oct	6:15 AM - 2:45 AM	15-30	6:15 AM - 1:30 AM	1905	44.68	30	6:15 AM - 12:25 AM (1:25 AM F/Sa)	30	5:15 AM - 1:10 AM	292	11.25	30-60	6:15 AM - 9:44 PM (10:57 Fri/Sat)	30	6:15 AM - 9:44 PM (10:57 Fri/Sat)
22	West Island Circulator			---	---	60/ Dial-a-ride	7:00 AM - 7:00 PM			---	---	---	---			---	---	---	---

## VTA Proposed Service Recommendations

Route	Name	Pros	Cons
1	Edgartown - Vineyard Haven Road	Increased service in off-season and summer season; service begins earlier in shoulder and off season to make early morning ferry connections	
2	West Tisbury - Vineyard Haven via Old Cty Rd.	Consistent headway; Improved transfers to RT 4 and Rt 10A	Miss some SSA ferry connections; Decrease in transfers to Rt 6
3	Vineyard Haven - West Tisbury via State	Consistent headway; Improved transfers with Rt 6; Same bus connection to Rt 5; more trips daily	Miss some SSA ferry connections;
4	West Tisbury - Chilmark - Menemsha	Consistent headway; Same bus connection to Rt 2; more trips daily; extended service hours	Services Chilmark CC or Menemsha Beach on each trip but not both
5	West Tisbury - Chilmark - Aquinnah	Consistent headway; Same bus connection to Rt 3; Improved connections to Rt 6.; more trips daily; extended service hours	
6	Edgartown - Airport - West Tisbury	Improved transfers with Rt 3, 5, 7, 9; simplify alignment; consistent headway	Service ends earlier
7	Oak Bluffs - Airport via County Road / Barnes Road	Improved transfers with Rt 6 and Rt 1; simplify alignment	Tight Schedule; 1 less outbound trip
8	South Beach Route	Consistent frequency	One less trip: shorter service hours
9	Oak Bluffs - Hospital - Airport via Barnes Road & County Road	Improved transfers from RT 6, Consistent frequency; one more outbound trip	Tight Schedule; Woodside serviced on demand only.
10	Tisbury Park & Ride	No Recommendations	No Recommendations
10A	West Chop Loop	Consistent headway; improved connections with RT 2	Less trips; miss some SSA ferry connections
11	Downtown Edgartown	No Recommendations	No Recommendations
12	Chilmark Inns / Sunset Bus	No Recommendations	No Recommendations
13	Edgartown – Oak Bluffs – Vineyard Haven via Beach Roads	Increased service in off-season and summer season; service begins earlier to make early morning ferry connections	
22	West Island Circulator	New service	Specialty equipment required

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## Appendix C

### Public Outreach

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## PUBLIC OUTREACH

One of the primary goals of the Regional Transit Plan (RTP) was to identify alternatives and recommendations that would result in improvements to the system for existing riders and potentially attract new riders. The VTA formed a Study Advisory Committee representing key stakeholder groups within the community as required by the legislation and provided review and comment on chapters of the document as they were produced. In developing the RTP, public comments received from ongoing public outreach efforts within the last two years were used.

### Study Advisory Committee

As dictated by the Transportation Finance Bill the VTA has formed and supported the development of the Study Advisory Committee to guide the development of this plan. The VTA reached out to representatives that included local employers and business members, the regional planning agency, and transit riders. A complete list of committee members and organization/groups represented on the SAC can be found in Table 1

Table 1 Study Advisory Committee Members

Organization
<b>Martha's Vineyard Commission, Transportation Planner</b>
<b>Martha's Vineyard Chamber of Commerce, Executive Director</b>
<b>Martha's Vineyard Community Services, Director and staff</b>
<b>Martha's Vineyard Center 4 Living, Director</b>
<b>Martha's Vineyard Regional High School Special Education staff</b>
<b>Owner of 4 local restaurants located in 3 towns</b>
<b>Steamship Authority</b>

As chapters became available the SAC reviewed and provided comments on the documents. Members of the SAC did not feel it was necessary to meet as they reviewed the chapters. The SAC will meet after the public comment period for the various chapters. The times, dates and locations of these meetings can be found in Table 2.

Table 2. Study Advisory Committee Meetings

Date	Location
<b>Tuesday February 10, 11:00AM</b>	Administrative Offices
<b>Friday March 27, 2015 11:00AM</b>	Administrative Offices
<b>Wednesday August 12, 2015</b>	Administrative offices

### Public Involvement

For the public outreach effort, the VTA partnered with the Martha's Vineyard Commission (MVC). The MVC was/is currently in the process of updating the five year Regional Transportation and Coordinated Human Service Transportation Plans. MVC staff attended meetings of these and other entities. The



Regional Transportation Plan update examined all modes of transportation, including transit. The Regional Transportation Plan update included comments received from organization and consumer surveys conducted specific to Martha's Vineyard, in the summer of 2014 by the Cape and Islands Regional Coordinating Council. The comments were generated from surveys found in Table 3. Employers and user groups were asked to gather comments.

**Table 3: Public Involvement**

<b>Email blast requesting comments at M.V.Chamber website</b>
<b>Overall transportation survey on M.V.Commission website</b>
<b>Regular listening sessions at local elderly housing centers</b>
<b>Public comment meeting on MVC Transportation plans</b>

In addition, the VTA solicited comments from the general public for the public review period through public notices in the local newspaper and website and at VTA Advisory Board meetings. The Chapters were made available on the VTA's website and at its Administrative Office. In addition to the above, public notice and documents were sent to various groups and associations as shown in Table 4.

**Table 4: Public Notice and Document Distribution**

<b>VTA website for comment</b>
<b>2 local papers for comment period</b>
<b>Study advisory committee members for distribution</b>
<b>Chamber of Commerce Member e-Bulletin Blast</b>
<b>Martha's Vineyard Commission</b>
<b>Councils on Aging</b>
<b>VTA Facebook &amp; Twitter Account</b>
<b>Requests for comment and to read ongoing study at all meetings attended by VTA.</b>

It is worth noting that the VTA has always maintained strong relationships with many user groups and advocates and the VTA considers the comment period to be ongoing.

Public comments are summarized in Appendix A.



# Appendix A



## Appendix A

### RTA Study Public Comments;

Notes from the first Study Committee meeting attached as Appendix B.

**The following comments are the results of the outreach by Study Advisory Committee members and the media outlets found in Table 4.**

- I live off-island and commute from the Vineyard Haven terminal to the Courthouse in Edgartown (easy) and to my daughter's house between the West Tisbury Business District and Alleys Store (difficult; when the bus peels off up Old County Road I have to walk the rest of the way).
- The Island Queen ferry management asked about selling our passes on board and mutual attempts to accommodate groups who would otherwise bring a large tour bus over for tours.
- I really like the VTA. Very convenient.
- A home owner who previously did not want buses stopping in front of his house said he has come to agree that there are people who need the distance to the stop to be minimal and gave permission to resume.
- All contacts were also asked to solicit comments on the snow and ice this winter affecting their travel with the VTA. None received so far.

**Woodside Village (elderly housing) residents had the following comments at a regular VTA listening session**

- We would like a signal outside the door to tell the drivers we are waiting inside and will be out shortly-they do not wait long enough sometimes.
- We often miss the bus when drivers fail to change their sign to the correct route.
- Please ask drivers to turn off high beams when pulling in at night.
- Need more return trips from the Hospital in the off season.
- My friend would like later West Chop service in-season.
- Ocean Park needs shelters and we have been asking for a long time.
- The VTA makes a lot of money from the summer riders and should use some to help elderly residents have more off season service.
- More locations at bus stops etc. where people can pick up schedules before they travel.

**From Martha's Vineyard Community Services staff outreach**

- Maintaining the Wheelchair lifts more, spoke with several individuals in wheelchairs who said the lifts need to be maintained more because they always seem to have some issues.
- Shelters at various locations, such as hillside village, Ocean Park, etc.
- Possibly more pull- ins at Hillside and Woodside.
- Keeping the buses cleaner.





- Better coordination with ferry schedules- it is annoying to walk off the boat and see buses pulling away.

**The following came from outreach by Listening sessions, Facebook posts and telephone;**

**Facebook;**

[April 28, 2014 at 8:25pm](#)

While I'm thankful for the Martha's Vineyard transit authority, I live in West Tisbury and the busses come at really inconvenient times. Why is there no more bus to Vineyard Haven at 6am during the summer months? A lot of us out here do take the bus and want to work during the summer and get to work on time. We also have no midnight bus. At least one bus would be fine for 6am daily and 12am on the current schedule (only on Fridays and Saturdays). West Tisbury isn't that far out, it would be nice if we had those bus times.

**Telephone comments:**

'The VTA should discount Annual passes for the first two weeks of January for year round residents under 65. With lots of buses almost empty in the winter .....it would be an incentive for people to get used to riding before becoming unable to drive.'

**Ongoing comments from 8.17.2015**

**Copies of the draft chapters 1 through 8 and the Executive Summary have been delivered to the six public libraries on the island and comments will continue to be collected.**

Letter received 8.18 complained about the number of people waiting on State beach on route 13 and being passed by a number of buses full to the white line.

Complaint from passenger on 8.18 that the VTA is collecting money from hundreds of day trippers each day and not delivering a decent product. People spend much of their day trip waiting longer than advertised for a bus, being passed up by full buses and do not receive a decent product paid for in advance.

A caller asked that the last peak season bus, route 13 OB to VH at 2:30AM be asked to be sure not to leave early. Late shift workers, one works in food service and one on a late restocking shift, running to catch it have been left more than once either Tuesday or Thursday. They are also thankful for the added service and hope it continues.

Residents off Old County Road in West Tisbury asking for earlier connections down island for employees of MV Hospital and the High School. (Known trips already added to the off season schedule).

Residents of elderly and disabled housing expressed thanks for the new low floor buses. They feel that the low floor design, wheelchair ramp at the front door and the addition of air conditioning will encourage more people to use the bus.

## **Appendix B- Notes from Advisory Committee Meeting**

**Tuesday February 10, 2015 11:00AM @ VTA**

Chapters 1, 2 & 3 previously distributed

In attendance:

1. Lois Craine, VTA
2. Patty Philbin, TCI (VTA's operating company)
3. Leslie Clapp, Director MV Center 4 Living
4. Ryan Doyon, MV Community Services
5. Julie Fay, Executive Director MV Community Services
6. Priscilla Leclerc, Transportation Planner Martha's Vineyard Commission
7. Nancy Gardella, Executive Director Martha's Vineyard Chamber of Commerce

Topics Discussed:

### **Reason for Meeting – To determine unmet needs or gaps in bus system**

- Increase in late night service; particularly restaurant employees are often unable to get home from work in shoulder and off seasons. (in progress) attendees asked to conduct informal surveys
- Encourage employers to buy their employees annual passes (has tax advantages). This will free up much parking
- Better coordination with Cape Cod RTA; Getting more people ADA certified on Island would make them eligible for Paratransit service on Cape. Other avenues have not been successful
- Food pantry may move to old VNA building. Possibility of flexing bus route to building
- Send survey with Meals on Wheels to identify service need.
- Accessible vehicle in Woods Hole, volunteer driver pool for off-Island medical appointments
- Wheel chair accessible taxi service
- Hy-Line connection in Hyannis for medical appointments-discounts available
- Improvements at transit stops – particularly shelters in Oak Bluffs
- Oak Bluffs planning a Park & Ride using a Town lot at the Library/Town Hall area

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## Appendix D

### Public Hearing Comments

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**NOTICE OF PUBLIC COMMENT AND REVIEW PERIOD  
MARTHA'S VINEYARD TRANSIT AUTHORITY  
REGIONAL TRANSIT PLAN**

The Martha's Vineyard Transit Authority (VTA) announces a public comment and review of Chapters 1 through 6 of their Regional Transit Plan (RTP). A copy of these chapters and recommendations is available at the VTA Administrative Office located at 11 A Street, Edgartown MA 02539 and on-line at [www.vineyardtransit.com](http://www.vineyardtransit.com)

This public review period will conclude at 9:00AM on August 27, 2015 at which time a Public Hearing will be held.

The VTA Regional Transit Plan is being developed in accordance with State Legislation (MGL chapter 46 Section 63) of the Transportation Finance Bill. The primary goal is to identify alternatives and recommendations that would result in improvements to the system for existing riders and potentially attract new riders. Chapters 1 through 6 include the project overview and purpose and performance statistics.

For further information and to submit comments please contact Lois E. J. Craine, VTA Assistant Administrator, at (508) 693-9440 X 111, or email to [lcraine@vineyardtransit.com](mailto:lcraine@vineyardtransit.com) or to VTA, 11 A Street, Edgartown, MA 02539.

Angela Grant  
VTA Administrator



**To: All Town Halls**

**Date: September 8, 2015**

**Please Post:**

### **MEETING NOTICE**

**The Martha's Vineyard Transit Authority (VTA) will be holding an Advisory Board Meeting at 7:30PM on Thursday September 10, 2015 at the VTA Offices, 11 A Street, Edgartown.**

### **AGENDA**

**Public Hearing and  
Review of draft Transit Study**

**New Business**

VTA Advisory Board  
Meeting and Public Hearing Minutes

September 10, 2015

The Martha's Vineyard Transit Authority Advisory Board met Thursday, September 10, 2015 at 7:30 PM in the offices of the Transit Authority, 11 A Street, Edgartown. Present were Alice Butler (Oak Bluffs), June Manning (Aquinnah), Lou Paciello (Edgartown) and Jay Grande (Tisbury). Also present were Angela Grant (VTA) and Lois Craine (VTA). Absent were John Alley (West Tisbury), Lenny Jason (Chilmark) and Russell Ashton (Rider Community Representative OB).

The meeting was called to order and the Public Hearing opened at 7:34AM.

RTA Study Plan and Public Hearing

Ms. Grant outlined the recommendations detailed in a spreadsheet in chapter 7 of the draft RTA study as separated into the 3 operating seasons of in season, shoulder and off season.

Consistent headways in the details particularly in the off season would not meet the ferries as well which the VTA does not see as being a positive move. The routes recommended for more service are in line with VTA recommendations based on current ridership and passenger demand.

Route 1 would be 15 minute frequency all day during the peak season and 30 minutes in the shoulder and off seasons. Ms. Grant pointed out that this may need to be 20 minutes in the shoulder season and 30 minutes off season.

Route 2 would be 120 minutes with a possible interline with route 4 and 10A in the off season.

Routes 3 and 5 would interline with 90 minute headways in the off season. In season they would have 30 minute frequency

Route 6 is recommended to be 30 minutes in season, 60 in the shoulder season and 90 minutes off season when interlined with route 8.

Routes 7 and 9, 60 to 90 minutes off season as linear routes. Route 9 particularly fell behind this in season due to congestion at the Barnes and West Tisbury Road intersection especially when the large air

carriers landed and took off from the airport. Both would have segment changes.

Park and Ride Tisbury would remain the same.

Route 13 would start earlier in the off season and have consistent headways.

The VTA believes there is more demand for off season service than the data collected for the study shows and that adding service would show good results.

Ms Butler asked if the VTA has learned much from the findings and Ms. Grant replied that the demographics presented are interesting but that much of the recommendations are in line with the plans the VTA and the VTA Board envisions as the next logical steps when funding becomes available.

Mr. Paciello asked if the Board could accept or reject the recommendations. Ms. Grant explained that the Legislature asked for the study in order to assess the need for more funding.

Ms. Manning observed that the study so far is informative and well presented and reported that route 12 is successful in it's new format and the Chilmark Selectmen would like to continue it through the Labor Day weekend next year.

Ms. Grant said that the most recent comments will be sent back and the full document finished for presentation to the Legislature.

Ms. Manning asked if the fare increase of January 1, 2015 has had any impact and Ms. Grant replied that the money has funded a \$1.00 per hour raise for all operators in the hope of helping with increasingly difficult recruitment.

#### New Business

Ms. Grant advised the Board that there will be a meeting of the Finance and Audit subcommittee at 8:30AM followed by the full Board at 9:00AM on Thursday October 8<sup>th</sup> when Bruce Norling will present the FY15 Audit to the Board.

The meeting adjourned at 8:10PM

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Date

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Signed

DRAFT

## Appendix E

### Proposed Timetables

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## APPENDIX -

### Proposed off season time table adjustments

#### Route 2

Depart W. Tisbury Town Hall	7:13 AM	9:13 AM	11:13 AM	1:13 PM	3:13 PM	5:13 PM
Arrive VH SSA*	7:45 AM	9:45 AM	11:45 AM	1:45 PM	3:45 PM	5:45 PM
Next rt 1	7:55 AM	9:55 AM	11:55 AM	1:55 PM	3:55 PM	5:55 PM
Next rt 13	7:55 AM	9:25 AM	11:25 AM	1:25 PM	3:25 PM	5:25 PM
Next 10A (same bus)	7:45 AM	9:45 AM	11:45 AM	1:45 PM	3:45 PM	5:45 PM
Next SSA departure	8:15 AM	10:45 AM	12:00 PM	2:30 PM	3:45 PM	6:15 PM
Departs VH SSA	8:00 AM	10:00 AM	12:00 PM	2:00 PM	4:00 PM	6:00 PM
Arrives W. Tisbury Town Hall	8:28 AM	10:28 AM	12:28 PM	2:28 PM	4:28 PM	6:28 PM
Last SSA Arrival	7:45 AM	9:00 AM	11:30 AM	2:00 PM	3:15 PM	5:45 PM
Next rt 4 (same bus)	8:28 AM	10:28 AM	12:28 PM	2:28 PM	4:28 PM	6:28 PM
Next Rt 6 to Airport	8:52 AM	11:22 AM	1:22 PM	2:52 PM	5:52 PM	6:52 PM

#### Route 3

To Tisbury										
Depart W. Tisbury Town Hall	7:25 AM	8:55 AM	10:25 AM	11:55 AM	1:25 PM	2:55 PM	4:25 PM	5:52 PM	6:37 AM	
Arrives VH SSA	7:45 AM	9:15 AM	10:45 AM	12:15 PM	1:45 PM	3:15 PM	4:45 PM	6:12 PM	7:07 AM	
Next rt 1	7:55 AM	9:25 AM	10:55 AM	12:25 PM	1:55 PM	3:25 PM	4:55 PM	6:25 PM	7:55 PM	
Next rt 13	7:55 AM	9:25 AM	10:55 AM	12:25 PM	1:55 PM	3:25 PM	4:55 PM	6:25 PM	7:55 PM	
Next 10A	9:45 AM	11:45 AM	1:45 PM	---	3:45 PM	5:45 PM	---	---	---	
Next SSA departure	8:15 AM	9:30 AM	10:45 AM	1:15 PM	2:30 PM	3:45 PM	5:00 PM	6:15 PM	8:30 PM	
To West Tisbury										
Departs VH SSA	6:15 AM	7:45 AM	9:15 AM	10:45 AM	12:15 PM	1:45 PM	3:15 PM	4:45 PM	6:12 PM	7:10 PM
Arrives W. Tisbury Town Hall	6:40 AM	8:10 AM	9:40 AM	11:10 AM	12:40 PM	2:10 PM	3:40 PM	5:10 PM	6:37 PM	7:35 PM
Last SSA Arrival	---	7:45 AM	9:00 AM	10:15 AM	11:30 AM	12:45 PM	2:00 PM	4:30 PM	5:45 PM	7:00 PM
Next Rt 4	---	8:28 AM	10:28 AM	12:28 PM	---	2:28 PM	4:28 PM	6:28 PM	---	---
Next Rt 5 (Same bus)	6:40 AM	8:10 AM	9:40 AM	11:10 AM	12:40 PM	2:10 PM	3:40 PM	5:10 PM	---	---
Next Rt 6	6:52 AM	8:52 AM	10:22 AM	11:52 AM	1:22 PM	2:52 PM	4:22 PM	5:52 PM	6:52 PM	---



## Route 4

To Chilmark						
Depart W. Tisbury Town Hall	8:28 AM	10:28 AM	12:28 PM	2:28 PM	4:28 PM	6:28 PM
Arrive Chilmark Community Center	8:49 AM	---	12:49 PM	---	4:49 PM	---
Arrive Menemsha Beach	---	10:49 AM	---	2:49 PM	---	6:49 PM
To Menemsha						
Depart Chilmark Community Center	8:49 AM	---	12:49 PM	---	4:49 PM	---
Depart Menemsha Beach	---	10:49 AM	---	2:49 PM	---	6:49 PM
Arrives W. Tisbury Town Hall	9:10 AM	11:10 AM	1:10 PM	3:10 PM	5:10 PM	7:10 PM
Next rt 2 (same bus)	9:13 AM	11:13 AM	1:13 PM	3:13 PM	5:13 PM	---
Next rt 6	10:22 AM	11:52 AM	1:22 PM	4:22 PM	5:52 PM	---

## Route 5

To Aquinnah								
Depart W. Tisbury Town Hall	6:40 AM	8:10 AM	9:40 AM	11:10 AM	12:40 PM	2:10 PM	3:40 PM	5:10 PM
Aquinnah	7:01 AM	8:31 AM	10:01 AM	11:31 AM	1:01 PM	2:31 PM	4:01 PM	5:31 PM
To West Tisbury								
Aquinnah	7:01 AM	8:31 AM	10:01 AM	11:31 AM	1:01 PM	2:31 PM	4:01 PM	5:31 PM
Arrives W. Tisbury Town Hall	7:22 AM	8:52 AM	10:22 AM	11:52 AM	1:22 PM	2:52 PM	4:22 PM	5:52 PM
Next Rt 2	---	9:13 AM	11:13 AM	1:13 PM	---	3:13 PM	5:13 PM	---
Next Rt 3 (Same bus)	7:25 AM	8:55 AM	10:25 AM	11:55 AM	1:25 PM	2:55 PM	4:25 PM	5:55 PM
Next Rt 4	8:28 AM	---	10:28 AM	12:28 PM	2:28 PM	---	4:28 PM	6:28 PM
Next Rt 6	7:52 AM	8:52 AM	10:22 AM	11:52 AM	1:22 PM	2:52 PM	4:22 PM	5:52 PM

## Route 6

Depart Edgartown	---	7:25 AM	8:25 AM	9:55 AM	11:25 AM	12:55 PM	2:25 PM	3:55 PM	5:25 PM	6:25 PM
Arrive Airport	---	7:38 AM	8:38 AM	10:08 AM	11:38 AM	1:08 PM	2:38 PM	4:08 PM	5:38 PM	6:38 PM
Depart Airport	6:40 AM	7:40 AM	8:40 AM	10:10 AM	11:40 AM	1:10 PM	2:40 PM	4:10 PM	5:40 PM	6:40 PM
Arrive West Tisbury	6:52 AM	7:52 AM	8:52 AM	10:22 AM	11:52 AM	1:22 PM	2:52 PM	4:22 PM	5:52 PM	6:52 PM
Next Rt 5	7:22 AM	---	8:52 AM	10:22 AM	11:52 AM	1:22 PM	2:52 PM	4:22 PM	5:52 PM	---
Next Rt 4	---	8:28 AM	10:28 AM	---	12:28 PM	2:28 PM	4:28 PM	---	6:28 PM	---
Next rt 2	7:13 AM	---	9:13 AM	11:13 AM	1:13 PM	---	3:13 PM	5:13 PM	---	---
Next Rt 3	7:25 AM	---	8:55 AM	10:25 AM	11:55 AM	1:25 PM	2:55 PM	4:25 PM	5:55 PM	7:25 PM
Next Rt 7 or 9 (airport)	---	7:57 AM	8:40 AM	10:10 AM	11:40 AM	1:10 PM	2:40 PM	4:10 PM	5:40 PM	---
Depart West Tisbury	6:52 AM	7:52 AM	8:52 AM	10:22 AM	11:52 AM	1:22 PM	2:52 PM	4:22 PM	5:52 PM	6:52 PM
Arrive Airport	7:06 AM	8:06 AM	9:06 AM	10:36 AM	12:06 PM	1:36 PM	3:06 PM	4:36 PM	6:06 PM	7:06 PM
Depart Airport	7:10 AM	8:10 AM	9:10 AM	10:40 AM	12:10 PM	1:40 PM	3:10 PM	4:40 PM	6:10 PM	---
Arrive Edgartown	7:21 AM	8:21 AM	9:21 AM	10:51 AM	12:21 PM	1:51 PM	3:21 PM	4:51 PM	6:21 PM	---
Next rt 1	7:25 AM	8:25 AM	9:25 AM	10:55 AM	12:25 PM	1:55 PM	3:25 PM	4:55 PM	6:25 PM	---
Next rt 13	7:25 AM	8:25 AM	9:25 AM	10:55 AM	12:25 PM	1:55 PM	3:25 PM	4:55 PM	6:25 PM	---
Next rt 8 (same bus)	---	---	9:25 AM	10:55 AM	12:25 PM	1:55 PM	3:25 PM	4:55 PM	---	---



## Route 7

To Oak Bluffs							
Depart Airport	7:57 AM	9:27 AM	10:57 AM	12:27 PM	1:57 PM	3:27 PM	4:57 PM
Round About	8:02 AM	9:32 AM	11:02 AM	12:32 PM	2:02 PM	3:32 PM	5:02 PM
Arrive Oak Bluffs	8:15 AM	9:45 AM	11:15 AM	12:45 PM	2:15 PM	3:45 PM	5:15 PM
Next route 1 to Tisbury (round about)							
	8:37 AM	10:07 AM	11:37 AM	1:07 PM	2:37 PM	4:07 PM	5:37 PM
Next Rt 13 to West Tisbury	8:54 AM	9:54 AM	11:54 AM	12:54 PM	2:54 PM	3:54 PM	5:54 PM
To MV Airport							
Depart Oak Bluffs	8:20 AM	9:50 AM	11:20 AM	12:50 PM	2:20 PM	3:50 PM	5:20 PM
Round About	8:33 AM	10:03 AM	11:33 AM	1:03 PM	2:33 PM	4:03 PM	5:33 PM
Arrive Airport	8:38 AM	10:08 AM	11:38 AM	1:08 PM	2:38 PM	4:08 PM	5:38 PM
Next route 1 to Edgartown (round about)							
	8:33 AM	10:03 AM	11:33 AM	1:03 PM	2:33 PM	4:03 PM	5:33 PM
Next Rt 6 to West Tisbury	8:40 AM	10:10 AM	11:40 AM	1:10 PM	2:40 PM	4:10 PM	5:40 PM

## Route 8

To South Beach							
Church St	9:25 AM	10:55 AM	12:25 PM	1:55 PM	3:25 PM	4:55 PM	
Mattakesett Resort	9:40 AM	11:10 AM	12:40 PM	2:10 PM	3:40 PM	5:10 PM	
To Edgartown							
Mattakesett Resort	9:40 AM	11:10 AM	12:40 PM	2:10 PM	3:40 PM	5:10 PM	
Church St	9:55 AM	11:25 AM	12:55 PM	2:25 PM	3:55 PM	5:25 PM	
Next Rt 6 (same bus)	9:55 AM	11:25 AM	12:55 PM	2:25 PM	3:55 PM	5:25 PM	



## Route 9

To Oak Bluffs								
Depart Airport	7:10 AM	8:40 AM	10:10 AM	11:40 AM	1:10 PM	2:40 PM	4:10 PM	5:40 PM
Round About	7:15 AM	8:45 AM	10:15 AM	11:45 AM	1:15 PM	2:45 PM	4:15 PM	5:45 PM
Arrive Oak Bluffs	7:30 AM	9:00 AM	10:30 AM	12:00 PM	1:30 PM	3:00 PM	4:30 PM	6:00 PM
Next route 1 to Tisbury (round about)								
	7:37 AM	9:07 AM	10:37 AM	12:07 PM	1:37 PM	3:07 PM	4:37 PM	6:07 PM
Next Rt 13 to West Tisbury								
	8:54 AM	9:54 AM	11:54 AM	12:54 PM	2:54 PM	3:54 PM	5:54 PM	6:54 PM
To MV Airport								
Depart Oak Bluffs	7:31 AM	9:01 AM	10:31 AM	12:01 PM	1:31 PM	3:01 PM	4:31 PM	6:01 PM
Round About	7:52 AM	9:22 AM	10:52 AM	12:22 PM	1:52 PM	3:22 PM	4:52 PM	6:22 PM
Arrive Airport	7:57 AM	9:27 AM	10:57 AM	12:27 PM	1:57 PM	3:27 PM	4:57 PM	6:27 PM
Next route 1 to Edgartown (round about)								
	8:03 AM	9:33 AM	11:03 AM	12:33 PM	2:03 PM	3:33 PM	5:03 PM	6:33 PM

## Route 10A

To West Chop							
VH SSA	7:45 AM	9:45 AM	11:45 AM	1:45 PM	3:45 PM	5:45 PM	
West Chop	7:51 AM	9:51 AM	11:51 AM	1:51 PM	3:51 PM	5:51 PM	
To Vineyard Haven							
West Chop	7:52 AM	9:52 AM	11:52 AM	1:52 PM	3:52 PM	5:52 PM	
VH SSA	8:00 AM	10:00 AM	12:00 PM	2:00 PM	4:00 PM	6:00 PM	
Next SSA departure	8:15 AM	10:45 AM	12:00 PM	2:30 PM	5:00 PM	6:15 PM	
Next Rt 2 (same bus)	8:00 AM	10:00 AM	12:00 PM	2:00 PM	4:00 PM	6:00 PM	
Next Rt 3	8:55 AM	10:25 AM	1:25 PM	2:55 PM	4:25 PM	---	

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