NANTUCKET

REGIONAL TRANSPORTATION PLAN 2016

FFY 2016 – 2040

APPROVED BY NP&EDC ON JULY 20, 2015

Nantucket Planning and Economic Development Commission
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NANTUCKET METROPOLITAN PLANNING ORGANIZATION

ENDORSEMENT OF THE

2016 – 2040 REGIONAL TRANSPORTATION PLAN
AND
AIR QUALITY CONFOMITY DETERMINATION

In accordance with 23 CFR Part 450 Section 322 (Metropolitan transportation planning process: Transportation Plan) of the October 28, 1993 Final Rules for Statewide and Metropolitan Planning, the Committee of Signatories representing the Metropolitan Planning Organization (MPO) for the Nantucket Region hereby endorses the 2016 – 2040 Regional Transportation Plan (RTP).

Also, in accordance with Section 176 (C)(4) of the Clean Air Act as amended in 1990 [42 U.S.C. 7251(a)], the MPO for the Nantucket Region has completed its review and hereby certifies that the implementation of the Nantucket MPO Regional Transportation Plan satisfies the conformity criteria specified in both 40 CFR Parts 51 and 93 (August 15, 1997) and 310 CMR 60.03 (December 30, 1994); furthermore this plan includes all regional significant projects contained in the previously endorsed FFY 2015-2018Nantucket Transportation Improvement Program (TIP). The projects in the TIP are of the same design and concept that were analyzed in the Regional Transportation Plan. Therefore no new air quality analysis is required for the TIP. Both the Nantucket 2016 - 2040 Regional Transportation Plan and the Nantucket MPO 2016 – 2019 Transportation Improvement Program are consistent with the air quality goals of, and in conformity with the Massachusetts State Implementation Plan.

Signatory Certification:

_____ _____
Stephanie Pollack, Secretary of Transportation Date
Massachusetts Department of Transportation

_____ _____
Thomas Tinlin, Acting Administrator Date
Highway Division - Massachusetts Department of Transportation

_____ _____
Nathaniel Lowell, Chairman Date
Nantucket Planning and Economic Development Commission

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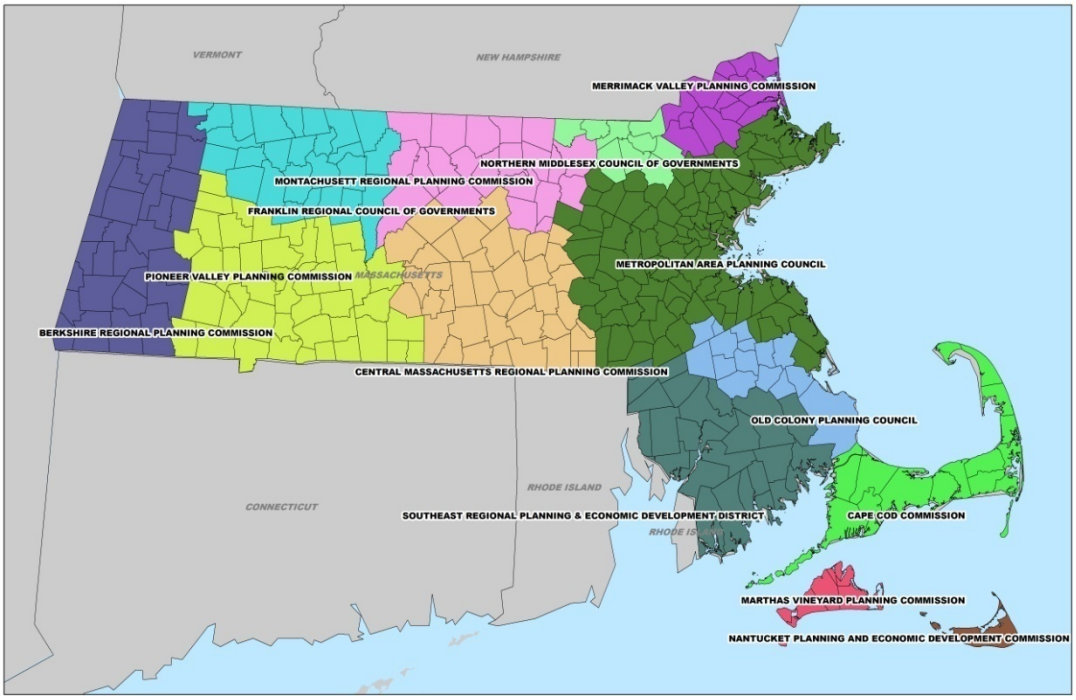


Map 1. Map of Regional Planning Agencies

1. INTRODUCTION

1.1. COMMUNITY PROFILE

Nantucket is located 25 miles off the south shore of Cape Cod in Nantucket Sound. The main island of Nantucket is approximately 45.9 square miles, and is 14 miles long and varies in width from 3 to 6 miles. Two other barrier islands, Tuckernuck and Muskeget, lie to the west of Nantucket. The island is served by ferry from Hyannis, Massachusetts and direct air service from Boston, and in the summer season from Providence, New York City and Washington, DC.

One of the unique attributes of Nantucket is that the island is both a Town and a County. Nantucket is also one of Massachusetts' thirteen regional planning agencies (RPA), with the local agency known as the Nantucket Planning and Economic Development Commission (NP&EDC).

The island is also unique geographically with natural and historic characteristics consisting of barrier beaches and fragile inland and coastal wetlands. There is also a diverse mix of wildlife and rare plant habitats, which have been protected to a large extent through land purchases by public and private conservation agencies.

In 1966, the entire island was designated a National Historic Landmark by the Secretary of the Interior. The Massachusetts legislature also designated the County of Nantucket as a Historic District in 1970 and authorized a Historic District Commission to oversee it. The historic features of the island include a large collection of eighteenth and early nineteenth century homes that, according to an informal survey, include over 400 dwellings remaining that were erected between 1750 and 1850.

Much of Nantucket's economy is income generated from tourists and other visitors, retirees, and second-home owners. Therefore, the community depends greatly upon the survival of these natural and historic resources, as well as the marine resources, to maintain the island as a premier destination.

Transportation plays a critical role in this effort. It is important that the island maintain the natural and historic qualities while providing a safe and efficient means for visitors and residents to travel to and around the island. Traffic gridlock continues to threaten Nantucket's aesthetics and character, as do contemporary solutions to traffic problems.

1.2. NP&EDC

The Nantucket Planning and Economic Development Commission (NP&EDC) is a Regional Planning Agency charged with planning for the "orderly and coordinated development and protection of the physical, social and economic resources for the island of Nantucket" (Mass. General Law, Chapter 561 of the Acts of 1973, "An Act Establishing the Nantucket Planning & Economic Development Commission"). This agency serves as one of the Commonwealth of Massachusetts' thirteen Regional Planning Agencies (see Map 1). Ten of these agencies are federally designated Metropolitan Planning Organizations (MPO). Federal regulations require that an MPO be formed in urbanized areas with a population of 50,000 or more.

While the NP&EDC (as well as the Martha's Vineyard and Franklin regions) do not meet these criteria, the Massachusetts Department of Transportation (MassDOT) distributes funding for rural transportation planning in these regions. To approve the acceptance of federal and state funding, the Nantucket region consists of a decision making body, or Committee of Signatories, consisting of MassDOT, the Highway Division of MassDOT, and the NP&EDC. As part of its role in accepting this funding, the NP&EDC follows federal transportation planning regulations, including the preparation of require documentation and conducting public outreach as part of the transportation planning activities.

1.3. MAP-21

Each Regional Planning Agency (RPA) that receives federal transportation funding must respond to the planning requirements of the Moving Ahead for Progress in the 21st Century (MAP-21), which the President signed into law on July 6, 2012. By transforming the policy and programmatic framework for investments to guide the system's growth and development, MAP-21creates a streamlined and performance-based surface transportation program and builds on many of the highway, transit, bike, and pedestrian programs and policies established in 1991.

Under MAP-21, there are planning factors that must be considered in the planning process to ensure that the funds used for transportation investments satisfy the intent of the law. These factors are:

1. Support the economic vitality of the United States, the States, nonmetropolitan areas, and metropolitan areas, especially by enabling global competitiveness, productivity, and efficiency;
2. Increase the safety of the transportation system for motorized and non-motorized users;

3. Increase the security of the transportation system for motorized and non-motorized users;
4. Increase the accessibility and mobility of people and freight;
5. Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns;
6. Enhance the integration and connectivity of the transportation system, across and between modes throughout the State, for people and freight;
7. Promote efficient system management and operation; and
8. Emphasize the preservation of the existing transportation system.

MAP-21 also calls for the establishments of performance targets that address performance measures. These targets are to be developed by the States in cooperation with the MPOs.

1.4. GREENDOT

In June 2010, MassDOT issued a sustainability initiative known as GreenDOT intended to promote sustainable economic development, protect the natural environment, and enhance the quality of life for all of the Commonwealth's residents and visitors. This will enable MassDOT to use resources in a manner that serves its existing customers while preserving our resources for future generations. The specific goals of the initiative are as follows:

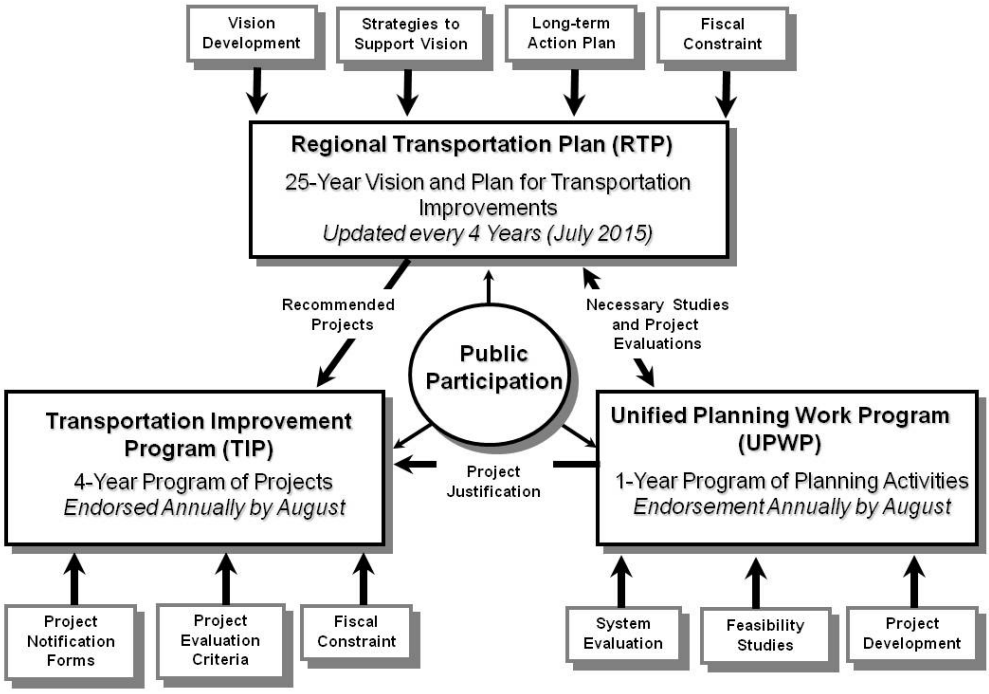
- Reduce greenhouse gas (GHG) emissions
- Promote the healthy transportation modes of walking, bicycling, and public transit
- Support smart growth development

This Regional Transportation Plan includes objectives and projects that achieve similar goals as described in the GreenDOT initiative, such as significant investment in bike and pedestrian infrastructure, and promoting a development pattern that maximizes the use of all modes of transportation. These actions are described in goal 3.2 in the Goals and Objectives section of this RTP.

1.5. REGIONAL TRANSPORTATION PLAN

To access federal funding for transportation improvements, MAP-21 requires that each Regional Planning Agency have an approved Regional Transportation Plan (RTP) with a fiscally constrained listing of eligible projects. Projects and programs must first be listed in the RTP prior to receipt of federal transportation funding. Once included in the RTP, these projects and programs can be further studied or designed as part of the annual Unified Planning Work Program (UPWP) or included in the Transportation Improvement Program (TIP), which is a four year listing of transportation projects using federal funds. As shown in the diagram below, all three of these planning documents have a specific planning function, and are developed within an organized public participation process.

Relationship Among NP&EDC Transportation Planning Documents



This RTP provides a demographic framework (see Section 2) and the NP&EDC's goals and objectives for transportation facilities (see Section 3.2), as well as a financially constrained action plan of recommended programs and projects through the year 2040 (see Section 14). In addition to considering the Commonwealth's Transportation Plan, described in section 1.4, the NP&EDC also developed the RTP in compliance with MAP-21.

A description of how this RTP considers the MAP-21 planning factors for projects and programs is provided below:

1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.
   - *Section 2.9 provides an overview of plans and studies completed by the NP&EDC to address a variety of issues including how transportation can help improve economic development in the community. For example, many of the recommendations from the* Downtown Circulation and Ferry Access Improvement Study *have been incorporated into this plan to improve the downtown environment for residents and, just as importantly to the local economic, tourists.*
   - *Section 7.3 of the plan discusses the* Wilkes Square Redevelopment Study, *which is important to the revitalization of the downtown area. One of the principle recommendations is the construction of a parking structure, that would address the lack of parking in the area and would facilitate additional patronage of businesses.*
2. Increase the safety of the transportation system for motorized and non-motorized users.
   - *Section 10 of this plan focuses on a discussion of safety improvement efforts for various transportation facilities.*
3. Increase the security of the transportation system for motorized and non-motorized users.

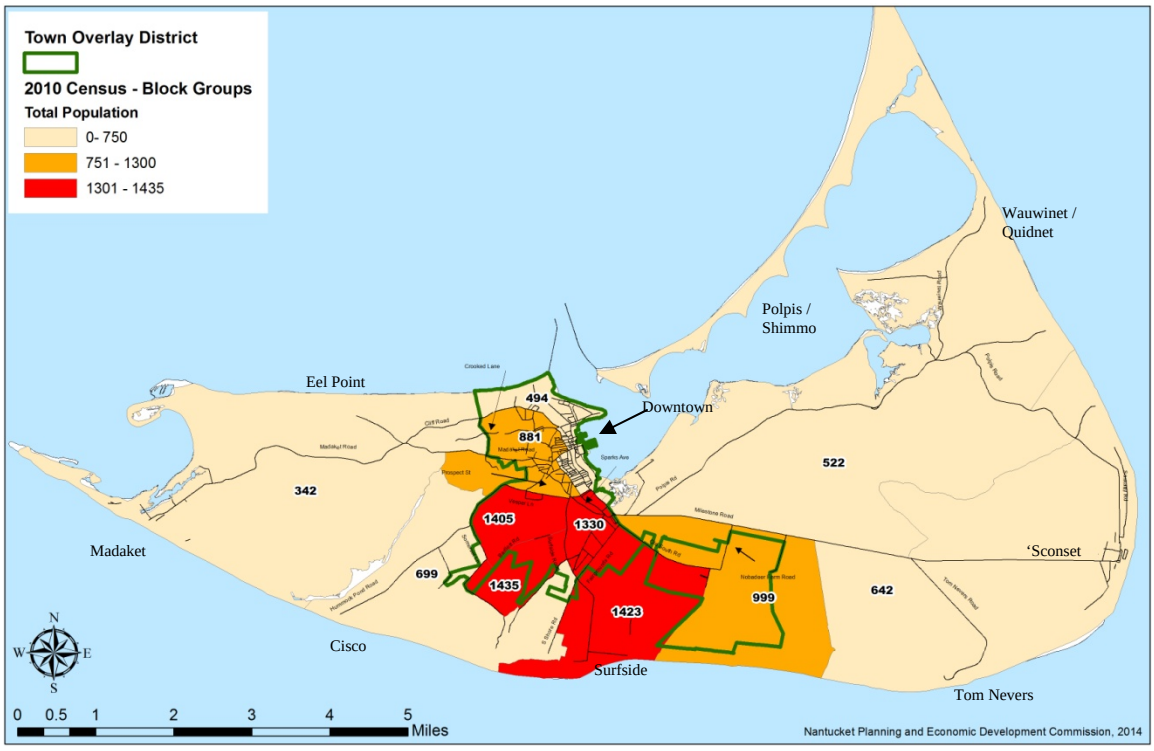
- *Section 11 of this plan provides a discussion of security improvement efforts for various transportation facilities.*

4. Increase the accessibility and mobility of people and for freight.
   - *Increasing accessibility and mobility for people is a continuing theme of this plan, and is directly addressed in the goals and objectives in section 3.1. Freight accessibility and mobility are primarily addressed in sections 4.6, 8.1.3, and 9.1.4. Specific goals concerning freight movement can be found in section 3.3.3.*
5. Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns.
   - *Environmental, historical, and tribal resources are discussed in section 2.3, and specific goals and objectives to protect and enhance these resources are found in section 3.3.2.*
6. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.
   - *Intermodal enhancement is fundamental to the goals and recommended improvements of this plan, and intermodal elements can be found throughout. Specifically these elements can be found in sections 3.2, 3.3, 5.1.5, 8.1.4, and 9.4.*
7. Promote efficient system management and operation.
   - *Discussions of system management and operational efficiencies are found primarily in the NRTA, Airport, and Steamship Authority sections, specifically in the areas of intelligent transportation systems, or ITS (section 5.1.8), and in the safety (section 10), and security (section 11) sections of this plan.*
8. Emphasize the preservation of the existing transportation system.
   - *Although preservation of the island's infrastructure is discussed in section 2.3.1, specific goals to accomplish this are found primarily in section 3.2.1 and 3.3.2.*

1.6. PUBLIC PARTICIPATION PROCESS

Beginning in December 2014, the NP&EDC conducted a public participation process, as required in MAP-21, involving coordination with the agencies and committees representing State and Federal governments, the ferry services, the airport services, land use management, public transportation, aging and disabled populations, tribal governments, environmental / natural resources, and historic resources. In addition to this coordination, the NP&EDC itself charged in its legislation with recommending plans for the economic, social and physical development of Nantucket related to transportation, land use, and population growth, as well as being composed of representatives of the Housing Authority, Conservation Commission, Department of Public Works, County government, and Planning Board (land management), contributed to the development of this plan.

On June 1, 2015, the NP&EDC voted to initiate, and advertise in the *Inquirer and Mirror* newspaper, a public review period of the draft RTP. The public review period was scheduled from June 11, 2015 to July 20, 2015, with copies of the draft plan available on-line and at the Atheneum, Town Building, and Planning Office. A public hearing to solicit comments and questions during this review period was held on June 29, 2015. Comment letters resulting from this outreach effort are attached to this plan in Appendix 1. **The NP&EDC approved this RTP following a review of comments received at the meeting on July 20, 2015.**



Map 2. Population by 2010 Census Block Group (US Census)

2. REGIONAL DEMOGRAPHICS

2.1. POPULATION CHARACTERISTICS

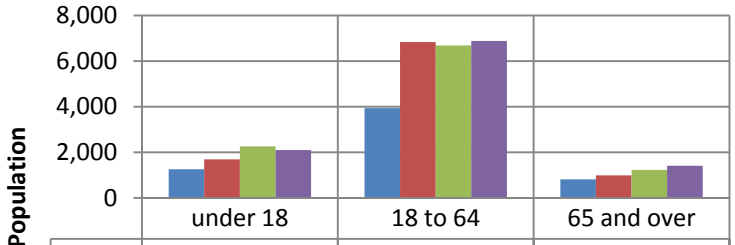
Nantucket's appeal as a year round residence is evident in the island's increasing population figures. And although dwellings are located throughout the island, much of the year round population is concentrated in the central portion of the island, or "mid-island". Map 2 shows this area in RED, which accounts for 55% of the year round population on 9% of the island.

As shown in Table 1 below, the island's year-round population increased dramatically during the past few decades. According to the US Census figures, the population was 5,087 in 1980, and by 2010 this figure doubled to 10,172. The estimated 2013 population has increased about 2% since 2010 to 10,399.

Table 1. Population by Year (US Census)

	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000	2010
Population	3,006	2,962	2,797	3,678	3,401	3,484	3,559	3,774	5,087	6,012	9,520	10,172

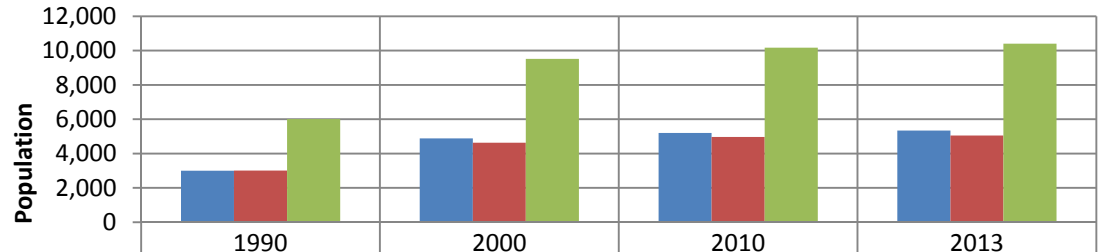
Table 2. Age Distribution (US Census)



	under 18	18 to 64	65 and over
1990	1,257	3,938	818
2000	1,695	6,835	990
2010	2,262	6,684	1,227
2013	2,101	6,884	1,414

Table 2 shows the age distribution of the population. It can be seen that the 65 and over demographic has steadily increased between 1990 and 2013, whereas the 18 to 64 demographic has remain relatively unchanged since 2000.

Table 3. Population by Gender (US Census)



	1990	2000	2010	2013
Male	3,003	4,884	5,205	5,345
Female	3,009	4,636	4,967	5,054
Total	6,012	9,520	10,172	10,399

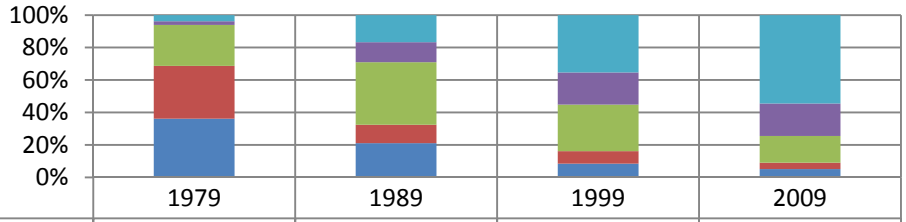
Table 3 breaks down the population by gender. This table shows that the ratio of males to females has been relatively unchanged since 2000.

2.2. INCOME AND EMPLOYMENT

The following analysis illustrates the income levels of year-round residents, as well as the employment trends on a seasonal and industry basis, by utilizing U.S. Census data and data from the Update of the Nantucket Economic Base Study Report.

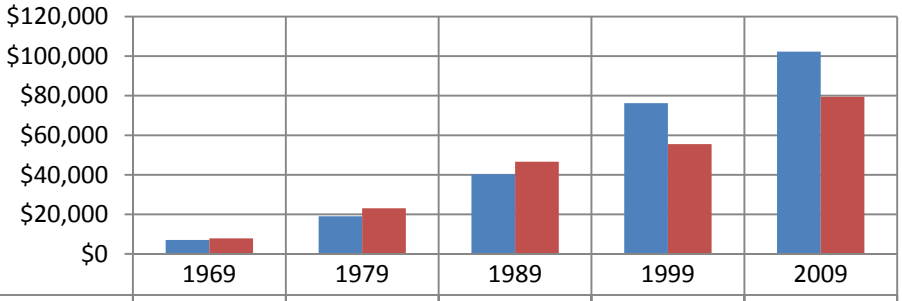
2.2.1. Household Income

Table 4. Household Income Levels (US Census)



	1979	1989	1999	2009
Over $75,000	81	382	1,307	2,269
$50,000 to $74,999	49	282	736	833
$25,000 to $49,999	547	879	1,061	683
$15,000 to $24,999	702	260	282	167
Less than $15,000	782	482	315	212

Table 5. Mean / Median Household Income (US Census)

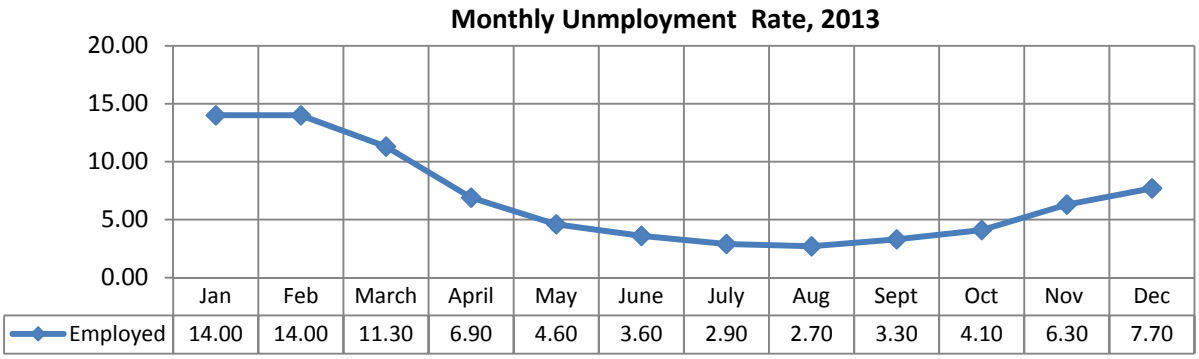


	1969	1979	1989	1999	2009
Mean Income	$7,064	$19,012	$40,331	$76,214	$102,243
Median Income	$7,872	$23,071	$46,606	$55,522	$79,431

Tables 4 and 5 show the income levels, including the mean and median incomes for residents of Nantucket. Most residents now earn over $75,000 with the mean income actually surpassing the median income level in 1999, meaning those of the higher income began earning significantly more than most year round employees.

2.2.2. Employment

Table 6. Monthly Unemployment, 2013 (Bureau of Labor Statistics)



	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Employed	14.00	14.00	11.30	6.90	4.60	3.60	2.90	2.70	3.30	4.10	6.30	7.70

Table 6 shows that the monthly unemployment rate in 2013 was lowest in July at 2.7%, and reached the high in February at about 14%. This is typical of the island's seasonal tourist oriented economy. The seasonal fluctuation of employment suggests that most of these jobs are either (a) held by workers who do not live on Nantucket year-round or (b) held by Nantucket residents who enter and leave the labor force on a seasonal basis.

Figure 1. Employment Profile, 2009 (Bureau of Labor Statistics)

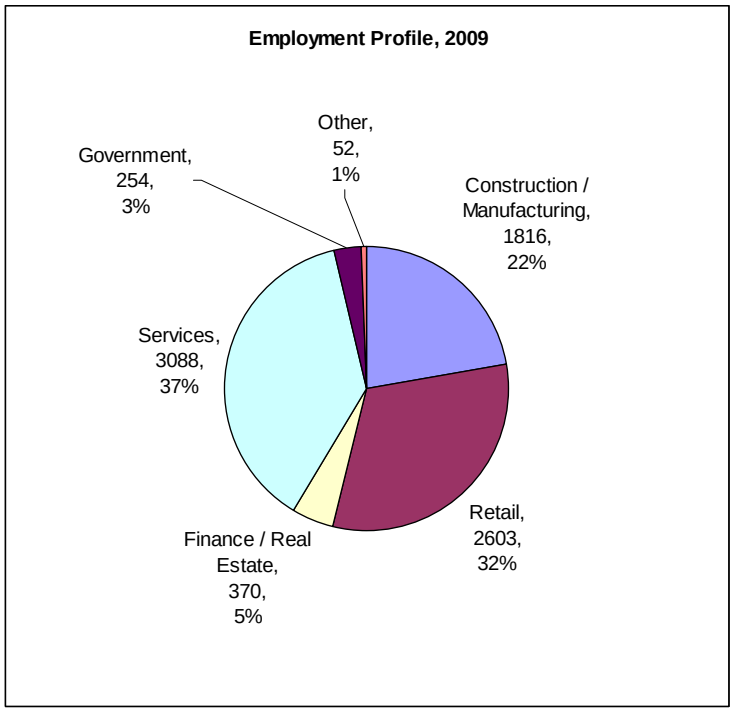
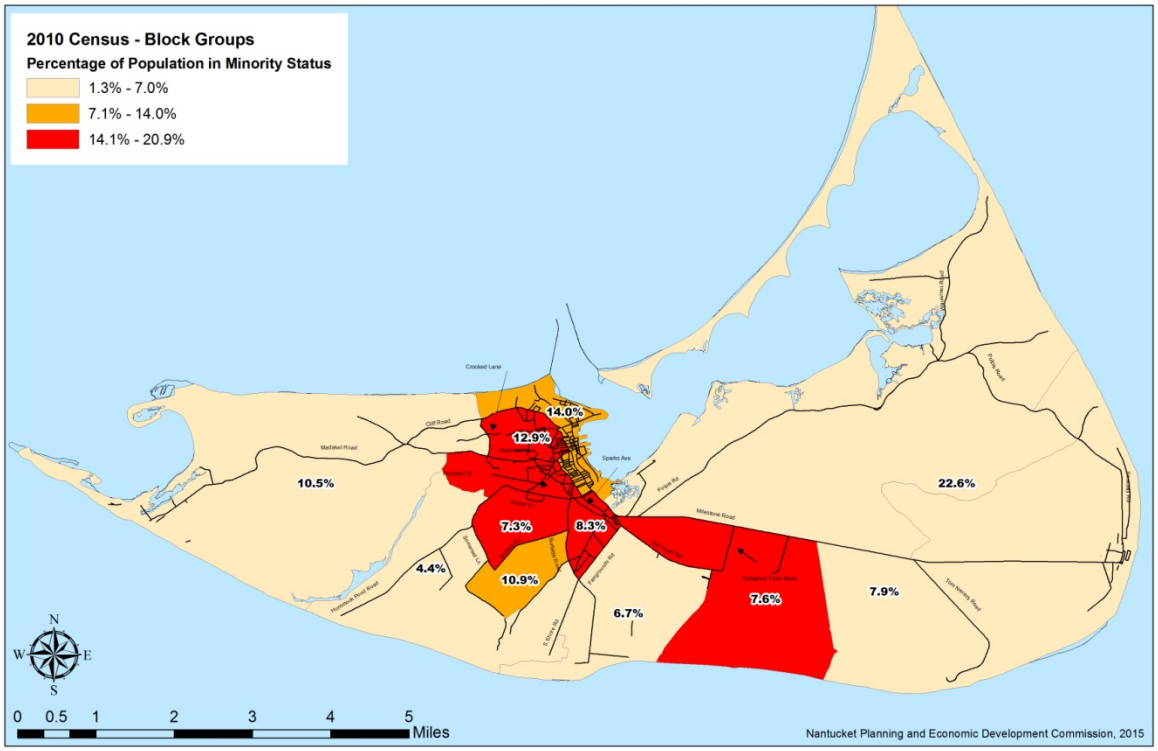


Figure 1 details the various employment sectors. As reflective of the seasonal tourist economy, most jobs are in the retail and service sectors. A large portion of the employment is also in construction and manufacturing, which is indicative of the growth the island experienced in the last 20 years.

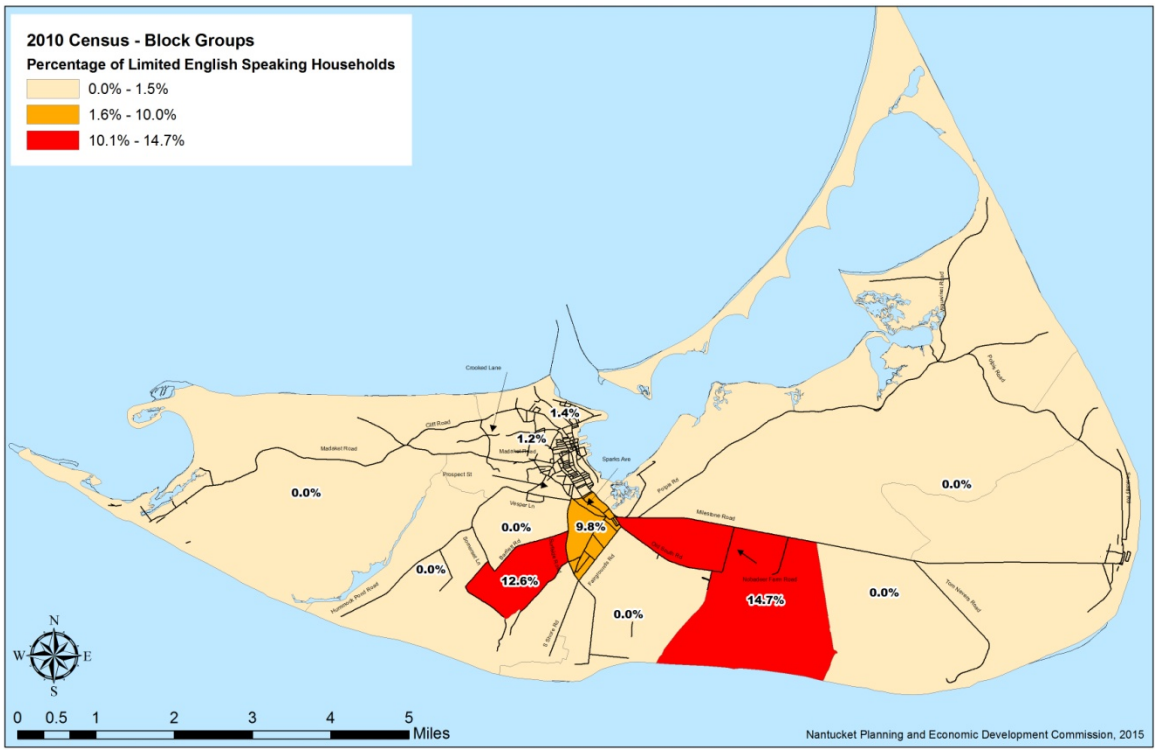
2.2.3. Environmental Justice and Title VI

Federal law requires observance of Title VI of the 1964 Civil Rights Act and Executive Order 12898, which govern impacts of transportation programs and projects in "Environmental Justice populations" (EJ), or neighborhoods with high minority, limited English proficiency, low-income, and foreign-born populations. The Title VI program for FHWA, FTA, and MassDOT also incorporates broader application of the program requirements to ensure protection and prohibit discrimination or disproportionate adverse impacts related to the transportation system based on gender, disability status, and age.

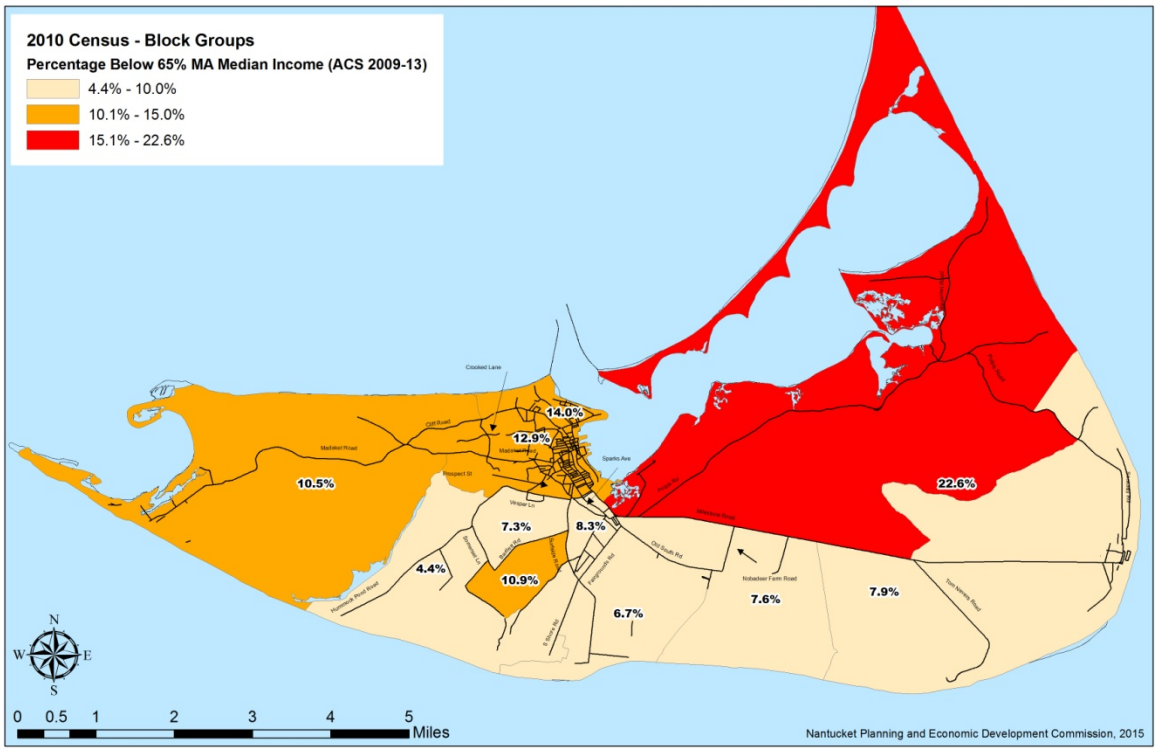
The maps below depict the EJ and Title VI populations on Nantucket that were identified with data from the American Community Survey (ACS) for 2009-2013. The areas with higher concentrations of lower income, minority, limited English proficiency, and/or disabled populations are primarily in the mid-island and Airport area neighborhoods. These areas are also within the Town Overlay District where not only density and future growth are focused, but also transportation services and facilities, such as public transportation and multi-use paths, are available or future investments in this infrastructure is targeted.



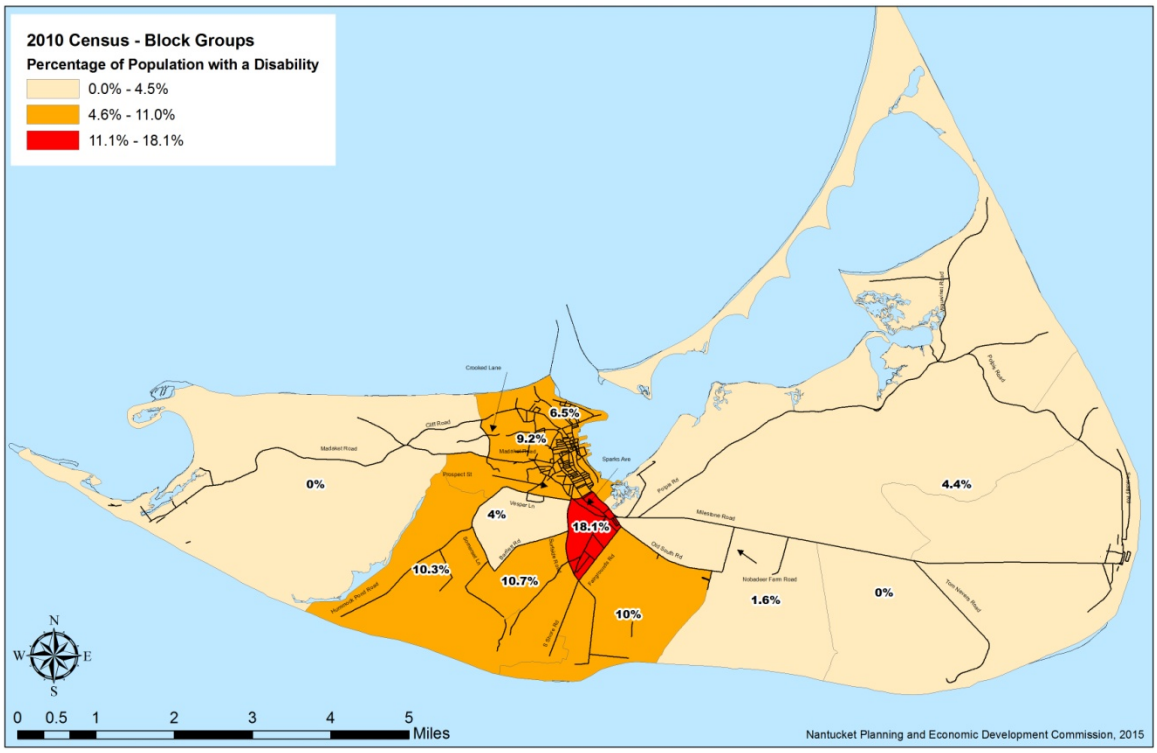
Map 3. Percentage of Population Minority (ACS 2009-13)



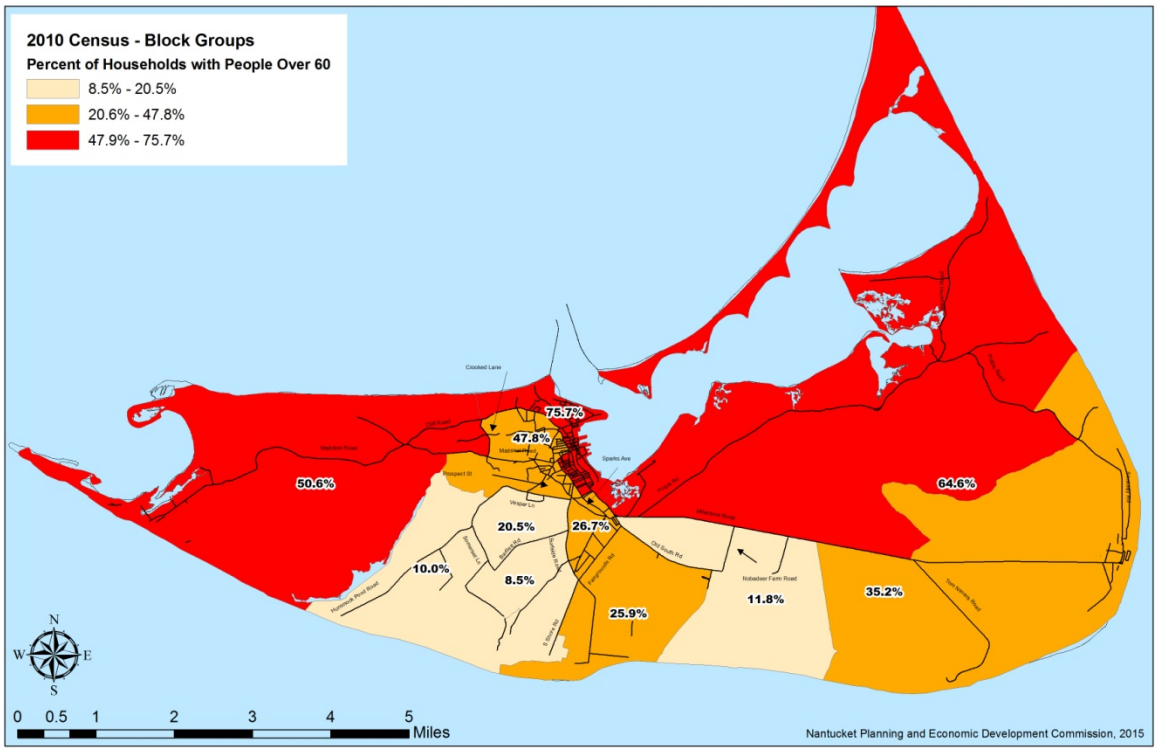
Map 4. Percentage of Limited English Speaking Households (ACS 2009-13)



Map 5. Population less than 65% MA median income (ACS 2009-13)



Map 6. Percentage of Population with a Disability (ACS 2009-13)



Map 7. Percent of Households with People Over 60 (ACS 2009-13)

2.3. HISTORIC, ENVIRONMENTAL, TRIBAL RESOURCES

2.3.1. Historic Resources

The Nantucket community has done an excellent job of preserving historic structures, which has been enforced through the designation of the island as a Historic District. However, there continues to be a need to recognize the defining elements of Nantucket's cultural landscape, facades, gardens, and open spaces and how they relate to one another. That is Nantucket's historical heritage. Renovated historic buildings can be adapted to new uses in ways that are sensitive to their historic architecture, such as the Academy Hill School conversion to elderly housing. Preserving the historic pattern of neighborhoods, as well as improving the quality of existing neighborhoods that are out of character with the local building tradition, is also an important means to blend development demands with the historic heritage.

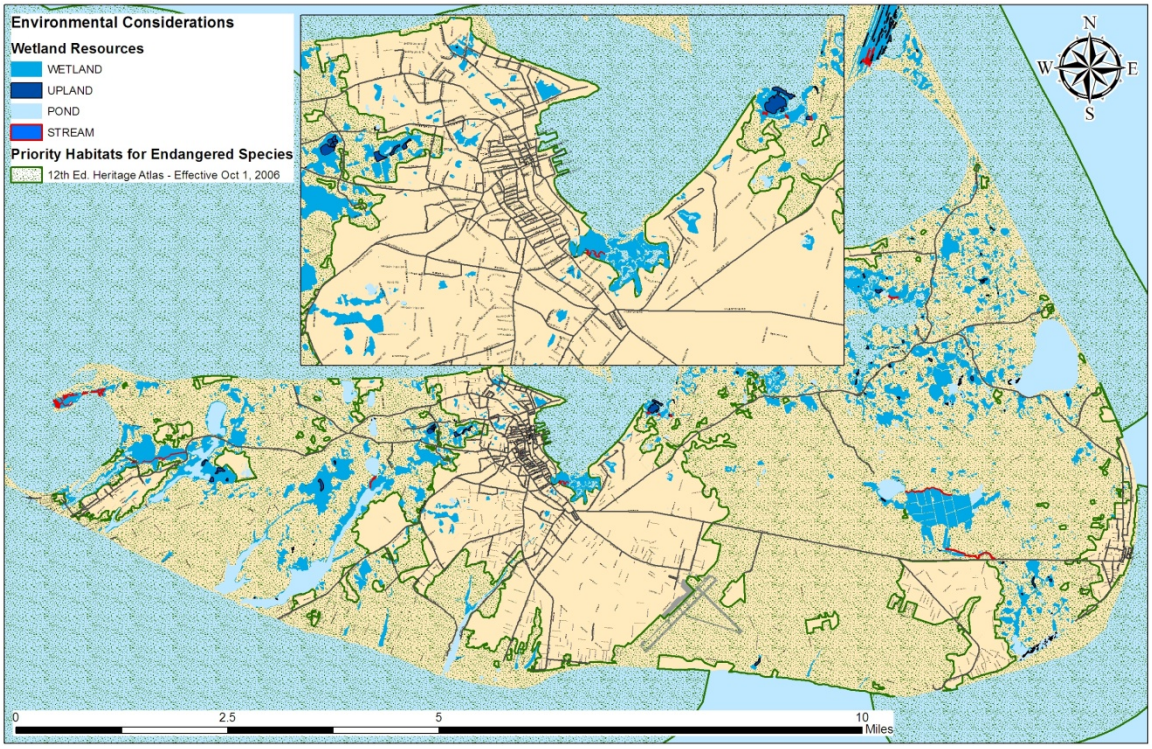
The transportation system can assist in blending the prevalent historic character into areas that lack this influence. As noted in the Section 3 – Goals and Objectives, this can be accomplished with a strategy of using an historic and walkable street pattern of interconnected streets with the use of paving materials and standards found in the more historic areas of the island. This can also be accomplished with early coordination with the Historic District Commission, which is charged with architectural review of structures, and the Historical Commission, which is charged with archeological and historical resource preservation.

2.3.2. Environmental Resources

The Nantucket community has also done an excellent job of acquiring land for conservation. More than 60% of the island is classified tax-exempt, which consists of some Town government uses, but is mostly conservation land and open space. To protect primary habitat and water resources, it is necessary to continue funding and to focus efforts on maintaining their integrity, as well as support planning and community initiatives that enhance natural resource protection.

Map 8 below depicts the location of primary habitats for endangered species and various categories of wetlands on Nantucket. As noted in the goals and objectives, improvements to the transportation system should protect and enhance these resources, and should be considered along with the economic benefit of an improvement project.

Through cooperation with regulatory and permitting agencies, Nantucket has completed projects, such as the Hummock Pond, Polpis, and Cliff Road bike paths, that have involved impacts to both wetland and rare/endangered plant populations. Mitigation of these impacts has included, in cases of wetland impacts, creation of addition wetland areas and, in cases of rare plant impact, the relocation of the impacted plant populations. Both of these efforts included mitigation activities in the immediate vicinity of the project and impact area.



Map 8. Environmental Considerations

2.3.3. Tribal Resources

The NP&EDC and the Town of Nantucket routinely coordinate with the Tribal Historic Preservation Officer of the Wampanoag Tribe of Gay Head (Aquinnah) as part of the Massachusetts Historic Commission's required systematic and detailed archeological field investigations in connection with Federal and State funded transportation projects for the purpose of locating and identifying archaeological cultural resources affected by a project, as well as evaluating the possible effects of the project on any cultural resources. As part of the development of this plan, the NP&EDC provided a listing of recommended projects to the Tribe's Preservation Officer for review. There were no comments on these recommendations.

2.4. DEMOGRAPHIC FORECASTS

2.4.1. Forecasting Methods

As part of developing the Regional Transportation Plans, all MPOs are required to develop demographic projections for the year 2040. These projections were developed in coordination with MassDOT's Office of Transportation Planning (OTP). OTP considered overall statewide and national trends in forecasting initial regional totals for 2040 as follows: The 2040 population projection (Table 7) is an extrapolation of the annual numeric change between 2000 and 2025, an assumption that reflects the relatively constant rate of growth in most regions since 1980.

Two new pieces of information released since 2010 support a different extrapolation methodology to estimate 2040 regional employment levels. The new data are 2040 age group projections for Massachusetts by the Census Bureau and 2030 age group labor force participation

rate projections for the nation by the Bureau of Labor Statistics. These data are used to construct a model for projecting growth in the labor supply, and hence employment. The model results show that employment growth is likely to be far lower between 2025 and 2030 than in previous periods. This is due to the large number of retiring baby-boomers compared with the fewer number of labor force entrants. Therefore, instead of applying the annual employment change between 2000 and 2025, the 2030 employment projection (Table 8) is an extrapolation of 50% of the annual change between 2000 and 2025. This percentage better reflects the projected slower growth in the labor supply, as well as continued in-migration from abroad (immigration) and continued out-of-state commuting in many regions.

All regional totals were developed with the review and input of other MPO members. The regional planning agencies provided municipal estimates based on past and current trends, development and "build-out" information, local knowledge, and other factors.

2.4.2. Population Forecast

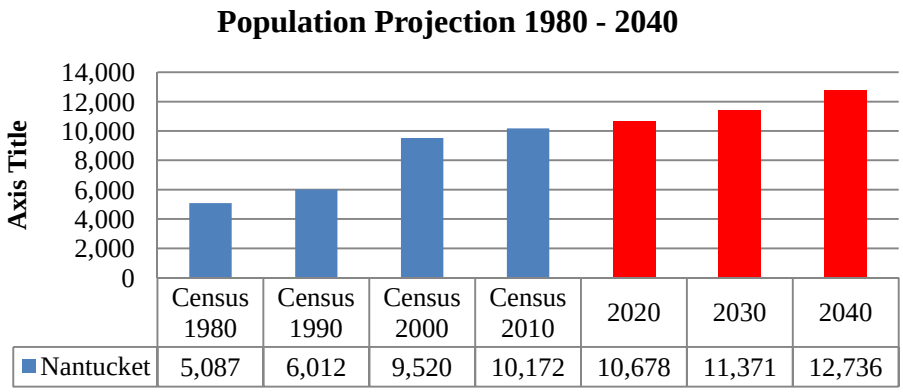


Table 7. Year-Round Population Forecast

2.4.3. Employment Forecast

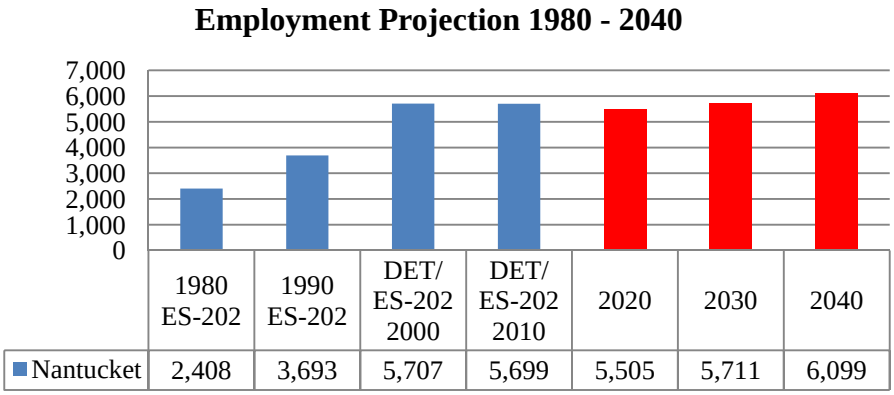
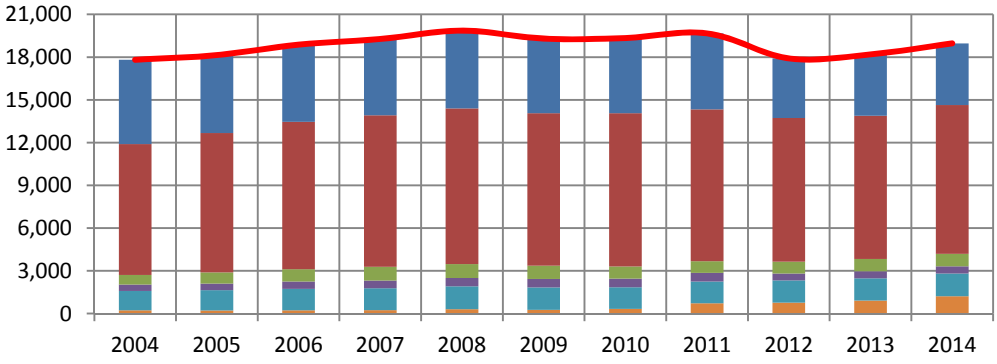


Table 8. Employment Forecast

2.5. VEHICLE STATISTICS

This section provides data concerning the quantity and type of vehicles registered on Nantucket. The data for this section was compiled using the 2000 Census and data from the Registry of Motor Vehicles.

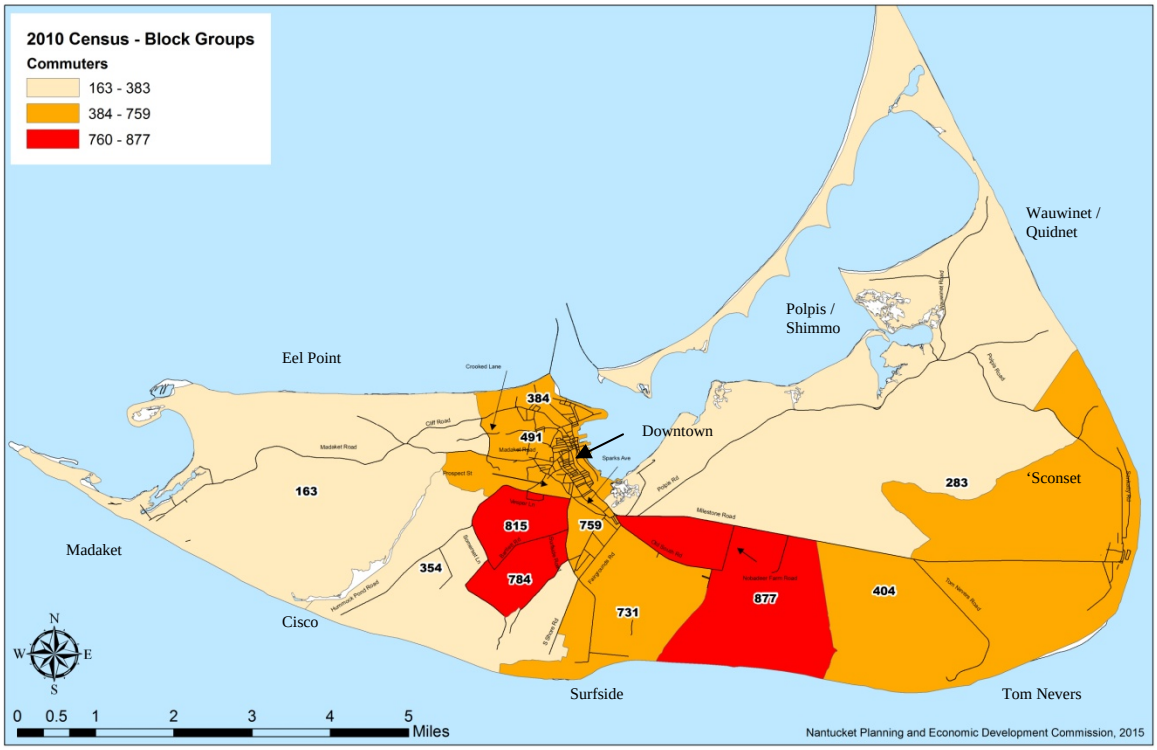
Table 9 shows the number of registered vehicles, by type, from 2000 to 2010. The table shows that the number of registered vehicles has dramatically increased until 2007 when there was a slight drop and leveling-off of the growth trend.



	Jul-04	Jul-05	Jul-06	Jul-07	Jul-08	Jul-09	Jul-10	Jul-11	Jul-12	Jul-13	Jul-14
Passenger Cars	5,925	5,472	5,415	5,357	5,455	5,237	5,278	5,333	4,183	4,316	4,329
Light Trucks	9,176	9,784	10,341	10,628	10,934	10,706	10,756	10,659	10,090	10,050	10,440
Heavy Trucks	678	779	874	972	975	927	856	825	831	859	878
Motorcycles	444	464	509	534	583	594	606	598	485	495	509
trailers	1,361	1,422	1,508	1,538	1,602	1,569	1,509	1,530	1,554	1,561	1,587
Other	233	224	229	244	312	268	334	726	772	915	1,222
Total	17,817	18,145	18,876	19,273	19,861	19,301	19,339	19,671	17,915	18,196	18,965

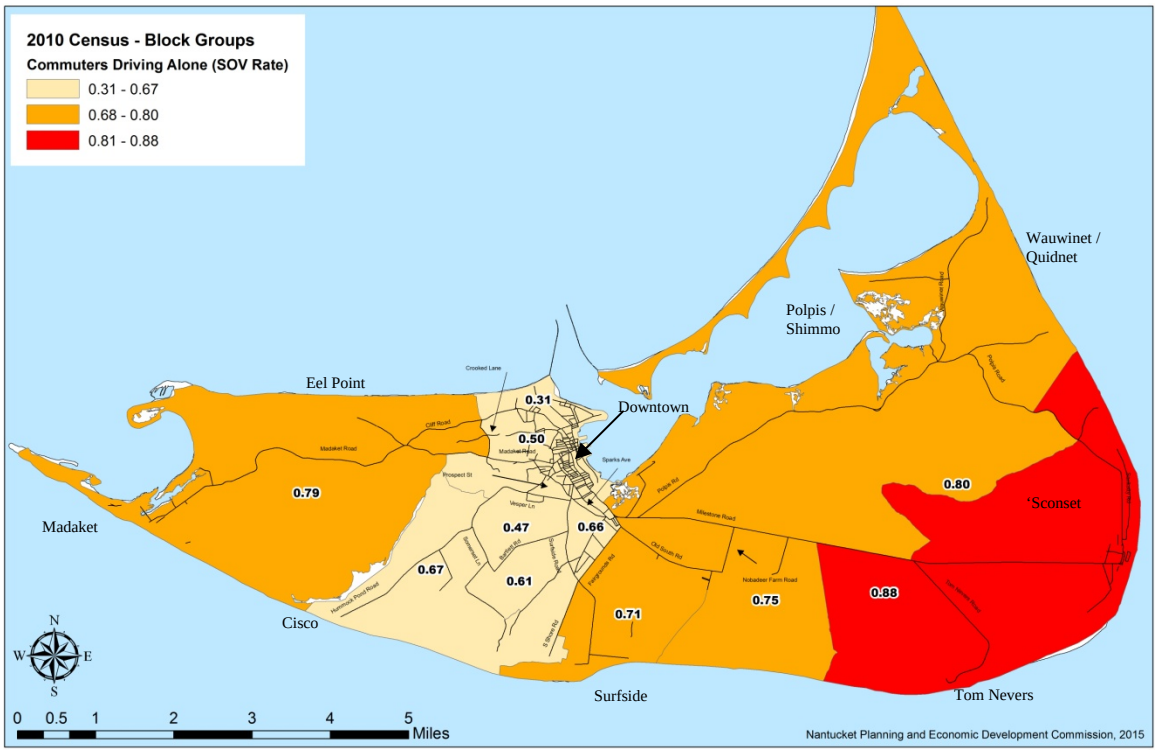
Table 9. Vehicle Registration by Type, 2004 to 2014 (MassDOT)

2.6. COMMUTER CHARACTERISTICS



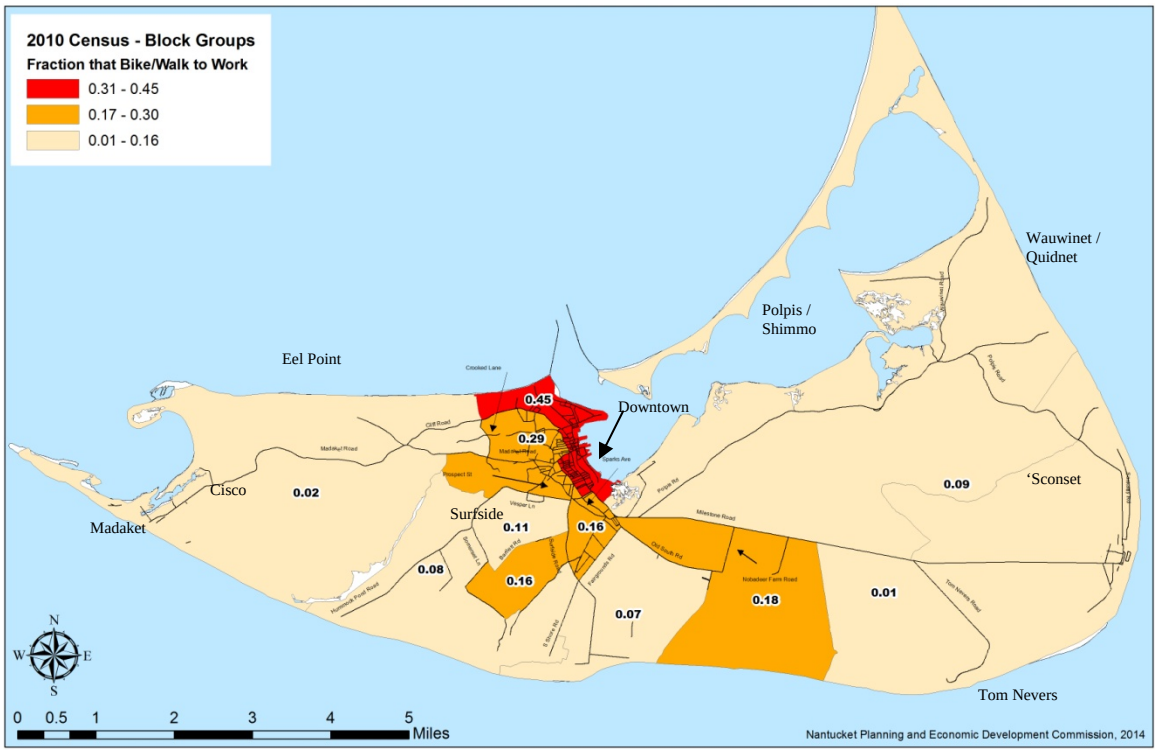
Map 9. Total Year-Round Work Commuters (ACS 2009-13)

Map 9 shows the areas of the island where all commuters originate by census block. It can be seen that a majority of commuters live in and around the mid-island portion of Nantucket, which corresponds with the concentration of year-round residents.



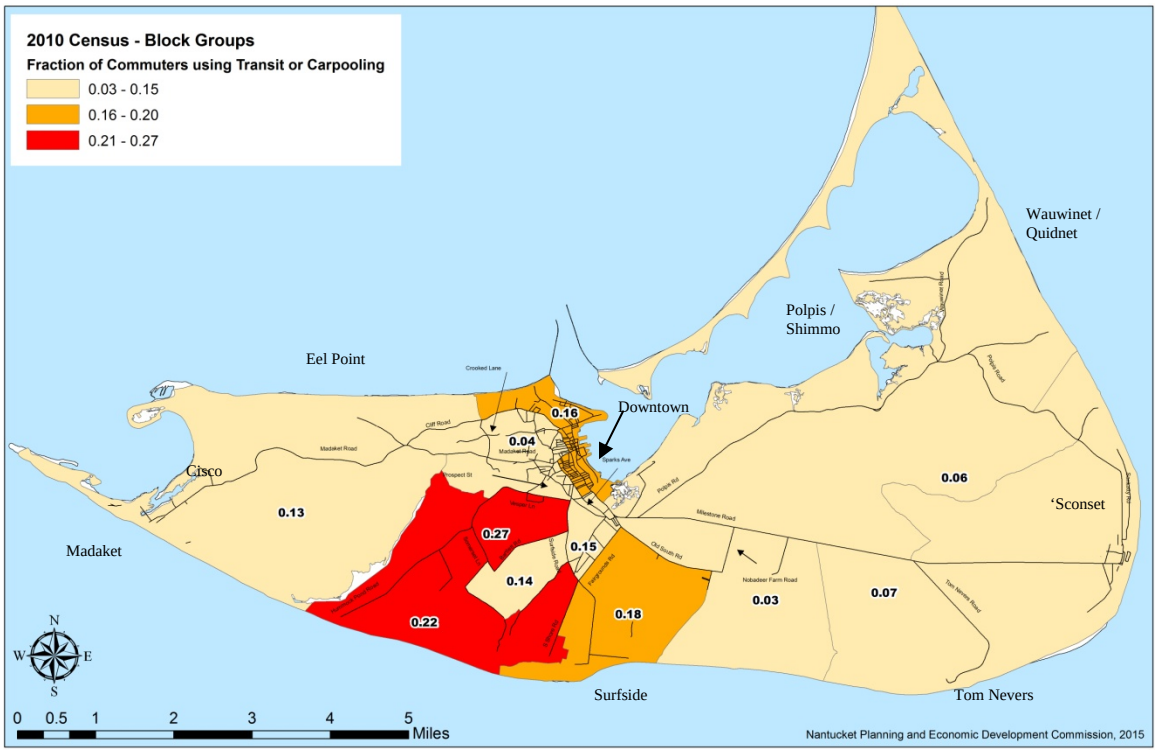
Map 10. Fraction of Population Driving Alone (ACS 2009-13)

Map 10 depicts the percentage of the population within each census block that commutes to work by driving alone. This map shows that the highest rate of commuters driving alone to work (88%) is in the Tom Nevers and Sconset areas of the island, which are the furthest from the downtown and mid-island commercial areas. The map also shows that areas closer to these commercial areas have lower rates of commuters driving alone.



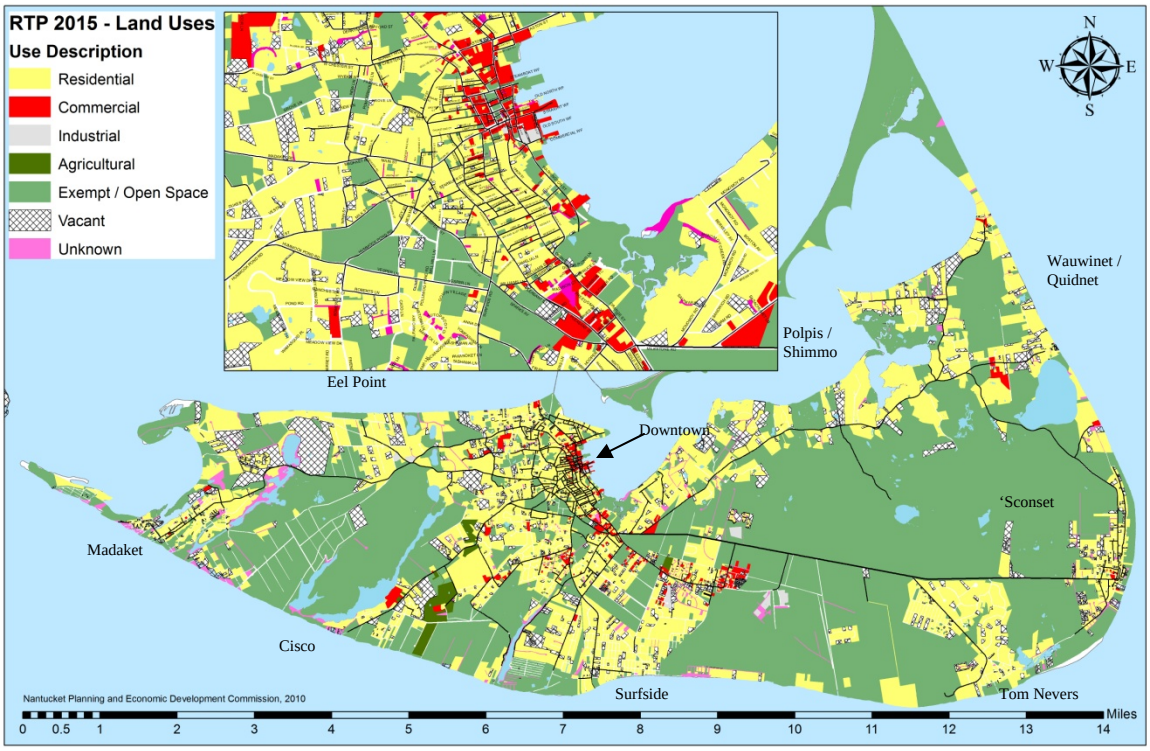
Map 11. Fraction of Population that Walk or Bike (ACS 2009-13)

Map 11 depicts the percentage of the population within each census block that walks or bikes to work. As is suggested in the map of commuters that drive alone, the areas closer to the downtown and mid-island commercial areas tend to have higher rates of walking and biking.



Map 12. Fraction of Commuters using Transit or Carpooling (ACS 2009-13)

Map 12 shows the percentage of the population of each census block that commute in groups (carpool or use transit). It can also be seen that Fairgrounds/South Shore and the Hummock Pond / Cisco areas have high percentages of the population that commute in groups.



Map 13. Land Use Map

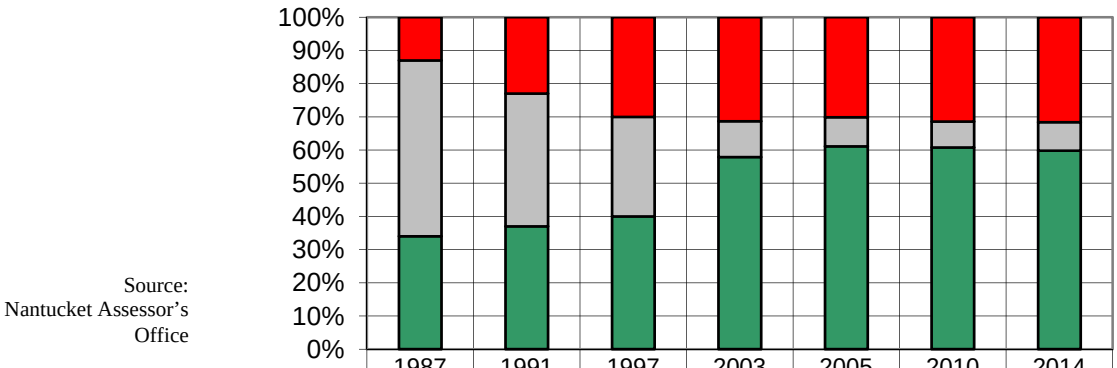
2.7. LAND USE

There is approximately 30,000 acres of land on Nantucket. The predominant land use is for Exempt / Open Space (conservation and/or government properties), although another significant portion of the island is residential (see Map 13). The high demand for housing, particularly for seasonal vacation homes, has meant that Nantucket continues to face intensive development pressure. Recent residential growth has occurred most often outside of the historic core district where suburban-style development has replaced former open areas.

2.7.1. Land Use

Table 10 shows, according the Nantucket Town Assessor, how much of the island is developed, vacant, or of tax-exempt status. The figure shows that almost 32% of the island is developed and almost 60% of the island's area is in tax-exempt status (government, conservation, open space).

Table 10. Trend of Developed, Vacant, or Exempt Land



Source: Nantucket Assessor's Office

	1987	1991	1997	2003	2005	2010	2014
Developed	13.0%	23.0%	30.0%	31.3%	30.1%	31.4%	31.6%
Open to Development (Vacant)	53.0%	40.0%	30.0%	10.8%	8.8%	7.8%	8.6%
Exempt Property (Public, Conservation, Open Space)	34.0%	37.0%	40.0%	57.8%	61.1%	60.8%	59.8%

Figure 2. Land Use Chart

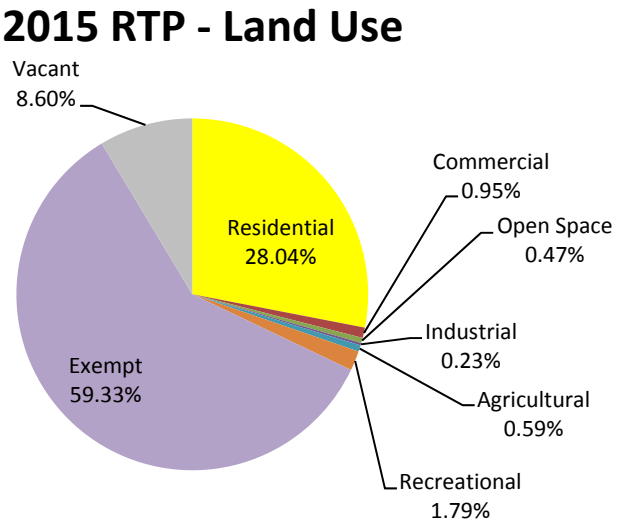


Figure 2 is a breakdown of the island's total area by type of land use. It can be seen that a significant portion (59.33%) of the developed land is classified as Exempt (public, conservation, or open space).

Exempt Property

This category includes all property that is exempt from taxation under various provisions of the law and owned by either governmental (e.g., Town of Nantucket) or private conservation agencies, such as the Nantucket Conservation Foundation and Nantucket island Land Bank.

Residential
There are 8,119 acres devoted to residential development on the island, which is 28% of the total acreage on the island. Considering that only about 32% of the island is developed, residential use accounts for about 85% of this developed land.

Open Space
Open space include woodlands, quarries, water (ponds), sand pits, and wetlands.

Commercial
There are 274 acres, or 1% of the island, utilized for commercial activities. Presently, the commercial land is concentrated primarily in downtown Nantucket and the center of the island, known as the "mid-island", with some commercial and light industrial uses running along a transportation network spine from the Milestone Rotary (intersection of Old South Road, Lower Orange Street, Sparks Avenue and Milestone Road) east along both sides of Old South Road to the Airport (see Map 10). The commercial zone also extends from the Rotary northwest along Sparks Avenue and Pleasant Street.

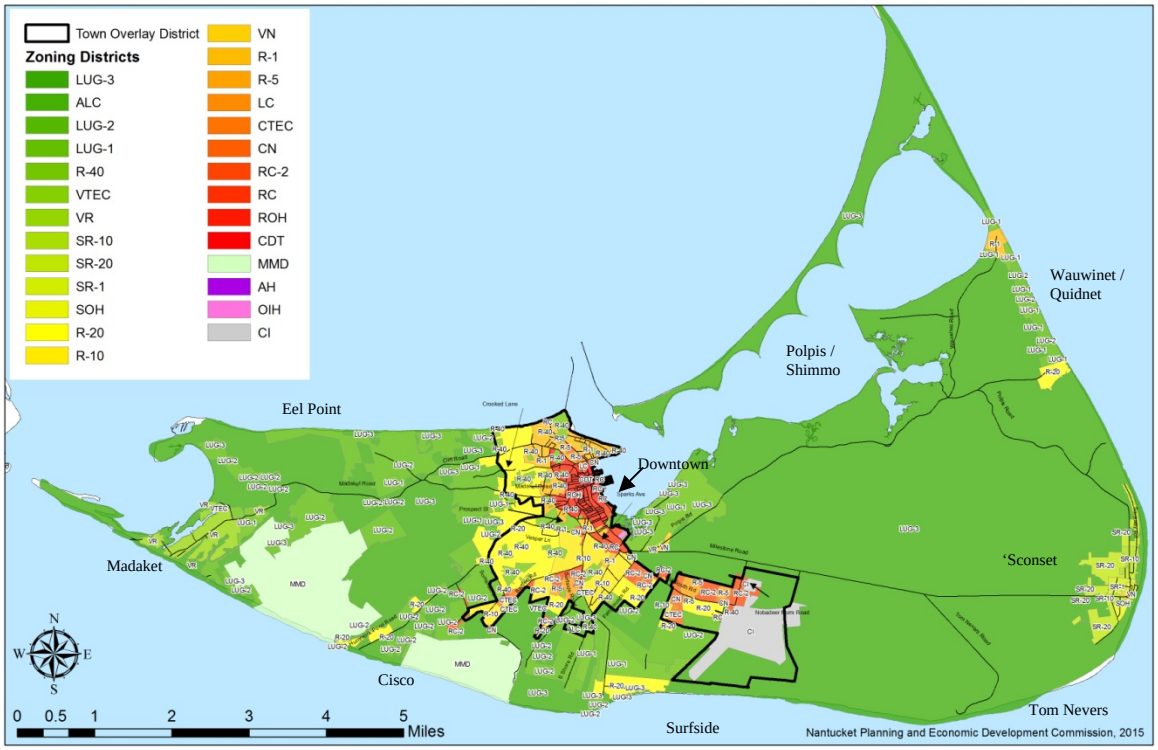
The commercial uses consist of retail and service-oriented businesses, some of which are seasonal and located in the downtown core district. Minor commercial uses also include workshops and construction-related businesses, many of which are based out of homes.

Agricultural
Approximately 169.9 acres, or 0.6%, of land is devoted to agricultural use. Bartlett's Ocean View Farm and Moor's End Farm are the largest working farms on Nantucket.

Recreation
Recreational land uses include areas associated with active outdoor recreation. Examples are golf courses, beaches and athletic fields. The Nantucket Park and Recreation Commission currently has jurisdiction of over 135 acres of property. Commission-managed properties include Jetties Beach, Children's Beach, Francis Street Beach, Mill Hill, Dead Horse Valley, Siasconset Beach, Surfside Beach, Madaket Beach, Dionis Beach, Coffin Park, the Teen Center, the Nantucket Youth Fields and the former U.S. Navy Base at Tom Nevers. A total of eleven buildings, six tennis courts, seven parking areas and three play areas are included. It should also be noted that the Nantucket County Fair is held annually on Tom Nevers Recreational Facility property.

Industrial
Light industrial uses are only a small portion of Nantucket's developed land area. Nantucket's light industrial land uses are the utilities and power generation facilities and several construction related non-manufacturing industries such as asphalt production, grading and excavation. A number of the island's light industrial, construction and storage facilities are located along Old South Road and the area surrounding the Nantucket Memorial Airport. An industrially zoned area is located off of Milestone Road in an area west of the Airport, along New South Road, Industry Road and Shadbush Road, is a preferred location for relocating less desirable industrial uses that exist in residential and commercial areas.

Since the installation of an electric cable (January 1997), which supplies electricity to Nantucket from the mainland, the 2.11 acre electricity generating facility located in the downtown core district has been inoperative. Backup generators are located at the airport. This location has also been the subject of the Town's Wilkes Square Redevelopment Study, which is referenced throughout this plan.



Map 14. Zoning Map

2.8. ZONING BYLAW

Map 14, the Nantucket Zoning Map, details the zoning districts established in the Nantucket Zoning Bylaw, originally adopted in 1972 and revised periodically at Town Meeting. The intent of the Nantucket Zoning Code is to "promote the health, safety, convenience, morals and general welfare of its inhabitants, to lessen the danger from fire and congestion and to improve the town under the provisions of the State Zoning Act, Massachusetts General Laws, Chapter 40A, the use, construction, repair, alterations and height of buildings and structures and the use of land and size and shape of lots in the Town of Nantucket are hereby restricted and regulated as hereinafter provided."

Single-family dwellings are permitted most zoning districts except for the R-5 Limited, R-10 Limited, Commercial Industrial district and the special districts for Our Island Home (OIH), Academy Hill (AH), and the Assisted/Independent Living Community District (ALC). Additionally, most parcels are permitted a second dwelling if certain conditions are met. For instance, the secondary dwelling must have 20% less ground coverage than the primary dwelling and meet minimum separation requirements.

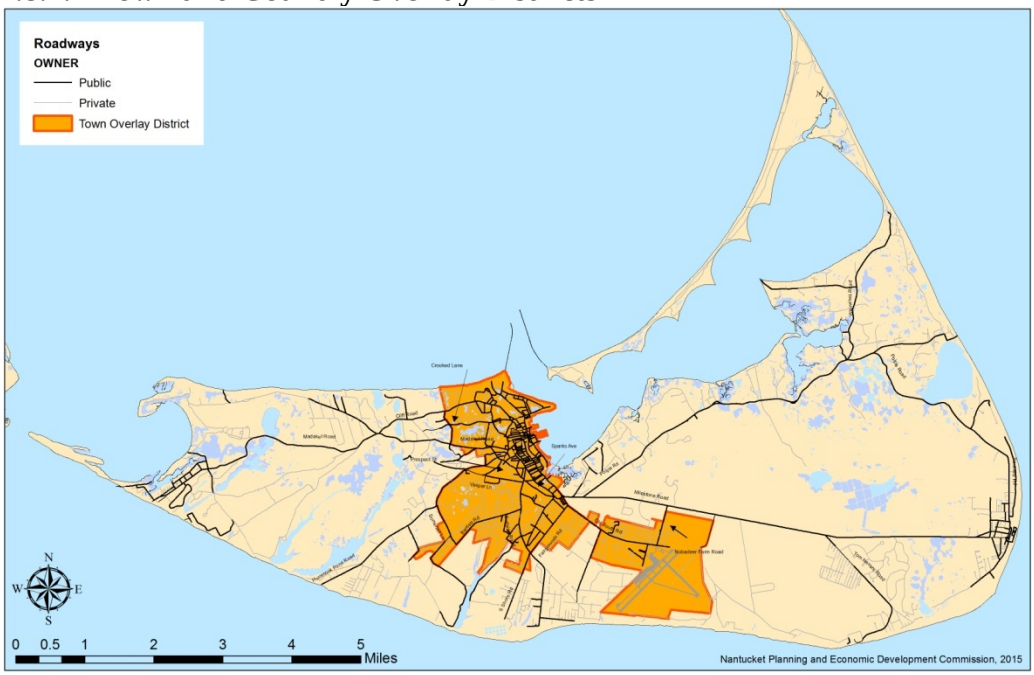
Nantucket's residential zoning districts can be categorized as high-density residential, medium-density residential and low-density residential. The zoning districts that allow high-density residential units are in the downtown core area, mid-island, Siasconset, and Wauwinet. Medium-density residential districts generally occur outside of the core area to the west, mid-island, along the western-most portion of Polpis Road, in Madaket, in the periphery of Siasconset and near Nobadeer Beach (see the following Table 11, Summary of Nantucket Zoning Code).

Table 11. Summary of Nantucket Zoning Code

Zoning	Min. Lot Size	Min. Frontage	Front Yard Setback	Ground Cover Ratio
Low Density Residential				
Limited Use General 2 (LUG-2)	80,000 sq. ft.	150 ft.	35 ft.	4.0%
Limited Use General 3 (LUG-3)	120,000 sq. ft.	200 ft.	35 ft.	3.0%
Special District: Moorlands Management District	10 Acres	300 ft.	50 ft.	0.5%
Medium Density Residential				
Limited Use General 1 (LUG-1)	40,000 sq. ft.	100 ft.	35 ft.	7.0%
Residential 40 (R-40)	40,000 sq. ft	75 ft.	30 ft.	10.0%
Village Residential (VR)	20,000 Sq. ft.	100 ft.	30 ft.	10.0%
Residential 10 (R-10)	10,000 sq. ft.	75 ft.	20 ft.	25.0%
Residential 20 (R-20)	20,000 sq. ft.	75 ft.	30 ft.	12.5%
Sconset Residential 10 (S-10)	10,000 sq. ft.	75 ft.	20 ft.	25.0%
Sconset Residential 20 (S-20)	20,000 sq. ft.	75 ft.	30 ft.	12.5%
High Density Residential				
Residential 1 (R-1)	5,000 sq. ft.	50 ft.	10 ft.	30.0%
Sconset Residential 1 (SR-1)	5,000 sq. ft.	50 ft.	10 ft.	30.0%
Residential 5 (R-5)	5,0000 sq. ft	50 ft.	10 ft.	40.0%
Sconset Old Historic (SOH)	5,000 sq. ft.	50 ft.	None	50.0%

Residential Old Historic (ROH)	5,000 sq. ft.	50 ft.	None	50.0%
High Density Commercial/Mixed Use				
Residential Commercial (RC)	5,000 sq. ft.	40 ft.	None	50.0%
Residential Commercial 2 (RC-2)	5,000 sq. ft.	40 ft.	10 ft.	50.0%
Commercial Mid-Island (CMI)	5,000 sq. ft.	50ft.	None	50.0%
Commercial Neighborhood	7,500 sq. ft.	50 ft.	10 ft.	40.0%
Commercial Trade, Entrepreneurship, and Craft (CTEC)	10,000 sq. ft.	50 ft.	10 ft.	40.0%

2.8.1. Town and Country Overlay Districts



Map 15. Town Overlay District

At the 2002 Annual Town Meeting, the Town of Nantucket approved the creation of a Town Overlay District (TOD) and a Country Overlay District (COD), as seen in Map 15. The purpose of the TOD is to:

1. Limit the spatial extent of growth consistent with the traditional settlement pattern;
2. Encourage development within the Town Overlay District where infrastructure already exists, or can be extended;
3. Produce housing affordable for year-round residents through infill development; and to

4. Create development patterns that are conducive to service by alternatives to the automobile, such as transit, and bicycle and pedestrian systems.

While development is encouraged in the TOD, the COD is intended to preserve areas characterized by traditional and historic rural land use patterns.

In more recent Town Meetings, implementation of the Town and Country Overlay Districts has occurred through the adoption of new zoning districts, the re-organization of zoning districts into "Town" districts and "Country" districts, and the rezoning of many areas to conform to the "Town" and "Country" concepts. These initiatives have been supported through the passage of numerous warrant articles at Town Meeting and through their inclusion in the Nantucket Master Plan.

2.9. COMMUNITY PLANS

Development of Nantucket Master Plan ("Master Plan" hereafter) in accordance with M.G.L. Chapter 41 Section 81D began in 2005. A questionnaire was included in the 2006 Town census and non-binding ballot questions were voted at the election polls that same year. Zoning articles to test the direction of the Master Plan were included in the Annual and Special Town Meeting Warrants beginning in 2006.

In 2009, the Master Plan was approved by the Planning Board. The NP&EDC also reviewed the Master Plan in anticipation of the potential passage of the Land Use Partnership Act (LUPA). In compliance with that legislation, the plan was determined to be complete. In addition, the Master Plan was accepted by the Town through a unanimous vote in favor of Article 26 at the 2009 Annual Town Meeting.

The Master Plan includes many goals and objectives regarding transportation that are included in this plan. Many of the recommendations included in the Master Plan are updates from previous planning documents such as the *Nantucket Comprehensive Community Plan* (2000) and the *1990 Goals and Objectives for Balanced Growth*.

2.9.1. Area Plans

Various areas of the island have had planning documents developed and accepted by the NP&EDC. The first of these plans was initiated by the Mid-Island Partnership, which was large association of businesses located outside the Downtown area, by petitioning the NP&EDC for the formation of a Mid-Island Area Plan Work Group.

On May 5, 2001, the Partnership petitioned the Commission to form the Mid-Island Work Group, which was approved on May 7, 2001. The Mid-Island Area Plan was adopted by the Nantucket Planning Board on March 3, 2003, and many of the recommendations of the plan were related to the transportation system and have been incorporated into this RTP.

The Siasconset Area Plan, which covers the village of Siasconset on the eastern end of the island, was the second area plan approved by the NP&EDC. Although no recommendations were relevant to the scope of the RTP (such as intersection improvements or bike path additions),

other recommendations have been implemented and incorporated into the Nantucket Master Plan.

Madaket Area Plan, Surfside Area Plan, and Brant Point Area Plan were subsequently developed by the NP&EDC, but there also were no recommendations relevant to this RTP.

2.9.2. Planning and Study Documents

The following transportation documents have been approved or accepted by the NP&EDC:

2.9.2.1. Roadways

1. *Downtown Circulation and Ferry Access Improvement Study.* Prepared by Milone and MacBroom, March 2008.
2. *Four Corners Intersection Evaluation.* Prepared by Vanasse Hangen Brustlin, June 2008.
3. *Town of Nantucket MassDOT Road Inventory (Pavement Management Report).* Prepared by MACTEC Engineering and Consulting, July 2011

2.9.2.2. Public Transportation

1. *Park and Ride System.* Prepared by TetraTech Rizzo, March 2010.
2. *Regional Transit Plan.* Prepared by URS Corporation. Final Plan not available as of May 2015.

2.9.2.3. Bicycle and Pedestrian

1. *Update of the Nantucket Bicycle and Pedestrian Master Plan.* Prepared by Greenman-Pedersen, Inc., September 2005.
2. *A Plan for the Improvement of Nantucket's Downtown Sidewalks with Recommendations.* Prepared by the Nantucket Roads and Right of Way Committee. June 2015.

2.9.2.4. Parking

1. *Downtown Parking Study*. Prepared by TetraTech Rizzo, February 2010.

2.9.2.5. Other Reports

1. *Nantucket Economic Base Study Report.* Prepared by RKG Associates, June 2002.
2. *Wilkes Square Redevelopment Study.* Prepared by CBT Architects, February 2010

3. NP&EDC GOALS AND OBJECTIVES

3.1. OVERVIEW

The goals and objectives in this section encompass a comprehensive system of solutions based on the notion that no single measure alone is capable of solving the island's transportation safety and congestion problems. As noted in Section 1.1, the community's principal role is to provide a quiet, rural, scenic, and historic setting for residents and visitors. This role, and the future health of the tourism industry, would be greatly impaired if the community pursues a transportation policy that would alter the island's rural and historic character.

Although the automobile may be the mode of choice for many visitors and residents, contemporary solutions to traffic and parking problems characterized by automobile-oriented functions and aesthetics should not be applied to Nantucket. In order to retain its rural and historic character, community practice has rejected building more streets, widening country roads, adding turning lanes, and installing traffic signals.

Considering the need to preserve the historic and environmental qualities of the island, the community's transportation vision for the next 25 years is to: **1) manage the use of cars on Nantucket while, 2) providing a transportation system that is safe, convenient, economical, and sensitive to the character of the island**.

The eight emphasis areas for the goals that will address these challenges are:

- Town and Country
- Multi-modal
- Congestion and Safety Balance
- Environmental and Historical Sensitivity
- Transport between the Mainland
- Parking Management
- Wayfinding
- Telecommunication

3.2. TRANSPORTATION GOALS

TOWN AND COUNTRY

3.2.1. Continue using the Town and Country overlay districts to guide development and infrastructure investments.

3.2.1.1. Adopt and implement a policy concerning the improvement, maintenance, or acquisition of roads consistent with the Town and Country concept.
Measure: All TIP and local capital roadway projects will be evaluated for location within the Town or Country overlay district.

3.2.1.2. Seek official designation to preserve the scenic integrity of the island's four scenic roads: Madaket Road, Polpis Road, Milestone Road, and Wauwinet Road.
Measure: Submit roadway to authorized agencies for consideration.

3.2.1.3. Require a street configuration for subdivisions in or near villages that is consistent with historic village patterns and connects streets.
Measure: All proposed subdivision roadways consider neighboring roadway materials and aesthetics when submitted for review.

MULTI-MODAL

3.2.2. Offer an array and interconnection of transportation modes to the traveling public.

3.2.2.1. Expand and maintain an island wide system of shared-use paths, recreational trails, and sidewalks by seeking funding to repair, modify, and install accessible and obstruction-free sidewalks and paths between the following areas: ferry terminals, downtown public and cultural areas, bike paths adjacent to the downtown area, the Hospital, Schools, and mid-island commercial areas.
Measure: Submit at least one bike and pedestrian project annually to the Capital Project Committee for funding consideration.

3.2.2.2. Coordinate the Town's efforts to construct bicycle and pedestrian facilities with those of private developers who contribute to the construction of on-site and off-site paths as a condition for approval.
Measure: Evaluate the proximity of all proposed developments to RTP projects.

3.2.2.3. Coordinate with the DPW, Visitor Services, NRTA, and other agencies to identify location and quantity of bike racks that may be necessary in the core area, at the beaches, and at the Airport to encourage and facilitate bicycle use.
Measure: Evaluate bike rack utilization each summer season.

3.2.2.4. Seek supplemental funding from acceptable sources to increase frequency and expand hours of operation of shuttle service, to add ridership capacity, and induce greater utilization of the transit service.
Measure: Include at least one recommended improvement of the Regional Transit Plan in the annual Capital Plan.

3.2.2.5. Seek funding to design and construct taxi stand improvements along New Whale Street and Straight Wharf as recommended in the Wilkes Square Redevelopment Study, as updated.
Measure: Submit request annually to the Capital Project Committee for funding consideration.

CONGESTION AND SAFETY BALANCE

3.2.3. Rely on traffic control methods that reduce congestion while maximizing public safety and livability.

3.2.3.1. Consider the degree of a project's safety improvement as a key factor in evaluating and prioritizing projects for the Transportation Improvement Program.
Measure: Evaluate safety as part of the prioritization of projects for the TIP.

3.2.3.2. Institute a variety of traffic-calming measures to slow the speed of traffic and create more pedestrian-friendly streets in the downtown and mid-island areas.
Measure: Conduct speed studies as part of the annual traffic data collection.

3.2.3.3. Develop alternative solutions to identified "problem intersections" along Milestone Road, Old South Road, and Pleasant Street for pedestrians and bicyclists.
Measure: Submit at least one "problem intersection" project annually to the Capital Project Committee for funding consideration.

3.2.3.4. Coordinate with School Administration to encourage walking and biking to the schools.
Measure: Meet with School Administration prior to the beginning and end of the school year to discuss accommodations for walking and biking to school.

3.2.3.5. Seek funding for roadway improvements along established truck routes and collector roadways that enhance safety and reduce traffic congestion.
Measure: Prioritize TIP projects located along collector roadways and truck routes.

3.2.3.6. Consider options recommended in the Downtown Traffic Study, as updated, to improve vehicle flow along roadways servicing ferry terminals.
Measure: Update data and/or recommendations of the study annually.

ENVIRONMENTAL AND HISTORICAL SENSITIVITY

3.2.4. Consider environmental and historical impacts of any transportation system improvement.

3.2.4.1. Evaluate environmental and historical impacts of proposed projects during the criteria scoring and prioritizing of the proposed project.
Measure: Prioritize projects based on minimized impacts to environmental and historical resources, and reducing contributions to and resiliency to Climate Change.

3.2.4.2. Include in construction agreements protocols for preventing and removing invasive species identified by the Natural Heritage & Endangered Species Program or the Nantucket Conservation Commission as part of any transportation improvement.
Measure: Include protocols in all construction contracts.

TRANSPORT BETWEEN THE MAINLAND

3.2.5. Ensure that transportation to and from the island is safe, convenient, economical, and sensitive to the various areas of the island.

3.2.5.1. Strive for the expansion of healthy and multi-modal transportation (i.e., sidewalks and public transportation) servicing the ferry providers and the Airport to reduce auto-dependency.
Measure: Submit at least one bike and pedestrian improvement in or around island ports annually to the Capital Project Committee for funding consideration.

3.2.5.2. Study all ferry wharves and adjoining streets to see how they can more efficiently handle visitor arrivals and departures.
Measure: Update data and/or recommendations of the Downtown Traffic Study annually.

3.2.5.3. Advocate for better use of voluntary noise abatement routes.
Measure: All noise complaints are collected and investigated by Airport Administration.

3.2.5.4. Limit non-compatible land uses under and adjacent to Runway instrument approaches and established noise abatement corridors.
Measure: Inform Airport Administration of all major developments in vicinity of the Airport.

3.2.5.5. Advocate for convenient and unimpaired access by water to and from the mainland, including affordable fares, to be provided to Nantucket residents at all times of year.
Measure: Coordinate annually with Steamship Authority Administration and analyze ferry traffic reports monthly.

3.2.5.6. Study the ways and means of encouraging smooth transitions between the ferries, the Airport, and Nantucket destinations, while reducing the traffic impacts.
Measure: Collect traffic data annually to track level of impact of ferry traffic.

3.2.5.7. Urge all ferry services to provide destination facilities with the number of walk-on passengers, so that an appropriate number of shuttles, taxis, and bicycles are available on arrival.
Measure: Include subject in annual discussions with SSA Administration.

3.2.5.8. Encourage scheduling of arrivals and departures of ferries that do not conflict with peak traffic periods in the vicinity of the ferry terminals.
Measure: Include review of scheduling in annual discussion with SSA Administration.

3.2.5.9. Renew talks with the ferry service providers to create of a mutual strategy to reduce congestion at the Steamship Authority and lower Broad Street.
Measure: Include review of scheduling in annual discussion with SSA Administration.

PARKING MANAGEMENT

3.2.6. Create options and management policies for parking in the downtown area.

3.2.6.1. Continue to suggest amendments to the Traffic Rules and Regulations that would better protect the economic viability of downtown commerce by improving on-street parking opportunities and reducing congestion in the downtown area.
Measure: Meet annually with parking stakeholders to review potential amendments.

3.2.6.2. Continue to review and suggest modifications to the on-street space available for commercial delivery vehicles.
Measure: Include subject in annual meeting with parking stakeholders.

3.2.6.3. Continue to evaluate alternative parking permit systems for the downtown area.
Measure: Include subject in annual meeting with parking stakeholders.

3.2.6.4. Identify and evaluate peripheral parking areas to provide additional parking options for the NRTA and downtown area.
Measure: Include subject in annual meeting with parking stakeholders.

3.2.6.5. Encourage the lodging establishments to provide or expand the use of vans whenever a parking waiver is granted by the Planning Board.
Measure: All proposed lodging establishments will be requested to evaluate service.

3.2.6.6. Promote the use of NRTA Park and Ride lots for downtown access as an alternative for island residents and visitors who reside beyond walking distance to existing shuttle routes.
Measure: Include funding for promotional material in annual NRTA budget.

3.2.6.7. Assist the Town in developing a strategy to implement a paid parking system with a portion of the revenue to fund an additional NRTA Park and Ride route for the downtown area.
Measure: Include subject in annual meeting with parking stakeholders.

WAYFINDING

3.2.7. Improve information for using the island's alternative transportation modes.

3.2.7.1. Maintain and improve digital communication that provides information on Nantucket's bicycle, pedestrian, and public transportation systems.

Measure: Review Town maintained on-line information annually.

3.2.7.2. Publicize traffic laws that apply to bicyclists.
Measure: Include funding for educational material in annual Town budget.

3.2.7.3. Assist as necessary with the development of additional information systems to inform travelers on ferries, airplanes, taxis, the shuttle, and at the Visitor Center and Chamber of Commerce of details concerning bike routes, shuttle routes, and any changes to those systems.
Measure: Include educational material in annual Visitors Guide.

3.2.7.4. Continue to encourage downtown restaurants to persuade potential patrons, at the time reservations are made, to use taxis or the NRTA shuttle system.
Measure: Include subject in annual meeting with parking stakeholders.

3.2.7.5. Encourage employers to purchase shuttle passes for their employees and participate in the Emergency Ride Home program.
Measure: Require as part of parking waiver requests submitted to Planning Board.

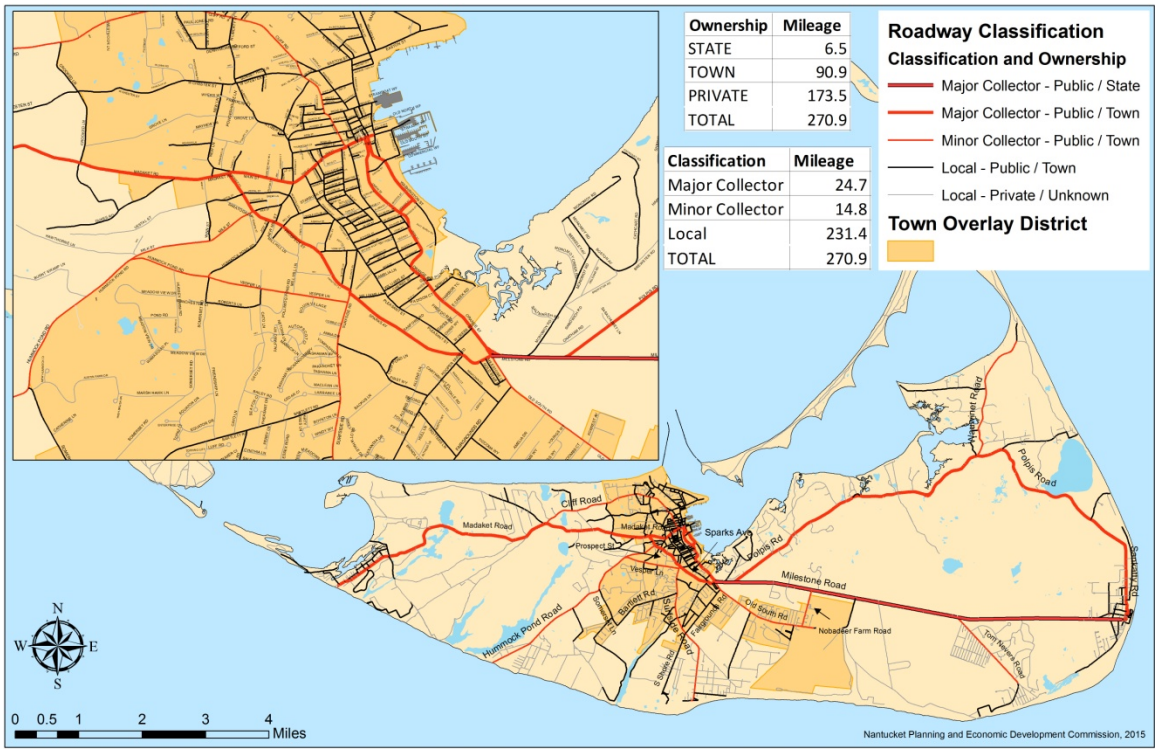
3.2.7.6. Encourage distribution of truck-route maps for downtown Nantucket to all truck drivers when they board in Hyannis.
Measure: Include subject in annual meeting with SSA Administration.

TELECOMMUNICATION

3.2.8. Utilize the telecommunication infrastructure as a means to reduce the number of trips.

3.2.8.1. Develop a program through the Town's Human Resources Department that would allow certain Town employees to work from home.
Measure: Establish a baseline number of employees that telecommute regularly.

3.2.8.2. Evaluate changes to the Town's website and on-line services that may reduce vehicle trips.
Measure: Include subject in annual meeting with parking stakeholders.



Map 16. Street Classification Map

4. REGIONAL ROADWAY NETWORK

4.1. FUNCTIONAL CLASSIFICATION

According to the Town of Nantucket's GIS data there are approximately 270.9 miles of roadway on the island. Of this total, 97.4 miles (36%) are public roads and 173.5 miles (64%) are private roads or roads with undetermined ownership. The Highway Functional Classification System is a management system utilized by the Federal Highway Administration to classify public roads by the service each road provides. This system describes collectors as providing a higher degree of mobility, or ability to accommodate traffic flow, than local roadways with a higher emphasis and utility on access to abutting properties.

In 1992, the NP&EDC, in conjunction with the Nantucket Department of Public Works, and in accordance with the Massachusetts Highway Department (now MassDOT Highway Division) guidelines, completed the functional reclassification of the island's road system. Map 16 shows the location of major and minor collector roadways, as well as local public and private roadways.

The roads classified as collectors include Madaket, Sparks, Orange, Polpis, Milestone, Sankaty, Cliff, Hummock Pond, Vesper, Surfside, Old South, Nobadeer, Tom Nevers, and Wauwinet Roads. The remaining roads are classified as local and consist of many local access routes and unpaved private roads.

4.1.1. Scenic Roadways

The Town of Nantucket designated Milestone Road, Polpis Road, Madaket Road, and Wauwinet Road as scenic roadways with the approval of article 65 of the 1984 Annual Town Meeting (see Map 17). Pursuant to M.G.L ch. 40 c 15C, any tree or stonewall removal along these roadways requires Planning Board approval.

Map 17. Scenic Roadway

4.2. TRAFFIC VOLUMES

The NP&EDC conducts traffic counts of the collector system, as well as some local streets each summer season. There are also shoulder season counts taken along Polpis Road, Sankaty Road, and Union Street in the spring and fall.

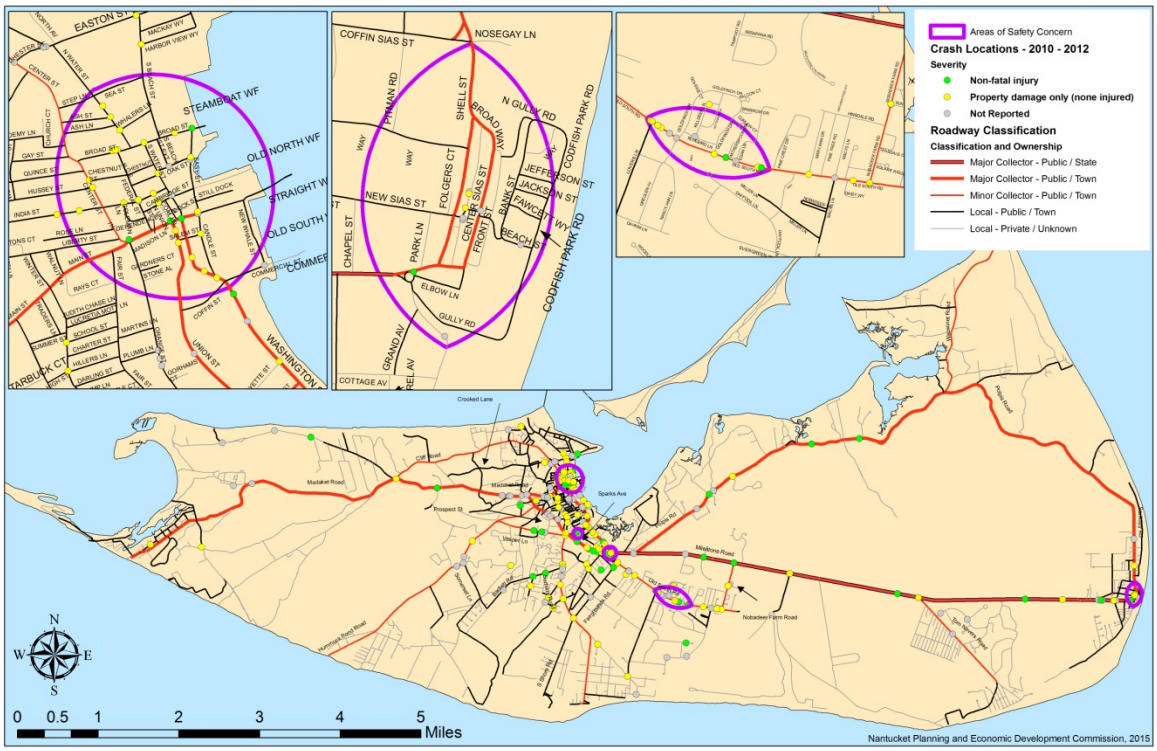
Table 12. Automated Traffic Recorder (ATR) Counts – June to August (NP&EDC)

	2011	2012	2013	2014
Milestone Road	15,505	15,975	15,653	16,405
Orange Street	15,618		14,855	14,999
Old South Road		14,616	15,106	14,632
Surfside Road		11,045	10,896	
Sparks Avenue	9,523	9,272	9,634	9,964
Fairgrounds Road		7,932	8,251	8,578
Polpis Road	6,478	6,311	6,528	5,990
Union Street	2,831	3,299	3,264	2,999
Sankaty Road	1,751	1,584	1,416	1,494

Table 12 lists each of the streets that have been counted each summer season from 2011 to 2014. These counts have not been seasonally adjusted. This table lists Average Daily Traffic, or ADT, by highest volume for 2014. The ADT is used to measure the volume, or number, of vehicles that utilize a given street. It can be seen that Milestone Road, Orange Street, Old South Road, and Surfside Road are the most traveled streets of the ones that were counted (see Map 18).

Map 18. High Traffic Volume Roadways

4.3. SAFETY



Map 19. Crash Locations 2010-2012 (MassDOT)

The NP&EDC collects crash records each year from MassDOT to help identify problem areas. Map 19 shows the location of crashes. It can be seen that the downtown area experiences the most crashes of any other location on island. However, the crash locations also suggest there are safety concerns along Pleasant Street at Williams Lane, in the vicinity of the Milestone Rotary, along Old South Road between Lover's Lane and Airport Road, and in 'Sconset along Center Street. As noted in Section 14.3, traffic studies in the downtown, mid-island, and along Old South Road are anticipated in the future to evaluate options for improving accessibility for all users, as well as congestion and safety.

4.4. INTER-MODAL LINKS

4.4.1. Airport and Ferry Docks

Map 20. Points of Entry

Nantucket has three main points of entry: The Nantucket Memorial Airport, the Steamship Authority (SSA) terminal (Steamboat Wharf) and the Hy-Line terminal (Straight Wharf), shown in Map 20. The SSA ferry service provides the only means of transportation to the island for automobiles and trucks. These locations are inter-modal points for individuals arriving on the island to access buses, taxis, or rental cars bikes, or mopeds.

Both the SSA Wharf and the Straight Wharf are in the downtown core district, and are within close proximity to taxis, the Nantucket Regional Transit Authority (NRTA) shuttles, private tour buses, rental cars, bikes, or mopeds, and privately operated shuttle vans that service a number of hotels located outside of the downtown core district. The downtown core district is where many of the lodging, dining and shopping attractions are located.

The Nantucket Memorial Airport is located approximately 2.5 miles from the downtown core district. Private automobiles, taxicabs, bicycles and rental cars can access the Airport. However, the Nantucket Airport Commission operates a 292-car parking lot at the Airport where there is a $20 charge for overnight parking.

4.4.2. Commuter Park ‘n’ Ride Lots / Transportation Center

(Please see the Intermodal Linkages in Section 5.1.6)

4.5. FREIGHT MOVEMENT

Freight is transported to Nantucket by barge, boat, and airplane. The SSA operates up to three scheduled round trips daily by the freight boat; this schedule includes trips designated as "Hazardous Material" trips. The hazardous material boat is prohibited from carrying automobiles or passengers, with the exception of the driver and a helper for each truck, when transporting material classified by the United States Coast Guard as hazardous material. Non-Hazardous trucks may also be transported on the conventional service ferries.

Map 21. Designated Truck Route

Map 21 shows the truck route that is used to minimize the number of freight trucks on local streets. The route links the SSA docks with the Milestone Rotary. From the Milestone Rotary, large trucks are able to access other areas of Nantucket, such as mid-island, Airport, 'Sconset, and Madaket areas via the collector street system.

4.6. BRIDGES

Map 22. Bridges

There are two local bridges that are functionally classified as "rural local": the Ames Avenue Hither Creek (a.k.a. Madaket Millie's Bridge), which was originally built in 1946 and rebuilt in 1983, and the Massasoit Road Long Pond, which was built in 1981. Both of these bridges are located in Madaket on the west end of the island. As of December 2014, the American Association of State Highway and Transportation Officials (AASHTO) rating for the Ames Avenue Bridge is 34, and the Massasoit Road Bridge rating is 48.8. The Town completed the redecking of the Ames Ave Bridge in 2014 to address the poor condition of the wooden travel surface.

4.7. PAVEMENT MANAGEMENT

An updated report of the pavement condition of federal-aid eligible roadways was accepted by the NP&EDC on August 25, 2011. The objective of this effort was to perform an inventory of approximately 34 miles of federal-aid road to enable the NP&EDC to provide updates to MassDOT's Road Inventory System. Specific attributes identified and recorded in the field survey included number of travel lanes, Shoulder type and width, paved surface width, curb, sidewalk width, structural condition, and Present Serviceability Index (PSI). The PSI was estimated based on the following definitions taken from the HPMS. Map 23 has been updated to reflect roads that have been resurfaced since 2011 and shows the color coded pavement quality of federal-aid eligible roads. The cost of improving areas that are classified as deteriorated over 50 percent of the surface has not been estimated, but these areas would indicate a priority area for improvements.

Present Serviceability Index (modified from HPMS Field Manual) PSI Description:

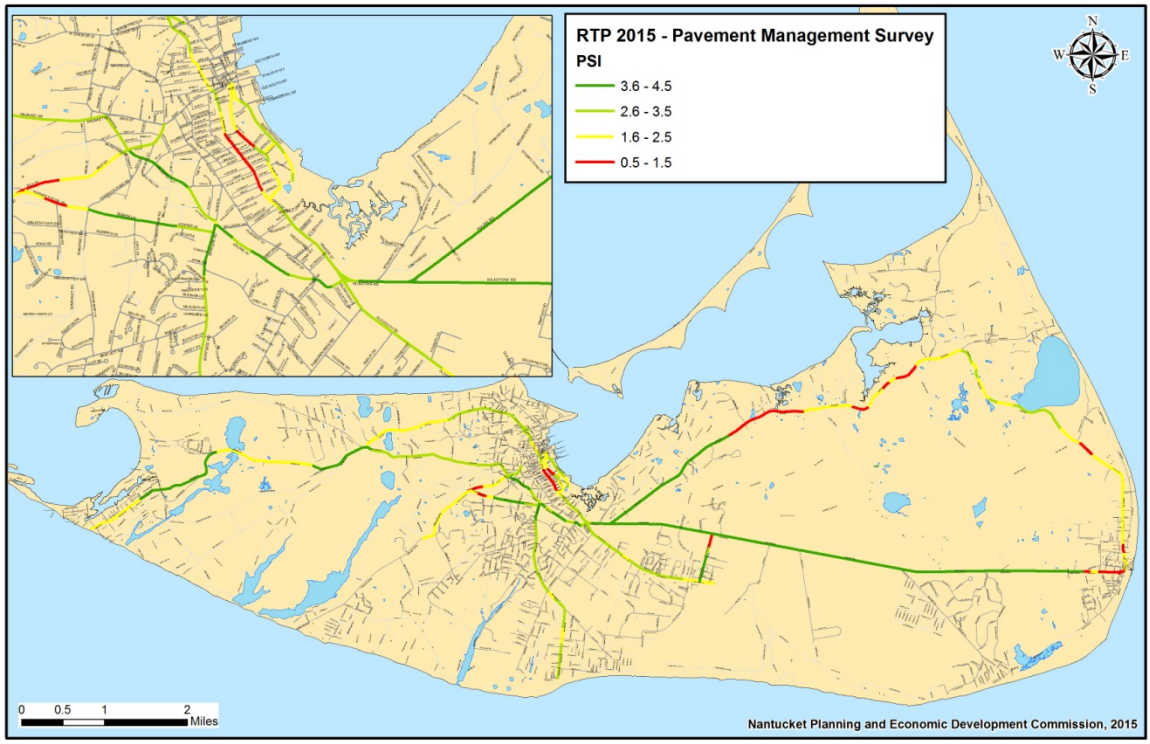
4.5 Only new (or nearly new) superior pavements are likely to be smooth enough and distress free (sufficiently free of cracks and patches) to qualify for this category. Most pavements constructed or resurfaced during the data year would normally be rated in this category.

3.5 Good ride quality and exhibit few, if any, visible signs of surface deterioration. Flexible pavements may be **beginning to show** evidence of **rutting and fine random cracks**.

2.5 Ride quality is noticeably inferior to that of new pavements, and may be barely tolerable for high-speed traffic. Surface defects of flexible pavements may include rutting, map cracking, and **extensive patching**.

1.5 Deteriorated to such an extent that they affect the speed of free-flow traffic. Flexible pavement may have large potholes and deep cracks. Distress includes raveling, cracking, rutting and occurs over **50 percent of the surface**.

0.5.1 Extremely deteriorated condition. Passable only at reduced speeds, and with considerable ride discomfort. Large potholes and deep cracks exist. Distress occurs over **75 percent or more of the surface**.



Map 23. Pavement Management - June 2011 PSI Map (NP&EDC)

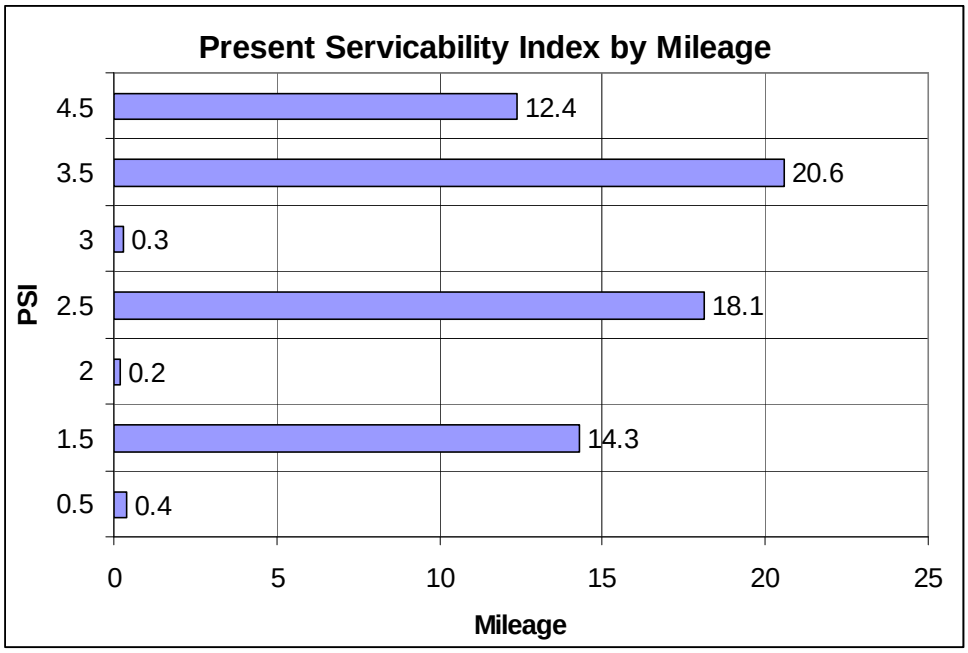


Figure 3. Pavement Management - PSI by Mileage (NP&EDC)

4.8. OPERATION AND MAINTENANCE

In addition to the Chapter 90 program that provides state aid for maintenance of local roadways, the MassDOT provides federal and non-federal aid for operation and maintenance activities, such as snow removal, for Milestone Road. Funding for these activities is provided in section 14.3.

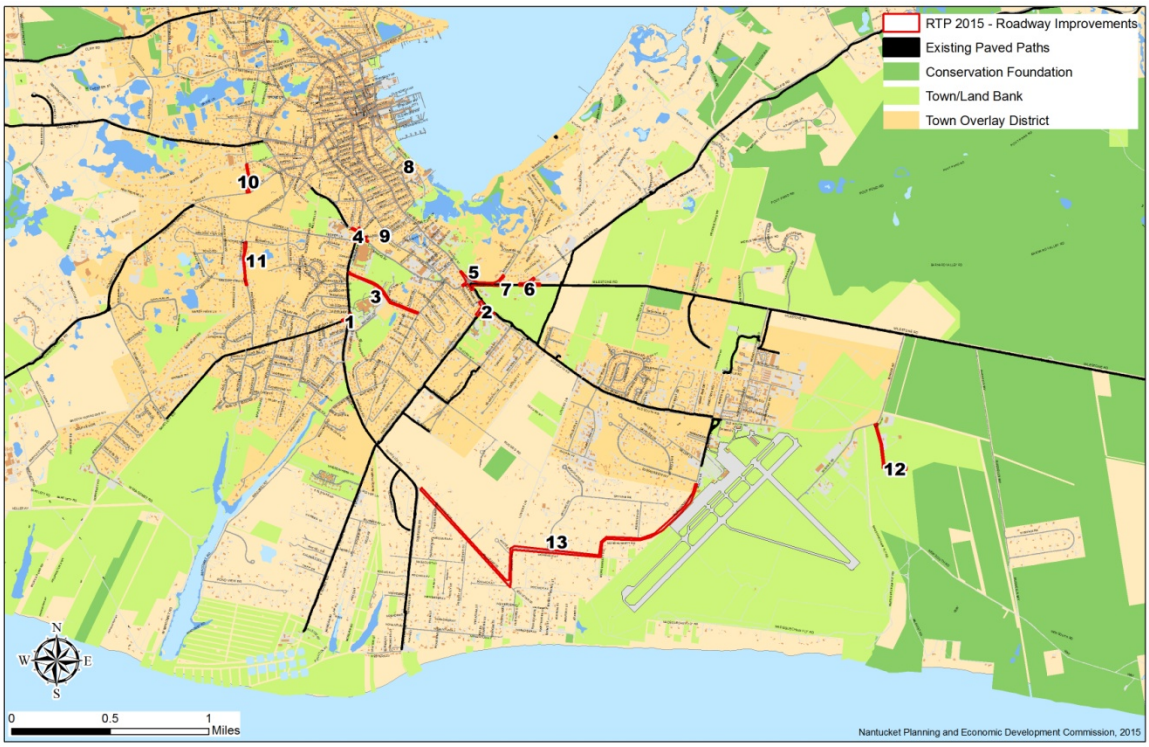
4.9. ROADWAY IMPROVEMENTS

Description of Status Designation

A	Design complete, ready for construction
B	Project permitted, final plans initiated
C	Preliminary design complete, Permitting stage
D	Preliminary design initiated
E	Project funded, design to be initiated
F	Project is unfunded

Roadway Improvements (see Map 24)

Project ID	Project	Design Cost	Construction Cost	Status
1	Surfside Rd at Bartlett Rd	$100,000	$700,000	F
2	Fairgrounds Rd at Old South Rd	$100,000	$700,000	F
3	First Way Roadway Improvements	$250,000	$2,000,000	F
4	Four Corners	$90,000	$900,000	F
5	Milestone Rotary	$100,000	$950,000	F
6	Milestone Rd at Polpis Rd	$75,000	$500,000	F
7	Milestone Rd at Monomoy Rd	$75,000	$500,000	F
8	Washington St at Francis St	$50,000	$350,000	F
9	Pleasant St at Williams/Cherry St	$25,000	$150,000	F
10	Winn Street - 800 ft	$40,000.00	$280,000	F
11	Friendship Lane - 1,200 ft	$60,000.00	$420,000	F
12	Industry and Shadbush Rds - 1,800 ft	$90,000.00	$630,000	F
13	Boulevarde to Airport Rd	$500,000.00	$3,700,000	F

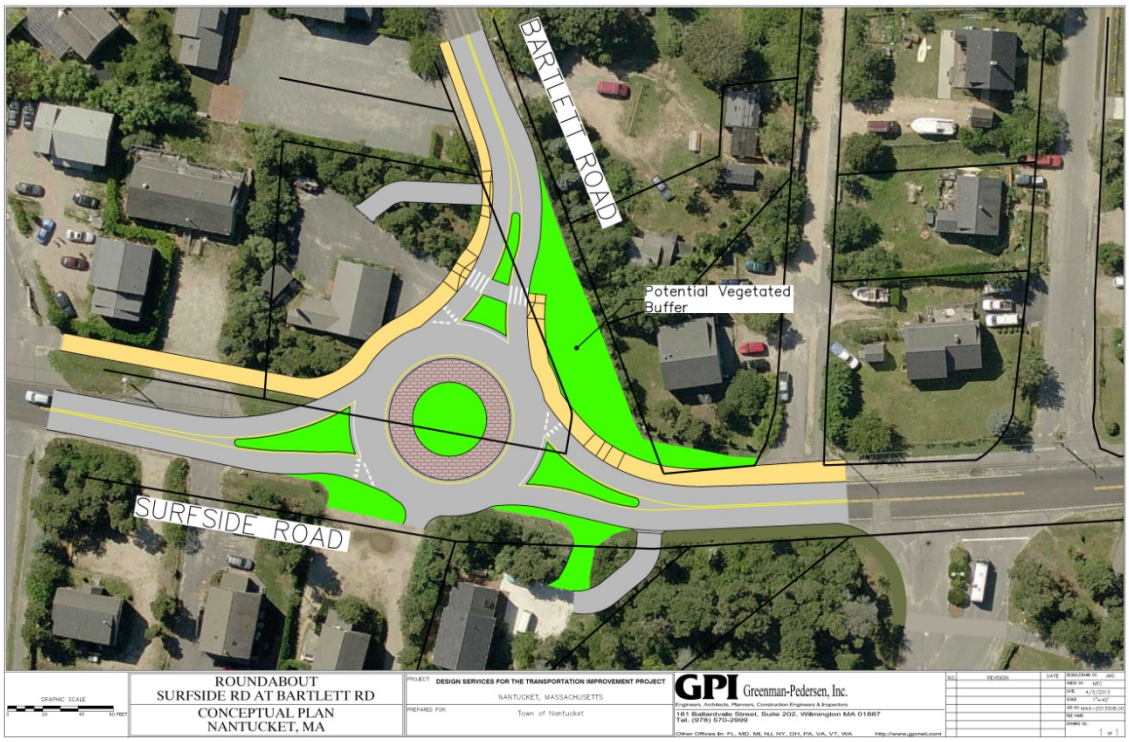


Map 24. Roadway Improvements

The roadway improvements shown in Map 24 above, and described below, have been identified in the list of studies and planning documents from Section 2.9.2, or identified as part of the development of this plan. These improvements have been categorized into intersections, roadways, smaller improvements for safety or congestions issues such as poor sightlines, roadway obstructions, poor drainage, or poor lighting.

4.9.1. Surfside Road at Bartlett Road

Status	Est. Design Cost	Est. Cost to Construct
F – Project is unfunded	$100,000	$700,000



The intersection of Surfside Road at Bartlett Road experienced a crash rate of 0.77 accidents per million entering vehicles (acc/mev) from 2007 to 2009. This is higher than the district wide (0.59 acc/mev) and statewide (0.66 acc/mev) averages for unsignalized intersections, and therefore may be indicative of a safety problem. A contributing factor may be the sight-distance restrictions looking north from Bartlett Road. Based on a traffic study of alternatives for the intersection, the preferred long term option is a roundabout. Changing to configuration to provide operations of a roundabout will improve traffic congestion and eliminate unsafe conflicts for vehicle traffic and the bicycle and pedestrian traffic along the Bartlett and Surfside bike paths.

4.9.2. Fairgrounds Road and Old South Road intersection

Status	Est. Design Cost	Est. Cost to Construct
F – Project is unfunded	$100,000	$700,000

In 2006, the NP&EDC conducted an evaluation of alternative traffic control measures for this intersection to address congestion and safety concerns documented as part of the *Mid-Island Area Plan* and with consideration of future development of a new Police Station and other public uses on a municipally owned property abutting the intersection.

Under the existing configuration of this intersection, the Fairgrounds Road approach experiences significant delay during peak hours while utilizing 2004 and projected 2014 traffic volumes. The Old South Road approaches have little delay since they are not required to stop. Under the proposed roundabout configuration, delay along Fairgrounds Road is significantly reduced while

delay along Old South Road is also reduced. All movements operate at a level-of-service (or LOS) 'B' (considered acceptable) or better during peak hours while utilizing 2004 traffic volumes. All movements operate at a LOS 'C' (also considered acceptable) or better during peak hours while utilizing projected 2014 traffic volumes.

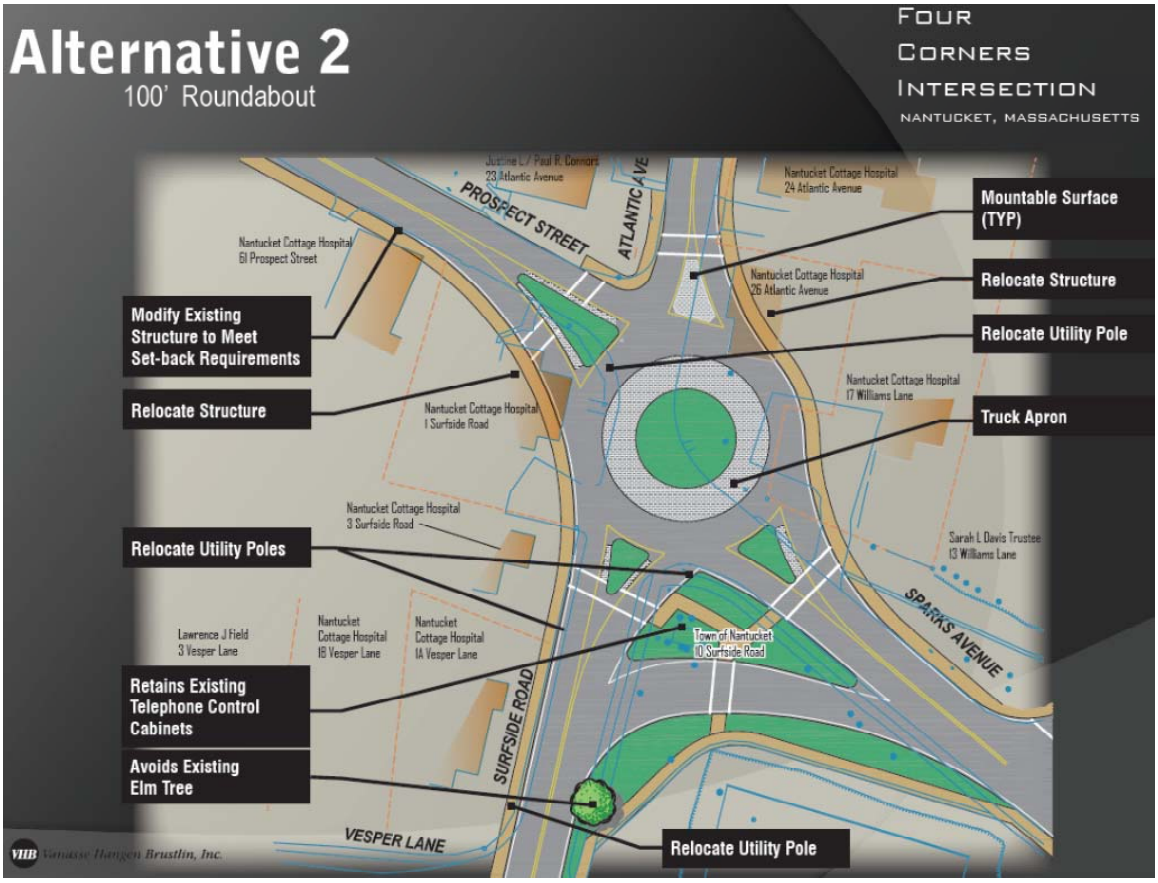
4.9.3. First Way Roadway and Bike/Pedestrian Improvements

Status	Est. Design Cost	Est. Cost to Construct
Conceptual – F – Unfunded	$250,000	$2,000,000

This roadway and bike / pedestrian improvement is recommended to connect the neighborhoods along Fairgrounds and Hooper Farm Roads with the elementary, middle, and high schools located along Surfside Road. First Way is the primary connection to the neighborhoods east of the schools; however, sections of this roadway are currently unpaved, and there is no bike and pedestrian facility along the roadway. This connection will provide improved traffic flow around the public schools, and a safe bike and pedestrian link to encourage students living close to the schools to bike or walk to school.

4.9.4. Atlantic Avenue, Sparks Avenue, Surfside Road, and Prospect Street (a.k.a., Four Corners) intersection

Status	Est. Design Cost	Est. Cost to Construct
D – Design funded, design has initiated	$90,000	$900,000



Geometric deficiencies currently exist at the Four Corners intersection contributing to the failing level of congestion and to the frequency and severity of crashes. This intersection has been identified in the *mid-island Area Plan* in 2002 and further studied in the *mid-island Traffic Study* in 2004 and recently in the *Four Corner Intersection Evaluation* in 2010. The recent evaluation and design work has proposed reconstructing the intersection to a modern single lane

roundabout. The roundabout option has been found to be a great improvement to congestion, overall safety, and could contribute as a gateway to the area.

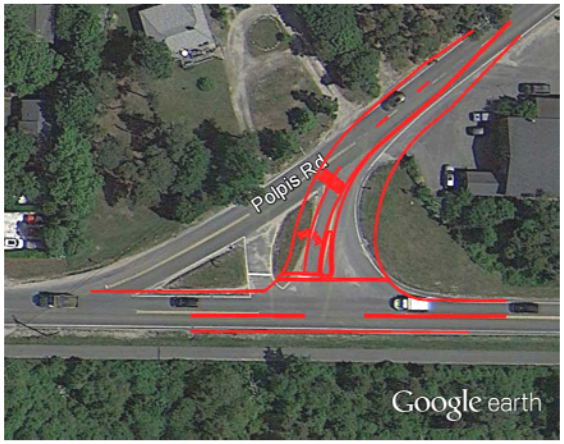
4.9.5. Milestone Rotary (create a modern roundabout)

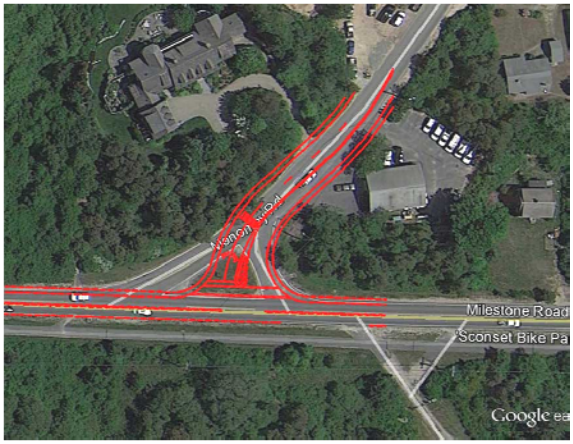
Status	Est. Design Cost	Est. Cost to Construct
F – Project is unfunded	$100,000	$950,000

Geometric deficiencies currently exist at the Milestone Rotary. As recommended in the *mid-island Traffic Study* and the *mid-island Area Plan*, the NP&EDC conducted and accepted the *Roundabout Implementation Report* in September 2006, which studied the ramification of converting the current rotary to a modern roundabout. The proposed modifications would improve safety for all modes of transportation and decrease congestion from all approaches to the intersection.

4.9.6. Milestone Road at Polpis Road
4.9.7. Milestone Road at Monomoy Road

Status	Est. Design Cost	Est. Cost to Construct
Polpis Intersection F – Project is unfunded	$75,000	$500,000
Monomoy Intersection F - Project is unfunded	$75,000	$500,000





Geometric deficiencies presently exist at the intersections of Milestone Road at Polpis Road and Monomoy Road. Improvements at these intersections include reconfiguring the intersections to a traditional 90-degree "T" intersection. This will slow the traffic both turning into and exiting from the side streets. This will also tighten the intersection and reduce the vast amount of pavement and travel ways currently in place.

4.9.8. Washington Street at Francis Street

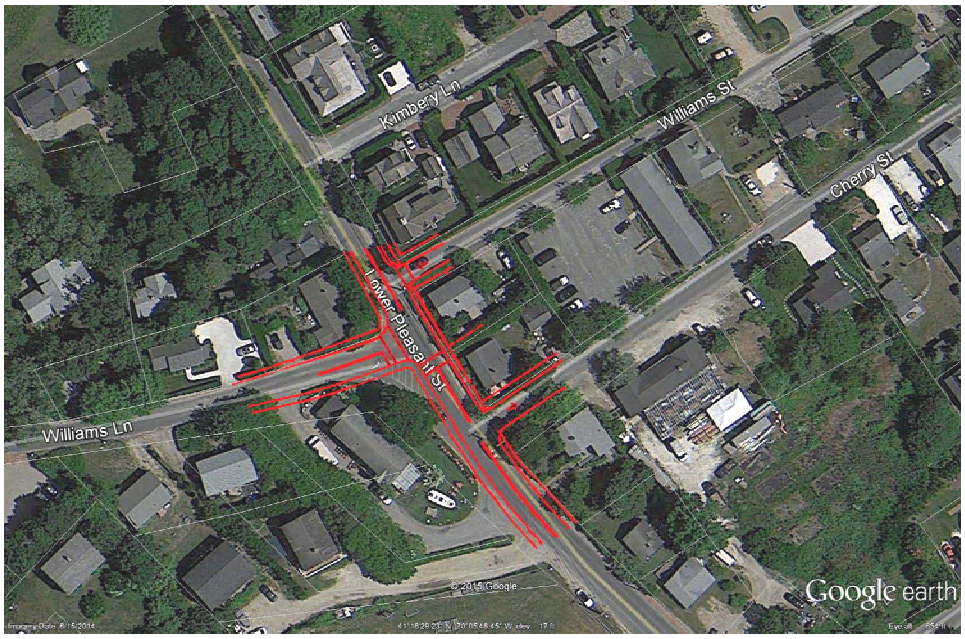
Status	Est. Design Cost	Est. Cost to Construct
D – Design funded, design has initiated	$50,000	$350,000

This intersection is along the accepted truck route, but has several issues that impact congestion and safety accommodating the freight vehicles. As demonstrated in the images above, large trucks require whole width of the intersection to make turns in and out of town. Trucks must wait for adequate gap in traffic and have limited sight distances. Additionally, there are no crosswalks that connect sidewalks or the northern and southern sides of the intersection. Although a three way stop has been proposed in the past to control traffic through the intersection, widening the turning radius for in- and out-bound truck traffic would significantly improve congestion and safety by preventing large trucks from waiting and crossing into the opposing lane of traffic to navigate through the intersection.

4.9.9. Pleasant Street at Cherry Street, Williams Lane and Williams Street

Status	Est. Design Cost	Est. Cost to Construct
F – Project is unfunded	$25,000	$150,000

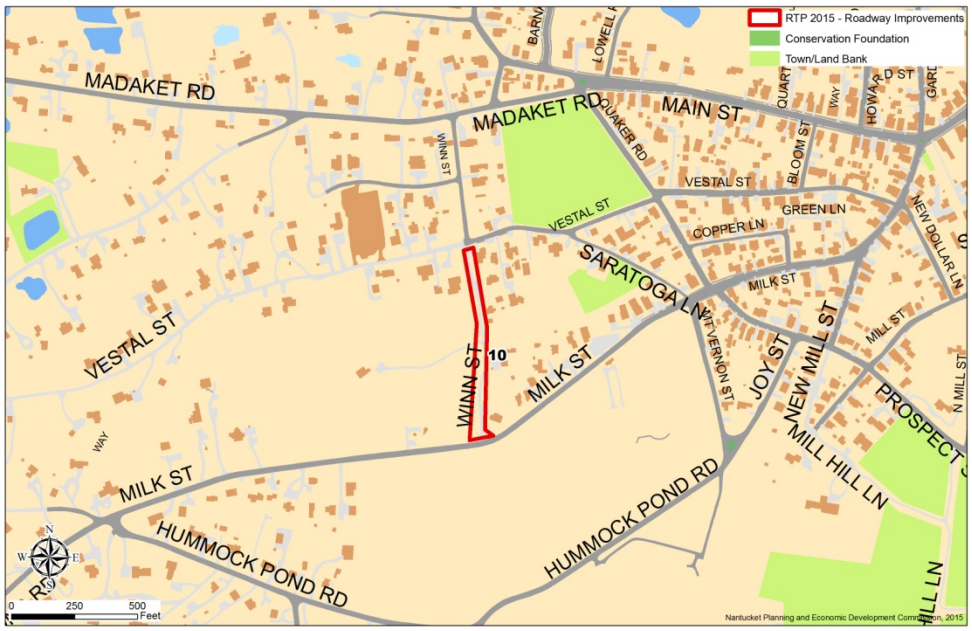
In order to eliminate the conflict between the Williams Lane traffic and Pleasant Street traffic, the intersection should be reconfigured to form a more traditional, "T" intersection. This will slow the traffic both turning into and exiting from Williams Lane. This will also tighten the intersection and reduce the vast amount of pavement and travel ways currently in place. These improvements are recommended for both one-way and two-way flow on Pleasant Street.



4.9.10. Winn Street

Status	Est. Design Cost	Est. Cost to Construct
F – Project is unfunded	$40,000	$280,000

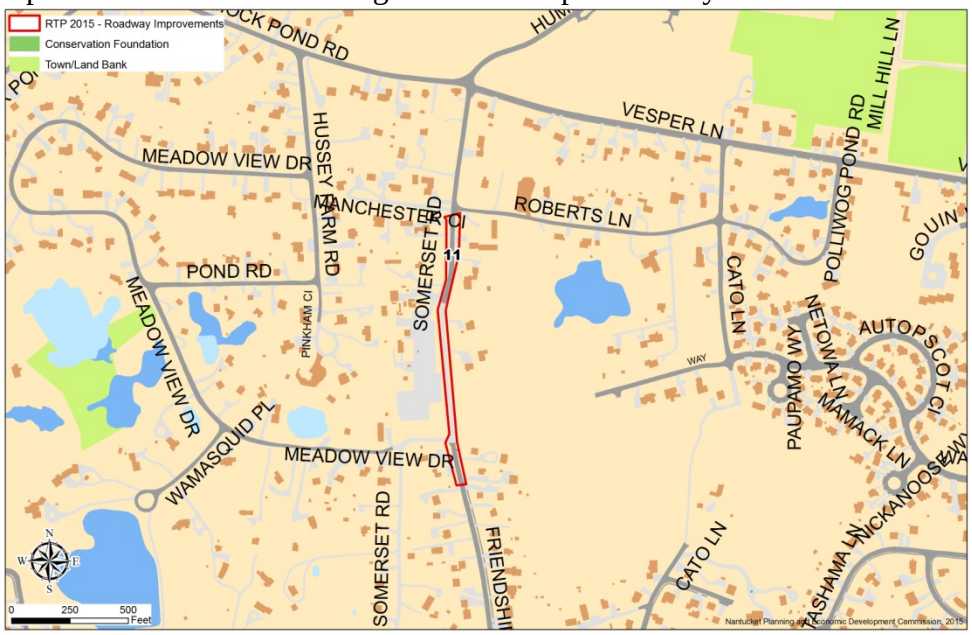
Winn Street is serves as a connection between Madaket Road and Milk Street Extension. The roadway is divided into two section – a 500 linear foot paved section that is privately owned, and an 800 linear foot unpaved section that is publicly owned. Improvements to widen and pave the publicly owned section would allow for a safer and convenient connection for all users, especially for bicyclists connecting between the Madaket Rd bike path and the proposed Milk St Ext path. The privately owned section of Winn Street should also be taken as a public way.



4.9.11. Friendship Lane

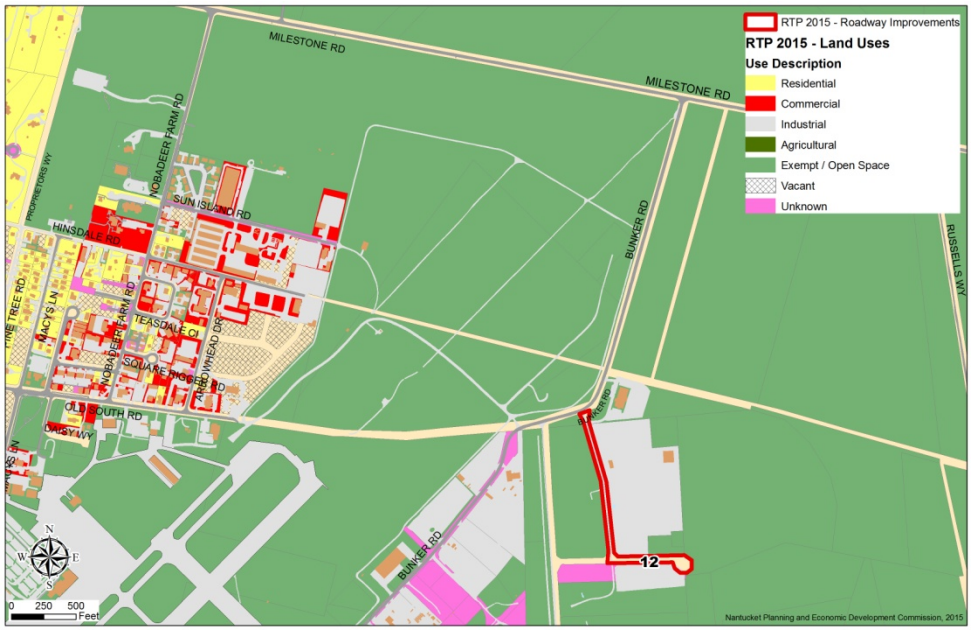
Status	Est. Design Cost	Est. Cost to Construct
F – Project is unfunded	$60,000	$420,000

This section of Friendship Lane is a private unpaved way that is narrow and can accommodate very few vehicles, and cannot safety accommodate bicycle or pedestrian traffic. By improving this roadway as a public way with adequate width, surface, and sidewalks, other ancillary roadways and intersection, such as the Surfside Road and Bartlett Road intersection, could experience a reduction in congestion and improve safety and travel time for all users.



4.9.12. Industry and Shadbush Roads

Status	Est. Design Cost	Est. Cost to Construct
F – Project is unfunded	$90,000	$630,000



These public roadways are currently unpaved and provide access from Milestone Road and Bunker Road to numerous industrially zoned lots located near the Airport. Although some of these industrial lots are currently being used, the roadways are still unpaved. As more lots are developed and utilized for industrial purposes, there will be a greater need to improve these roadways to a standard that can accommodate the traffic of abutting uses.

4.9.13. Boulevarde to Airport Road

Status	Est. Design Cost	Est. Cost to Construct
F – Project is unfunded	$500,000	$3,700,000

The Boulevarde, Lovers Lane, Okorwaw Avenue, and Monohansett Road are private roadways currently used for access to low density primarily residential abutting uses, and as a secondary access to the Airport. Although this corridor is paved to a width of between 18 and 22 feet to accommodate two-way vehicle traffic, the pavement condition is poor and there are no sidewalks or bike paths. I

4.10. BRIDGE IMPROVEMENTS

The bridge described below has been inspected by MassDOT as part of their bridge program.

4.10.1. Ames Avenue Bridge (a.k.a., Millie's Bridge)

Status	Est. Design Cost	Est. Cost to Construct
F – Design unfunded	TBD	TBD

Millie's Bridge had been identified by the Nantucket Department of Public Works as needing maintenance, which was addressed by redecking the wooden traveled surface of the bridge in 2013. The structural members of the bridge are also inspected annually by MassDOT and reported to the Town.

Map 25. NRTA Fixed Route System Map

5. PUBLIC TRANSPORTATION FACILITIES

5.1. NRTA SERVICE

5.1.1. Introduction

A principle objective in establishing the Nantucket Regional Transit Authority (NRTA) was to alleviate downtown traffic congestion and create parking opportunities in the downtown core district. Shortly after the NRTA began service in 1995, and after the two initial routes proved successful as an alternative mode of transportation, it became apparent that the NRTA could be an island-wide transportation system. Since 1995, service has been significantly expanded to meet the community's demand and to fill gaps in the service.

The first operating season consisted of a 100-day operating schedule during the peak season (June 8 through September 15). Four buses operated on two five mile routes and linked four satellite parking areas, a number of high density residential neighborhoods, numerous high-volume commercial uses, and several public uses to Nantucket's historic downtown core district.

The NRTA has subsequently expanded the number of operating days and hours, and has added service to serve Madaket, Sconset along three different routes, Surfside Beach, Jetties Beach, Airport and service between the boat lines and a park and ride lot.

5.1.2. NRTA Fleet Inventory

Fixed Route Buses

Bus #	Year	Make	Model	Length	Age
1	2008	Eldorado	Escort RE	29	7
2	2016	IC	HC	29	NEW
3	2010	IC	HC CB	25	5
4	2007	Eldorado	Escort	29	8
5	2012	IC	HCCB	25	3
6	2013	IC	HC	25	2
7	2011	IC	HC CB	25	4
8	2013	IC	HC	25	2
9	2006	Eldorado	Escort RE	29	9
10	2006	Eldorado	Escort RE	29	9
11	2011	IC	HC CB	25	4
12	2011	IC	HC CB	25	3
13	2013	IC	HCTC	25	2
14	2011	IC	HC CB	25	4
15	2013	IC	HCTC	25	2
16	2013	IC	HCTC	25	2
17	2013	IC	HCTC	25	2
18	2011	IC	HC CB	25	4
19	2016	IC	HC	25	NEW

Fixed Route Non Revenue Support Vehicles

25	2014	Ford	Explorer	Utility	1
26	2014	Toyota	Sienna	Van	1
27	2014	Toyota	Sienna	Van	1
30	2014	Toyota	Tacoma	PU	1
29	2011	Ford	SRWSUP	PU	4

Demand Response Vehicles

20	2015	Ford	E350	9 Pass	New
21	2009	Ford	EcoVan	9 Pass	6
22	2009	Ford	EcoVan	9 Pass	6
23	2015	Ford	E350	9 Pass	New

5.1.3. Fixed Route Fares

Fares are $1.00 on the Mid-Island Loop, Miacomet Loop, Jetties Beach Route and in-town portions of the Madaket and Sconset Routes. Fares are $2.00 on the Madaket Route, Sconset Routes, Surfside Beach Route and Airport Route. Seniors 65 & Older, persons with disabilities, and veterans/military personnel are half fare and children 6 and under are not charged a fare.

The NRTA offers several pass options:
Short term passes are available and may be purchased aboard all buses:
1-day pass is $7; 3-day pass is $12; 7-day pass is $20

Season passes are available at the NRTA's Administrative Office:
30-day pass $50; season pass $90, Commuter pass (employer purchased) $80, Nantucket student pass $50; other students, college students pass $80; and senior/disabled/military pass $50.

5.1.4. Fixed Routes

Mid-Island Loop (3.3 miles) serves Washington Street, Francis Street, York Street, Atlantic Avenue, Surfside Road, Surfside Drive, Hooper Farm Road, Sparks Avenue, Orange Street, Dave Street, Pleasant Street, Dover Street, Union Street, Francis Street to the downtown shuttle hub at the Greenhound Building on Washington Street. This route maintains 30 minute headways during the shoulder season and 15-minute headways during the peak season. The mid-island Loop operates from mid/end of-May through early October, daily from 7:00 a.m. to 11:30 p.m. (in 2015 service is extended to midnight between June 15 to September 7)

Miacomet Loop (6.9 miles) serves Washington Street, Francis Street, Orange Street, Old South Road, Fairgrounds Road, Surfside Road, Bartlett Road, Raceway Drive, Somerset Lane, Hummock Pond Road, Joy Street, Prospect Street, West York Lane, Dover Street, Francis Street to the downtown shuttle Washington Street Stop at the Greenhound site. This loop maintains 30-minute headways during the shoulder season and 20-minute headways during the season. The

Miacomet Loop operates mid/end of May through early October, daily from 7:00 a.m. to 11:30 p.m. (in 2015 service is extended to midnight between June 15 to September 7)

Madaket Route (13.7 miles round trip) serves North Water Street, Cliff Road, North Liberty Street, West Chester Street, New Lane Madaket Road and returns to the downtown stop on Broad Street. This route maintains 60-minute headways during the shoulder season and 30-minute headways during peak season. The Madaket Route operates end of May through mid September, daily from 7:00 a.m. to 11:30 p.m.

Sconset via Polpis Road (21.2 miles round trip) serves Washington Street, Francis Street, Union Street, Orange Street, Milestone Road, Polpis Road, Sankaty Road, Coffin Street, West Sankaty Avenue, School Street to the Sconset stop on Main Street and returns on the same route to the downtown stop on Washington Street. This route maintains one hour and twenty minute headway from July 1st through Labor Day from 10:00 a.m. to 6:00 p.m.

Sconset via Old South Road Route (16.8 miles round trip) serves Washington Street, Francis Street, Union Street, Orange Street, Old South Road, Nobadeer Farm Road, and Milestone Road to the Sconset stop on Main Street and returns the same route to the downtown stop at the Greenhound site on Washington Street. This route maintains 60-minute headways. The Sconset via Old South Road Route operates mid/end of May through Columbus Day, daily from 7:00 a.m. to 11:30 p.m. (in 2015 service is extended to midnight between June 15 to September 7)

Sconset via Milestone Road Route (16 miles round trip) serves Washington Street, Francis Street, Union Street, Orange Street, and Milestone Road to the Sconset stop on Main Street and returns the same route to the downtown stop at the Greenhound site on Washington Street. This route maintains 60-minute headways. The Sconset via Milestone Road Route operates July through Labor Day, daily from 7:15 a.m. to 7:15 p.m.

Surfside Beach Route (6.3 miles round trip) serves Washington Street, Francis Street, Union Street, Orange Street, Old South Road, Fairgrounds Road, and Surfside Road to the stop at Surfside Beach and returns the same route to the downtown stop on Washington Street. This route maintains a 40-minute headway. The Surfside Beach Route operates mid June through Labor Day, daily from 10:00 a.m. to 6:00 p.m.

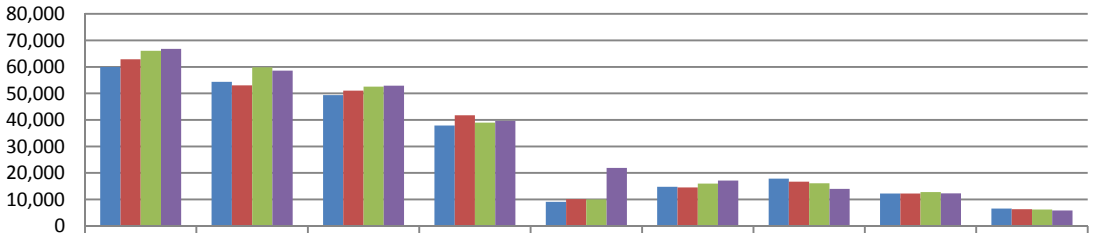
Jetties Beach Route (1.9 miles round trip) serves North Water Street, Easton Street, North Beach Street (South Beach Street return trip), Bathing Beach Road, to the shuttle stop at Jetties Beach and returns the same route to the downtown stop on Broad Street). This route maintains 30-minute headways. The Jetties Beach Route operates mid June through Labor Day, daily from 10:00 a.m. to 6:00 p.m.

Airport Route / Ferry Connector (3.2 miles) serves Washington Street, Francis Street, Union Street, Orange Street, Old South Road, and Macy's Lane to the stop at Nantucket Memorial Airport and returns along the same route to the downtown stop on Washington Street. This route maintains 20 minute headways. The Airport Route operates from mid-May to Labor Day, daily from 10:00 a.m. to 10:00 p.m. In 2014, the route was expanded as part of a public/privately funded pilot program to maintain the existing service to the Airport and to meet demand of ferry users. The Ferry Connector service begins at 7:00 a.m. with exclusive service between both ferry terminals and a new Town-owned park and ride lot at 2 Fairgrounds Road, which provided

overnight parking (currently free of charge) for residents and off-island commuters using the ferries. The success of this pilot in the summer months prompted the extension of the Ferry Connector service to the Columbus Day weekend. The Ferry Connector portion of this service will once again be publicly/privately funded for the 2015 season, but local public funding is being sought for future service years.

5.1.5. Ridership Statistics

Table 13. Passenger Boardings by Route 2011-2014 (NRTA)



	Miacomet	Mid Island	Sconset - Old South	Madaket Route	Airport / Fast Ferry Connector	Sconset - Milestone	Surfside Beach	Jetties Beach	Sconset - Polpis
2011	60,010	54,365	49,386	37,919	9,088	14,803	17,849	12,246	6,573
2012	62,881	53,068	51,067	41,763	10,115	14,541	16,699	12,224	6,312
2013	66,048	59,836	52,556	38,959	9,996	15,981	16,091	12,771	6,188
2014	66,782	58,567	52,896	39,658	21,925	17,141	13,961	12,277	5,812

Table 14. NRTA Fixed Route Passengers

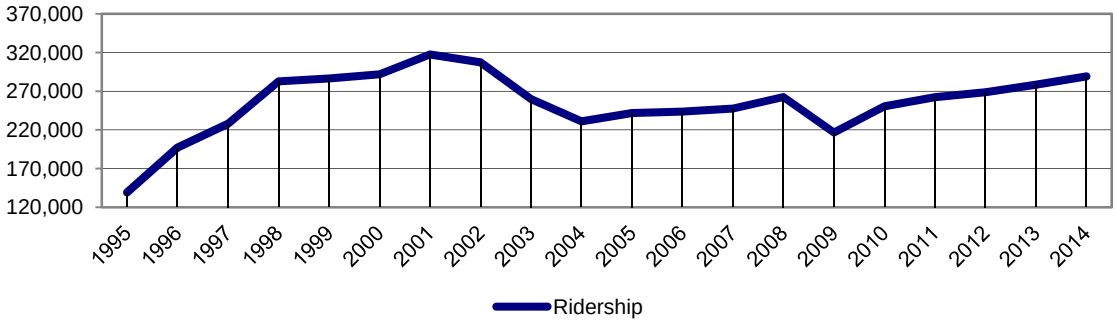
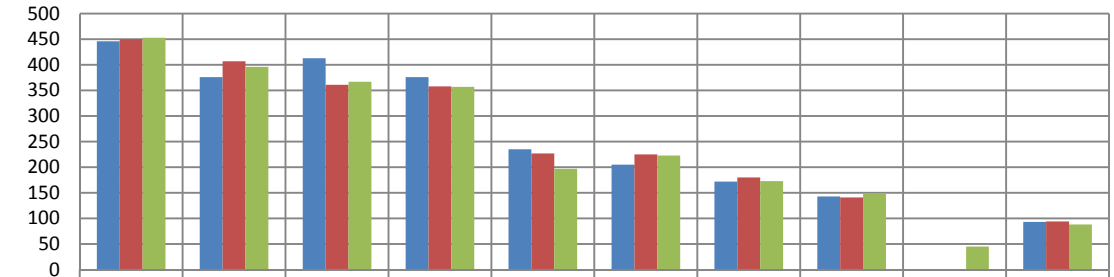


Table 14 shows the passenger ridership on the NRTA fixed route service from 1995 to 2014. It can be seen that there was a significant increase from 1995 to 1998 due to added routes to the system. However, as mentioned earlier, there were significant cuts in funding and service in 2002, which resulted in a drop in ridership from 2001 to 2009. Since 2009, service has steadily increase each year.

Table 15. Average Daily Ridership 2012 - 2014



	Miacomet Loop	Mid Island Loop	Madaket Route	Sconset via Old South	Surfside Beach Route	Sconset via Milestone	Jetties Beach Route	Airport Route	Fast Ferry Connector	Sconset via Polpis
2012	446	376	413	376	235	205	172	143		93
2013	450	407	361	358	227	225	180	141		94
2014	453	396	367	357	197	223	173	148	45	88

Table 15 shows the average number of passengers carried by the NRTA each day, or average daily ridership (ADR). It can be seen that the two routes servicing the downtown and mid-island areas of the island (Miacomet Loop and Mid Island Loop) have the highest daily ridership.

5.1.6. Intermodal Linkages

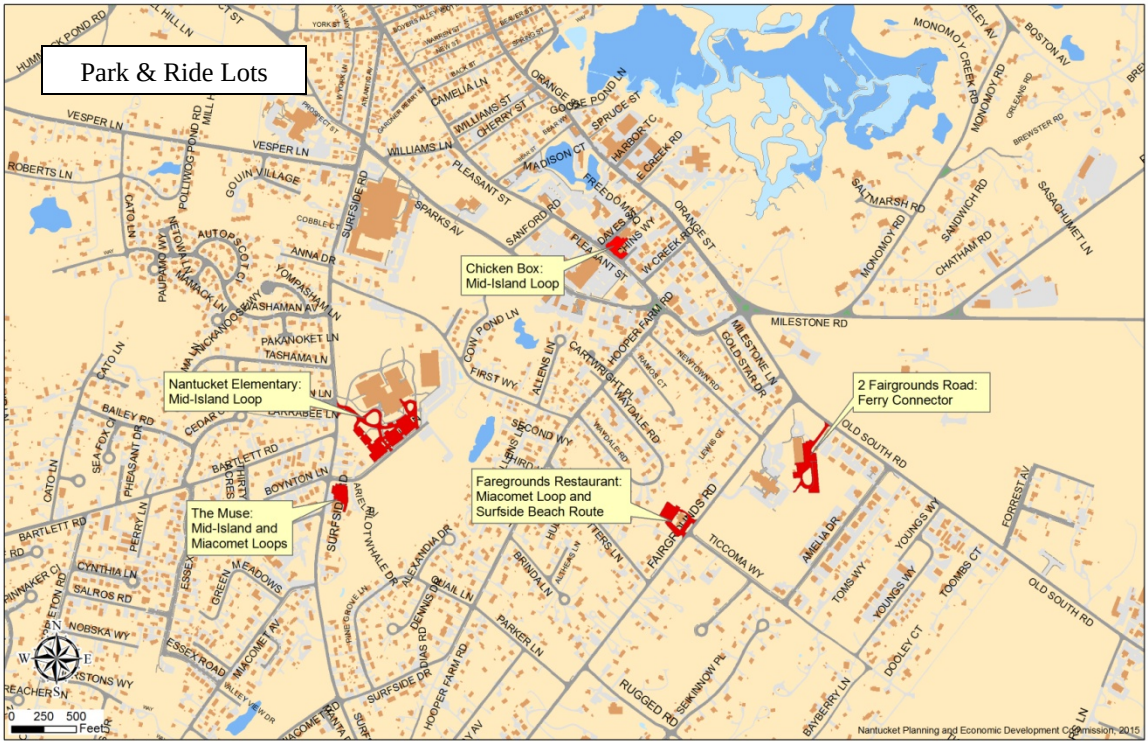
The NRTA has set up a variety of intermodal strategies to integrate the bus service with vehicles, bicycles and pedestrians. The NRTA's fixed route service also links Nantucket Memorial Airport and passenger ferries. These efforts are intended to simplify the transition in utilizing other modes of transportation in accessing the service.

5.1.6.1. Downtown bus stop (Greenhound)

The NRTA relocated a few stops from the curbside along Washington Street to an abutting property owned by Greenhound LLC, which is a local not for profit with a mission to assist in keeping the downtown area of Nantucket viable. The stops are adjacent to a bus information center with public restroom, benches, bike racks, free Wi-Fi, and change machine. The site is within close walking distance to the ferry terminals and the downtown shops and businesses.

5.1.6.2. Park ‘n’ Ride Lots

Four established businesses and the Town allow the NRTA to utilize existing parking lots as park ‘n’ ride lots. There is no charge to park, and lots are located at the following locations:



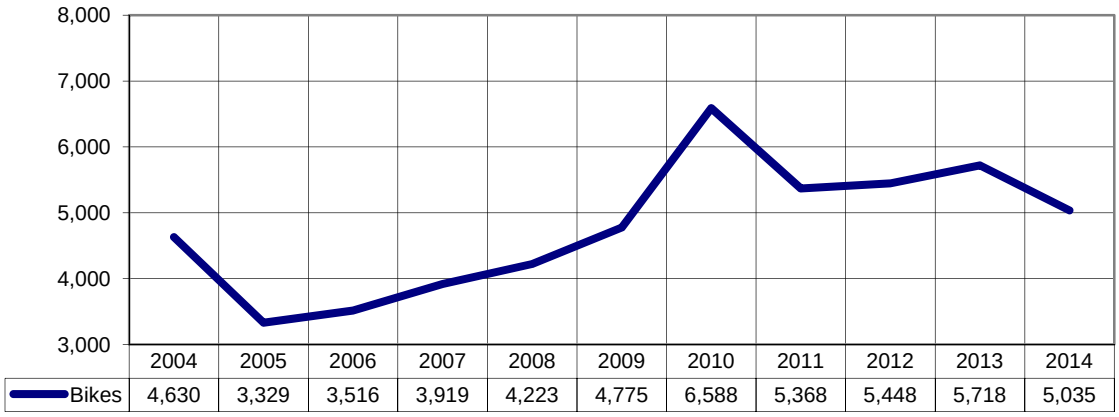
Map 26. NRTA Commuter Lot Locations

Park-n-Ride Lot	Service Routes
Faregrounds Restaurant	Miacomet Loop
The Muse	Miacomet Loop, mid-island Loop
The Chicken Box	Mid island Loop, Miacomet Loop, Sconset Routes, Airport Route
Nantucket Elementary School	Mid island Loop
2 Fairgrounds Road	Ferry Connector

5.1.6.3. For Bicyclists

Bike Racks on the Bus: All buses are equipped with bike racks that accommodate two (2) bikes.

Table 16. Total Bicycles Carried on NRTA Fixed Route Vehicles



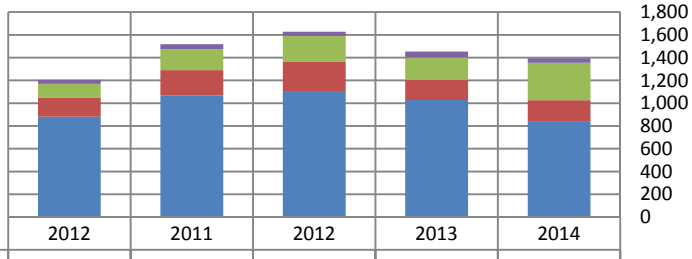
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Bikes	4,630	3,329	3,516	3,919	4,223	4,775	6,588	5,368	5,448	5,718	5,035

Table 16 shows the number of bicycles carried from 2004 to 2014. The data shows that there are typically over 4,000 bike carried on the NRTA each year, with number of bikes carried peaking in 2010, with over 6,500 bikes carried.

5.1.7. Advance Reservation Van Service – "Your Island Ride"

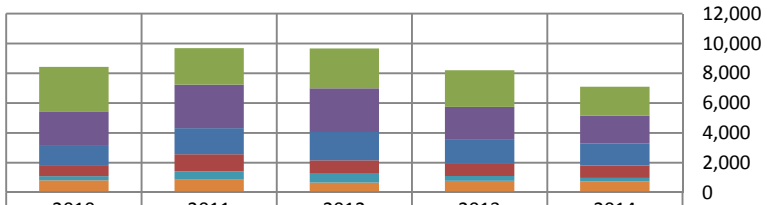
The NRTA provides advanced reservation door-to-door van service for the elderly 60 years of age and older, and, persons with disabilities. This service is provided Monday through Friday, 8:00 a.m. to 4:00 p.m. Under the Americans with Disabilities Act (ADA) the NRTA must accommodate individuals with physical, mental, visual, and hearing impairments on fixed-route buses, as well as on the paratransit (Your island Ride and complementary paratransit services) vehicles that operate a special door-to-door service. Also, per ADA regulations, the NRTA follows a certification and eligibility process for the clients. The NRTA operates two vans purchased through the Federal Transit Administration's (FTA) Mobility Assistance Program (MAP) section 5310 fund. MAP vehicles are obtained through a competitive bidding process administered by the Massachusetts Department of Transportation (MassDOT), which procures the vehicles. The vans have a capacity for 9 passengers, and up to 3 wheelchairs.

Table 17. Ridership by User Type (NRTA)



	2012	2011	2012	2013	2014
Non-Elderly non-amb	34	45	37	52	39
Non-Elderly Amb	120	182	225	196	329
Elderly Non-Amb	169	223	267	178	190
Elderly Amb.	881	1,068	1,099	1,027	836

Table 18. Ridership by Trip Type (NRTA)



	2010	2011	2012	2013	2014
Nutrition	2,978	2,451	2,671	2,464	1,931
Recreation	2,314	2,917	2,930	2,204	1,892
Medical	1,342	1,750	1,905	1,571	1,473
Employment	691	1,144	893	855	820
Shopping	279	564	597	323	235
Other	820	859	666	789	750

Tables 17 and 18 above show the ridership of the "Your island Ride" service. The following defines the type of users of this service:

- Elderly Ambulatory – 60 years of age or older and have no mobility issues.
- Non-elderly ambulatory – less than 60 years of age, no mobility issues, but other disability, such as a mental disability
- Elderly non-ambulatory – 60 years of age or older that require the use of a mobility device
- Non elderly non-ambulatory – less than 60 years of age that require the use of a mobility device

5.1.8. Paratransit Service

The NRTA provides complementary paratransit services to the disabled who cannot use fixed-route services during the period the NRTA operates its seasonal fixed route service (operation start and end dates vary each year). The NRTA averages two (2) paratransit trips annually.

5.1.9. Intelligent Transportation System

Intelligent Transportation Systems (ITS) are applications of advanced technology in the field of transportation, with the goals of increasing operational efficiency and capacity, improving safety, reducing environmental costs and enhancing personal mobility. The Commonwealth of Massachusetts, through MassDOT, has undertaken the development of a Regional Intelligent Transportation Systems Architecture for Southeastern Massachusetts. The NRTA has utilized ITS on its fixed route vehicles, Automated Stop Announcement System, Automated Vehicle Locator System, and Automated Passenger Counting System.

The NRTA will consider future ITS projects that are applicable and will enhance NRTA services. Currently all NRTA fixed route buses are equipped with Electronic Validating Fareboxes. This equipment enabled the NRTA to better serve and track its riders. Short-term passes (1-day, 3-day, and 7-day) are able to be purchased aboard all buses making it more convenient to visitors. Season passes, purchased at the NRTA Administrative office, are simply swiped through the farebox by the passholder. Fares are validated to ensure the correct amount

of money is collected. Change cards are now issued for future rides. A card is issued from the farebox to the passenger for the amount of money paid into the farebox over the cost of the regular fare.

Automated Stop Announcement System (ASAS). Stops are automatically announced at established Global Positioning System (GPS) trigger points, providing effective communications with on-board passengers as well as identifying the bus route for passengers waiting to board a bus at a bus stop location. This not only meets requirements of the Americans with Disabilities Act, but has been a tremendous benefit to the system for visitors who are unfamiliar with the island.

Real-Time Bus Information. Real time information about the bus locations, estimated arrival times and service announcements can be accessed using a smart phone application known as TransLoc.

5.1.10. Ridership Incentive Programs

The NRTA continues its efforts to provide Ridership Incentive Programs (RIP) that encourage ridership. These are:

Commuter Solution Program
This program began in 1997 through a Transportation Demand Management (TDM) grant and enables employers to purchase passes for their employees at a discounted rate ($10 off the cost of a season pass). This is one of the pass options made available to fixed route riders. Since its inception, participation has increased each year in the number of businesses that participate and the number of passes sold. In 2010, 70 businesses participated and purchased 633 passes for employees (approximately 11% of average year round employment estimates).

Emergency Ride Home Program
The NRTA offers Mass*RIDES* Emergency Ride Home (ERH) Program that is available to any employer and employee who commutes to work by transit, walking, bicycling or carpooling at least twice a week and enrolls in the program. This program promises employees who regularly use travel options that Mass*RIDES* will pay for the ride home if they experience a qualified emergency (A qualified personal illness/emergency, unexpected family illness/emergency, and unscheduled overtime at supervisor's request). The ERH program provides that extra reassurance people need in order to choose an alternative to driving alone, and it's an added benefit for those who already use an alternate mode.

Public Transportation & Walking Map to Historic Sites and Museums
Several island organizations that operate historic sites and museums on Nantucket have teamed up with the NRTA to promote their properties to visitors by way of the Shuttle. The *Public Transportation and Walking Map to Historic Sites and Museums on Nantucket* brochure includes a map locating the island's historic sites and museums and provides shuttle routes and stops, as well as walking times from site to site.

Ride to Read
The Nantucket Elementary School, Nantucket Public Library, Friends of Nantucket Public Schools, and the NRTA established this program in 2000 to provide elementary school children

the opportunity and convenience to continue reading throughout the summer. The children can catch the Shuttle to the library, read, check out books, receive two vouchers for "free" rides on the shuttle home and back to the library. Friends of Nantucket Public Schools then pays the fare for the number of vouchers collected by NRTA drivers.

Pass Options
The NRTA provides several pass options to both seasonal shuttle users and visitors.

Park and Ride Lot Campaign
For the 2011 season the NRTA has distributed brochures describing how to use the system's park and ride facilities to encourage increase utilization of the option.

5.2. COORDINATED HUMAN SERVICES / PUBLIC TRANSPORTATION PLAN

Federal transportation law requires the development of a Coordinated Human Services Public Transportation Plan (CHSPT Plan) to identify needs and gaps in human services transportation for seniors and individuals with disabilities in Nantucket. The Nantucket CHSPT Plan was approved by the NP&EDC on March 2, 2015 and included the following identified public transportation needs for the elderly and disabled:

- Weekend demand response service
- Evening demand response service
- Replacement of demand response vehicles
- Sidewalks linking fixed route stops to origins/destinations
- Bus shelters at fixed route stops

5.3. PRIVATELY OPERATED TOUR BUSES

Barrett's Tours, Gail's Tours, Inc., Historic Nantucket Tours, Betty's Tours and All Point Tours operate historic site-seeing tours of Nantucket. Also, a few of the resort hotels operate private vans for their guests.

5.4. TAXI CABS

Taxis play an important role in Nantucket's transportation network. The taxis are a means of transportation to destinations outside of the central business district. Many visitors to the island do not bring a car and taxis provide an important door-to-door transportation service, complementing NRTA fixed-route service.

5.5. PUBLIC TRANSPORTATION IMPROVEMENTS

5.5.1. NRTA Capital Needs

5.5.1.1. Fleet Replacement

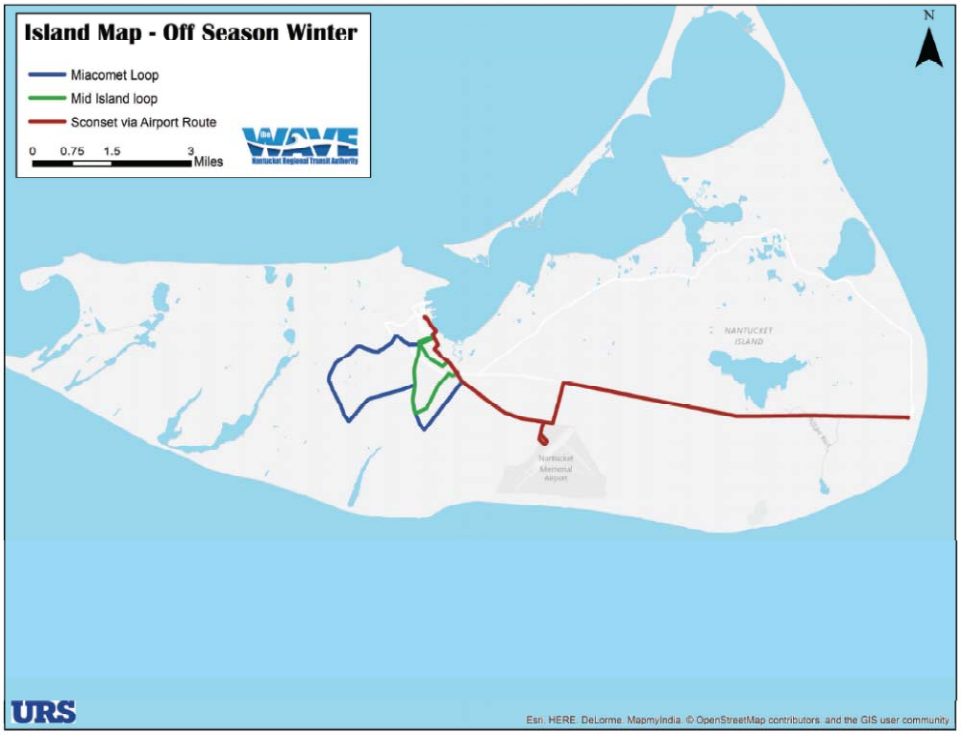
The NRTA replaces a bus approximately every seven years. Based on this replacement schedule, and under the existing system of service, there would need to be 62 buses purchased over the 25 year life of this plan. This replacement schedule is shown below.

	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040
# of Replacements	14	12	12	14	10
Approx. cost per replacement	$250,000	$280,000	$310,000	$340,000	$340,000
Total Cost	$3,500,000	$3,360,000	$3,720,000	$4,760,000	$3,400,000

5.5.2. NRTA Service Improvements

Since the service began, the NRTA has expanded and contracted service based on these funding considerations. Although a significant increase in federal transit funding is not anticipated in the near future, the NRTA has developed a Regional Transit Plan in coordination with local stakeholders, MassDOT, and public input. This plan includes the following recommendations that would be implemented as resources become available, and will strengthen the system and attract more riders by aligning the service with local demand.

5.5.2.1. Off-Season Winter Service



Days / Hours of Service:	Add off-peak season service 7:00AM to 9:00PM
Frequency of Service:	Mid-Island – 30 minutes Miacomet – 30 minutes Sconset via Airport – 60 minutes
Estimated Cost:	$870,000
Additional vehicles needed:	0

There is a high demand for year round service and an implementation study will be conducted in the fall of 2015 to identify all actions and capital needs for implementing this service. Comments received during review by the public, the steering committee, and from previous public outreach identified this service as the number one need. It is recommended that winter service operate all days except for Thanksgiving and Christmas. Winter service will require substantial investments. The garage facility will need to be heated. NRTA will need to contract with the operating company to have maintenance and operations staff year round. Operators are currently part-time and many are international on visas. Year round operators will be required.

5.5.2.2. Mid-Island Loop

Days / Hours of Service:	Expand peak season service to 7:00AM to 2:00AM Add off-season service 7:00AM to 9:00PM
Frequency of Service:	Keep 15 minutes during peak and 30 minutes during shoulder Add 30 minutes during off-season
Estimated Cost:	$20,000 for peak service expansion, $290,000 for off-season
Additional vehicles needed:	0

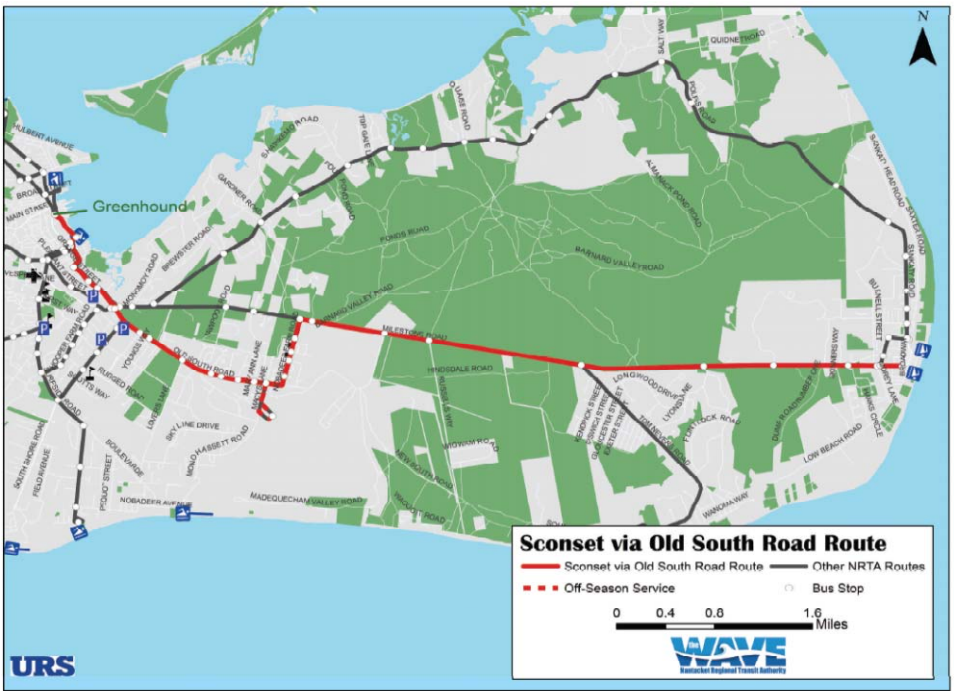
There are no changes to the alignment, but service should be later into the evening and winter/off-season. Later night service after 11:30 PM will reduce from 20 minute headways to 30 minute headways. Later night service will better accommodate the hospitality industry. This route is a candidate for winter season service because in the shoulder season it performs above average.

5.5.2.3. Miacomet Loop

Days / Hours of Service:	Expand peak season service to 7:00AM to 2:00AM Add off-season service 7:00AM to 9:00PM
Frequency of Service:	Keep 20 minutes during peak and 30 minutes during shoulder Add 30 minutes during off-season
Estimated Cost:	$23,000 for peak service expansion, $290,000 for off-season
Additional vehicles needed:	0

There are no changes to the alignment, but service should be later into the evening and winter/off-season. Later night service after 11:30 PM will reduce from 20 minute headways to 30 minute headways. Later night service will better accommodate the hospitality industry. This route is a candidate for winter season service because in the shoulder season it performs above average.

5.5.2.4. Sconset via Old South Road



Days / Hours of Service:	Expand peak season service to 7:00AM to 2:00AM Add off-season service 7:00AM to 9:00PM
Frequency of Service:	Keep 60 minutes Add 60 minutes during off-season
Estimated Cost:	$20,000 for peak service expansion, $290,000 for off-season
Additional vehicles needed:	0

In the winter off season service, this route will service the airport during open hours. It will service it both inbound and outbound. Later night service will be□er accommodate the hospitality industry. This route is a candidate for winter season service because it is in the shoulder season and performs above average.

5.5.2.5. Service to Cisco Beach

Days / Hours of Service: Add peak season service 9:30AM to 6:30PM
Frequency of Service: 60 minutes
Estimated Cost: $52,650
Additional vehicles needed: 1

This is a new route. It would travel between Washington Street and Cisco Beach along York/Dover Street, Prospect St., Mile Street Extension, and Hummock Pond Rd. This route would service Bartlett Farm Road and Cisco Beach but requires that a turnaround at Cisco Beach be paved.

5.5.2.6. Jetties Beach Route

Days / Hours of Service: Expand to 7:00AM to 11:00PM
Frequency of Service: Keep 30 minutes
Estimated Cost: $35,000
Additional vehicles needed: 0

Service has been expanded in the morning and evening to accommodate events and the hospitality industry.

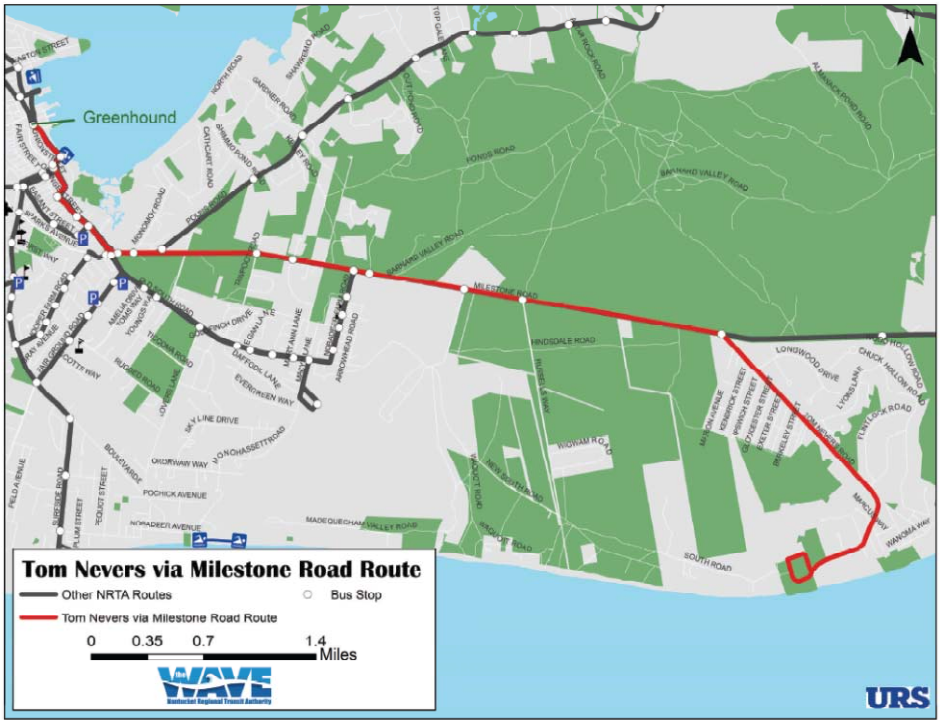
5.5.2.7. Madaket Route

Days / Hours of Service: Expand peak season service to 7:00AM to 2:00AM
Frequency of Service: Keep 30 minutes during peak season, 60 minutes after 11:30PM
Estimated Cost: $17,000

Additional vehicles needed: 0

There are no suggested alignment changes, but service should be extended later into the evening. Late night service after 11:30PM will be reduced from 30 minute headways to 60 minutes. Later night service will better accommodate the hospitality industry.

5.5.2.8. Tom Nevers via Milestone Road



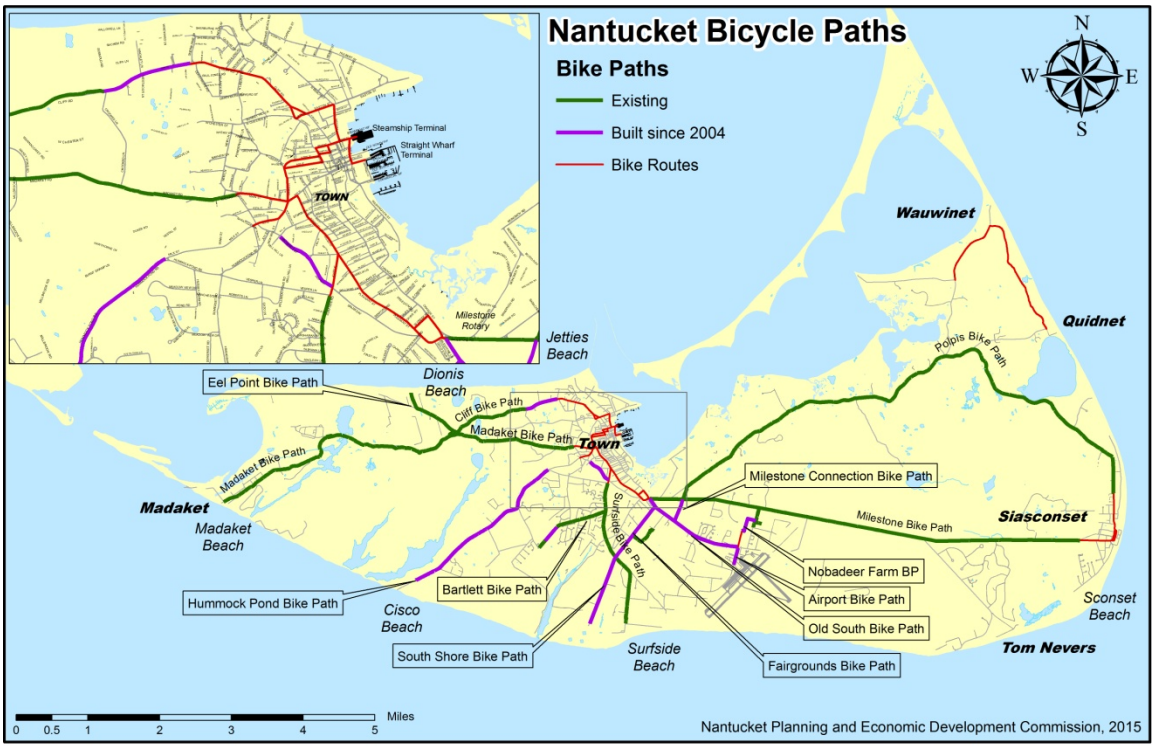
Days / Hours of Service: Add peak and shoulder season service 7:00AM to 11:30PM
Frequency of Service: 60 minutes
Estimated Cost: $52,650
Additional vehicles needed: 1

This is a new route. It would travel between Washington Street and Tom Nevers Road along Orange St., Milestone Rd., and Tom Nevers Road. This route would service Tom Nevers area. At Greenhound it would require that a new bus stop along Washington St. be established. It would also require a turnaround at Tom Nevers Park be paved.

5.5.2.9. Wilkes Square Transit Center (downtown transit hub)

Estimated Cost: $5,500,000 (estimate)

While the NRTA operates public transportation with its transportation center located along Candle Street, there is an opportunity to improve Wilkes Square and enhance the quality of service to users by relocating and incorporating the stop into the redevelopment strategy. The proposed facility would provide an area necessary for transit operations, and be located within better proximity to the private ferry terminal along Straight Wharf and the proposed new development. Additional study is needed to refine design specifics and operational functions using the proposed new location.



Map 27. Existing Bike Paths

6. BICYCLE AND PEDESTRIAN NETWORK

6.1. EXISTING MULTI-USE PATH FACILITIES

Map 27 shows the location of existing and proposed multi-use paths (a.k.a., bike paths) on Nantucket, which are generally located outside of the downtown and along scenic rural roads. A brief description of each of these paths is provided in Table 19. Sidewalks are generally located in the commercial and residential core area. This system of sidewalks does however have significant gaps, especially within the network of sidewalks outside of the downtown core area.

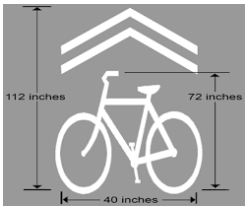
Table 19. Summary of Existing Bicycle Paths.

Name	Limits	Length (miles)	Width (feet)
Polpis Rd.	From Milestone Rd. to Anne's Ln. in 'Sconset	8.2	8
Milestone Rd.	(South side of road) From the Rotary (intersection of Orange St., Sparks Ave., Old South Rd., and Milestone Rd.) to Main St. / New St. in 'Sconset	6.4	8
Madaket Rd.	From Quaker Rd. to Madaket Beach	5.6	8
Hummock Pond Rd.	From Milk St Ext to Cisco Beach parking lot	2.5	10
Surfside Rd.	From Surfside Rd. at Vesper Ln. to Surfside Beach	2.5	8
Cliff Rd.	From Eel Point Rd. to Sherburne Tpk.	1.6	9 to 10
Old South Rd.	From Milestone Rotary to Airport Rd/Macy's Ln.	1.0	10

S Shore Rd.	From Surfside Rd to end of pavement	1.0	10
Eel Point Rd.	From Madaket Rd. to Dionis Beach	0.9	9
Fairgrounds Rd.	From Old South Rd. to Surfside Rd.	0.9	10
Bartlett Rd.	From Surfside Road to Raceway Dr.	0.9	6 to 10
Nobadeer Farm Rd.	(East side of road) from Milestone Rd. to Sun island Rd. (West side of road) from Nobadeer Farm Rd to intersection of Hinsdale Rd and Macys Ln	0.5	9 to 10
Milestone Connector	From Old South Rd to Milestone Rd	0.3	10
Prospect St.	From Surfside Rd. to N Mill St.	0.3	8 to 10
Airport Rd.	From Old South Road to Airport Entrance Driveway	0.25	10
TOTAL		**32.85**	

6.2. ON-ROAD BICYCLING FACILITIES

As shown in the picture above, Nantucket Visitor Services maintains a system of suggested routes with bicycle directional stickers. These routes (also shown in Map 25) are marked with bicycle directional stickers that are 3 inches by 5 inches in size and have been placed on sign posts between the ferry terminals and each of the bicycle paths. The stickers are geared towards the many visitors who come to Nantucket for the first time by working like trail markers, and are designed to be unobtrusive since Nantucket has worked to reduce the visual clutter that is created by too many signs. The bicycle rental shops have worked to educate visiting bicyclists about the program. Visitor Services has also developed a transportation map that includes information on walking and bicycling on Nantucket that will include these routes.



In addition to the wayfinding signage and stickers, the Town has experimented with bike route stencils, or "sharrows" (shown in the picture above). These special pavement markings provide additional wayfinding for bicyclists, and alert drivers to use caution along roadways with these stencils as they are heavily used by bicyclists who need to share the road with other vehicles.

6.3. RECREATIONAL TRAILS

Nantucket has an extensive network of dirt roads that are frequently used for off-road bicycles and walking trails. These dirt roads and paths exist primarily on Town and Conservation properties and provide access to coastal and natural resources around the island.

6.4. EXISTING PEDESTRIAN FACILITIES

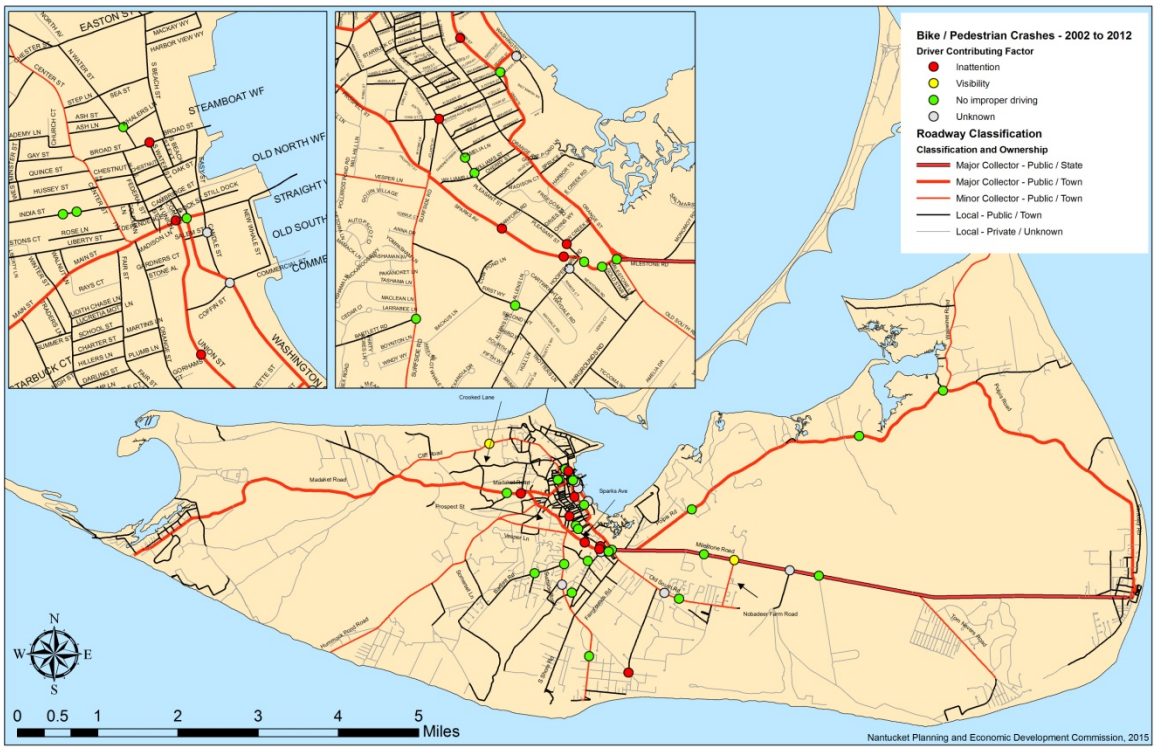
Walking is a convenient and economical means of transportation on Nantucket. In fact, the congested traffic conditions during the peak summer months make walking a convenient alternative, especially for the visitors who arrive without cars. The island's small size and relatively flat terrain make it possible to explore many of the island's tourist attractions by foot.

Nantucket's pedestrian circulation system consists of an extensive sidewalk network and unique pedestrian environment in the downtown area, limited sidewalks beyond a half-mile radius from the town center, and the bicycle paths out-of-town. Although the sidewalk network and pedestrian environment in the downtown is well developed, there are maintenance needs along portions of the existing sidewalks, as well as gaps in the network and substandard sidewalk widths impact walkability and detract from the pedestrian experience downtown, primarily around and between both ferry terminals.

On the periphery of the downtown, important sidewalk links are either missing or substandard. The problem is particularly severe between the downtown and mid-island area. Specifically, problems and inadequacies, such as substandard width and access ramps, exist on Sparks Avenue, Orange Street (east of Union Street), Pleasant Street, Prospect Street, Quaker Road, Francis Street, Washington Street, and Union Street (see Map 28). Improvements along these corridors are found in Section 6.6 or in the sidewalk improvements listed in Section 6.7.

Map 28. Pedestrian Problem Areas

6.5. BICYCLE AND PEDESTRIAN SAFETY



Map 29. Bike and Pedestrian Crashes, 2002 to 2012 (MassDOT)

Map 29 shows that there are scattered bike and pedestrian accidents throughout the town area, with several concentrated within the Core Area and along Pleasant Street and Sparks Avenue. Sections of Pleasant Street that have experienced a crash involving a bicyclist or pedestrian do not have sidewalks. Sparks Avenue has 4-6 foot wide sidewalks, but due to the heavy bike traffic these facilities are inadequate for both bikes and pedestrians to utilize simultaneously.

6.6. BICYCLE IMPROVEMENTS

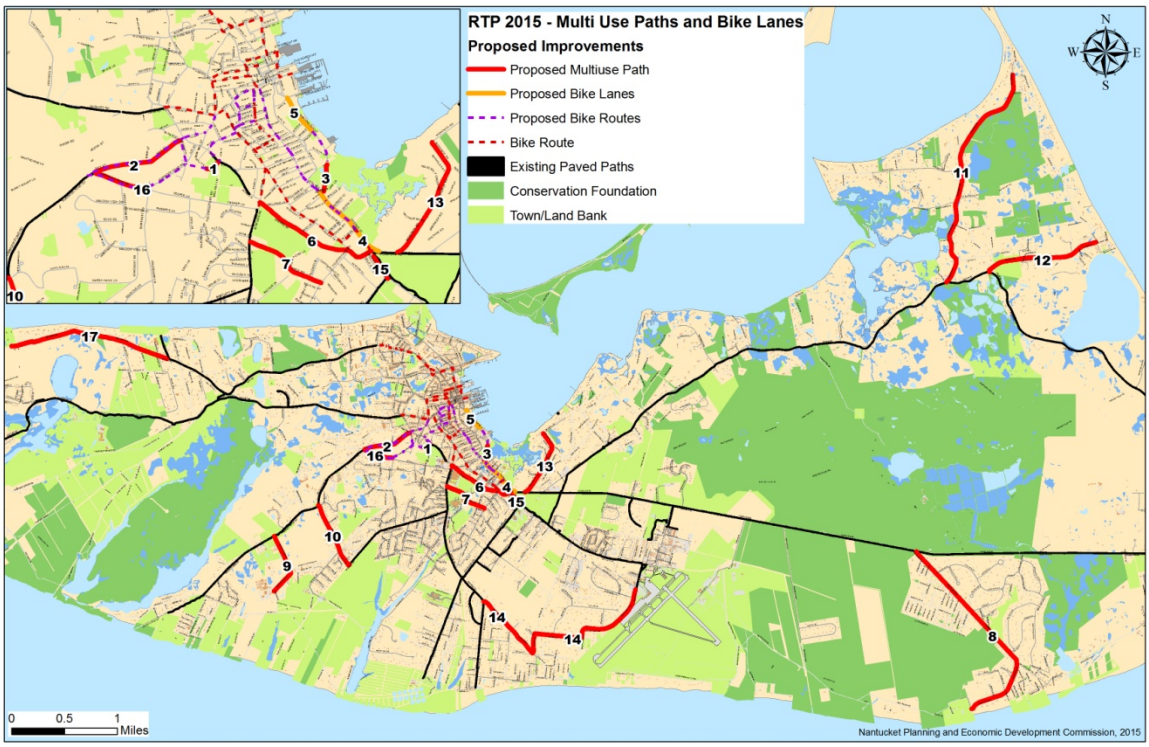
The following bicycle improvements are recommendation of studies and plans listed in Section 2.9.2, or developed as part of the public outreach for this plan.

Description of Status Designation

A	Design complete, ready for construction
B	Project permitted, final plans initiated
C	Preliminary design complete, Permitting stage
D	Preliminary design initiated
E	Project funded, design to be initiated
F	Project is unfunded

Bicycle Improvements (See Map 30)

Project ID	Project	Design Cost	Construction Cost	Status
1	Mill Hill Path	$15,000	$200,000	D
2	Milk Street Ext Path	$60,000	$470,000	D
3	In-Town Multi-use Path, Phase 1	$150,000	$1,400,000	C
4	In-Town Multi-use Path, Phase 2	TBD	TBD	F
5	In-Town Multi-use Path, Phase 3	TBD	TBD	F
6	Sparks Avenue Path	$46,000	$459,000	F
7	First Way Path	$97,000	$643,000	F
8	Tom Nevers Road Path	$332,000	$2,211,000	F
9	Bartlett Farm Road	$100,000	$654,000	F
10	Somerset Lane Path	$111,000	$739,000	F
11	Wauwinet Road Path	$354,000	$2,361,000	F
12	Quidnet Road Path	$257,000	$1,715,000	F
13	Monomoy Road Path	$105,000	$700,000	F
14	Boulevarde Path	$333,000	$2,220,000	F
15	Old South Road Path – south side	$16,000	$122,000	F
16	Hummock Pond Rd Path Extension	$37,500	$250,000	D
17	Eel Point Road Path Extension	$244,000	$1,627,000	F

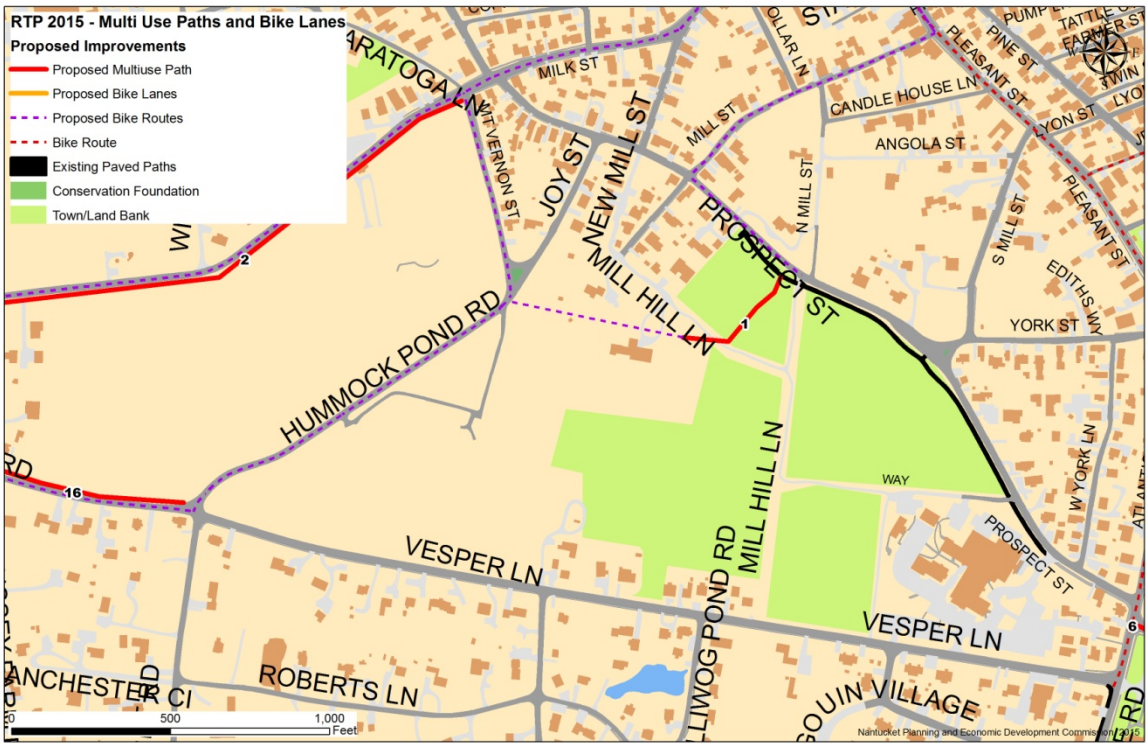


Map 30. Proposed Multiuse Paths and Bike Lanes

6.6.1. Mill Hill Multi-Use Path

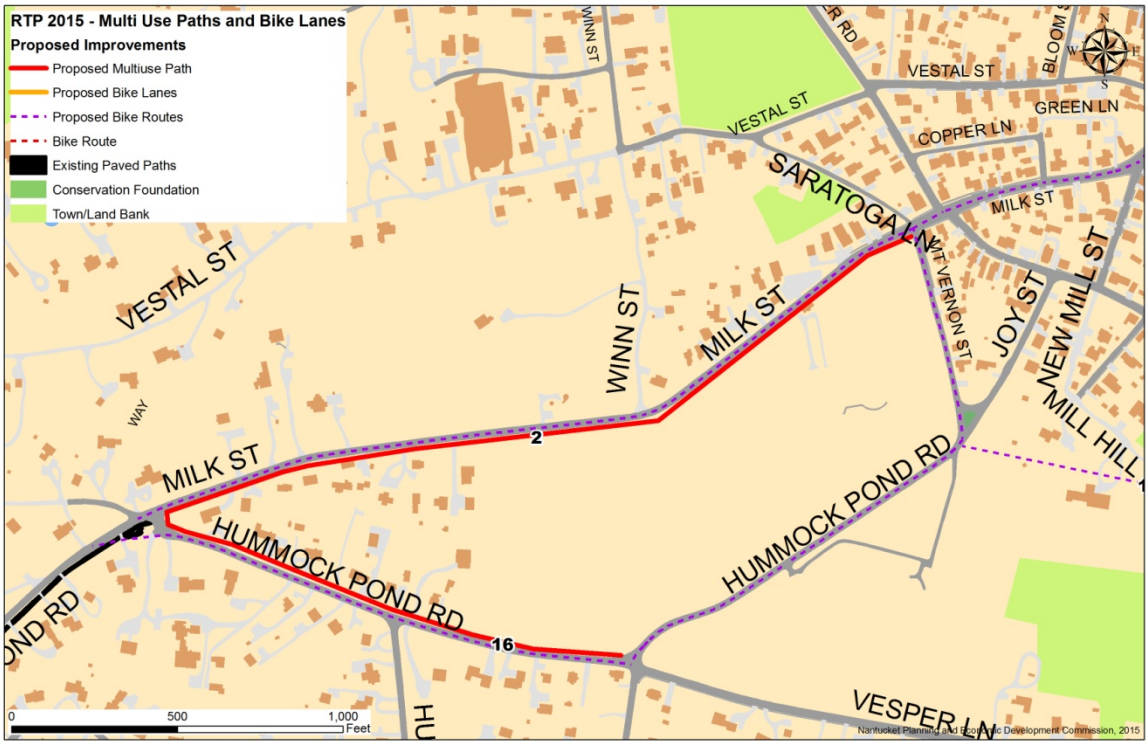
Status	Est. Design Cost	Est. Cost to Construct
D – Design initiated	$40,000	$220,000

The existing Prospect Street Path is 8 feet wide and extends from the intersection of Atlantic Avenue to just west of the intersection of North Mill Street. An extension of this path is necessary to safely link bike and pedestrian traffic from this path to the routes to Cisco Beach (via the proposed Hummock Pond Bike Path) and to Madaket (via the Madaket Bike Path). Since the right of way along Prospect Street is insufficient for a multi-use path, a preferred route would be aligned just south of the properties abutting Prospect Street.


RTP 2015 - Multi Use Paths and Bike Lanes
Proposed Improvements
Proposed Multiuse Path
Proposed Bike Lanes
Proposed Bike Routes
Bike Route
Existing Paved Paths
Conservation Foundation
Town/Land Bank
MILK ST
MILL ST
CANDLE HOUSE LN
ANGOLA ST
PLEASANT ST
PINE ST
LYON ST
MT VERNON ST
JOY ST
NEW MILL ST
N MILL ST
S MILL ST
PROSPECT ST
MILL HILL LN
EDITHS WY
YORK ST
W YORK LN
HUMMOCK POND RD
WAY
VESPER LN
ROBERTS LN
0
500
1,000
Feet
Nantucket Planning and Economic Development Commission 2015

6.6.2. Hummock Pond Road Bike Path Extension (a.k.a. Milk Street Extension Path)

Status	Est. Design Cost	Est. Cost to Construct
C – 25% Design (Phase 1)	$60,000	$465,800



This 8 foot wide 2,485 linear foot sidewalk is one of the components to the Prospect Hill Improvements that would provide safe and convenient bicycle and pedestrian access between Madaket, the Cisco area, and Town. This 8 foot wide path would be aligned along the east side of Milk Street Extension from the intersection of Mt Vernon Street to the intersection of Hummock Pond Road, and is currently proposed to be separated from the roadway with asphalt curbing. The path would provide an adequate area for bicyclists and pedestrians traveling to/from destinations along the Hummock Pond Road bike path.

6.6.3. In-Town Bike Path, Phase 1 (Railroad Causeway)

Status	Est. Design Cost	Est. Cost to Construct
D – Design initiated	$150,000	$1,400,000

The In-town Bike Path would provide a safe connection for bicyclist and pedestrians from the ferry terminals in the Downtown Core District to the Milestone Rotary, which is the link to the Milestone, Sparks, and Old South Bike Paths. The recommended concept for this project includes a shared use path along the historic railroad causeway, and a system of 5 foot wide sidewalks and 4 foot wide bike lanes along Washington Street and Orange Street. Due to the cost of reconstructing Washington and Orange Streets, the project will need to be phased and implemented as funding becomes available. The initial phase would be the shared use path along the railroad right of way.

6.6.4. In-Town Bike Path, Phase 2 (Orange Street)

Status	Est. Design Cost	Est. Cost to Construct
F – Project is unfunded	TBD	TBD

As noted in the project description above, this future phase of the In-Town Bike Path project would provide a 4-foot wide bike lane along both sides of Orange Street from the intersection of Spruce Street to the Milestone Rotary. Due to construction costs and right of way needs, this segment of the project was separated from the first phase of the project and is to be implemented as a future phase.

6.6.5. In-Town Bike Path, Phase 3 (Washington Street)

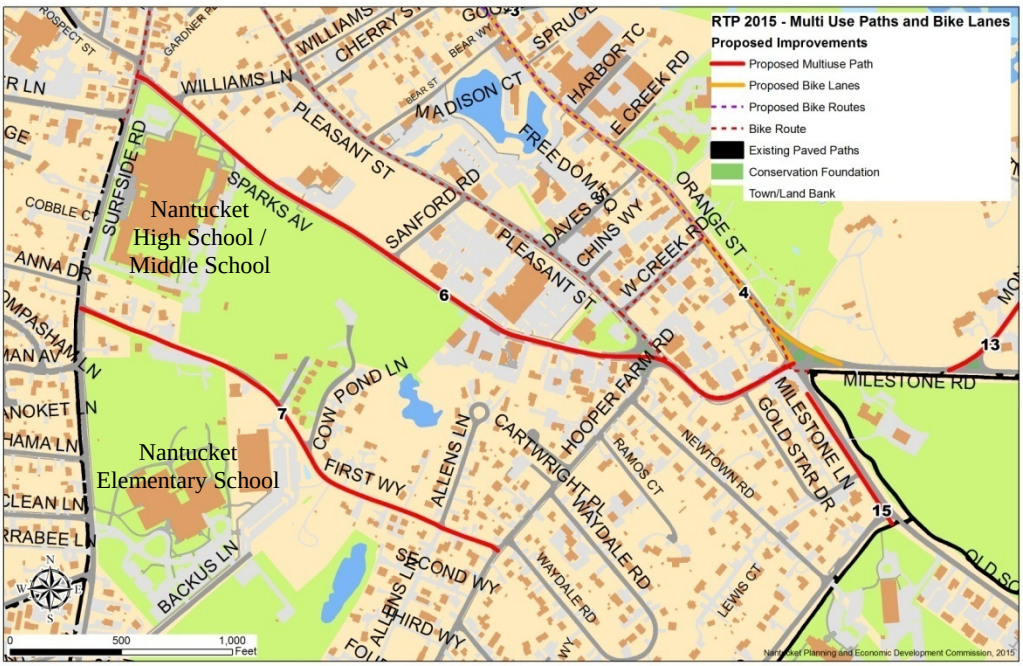
Status	Est. Design Cost	Est. Cost to Construct
F – Project is unfunded	TBD	TBD

As noted in the project description above, this future phase of the In-Town Bike Path project would provide a 4-foot wide bike lane along both sides of Washington Street from the intersection of Commercial Street to Francis Street. Due to construction costs, a need to evaluate alternative designs for the utility infrastructure in this project area, and right of way impacts this segment of the project was separated from the first phase of the project and is to be implemented as a future phase.

6.6.6. Sparks Avenue Path

Status	Est. Design Cost	Est. Cost to Construct
F – Project is unfunded	$46,000	$459,000

The Sparks Avenue improvements consist of widening the existing sidewalk to at least an 8-foot width along the south side of the roadway to link the Surfside Road intersection (Four Corners) with the Milestone Rotary. Portions of this widening have already been implemented. This improvement would widen the existing sidewalk along the remaining 2,620 linear foot "gap".



6.6.7. First Way Path

Status	Est. Design Cost	Est. Cost to Construct
F – Design not funded	$97,000	$643,000

First Way consists of a roadway that is paved between Surfside Road to the vicinity of Cow Pond Lane, with the balance of the roadway unpaved to Hooper Farm Road. There is no sidewalk or bike path along either side of the roadway. This improvement will provide a dedicated bicycle and pedestrian connection from Surfside Road to connect with Hooper Farm Road. This +/-2,200 linear foot path would provide a safer route for all users between these roadways, but would be most beneficial for students walking or biking between the public school and the neighborhoods east of the school campus.

6.6.8. Tom Nevers Road Bike Path

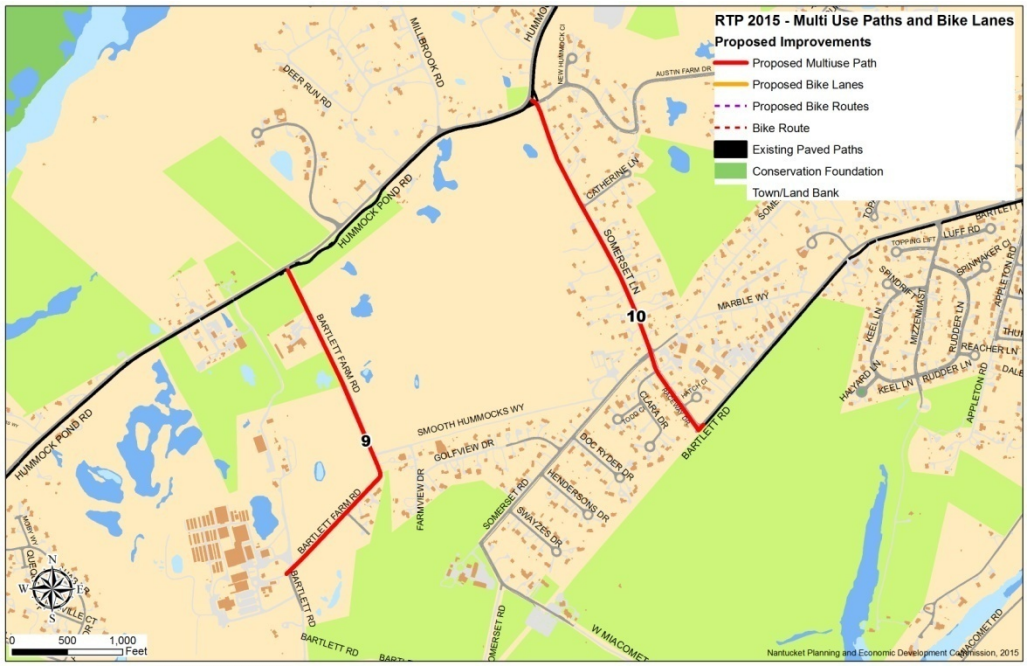
Status	Est. Design Cost	Est. Cost to Construct
Bike Path – F – Unfunded	$332,000	$2,211,000

This approximately two mile long multi-use path will connect the Milestone Bike Path with the Old Navy Base Playing Fields and the neighborhoods along Tom Nevers Road. The path would be aligned along the east side of the road from Milestone Road to the Tom Nevers Playing Fields, but due to the high cost of the project it would likely be phased with an initial 1.4 mile section built from Milestone Road to the intersection of Old Tom Nevers Road.

6.6.9. Bartlett Farm Road Path

Status	Est. Design Cost	Est. Cost to Construct
F – Project is unfunded	$100,000	$654,000

Bartlett Farm Road is a 22-foot wide roadway with grass shoulders that has had traffic dramatically increase in recent years with the development of an abutting large farm stand and brewery. As the popularity of these facilities has increased, there is a need to provide a dedicated bike and pedestrian facility to separate this traffic from the vehicle traffic in the roadway. A 10-foot wide multi-use path along a 3,270 linear foot section of Bartlett Farm Road would provide a bike and pedestrian traffic a more safe and convenient access to the popular destinations along the roadway.



6.6.10. Somerset Lane Path

Status	Est. Design Cost	Est. Cost to Construct
F – Project is unfunded	$111,000	$739,000

This project would provide a 10-foot wide multi-use path along the 3,434 linear foot section of Somerset Lane and Raceway Drive to connect the Hummock Pond Road Path with the Bartlett Road Path. Although the conceptual alignment of a path would need further study, a preliminary review of the corridor shows there may be more area along the western portion of the public way to construct the path.

6.6.11. Wauwinet Road Path

Status	Est. Design Cost	Est. Cost to Construct
Bike Path – F – Unfunded	$354,000	$2,361,000

This project would construct an 8- to 10-foot wide path along a 2.25 mile section of Wauwinet Road between Polpis Road and the gate house located near the end of Wauwinet Road (approximately 750 feet north of Squam Road). The impacts to abutting properties and wetlands will need to be quantified and evaluated as part of the preliminary design of this path. Due to the high cost of construction, this project would likely be phased with an initial 1.1 mile section built from the intersection of Polpis Road to Pocomo Road.

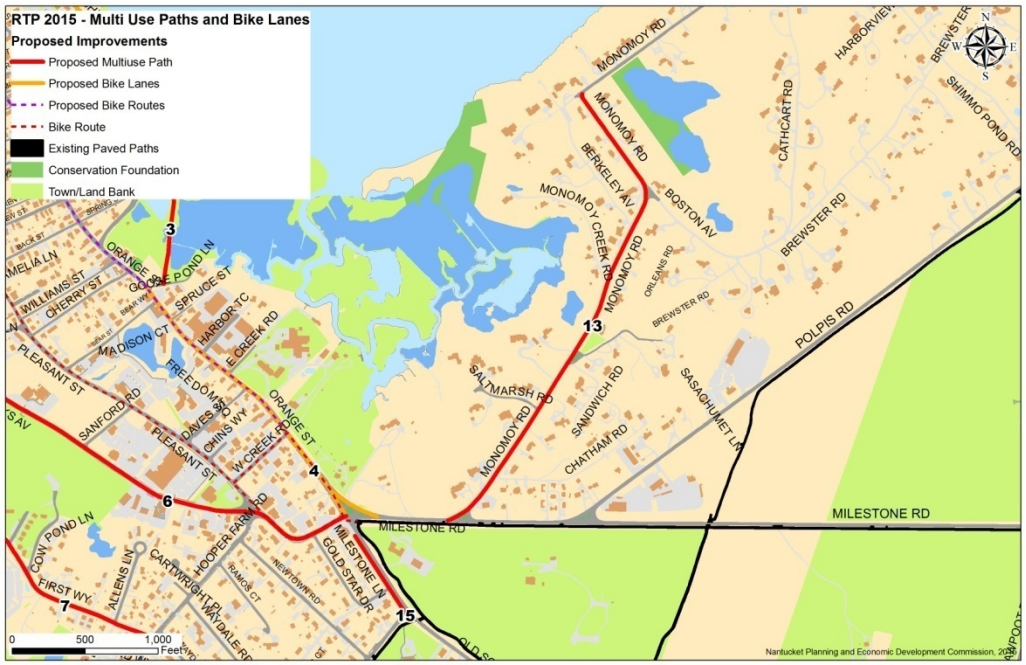
6.6.12. Quidnet Road Path

Status	Est. Design Cost	Est. Cost to Construct
Bike Path – F – Unfunded	$189,000	$1,715,000

This project would construct an 8- to 10-foot wide path along a one mile section of Quidnet Road between Polpis Road and Squam Road. The impacts to abutting properties and wetlands will need to be quantified and evaluated as part of the preliminary design of this path.

6.6.13. Monomoy Road Bike Path

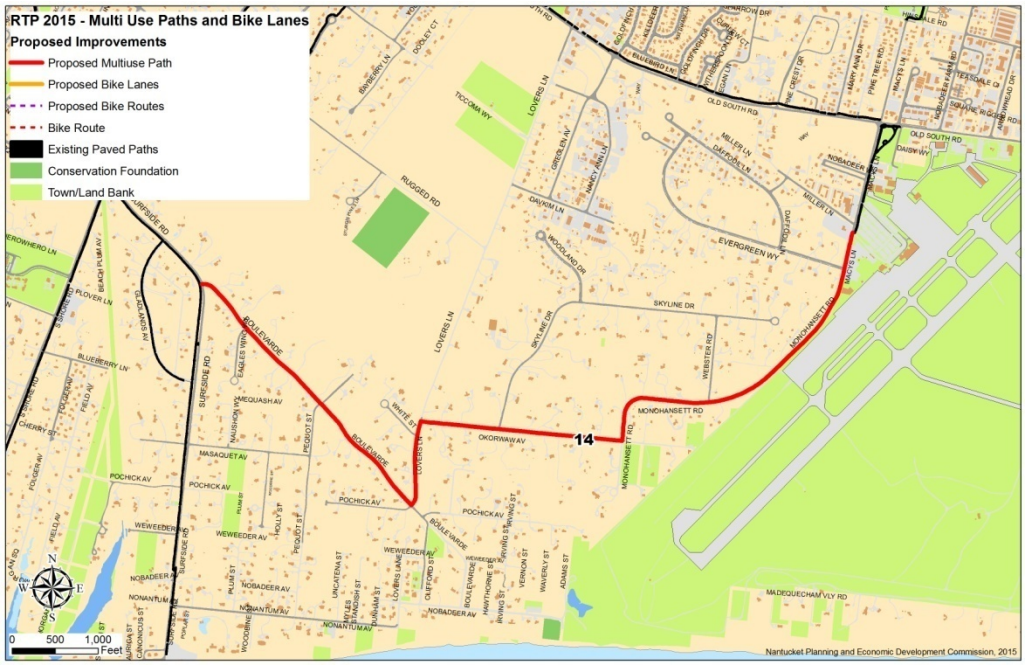
Status	Est. Design Cost	Est. Cost to Construct
Bike Path – F – Unfunded	$105,000	$700,000



This multi-use path project will connect the Milestone Bike Path with residential and public spaces along Monomoy Road. The alignment of the proposed 0.66 mile path has not been determined. Right of way impacts would need to be evaluated to determine the best alignment for the path.

6.6.14. Boulevarde Path

Status	Est. Design Cost	Est. Cost to Construct
F – Design not funded	$333,000	$2,220,000

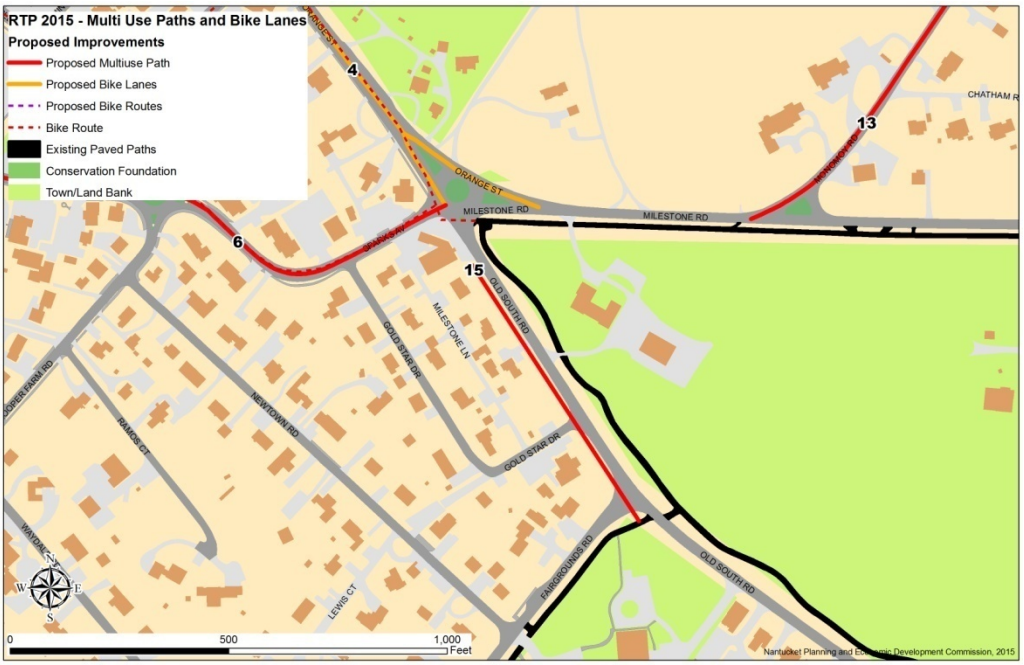


This improvement will provide a 10-foot wide multi-use path to connect the Surfside Road path with the Airport Road path using a portion of numerous roadways – Boulevarde, Lover's Lane, Okorwaw Avenue, Monohansett Road, and Airport Road. A majority of this 2.1 mile project corridor is privately owned and would require outreach to all abutters with rights to the roadway.

6.6.15. Old South Road Bike Path (south side link from Rotary to Fairgrounds Rd)

Status	Est. Design Cost	Est. Cost to Construct
F – Unfunded	$16,000	$122,000

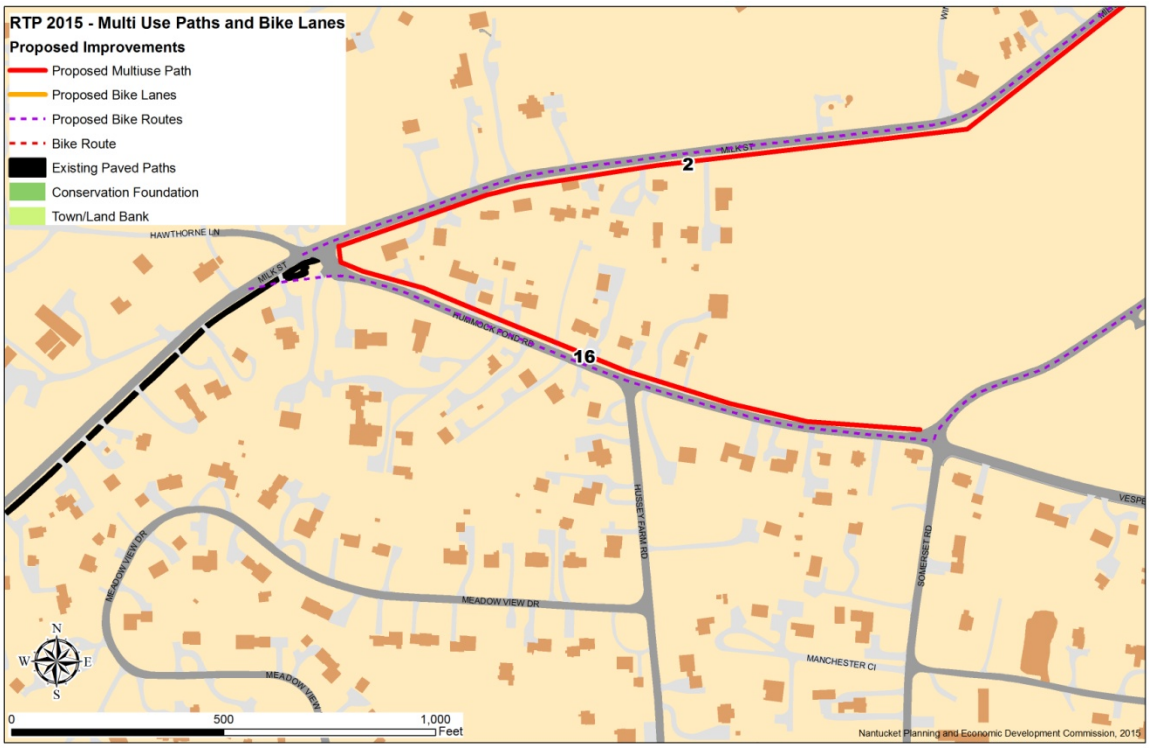
This improvement would provide a 10-foot wide bike path linkage along the south side of Old South Road between the Milestone Rotary and Fairgrounds Road. Path users would have a connection from the existing bike path and NRTA stop near the Milestone Road to the Fairgrounds Road Bike Path via this path and a crosswalk across Fairgrounds Road.



6.6.16. Hummock Pond Rd Path Extension

Status	Est. Design Cost	Est. Cost to Construct
C – 25% Design (Phase 1)	$60,000	$470,000

This 8 foot wide 1,575 linear foot path is another component to the Prospect Hill Improvements that would provide bicycle and pedestrian access between the Cisco area and Town. The path would be aligned along the north side of Hummock Pond Road and serve as an extension from the Milk Street Extension Path (see project description above) to Joy Street and Vesper Lane.



6.6.17. Eel Point Road Bike Path Extension

Status	Est. Design Cost	Est. Cost to Construct
F – Unfunded	$244,000	$1,627,000

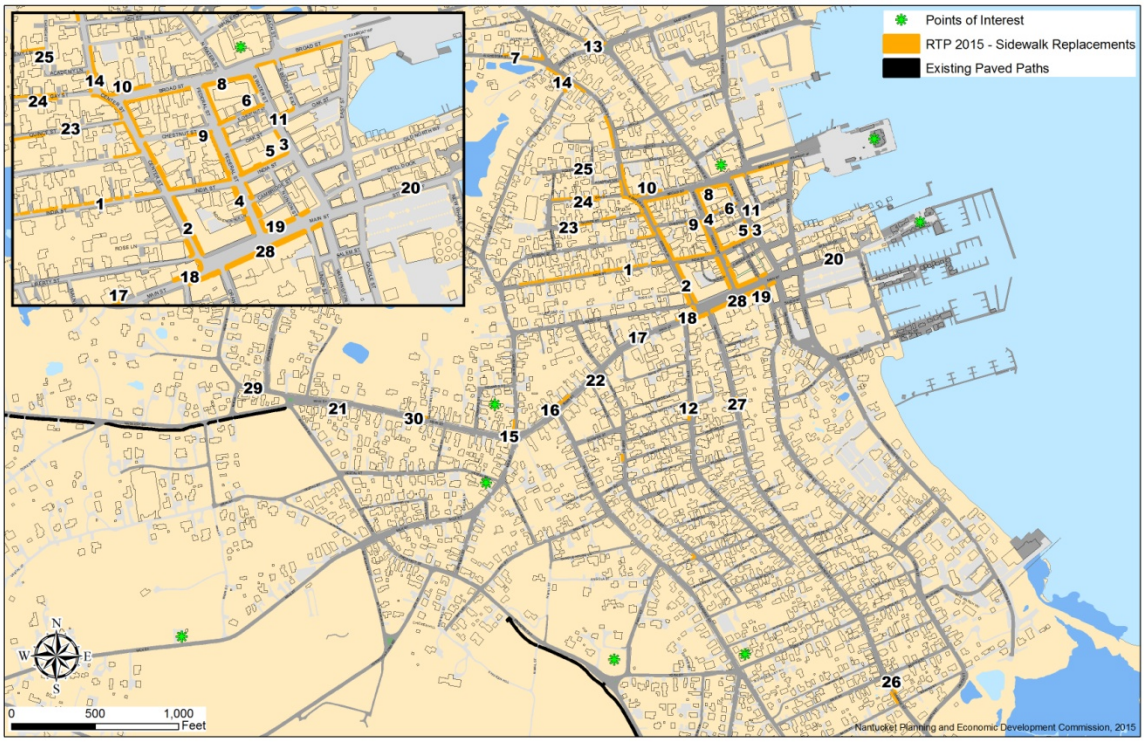
This 1.5 mile long extension of the Eel Point Road bike path would provide a 10-foot wide path along the north side of Eel Point Road between Dionis Beach Road and the 40th Pole access.

6.7. PEDESTRIAN IMPROVEMENTS

Throughout 2014, the Nantucket Roads and Right of Way Committee conducted a Downtown Sidewalk Survey to inspect sidewalks and note their condition, encroachments, obstructions, and identify gaps in the system where a sidewalk was needed. The following pedestrian improvements are the recommendations of the Roads and Right of Way Committee, studies and plans listed in Section 2.9.2, or identified as part of the outreach for this plan's development.

6.7.1. Sidewalk Replacements

The map below identifies existing sidewalks that are mostly flat with possible uneven surfaces or narrow passage due to utility poles, tree roots, and broken pavement or uneven bricks. These conditions impact accessibility by creating tripping hazards or more significant obstructions. The sidewalks most in need of resurfacing are found in the core district (i.e., Main Street and Centre Street) and along ancillary near the core (Upper Main Street and India Street) where pedestrian traffic is the heaviest.



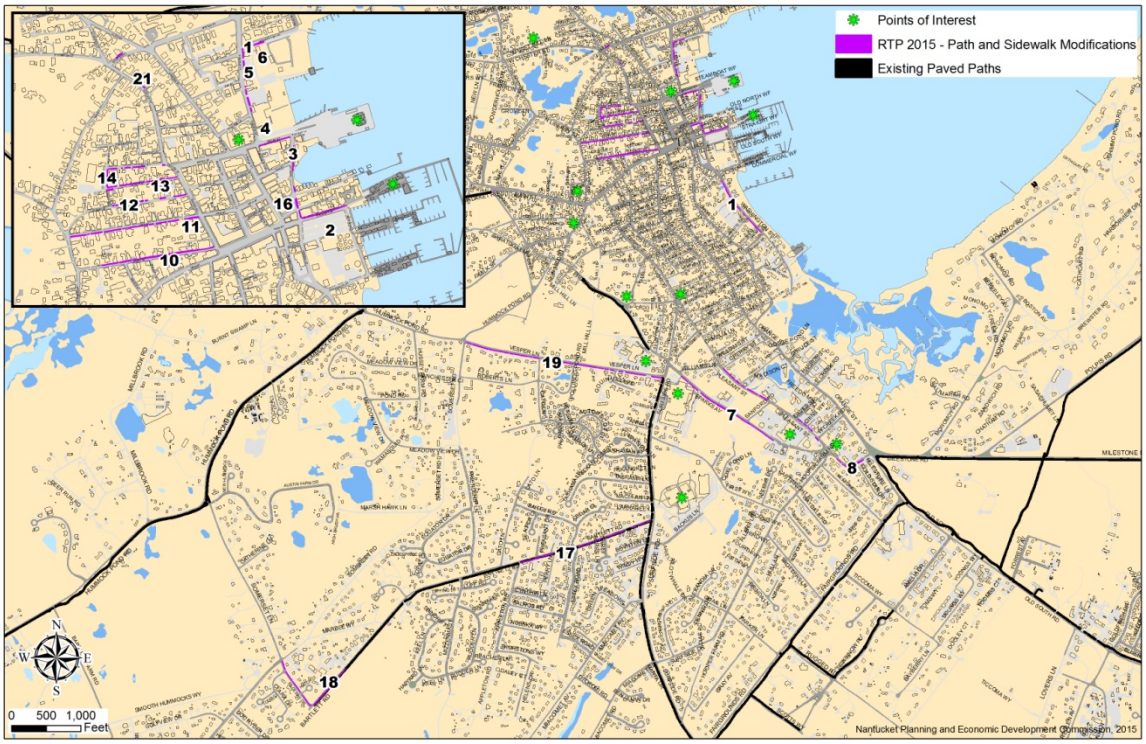
Map 31. Sidewalk Replacements

Map Id	Street	Estimated Sqft Area
1	India St	4,106
2	Centre St	9,390
3	S Water St	790
4	Federal St	9,257

5	India St	3,474
6	E Chestnut St	712
7	W Chester St	1,182
8	Broad St	5,813
9	Chestnut St	601
10	Broad St	2,481
11	Oak St	448
12	Pine St	1,102
13	Cliff Rd	751
14	Centre St	3,656
29	Main St	177
30	Main St	286
15	Gardner St	711
16	Main St	1,309
17	Main St	1,100
18	Main St	1,537
19	Main St	3,131
20	Straight Wf	326
21	Main St	431
22	Main St	431
23	Quince St	1,154
24	Gay St	1,257
25	Academy Ln	279
26	Orange St	1,220
27	Orange St	409
28	Main St	8,164

6.7.2. Sidewalk Modifications

The map below shows the location of existing sidewalks that are proposed to be modified. In most cases, a modification is recommended to widen the sidewalk to either meet the minimum ADA standard width or widen to accept the large volume of pedestrian traffic along the corridor. As noted in the Goals and Objectives, the priority areas for improving pedestrian circulation is between the ferry terminals and the following areas: downtown public and cultural areas, bike paths adjacent to the downtown area, the Hospital, Schools, and mid-island commercial areas.



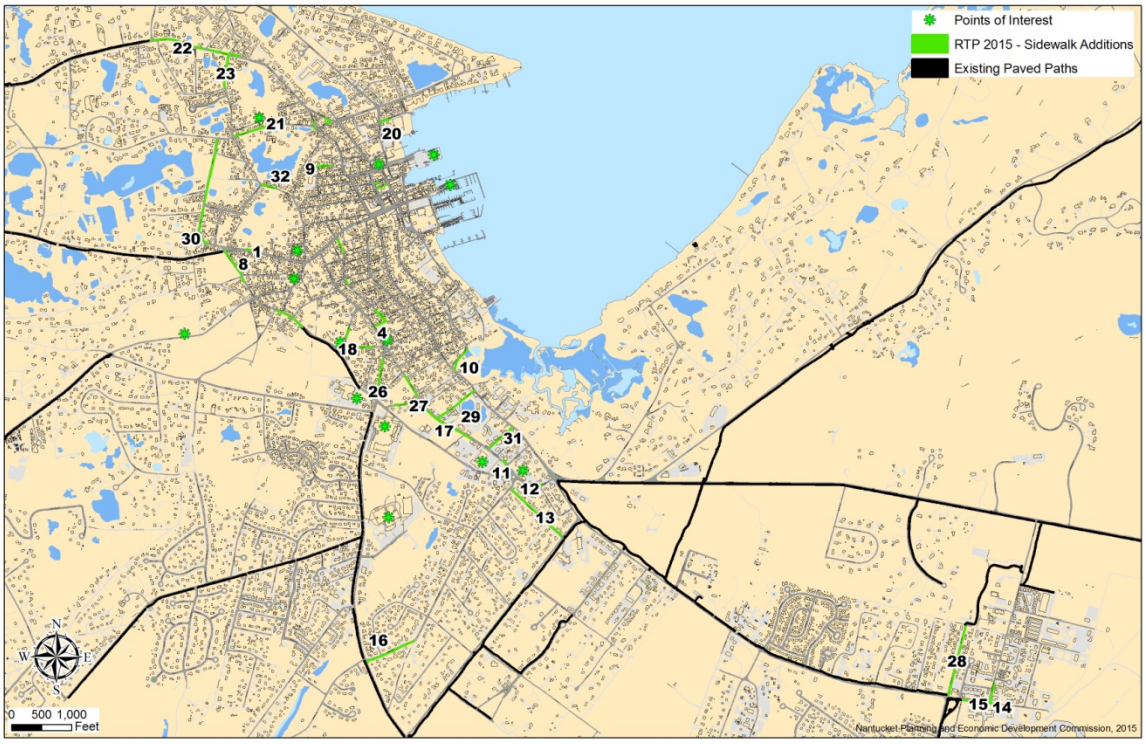
Map 32. Sidewalk Modifications

Map Id	Street	Estimated Sqft Area
1	Washington St	3,602
2	Straight Wf	1,652
3	Easy St	1,874
4	Broad St	846
5	S Beach St	1,402
6	Harborview Wy	1,271
7	Sparks Ave	8,002
8	Sparks Ave	1,813
9	Pleasant St	3,765
10	Liberty St	5,519
11	India St	4,196
12	Hussey St	2,030
13	Quince St	2,323

14	Westminster St	1,020
15	Gay St	857
16	Cambridge St	868
17	Bartlett Rd	5,536
18	Bartlett Rd	5,976
19	Vesper Ln	9,812
20	Chester St	418
21	Centre St	159
22	Main St	55

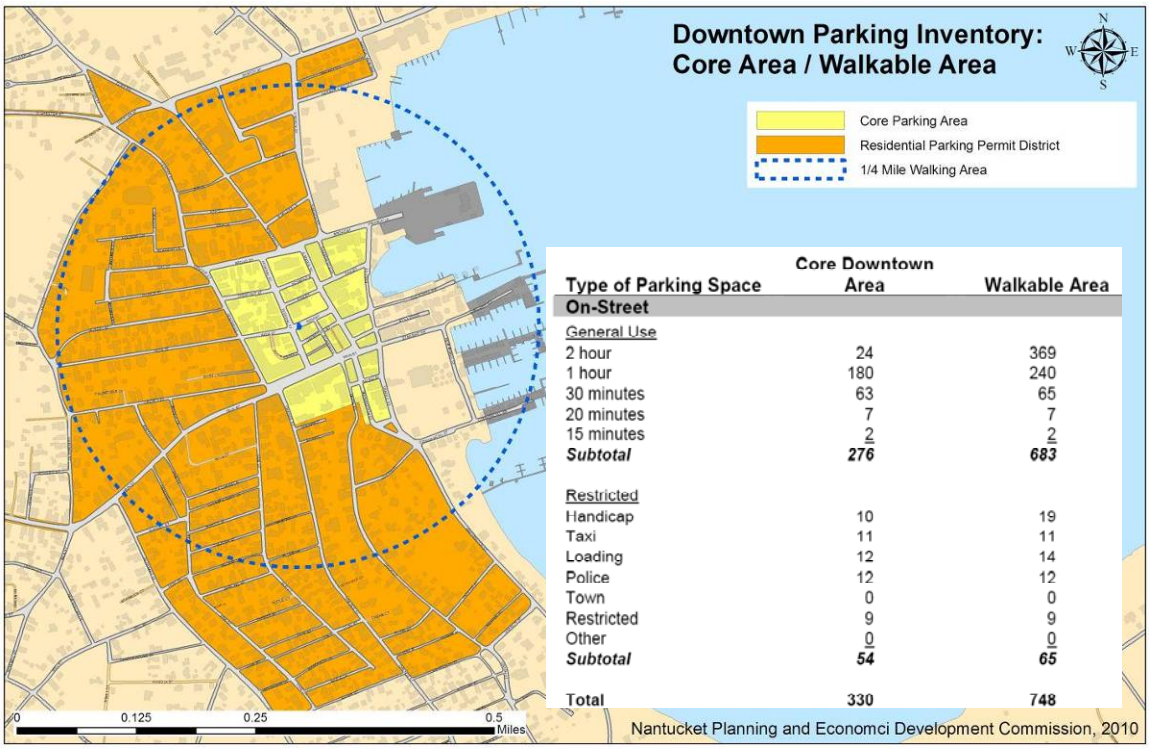
6.7.3. Sidewalk Additions

The map below identifies areas where a sidewalk should be added next to a roadway. In most cases, the addition of a sidewalk would link existing sidewalks and would remove "gaps" in the pedestrian network. As noted in the Goals and Objectives, these pedestrian improvements link important commercial and transportation nodes, such well as attractions such as the Nantucket Historical Association properties.



Map Id	Street	Estimated Sqft Area
1	Main St	332
2	E Chestnut St	110
3	Oak St	638
4	Pine St	3,404
5	Cliff Rd	1,015
6	N Centre St	189
7	W Chester St	142
8	Quaker Rd	2,690
9	Academy Ln	942
10	Union St	1,841
11	Pleasant St	709
12	Sparks Ave	1,723
13	Newtown Rd	7,605
14	Nobadeer Farm Rd	2,060

15	Old South Rd	3,266
16	Surfside Dr	5,565
17	Pleasant St	6,818
18	York St	2,145
19	S Mill St	776
20	Harbor View Wy	1,271
21	W Chester St	3,697
22	Cliff Rd	7,147
23	N Liberty St	3,400
24	Prospect St	2,087
25	Quaker Rd	453
26	Atlantic Ave	3,092
27	Williams Ln	1,481
28	Macys Ln	6,682
29	Bear St	4,786
31	Daves St	3,423
30	New Ln	9,736
32	N Liberty St	1,046



Type of Parking Space	Core Downtown Area	Walkable Area
On-Street		
General Use		
2 hour	24	369
1 hour	180	240
30 minutes	63	65
20 minutes	7	7
15 minutes	2	2
Subtotal	***276***	***683***
Restricted		
Handicap	10	19
Taxi	11	11
Loading	12	14
Police	12	12
Town	0	0
Restricted	9	9
Other	0	0
Subtotal	***54***	***65***
Total	330	748

Map 33. Parking Inventory in Downtown Area

7. PARKING FACILITIES

7.1. DOWNTOWN CORE DISTRICT

According to the *Downtown Parking Study*, completed in 2009, parking facilities in the downtown core district are very limited (see Map 33). This study demonstrated that there are not enough parking spaces (a deficit of approximately 374 spaces) for the demand during the summer season, particularly Friday and Saturday evenings. The existing parking accommodations are primarily on-street with extremely limited options for off-street parking, most in privately owned lots.

The Core District is restricted to one-hour parking in the summer and two-hour parking in the off-season. The area outside of the core district is referred to as the Residential Permit District, and has a two-hour time limit for parking. This is enforced from June 15th to September 15th. Residency permits are available to individuals who show that they live in this district, and exempt them from the restrictions. The parking restrictions are enforced by the Nantucket Police Department.

As noted in the NRTA section (section 5), there are six park and ride lots operated from the June 1st through September 30th in conjunction with the NRTA shuttle system.

7.2. MID-ISLAND AREA

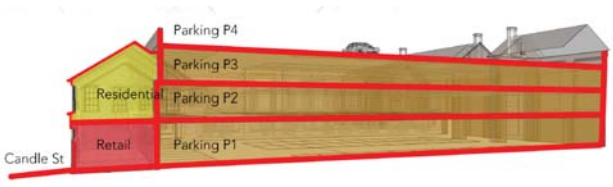
The *Traffic Study and Strategy for the Mid-Island Area* analyzed the off-street parking utilization of lots in the mid-island Area and determined that many of the parking lots along Pleasant Street and West Creek Road that were at or near capacity during peak periods (weekday evenings and mid-day weekends). As recommended in the traffic study, the Planning Board has required on-street parking be created along sections of Pleasant Street as part of recent development activity to address the need for parking in the area, and to contribute to a more "downtown feel" in the mid-island.

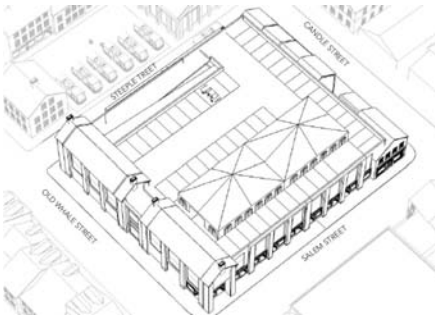
7.3. PARKING IMPROVEMENTS

7.3.1. Downtown Improvements

7.3.1.1. Increase in parking opportunities (Wilkes Square Redevelopment Area)

As documented in the *Downtown Traffic Study* and the *Downtown Parking Study* (listed in section 2.9), an increase in parking opportunities would address one of the major issues on Nantucket. Much of the traffic congestion in the downtown area is attributed to the lack of parking opportunities (both on- and off-street), which causes many drivers to continually circulate the area in search of a parking space. By providing a satellite parking facility within walking distance of the downtown attractions, the traffic congestion on the downtown streets could be significantly reduced.





One of the options proposed in the *Wilkes Square Redevelopment Study* (see Figure 4 in section 2.9) included a multi-level parking garage designed to address parking deficiencies and fit aesthetically into the historic downtown environment. The *Downtown Parking Study* documented that there is a need for approximately 374 additional public parking spaces in the core area. The proposed garage would provide 233 additional public spaces. An additional 139 spaces could be accounted for with the implement of a Park and Ride system recommended in section 5, which together could provide 372 of the 374 needed spaces.

7.3.1.2. Parking Management in the Downtown Area.

The Town of Nantucket is considering many tools for improving the management of parking in the downtown area. Among these tools is the possibility of implementing on-street paid parking to encourage turnover, prevent long-term parking by employees in desirable parking spaces, and fund supplemental transportation options, such as an additional Park and Ride route.

Figure 4. New Nantucket Memorial Airport Terminal Building

8. AIRBORNE TRAVEL FACILITIES

8.1. NANTUCKET MEMORIAL AIRPORT

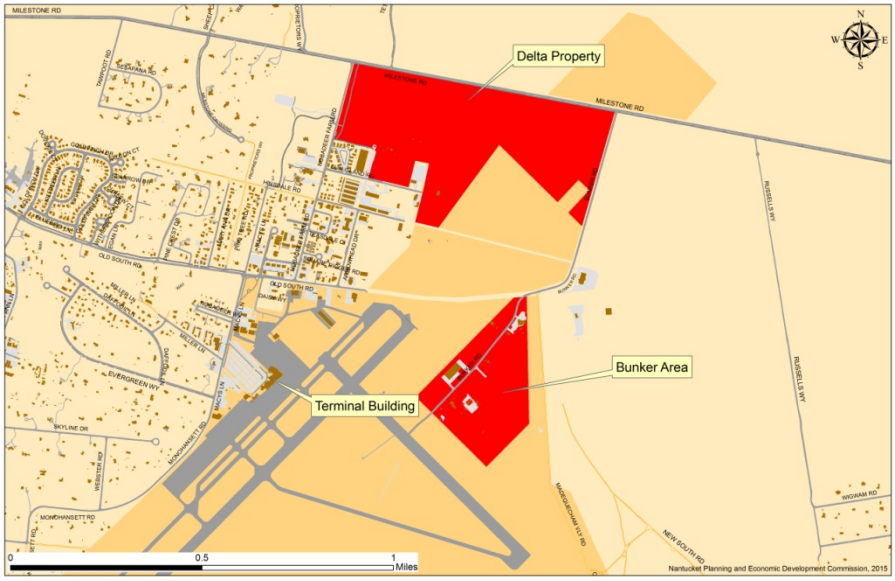
Nantucket Memorial Airport (ACK) is the second busiest airport in Massachusetts during the months of July and August, and is a popular destination for seasonal tourist traffic. The Airport is owned by the Town of Nantucket and operated by the Nantucket Memorial Airport Commission. The Commission is an appointed agency under the Nantucket Board of Selectmen and operates the Airport under its independent self-sustaining Enterprise Fund. A full-time manager and staff are employed to operate the Airport on a day-to-day basis.

The Airport is a major point of entrance and exit, and is an economic engine for Nantucket generating more than $400.1 million in economic output for the island (Massachusetts Statewide Airport Economic Impact Study 2010). It is located on Airport Road, approximately 2.5 miles southeast of Nantucket downtown core district. Each runway at ACK has unique operational characteristics which serve different operational needs and aircraft. Runway 6-24 is considered the airports primary runway and is capable of serving the approach and departure needs under most weather conditions by the largest aircraft typically operating at ACK. The Terminal Building was renovated in 2008, featuring an 18,000 ft^2 expansion to accommodate the growth in passenger enplanements and comply with TSA screening requirements. The building also meets the LEED Silver certification standards. Other buildings include the Airport's Rescue and Fire Fighting Station completed in 2012, a new General Aviation and Administration Building completed in 2014, a maintenance building, and several hangars. Nantucket's Air Traffic Control Tower is located in the northeast corner of the terminal building.

The island's isolated location and local demographics lend uniqueness to its aviation activity that is fundamentally different than at most other mainland airports. Due to the island's popularity as a summer resort destination, the airport experiences significant seasonal changes in the fleet of visiting aircraft: there is strong seasonal and Holiday presence of Part 121 commercial and general aviation traffic in addition to its year round Part 135 air taxi service.

Map 34. Nantucket Memorial Airport

The Airport occupies 1,200 acres with about 750 acres devoted to aeronautical operations and the remaining acreage devoted to non-aeronautical operations. The two areas on airport property that are not used for aeronautical operations include the “Delta Property” located northwest of the airfield and the “Bunker Area” northeast of the runways (see Map 35). The "Delta Property" is currently undeveloped, with commercial development opportunities currently being considered under the Airport’s Master Plan. The "Bunker Area" (a Formerly Used Defense Site - the site of the Navy's World War II depot) has been partially developed through a Major Commercial Development (MCD) plan by commercial tenants. Continued development of the Bunker Area has been delayed by the discovery of potential World War II ordnance and munitions constituents, and is in the process of an Army Corps of Engineers remediation effort.



Map 35. Airport Vicinity Map

The terminal parking lot at the Nantucket Memorial Airport has 292 parking spaces and 80 car rental spaces. The Airport also has a stabilized gravel parking lot which provides overflow parking for 120 rental cars, in addition to space for visitors to the Airport's ARFF Station. Traffic Counts at the main parking lot entrances and at Old South Road show that automobile traffic volumes have decreased by approximately 4% to 5% since 2002. Overnight parking has a $20 per night charge. There is also overflow parking for approximately 50 vehicles. As of June 2010, the Airport Commission installed a "paperless" self-service auto fare collection system for the main parking lot. Commission policy is to continue to encourage the use of the NRTA's Airport bus and taxi cabs. The Airport supports a website listing of taxi services and rates to various parts of the island.

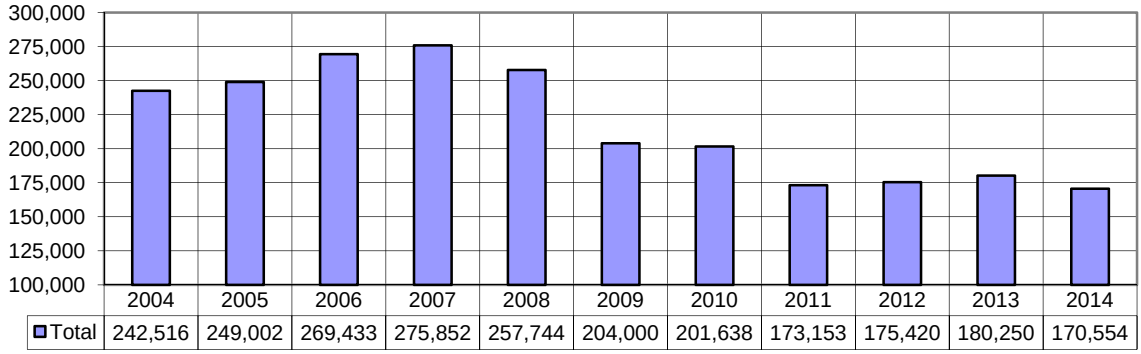
8.1.1. Passenger Services

The Nantucket Memorial Airport provides an important link to the mainland with service provided by these airlines: Nantucket Air/Cape Air (Hyannis, Providence, Boston, Martha's Vineyard, White Plains, NY and New Bedford), island Air (Hyannis), US Airways (summer service to LaGuardia, NY, and Washington, D.C.), United (Newark, NJ service in the summer only), Delta Airlines (JFK, NY service in the summer only), JetBlue (JFK, NY and Boston service in the summer only) and Tradewinds Aviation (White Plains, NY and Teterboro, NJ). There are also a number of airlines that provide charter services to Nantucket. These companies include: Reliant Air, Linear Air, Fair Shares, Action Air, A-Z Aviation, Chatham Air, Linear Air and Ocean Wings Air Charter.

Across all classes of service, the trend in service has been towards decreasing enplanements, decreasing operations, and larger aircraft.

8.1.2. Airport Enplanements and Operations

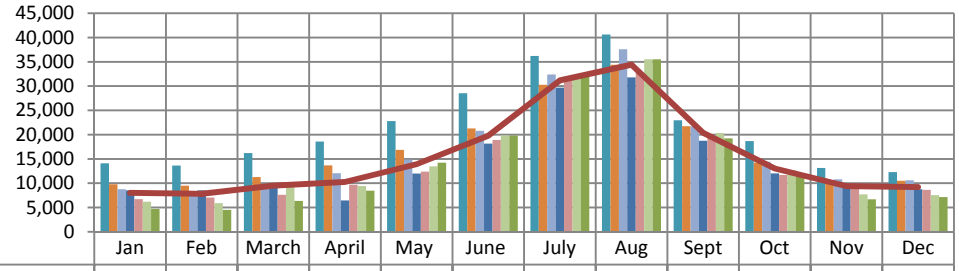
Table 20. Annual Airport Enplanements (ACK)



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total	242,516	249,002	269,433	275,852	257,744	204,000	201,638	173,153	175,420	180,250	170,554

Table 20 shows the total passenger enplanements (or departing passengers) from the Airport from 2004 to 2014. Enplanements have not recovered from the 2008 recession. The most recent 3 year average of 177,000 enplanements is a 25% reduction from the historical period shown.

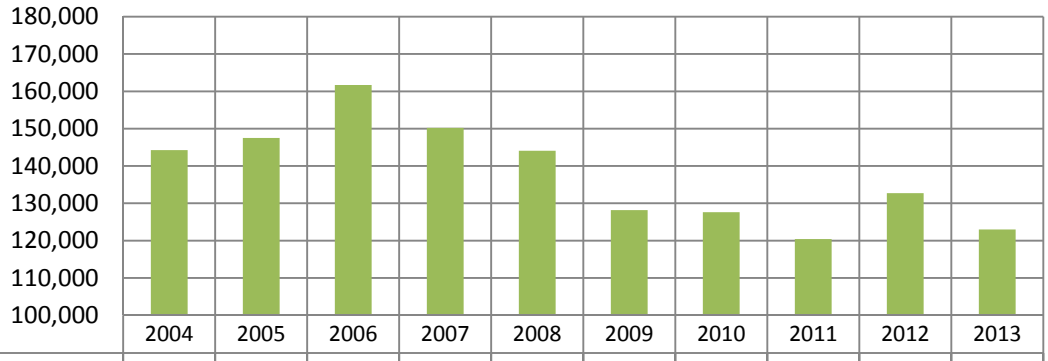
Table 21. 2010 Monthly Enplanements (ACK)



	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
2008	14,096	13,643	16,213	18,595	22,790	28,525	36,198	40,611	22,955	18,681	13,154	12,283
2009	9,796	9,502	11,252	13,661	16,870	21,284	30,288	34,380	21,727	14,268	10,465	10,507
2010	8,777	8,140	9,506	12,053	14,869	20,776	32,392	37,572	21,707	14,442	10,791	10,613
2011	8,544	8,523	9,480	6,455	11,996	18,136	29,694	31,788	18,744	12,012	9,029	8,752
2012	6,729	7,047	7,627	9,674	12,381	18,924	31,484	32,852	19,333	11,696	9,026	8,647
2013	6,183	5,893	9,674	9,407	13,479	19,847	32,009	35,512	20,330	12,665	7,717	7,534
2014	4,728	4,506	6,358	8,453	14,230	19,841	32,285	35,503	19,247	11,561	6,690	7,152
5-Year Monthly Ave.	8,006	7,821	9,508	10,250	13,919	19,793	31,173	34,421	20,368	13,017	9,406	9,211

Table 21 shows the total monthly enplanements from 2008 to 2014. The data show that the majority of enplanements occur during the summer months from June to September, which corresponds with all other modal traffic data collected by the NP&EDC.

Table 22. Annual Operations (ACK)



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Operations	144,267	147,529	161,685	150,200	144,073	128,188	127,623	120,422	132,721	123,000

Table 22 shows the total annual operations (which is defined as either a takeoff, or a landing) from the Airport from 2000 to 2013. Operations have generally decreased since 2000. The most recent 3 year average of 125,000 operations is a reduction of 13% from the historical period shown.

Table 23. Annual Airport Aircraft Size (ACK)

	Charter and General Aviation Propeller Aircraft			Corporate Jet Aircraft		
Year	Operations	Average Max Takeoff Weight	Average Wingspan	Operations	Average Max Takeoff Weight	Average Wingspan
2004	16,912.00	6,243.96	40.4	9,224.00	26,368.08	54.9
2005	15,736.00	6,358.76	40.8	9,336.00	26,876.47	55.3
2006	15,424.00	6,288.51	40.7	9,072.00	27,293.80	55.8
2007	15,152.00	6,401.94	40.9	9,262.00	26,889.17	56.0
2008	16,088.00	6,232.90	40.6	8,062.00	28,428.74	56.8
2009	14,432.00	6,145.09	40.3	7,128.00	28,239.39	56.9
2010	14,550.00	6,252.44	40.7	8,214.00	28,119.09	56.9
2011	10,392.00	7,080.48	42.6	8,350.00	29,004.32	57.2
2012	10,332.00	7,079.97	42.4	8,218.00	28,591.15	57.2
2013	10,750.00	7,127.22	42.9	8,492.00	29,594.75	57.5

Table 23 shows a detailed breakdown of two distinct market segments. While the number of operations for both charter/General aviation and Corporate jets have decreased, the fleet mix within each segment has become larger and heavier. Data are not available for air taxis and commercial service, however, Island Air's Cessna Caravan (for example) is 2,000 pounds heavier and 8 feet wider than the Cessna 402 it displaced. The most common commercial airliner is now Jet Blue's Embraer 190 with a maximum takeoff weight of 105,000 pounds and a 94 foot wingspan: in 2004 this was a Colgan Air Saab 340 at 29,000 pounds and 70 feet, respectively.

Current Airport infrastructure was designed to accommodate smaller and lighter aircraft. Despite declining enplanements and operations, the popularity of larger and heavier aircraft tax Airport facilities and require modernization.

8.1.3. Freight

Freight is transported to Nantucket by a number of companies. There is a charge for freight brought into the Nantucket Airport. Many of the commercial airline companies carry freight. These airline companies include: Cape Air, Nantucket Air, Nantucket Shuttle Airlines and island Air. There are a number of large companies that primarily transport freight through the Nantucket Airport. These companies include: Federal Express, United Parcel Service, U.S. Postal Service, Cape and island Freight and Marine Home Center.

8.1.4. Inter-Modal Access / Linkages

The Airport is well served year round by the island's extensive taxicab fleet. The taxi services provide a major link to and from all areas of the island. The NRTA also provides service between the Airport and the downtown area during the summer season.

Several of the airlines that serve Nantucket from Hyannis do carry bicycles with no extra charge to the customer. The Airport funded the design and construction of a bike path along Airport Road, from the proposed Old South Road bike path, to join with the Airport's entrance.

8.2. AIRPORT IMPROVEMENTS

In keeping with the Airport's Goals and Objectives, the Airport is completing a Master Plan and Sustainability Master Plan prior to proceeding with its future capital projects for safety, capacity, and efficiency improvements of its facilities. The Master Plan process will conclude with an

Environmental Analysis for comprehensive environmental permitting. The funding sources for these improvements do not affect the funding target for the Nantucket region and are financed either exclusively by the Airport or in combination with Federal and State funding. As a result, these improvements as currently drafted in the Master Plan are not found in the Action Plan for this plan:

1. Runway 6 Safety Area improvements
2. Separation of taxiways E, F, and G
3. Relocation of stub taxiways A, B, and C
4. Runway 24 exit taxiway
5. Runway 15/33 exit and parallel taxiway
6. Terminal apron repaving
7. South Apron Redesign and Build
8. Runway 24 DME building relocation
9. Runway 15 Protection Zone improvements
10. North Ramp Tail Height/Parking Position relocation
11. Security and IT improvements
12. Solar Array development

Figure 5. Ferry Terminals

9. WATERBORNE TRAVEL FACILITIES

Figure 6. Total Ferry Passengers (SSA)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Freedom Passengers	22,836	23,036	22,032	23,027	21,196	20,235	19,064	18,557	19,852	20,285	21,704
Hy-Line Passengers	399,116	393,145	404,143	383,193	381,180	342,635	355,858	408,189	432,061	451,568	487,758
SSA Passengers	508,990	511,798	515,437	549,206	517,846	513,611	522,347	522,517	558,539	582,983	605,852

Nantucket is served by three ferry providers that provide transport between the island and Hyannis, Massachusetts. Figure 6 shows how passenger traffic is distributed each year (between 2000 and 2010) among the three providers.

9.1. STEAMSHIP AUTHORITY (SSA)

Since 1948, the Woods Hole, Martha's Vineyard, Nantucket Steamship Authority (SSA), which was known as the New Bedford, Martha's Vineyard, and Nantucket Steamboat Company from

1948 to 1961 per Chapter 544 of the Acts of 1948, has served as the "lifeline to the island", and has maintained a vital transportation link between Nantucket and the mainland. The SSA is responsible for providing passenger / vehicle / freight ferry service and licensing private carriers, such as Hy-Line Cruises and Freedom Cruise Line.

9.1.1. SSA Passenger Service

The SSA operates the M/V Eagle, with a maximum passenger capacity of 816, three round trips per day between Nantucket and Hyannis from mid-October through mid-May. During the peak season, from mid-May to mid-October, the SSA adds the M/V Nantucket, with a maximum passenger capacity of 800, to provide an additional three trips per day.

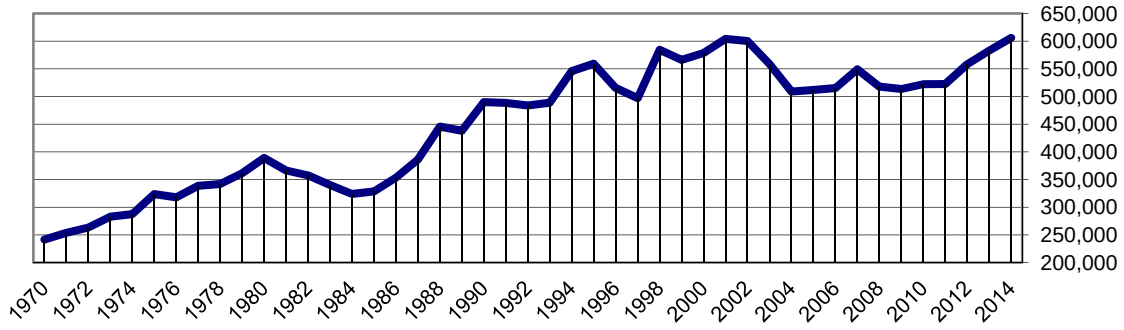
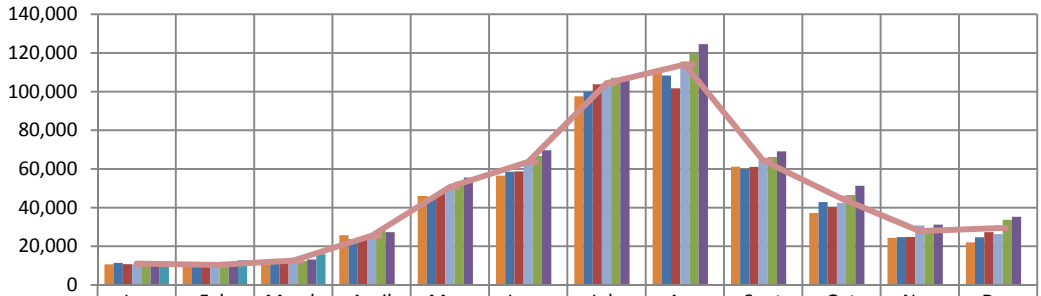


Figure 7. SSA Total Passengers

Figure 7 shows the total number of passengers using the SSA between Nantucket and Hyannis from 1970 to 2014. It can be seen that that the number of passengers carried in 2014 is nearly triple the total in 1970.



	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
2009	10,682	10,678	11,734	25,760	45,999	56,485	97,595	109,895	61,185	37,254	24,303	22,041
2010	11,377	10,432	12,208	23,683	45,625	58,553	99,924	108,302	59,921	42,908	24,774	24,620
2011	10,724	10,686	12,095	23,546	47,633	58,764	103,780	101,687	61,091	40,378	24,796	27,338
2012	10,677	10,760	13,156	24,175	51,131	64,540	103,360	115,532	65,596	42,481	30,790	26,341
2013	10,944	9,482	12,526	28,646	53,361	66,688	107,190	119,895	66,237	46,544	27,821	33,649
2014	11,101	10,208	13,182	27,297	55,525	69,717	107,359	124,568	69,080	51,320	31,203	35,292
2015	12,282	12,815	15,883									
5-Year Ave.	10,965	10,314	12,633	25,469	50,655	63,652	104,323	113,997	64,385	44,726	27,877	29,448

Table 24. Monthly Passengers on the SSA (SSA)

Table 24 shows the total passengers carried on the SSA each month from 2009 to 2015. This table shows that typically over 50,000 passengers are carried between Nantucket and Hyannis each month between May and October; and during the peak months of July and August, there are about 100,000 passengers carried each month.

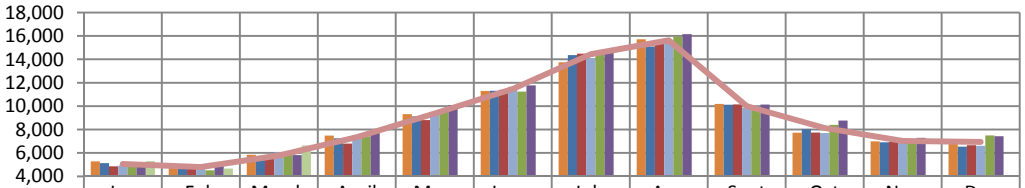
9.1.2. High-Speed Passenger Service

Figure 8. SSA High-Speed Ferry, *M/V Iyannough* (SSA)

Since 1998, the SSA has operated a high-speed passenger-only ferry service between Nantucket and Hyannis, which takes about an hour from dock-to-dock. In March 2007, a new high-speed ferry, the M/V Iyannough, replaced the M/V Flying Cloud, and operates with a capacity of 393.

9.1.3. Vehicle and Truck Ferry Service

The M/V Eagle and M/V Nantucket are equipped to carry vehicles between Nantucket and Hyannis. The M/V Eagle is configured to carry up to 52 spaces for vehicles with each space equivalent to a standard car at 17'-11" in length. The M/V Nantucket meanwhile is configured to carry up to 50 similarly sized vehicles.



	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
2009	5,275	5,015	5,846	7,488	9,317	11,303	13,744	15,708	10,183	7,729	6,984	6,757
2010	5,136	4,857	5,556	7,251	9,127	11,315	14,363	15,104	10,122	8,027	6,905	6,542
2011	4,856	4,819	5,675	6,799	8,811	11,393	14,488	15,378	10,150	7,746	6,931	6,658
2012	4,927	4,862	6,056	7,359	9,273	11,646	14,094	15,560	9,860	7,699	7,158	6,602
2013	5,142	4,515	5,834	7,407	9,581	11,247	14,503	15,944	9,730	8,403	6,851	7,490
2014	5,185	4,905	5,807	7,843	10,095	11,772	14,726	16,157	10,130	8,773	7,294	7,428
2015	5,290	4,661	6,635									
5-Year Ave.	5,049	4,792	5,786	7,332	9,377	11,475	14,435	15,629	9,998	8,130	7,028	6,944

Table 25. SSA Total Monthly Vehicles (SSA)

Table 25 shows the total vehicles carried on the SSA each month from 2009 to 2015. In the peak months of May through October the volume of cars exceeds 10,000, and in the July and August the total carried typically exceed 14,000.

9.1.4. Freight Ferry Service

The SSA also operates a freight ferry to Nantucket. The M/V Gay Head, M/V Katama or the M/V Sankaty has been assigned during the various schedules to provide this service. The SSA operates up to 3 scheduled round trips daily by the freight boat; this schedule includes trips designated as "Hazardous Material" trips. This is the maximum number of trips allowed per an agreement with the Town of Barnstable. The hazardous material boat is prohibited from carrying automobiles or passengers, with the exception of the driver and a helper for each truck, when transporting material classified by the United States Coast Guard as hazardous material. Non-Hazardous trucks may also be transported on the conventional service ferries.

9.2. PRIVATE FERRY SERVICE

9.2.1. Hy-Line Cruises

Hy-Line Cruises is a privately owned and operated ferry service. The Hy-Line provides passenger ferry service between Nantucket, Martha's Vineyard, and Hyannis during the peak summer season, as well as year round high speed ferry service to and from Hyannis.

The M/V Great Point, with a capacity for 720 passengers, provides three trips between Nantucket and Hyannis from May 8th to October 28th, while the M/V Grey Lady, a high-speed passenger catamaran ferry with a capacity of about 300 passengers, provides six year-round one-hour trips for passengers between Nantucket and Hyannis during the peak summer season, and continues service with five trips during the off-peak season.

In May 2014, the SSA Board of Governors unanimously approved a request from Hy-Line to replace the M/V Great Point with a new high speed 500 passenger catamaran ferry for the 2016 summer season. This would provide users with three high speed ferry options throughout the peak summer season per scheduling parameters out.

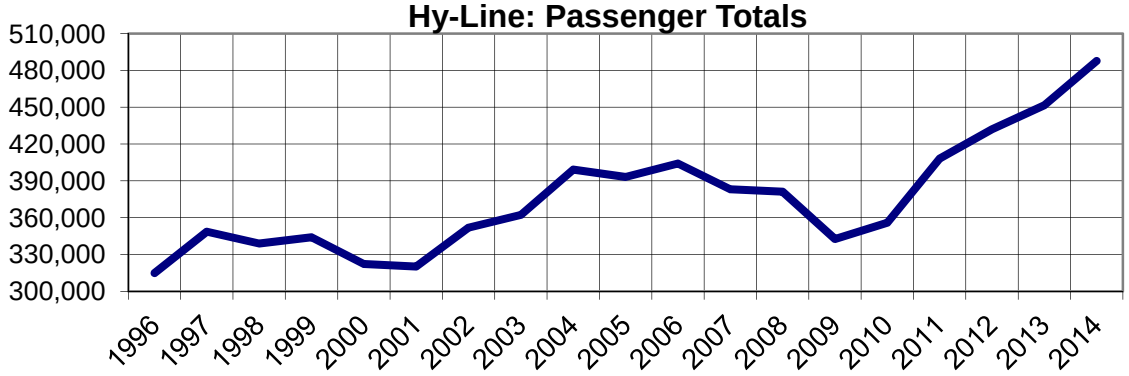


Table 26. Total Hy-Line Passengers, 1996 - 2014 (SSA)

Tables 26 shows the total number of passengers carried on all Hy-Line Ferries between Nantucket and Hyannis. Generally during the peak season of May to October there are over 10,000 Hy-Line passengers carried to Nantucket, and during the months of July and August there are typically over 35,000 passengers brought to Nantucket.

9.2.2. Freedom Cruises

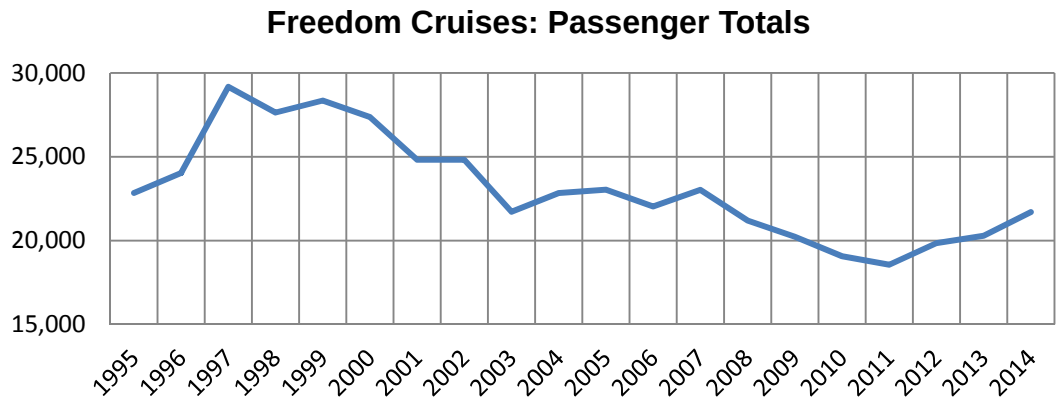


Figure 9. Freedom Cruises Passenger Totals

Freedom Cruises is a private passenger ferry operating between Harwich Port, MA and Nantucket from mid-May to Mid-October. The service operates three (3) round trips daily from mid-June to the end of August.

9.3. PRIVATE BOATS

The marina, yacht club, boatyards and commercial mooring operators service the boating community in Nantucket Harbor. The majority of the marina clientele are large power vessels, in contrast to the commercial moorings that are most often used by sailboats. According to the Nantucket Marine Department there is a summertime weekend turnover rate of approximately 100 boats per day in Nantucket Harbor.

The Town of Nantucket owns and operates a boat dock that can accommodate 100 boats with a maximum length of 40 feet. There is a sewage pump-out facility, pump-out boat, dinghy docks, ice potable water, public restrooms, showers, trash and recycling barrels. The Nantucket Harbormaster's office is located at the dock.

The Nantucket Boat Basin is a 240 slip marina / resort facility managed by island Resorts. This facility is located off New Whale Street within the Nantucket Harbor between Town Pier to the South and the Old North Wharf to the North. The basin facility consists of three solid fill wharves with adjacent pile-support piers: 1) Swain's Wharf (to the south); 2) Old South Wharf (in the center); 3) Straight Wharf (to the north). Located on each of these wharves are public access, open spaces, and several building structures that provide water-dependent accessory uses to the basin patrons and the general public.

Madaket Harbor Inc. is a floating system that can accommodate approximately 64 boats at full capacity.

A 1989 survey documented approximately 1,800 private moorings and 138 commercial moorings within both Nantucket and Madaket Harbors. Of these, 1,325 private moorings, and 125 commercial moorings are found in Nantucket Harbor, with the 475 remaining private moorings and the 13 remaining commercial moorings located in Madaket Harbor.

9.4. INTER-MODAL ACCESS / LINKAGES

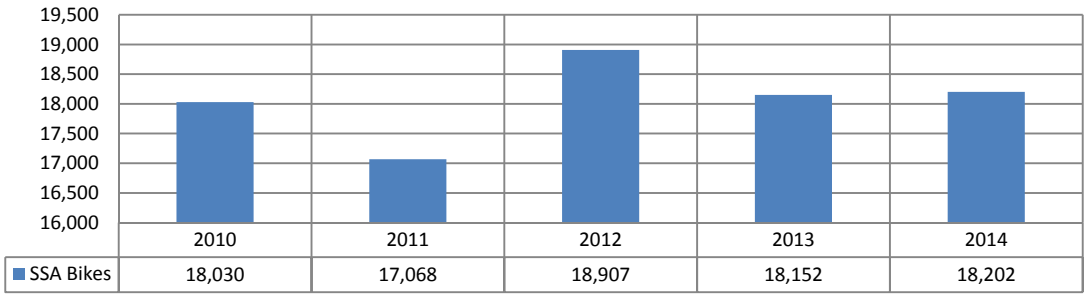


Figure 10. Bikes carried on the SSA

Both Ferry wharves are located in the central core waterfront and are within walking distance of rental bikes, rental mopeds, rental cars, taxis and private tour and shuttle buses. The Downtown Circulation and Ferry Access Improvement Study reviewed the bike and pedestrian environment and made various recommendations for improving the major routes between the terminals and the bike path system and the public transportation hub (Greenhound).

9.5. STEAMSHIP AUTHORITY IMPROVEMENTS

There are currently no major capital projects involving Nantucket using Federal and State capital funding programs. However, it should be noted that funding for such improvements do not affect the funding target for the Nantucket region and are made exclusively between the Steamship Authority and the Federal and State agencies. As a result these improvements are not found in section 12 of this plan.

As noted in Section 6.7, there are a number of sidewalk improvements that could be made in the vicinity of the ferry terminals to improve the walking experience of the general public, including ferry users. These improvements are shown on Map 36.

Map 36. Improvements in vicinity of Ferry Terminals

10. TRANSPORTATION SAFETY

10.1. ROADWAY SAFETY

The new SAFETEA-LU law includes a Highway Safety Improvement Program (HSIP) that provides funding to states for highway safety improvement projects. To receive the funding for projects from the HSIP each state is required to develop a statewide Strategic Highway Safety Plan (SHSP) that includes goals and strategies to improve highway safety. The SHSP developed by the Massachusetts Highway Department was completed in September 2006 with the active participation of the NP&EDC. This statewide SHSP has an emphasis on improving data systems (specifically crash reporting), infrastructure, at-risk driver behavior, high-risk transportation users (i.e., pedestrian and young drivers), public education and media, and safety program management. Strategies were developed primarily to reduce vehicle-related fatalities and injuries caused by alcohol impaired driving, speeding and lack of seat belt use.

In the same spirit of the statewide SHSP's data driven strategies the NP&EDC routinely collects vehicle crash data from both the Registry of Motor Vehicles and the Nantucket Police Department and utilizes this information to rank the safety of the island's roadway. In 2005, the *mid-island Traffic Study* thoroughly quantified the degree of safety along roadways and intersections in an area of the island where many of the collector roadways converge, and experience the highest density of residential population (see sections 4.3 and 6.8). This information was utilized a principal factor to evaluate and prioritize improvement projects for this plan (see section 12).

10.2. NRTA SAFETY

Consistent with the Federal Transit Administration's Safety and Security Program the NRTA's goal is to achieve the highest practical level of safety and security for its public transportation services.

The NRTA has developed a System Safety and Security and Emergency Preparedness Program Plan (SSEPPP).

The NRTA and its operators have developed a core safety program that includes, but is not limited to the following elements: driver selection, driver training, vehicle maintenance, drug and alcohol programs, and safety data acquisition and analysis. Drug and alcohol testing is required under 49 CFR 40 and 49 CFR 655. All NRTA fixed route buses and paratransit vehicles are equipped with fire extinguishers and a bus dispatch system for routine and emergency communications.

Driver training encompasses the following safety-related elements, and is based on the Federal Motor Carrier Safety Regulations 49 CFR 383 Subpart G and OSHA's Hazard Communication Standard 29 CFR 1910.1200. Other training required include ADA sensitivity, Lift and Wheelchair Securement, Terrorism Recognition and Reaction, how to handle Bloodborne Pathogens, Defensive Driving, and fire extinguisher training. A CORI Criminal Offender Records Checks record is also requested for paratransit drivers as well as being certified in first aide and CPR.

Training is provided in the following skills: traffic regulations, defensive driving and accident prevention, ADA sensitivity training, customer service training, and basic driving maneuvers. Instruction is also provided relative to safety procedures: leaving the vehicle unattended, seat belts, unnecessary conversation, traffic laws, right of way, sudden stops, backing up buses, door operation, exit and entrance steps, disturbances on buses, disabled buses (wheelchair lifts, engine stop override), system security awareness, security incident management for transit supervisors, evacuation of vehicles, fires on vehicles, hit and run, injuries to persons and employees, and securement procedures. It is the role of the General Manager to regularly identify and schedule on-going/recurring training as necessary to reinforce the policies and procedures as well as providing a mechanism to brief operators on new policies, procedures, and/or regulations. It is the role of the General Manager to perform routine ride checks to ascertain operator's competency level and their adherence to driving rules and regulations of the Authority assigned by Federal/State grant agreement. It is the role of the Authority to perform ride checks to verify that operators are collecting the correct fares, and operating safely. The Massachusetts Department of Telecommunications and Energy inspects each vehicle for safety compliance and issues a permit to each vehicle, which is displayed in each vehicle's window. Safety related vehicle equipment includes: Service brakes and parking brake, tires, wheels, and rims, steering mechanism, vehicle suspension, parabolic mirrors and other rear vision devices, lighting and reflectors or reflective markings, wheelchair lifts, radios, lockout/tag out procedure, vehicle pre-trip inspection, daily servicing checks, periodic inspection, interval related maintenance, and failure maintenance.

There is a sprinkler system located in the NRTA Bus Garage. An eyewash is available at the base garage and contains directions in compliance with OSHA are posted on the wall. Material Safety Data Sheets are located at a visible and accessible location at the NRTA bus garage.

Utilizing the Department of Homeland Security funding available in 2005 the Authority obtained kits (called 'go bags') for handling the clean-up and/or containment of hazardous spills on its vehicles. The go-bags are equipped with speedy dri, oil pads, water pads, drain docks, barrel socks, protective boots and gloves, and goggles. The purpose of the kit is to clean up spills not exceeding 10 gallons of anti-freeze, diesel fuel, engine oil, coolant and transmission oil. Bodily fluid kits were purchased and are on all revenue vehicles. Associated training was provided to all drivers and managers.

10.3. BIKE AND PEDESTRIAN SAFETY

Nantucket is a very bicycle- and pedestrian-friendly community, and numerous efforts are made to communicate safety awareness and the rules of the road to visitors and residents. The Visitor Services Bureau, NP&EDC, NRTA, Chamber of Commerce, and area bike shops are among the various agencies and businesses that help with this effort by including helpful information in web pages, advertisements, and travel guides.

An important goal, and one mentioned in the statewide SHSP, is to improve bike and pedestrian safety primarily in the vicinity of schools (see section 3.3.3). See section 6.5 of this plan for additional information.

10.4. AIRPORT SAFETY

The most important mandate for the Airport Commission and Airport personnel is the day-to-day safety of the flying public. The Airport's professional staff is required to meet FAA aviation and TSA security standards to maintain and enhance aircraft operational and flight safety, and public safety requirements. The FAA and TSA conduct mandatory annual inspections of the airfield, rescue/fire-fighting personnel and equipment and terminal building facilities to ensure compliance with these safety standards. As a result of increased aircraft congestion on Airport ramps across market segments, additional maneuvering space will be needed to meet FAA safety standards for the larger aircraft that make up today's aviation fleet mix.

10.5. STEAMSHIP SAFETY

One of the ongoing goals at the Steamship Authority (SSA) is to reduce the frequency and severity of personal injuries at terminals and on vessels. The SSA safety record is good considering the number of passengers that are carried each year. The SSA has a safety committee, consisting of members from all areas of the SSA's operations, that meets on a regular basis to discuss how it can make operations safer for passengers as well as for employees. Although there have not been any major safety measures recently implemented on Nantucket, the SSA and NP&EDC are looking to reduce vehicle / pedestrian conflicts at and around the ferry terminals. These recommendations are included in the *Downtown Circulation and Ferry Access Improvement Study.*

11. TRANSPORTATION SECURITY

11.1. NRTA SECURITY

The NRTA is a participant in the Massachusetts State Transit Security Awareness Program called '*Transit Watch.*'

A Safety/Security Committee has been appointed to actively address potential threats and vulnerabilities to avert security breaches and enhance the reality and perception of security on the transit system.

The area is surrounded by a six-foot chain link fence. The NRTA Bus Garage is located on Airport property that is secured.

All employees have at least one security responsibility - to serve as the eyes and ears for the system and report all security issues. They are expected to report immediately to the manager on duty. Immediate and appropriate action will be taken and all incidents will then be reported to the Safety/Security Committee for action. The NRTA conducts formal reviews of security incidents as a matter of agency policy.

The Southeast Regional Planning and Economic Development agency, as well as Southeast Homeland Security Council through the US Department of Homeland Security, have established a network to share security information applicable to the southern part of Massachusetts.

The NRTA received Department of Homeland Security funding for hardening transit operations to protect against terrorist attacks. This funding was used for a back-up generator, TARR training for Supervisors and Drivers, Hazardous Material clean-up kits (go-bags), bodily fluid kits and associated training, and an identification badge system.

Future plans include the purchase and installation of security cameras at the NRTA's bus garage and on all revenue vehicles.

Not all information pertaining to the NRTA's security plan may be released as a public document.

Emergency Management

The NRTA is a member of the Nantucket Emergency Preparedness Committee and works closely with the Fire and Police Departments in planning and implementing elements of emergency preparedness as it relates to transportation. The NRTA was recently charged with developing an emergency transportation plan for Nantucket. The committee is in the process of updating its Comprehensive Emergency Management Plan, which includes the NRTA and the use of its vehicles in emergency situations. An agreement between the Nantucket Health Department and the NRTA has identified the NRTA Bus Garage as an Emergency Dispensing Site for information dissemination and medication distribution to the general public. The Health Department will utilize the bus garage as a dispensing site on a seasonal basis and utilize NRTA

buses to transport individuals from information sites to dispensing sites and back. The NRTA is included in the Town of Nantucket's new radio system structure that will enable departments and NRTA to communicate with each other during emergency situations.

The NRTA has requested funding to purchase radios for the Town of Nantucket's new radio system structure.

11.2. AIRPORT SECURITY

In addition to the security improvements involved with the construction of new facilities, the Airport spends continual funds to maintain the perimeter fencing to better deter the infiltration of wildlife onto the airfield. The latest fencing improvements were completed adjacent to Madequecham Valley and Monohansett roads in 2014. The Airport has also installed a gate monitoring system and an advanced IP camera system to monitor the gates and various areas of the Airport and terminal.

Additionally, there is careful monitoring on a daily and weekly schedule of all fuel deliveries, storage and fuel trucks, as well as week-long syllabus-based training program(s) for all summer employees and new hires. This program covers fueling, driving techniques and testing and ramp procedures.

11.3. STEAMSHIP SECURITY

Current Department of Homeland Security regulations prohibit the disclosure of the SSA's U.S. Coast Guard-approved vessel and terminal security plans without a "need to know". Written permission must be obtained from the TSA Administrator or the Secretary of Transportation. Since 2001, the SSA has had to put in place additional security and screening measures in order to comply with applicable Federal regulations. Some of the more obvious improvements at the terminals have been additional fencing and pre-boarding areas with canopies or shelters for passengers. Continual planning efforts concerning transportation security will identify and address security problems and/or weaknesses to continually make improvements.

Emergency Management

During an emergency evacuation event, the United States Coast Guard will utilize the SSA and Straight Wharves for evacuation of the island. In an emergency, the SSA uses all available resources to assist Nantucket. The SSA currently gives priority passage for vehicles, such as utility company vehicles or fire trucks that are responding to an emergency on Nantucket per a mutual aid and emergency management agreement among various agencies. Extra trips could be arranged, if necessary. Further coordination with local officials and understanding of the SSA capabilities during an emergency event is needed.

12. IMPACTS OF CLIMATE CHANGE

The discussion of the impacts of Climate Change on the infrastructure of Nantucket was a federal requirement for this update to the RTP. The impacts of Climate Change have been interpreted as a possible rise in sea levels (the magnitude of which is not defined) and a possible increase in the severity of storm surges and flooding during storm events. An anticipated increase in this phenomenon will necessitate an infrastructure vulnerability assessment to measure the potential risks to this island's transportation infrastructure.

As an island with transportation infrastructure located at or near the fluctuating tidal levels, any changes to sea level resulting from Climate Change would be significant to Nantucket. Both of the islands ferry terminals are at the coastline and designed for current tidal levels. Additionally the Airport is located at the south shore of the island near the coast. The costs of replacing the transportation infrastructure that would be impacted by any rise in sea levels or more severe storm conditions has not been quantified, but any damage would require significant reinvestment to replace.

It should be noted that the Nantucket Memorial Airport has been selected by the Massachusetts Department of Transportation (MassDOT) Aeronautics Division in a pilot program to become the nation's first carbon neutral Airport. This program represents the fulfillment of MassDOT's GreenDOT initiative, and seeks to completely offset airport owned carbon dioxide emissions through efficiency improvements and installation of renewable energy.

Additionally, this RTP does focus transportation investments and policies on initiatives that reduce greenhouse gases emission and encourages the use of options other than the private automobile for transportation. Similar to MassDOT's GreenDOT initiative, the goals to reduce greenhouse gas emissions and create a sustainable community can be found in section 3 of this RTP.

Metropolitan Planning Organizations and the Global Warming Solutions Act

The Commonwealth's Global Warming Solutions Act (GWSA) of 2008 requires statewide reductions in greenhouse gas (GHG) emissions of 25 percent below 1990 levels by the year 2020, and 80 percent below 1990 levels by 2050. As part of the GWSA, the Executive Office of Energy and Environmental Affairs developed the Massachusetts Clean Energy and Climate Plan (CECP), which outlines programs to attain the 25 percent reduction by 2020 – including a 7.6 percent reduction that would be attributed to the transportation sector.

The Commonwealth's thirteen metropolitan planning organizations (MPOs) are integrally involved in helping to achieve greenhouse gas reductions mandated under the GWSA. The MPOs work closely with the Massachusetts Department of Transportation (MassDOT) and other involved agencies to develop common transportation goals, policies, and projects that would help to reduce GHG emission levels statewide. For example, one of the programs in the CECP is MassDOT's sustainability initiative known as GreenDOT. GreenDOT policy goals were developed in accordance with the GWSA, and are as follows:

- Reduce greenhouse gas (GHG) emissions

- Promote the healthy transportation modes of walking, bicycling, and public transit
- Support smart growth development

The NP&EDC shares in these goals and is working to meet the specific requirements of the GWSA regulation – *Global Warming Solutions Act Requirements for the Transportation Sector and the Massachusetts Department of Transportation (310 CMR 60.05).* The purpose of this regulation is to assist the Commonwealth in achieving their adopted GHG emission reduction goals by:

- Requiring MassDOT to demonstrate that its GHG reduction commitments and targets are being achieved
- Requiring each MPO to evaluate and track the GHG emissions and impacts of its Regional Transportation Plan and Transportation Improvement Program
- Requiring each MPO, in consultation with MassDOT, to develop and utilize procedures to prioritize and select projects in its RTP and TIP based on factors that include GHG emissions and impacts

Meeting the requirements of this regulation will be achieved through the transportation goals and policies contained in the 2016 Regional Transportation Plan, the major projects planned in the RTPs, and the mix of new transportation projects that are programmed and implemented through the Transportation Improvement Program. The GHG tracking and evaluation processes enable the MPOs to identify the anticipated GHG impacts of the planned and programmed projects, and also to use GHG impacts as a criterion in prioritizing transportation projects. This approach by the MPO is consistent with the greenhouse gas reduction policies of promoting healthy transportation modes through prioritizing and programming an appropriate balance of roadway, transit, bicycle and pedestrian investments; as well as supporting smart growth development patterns through the creation of a balanced multi-modal transportation system. All of the MPOs and MassDOT are working toward reducing greenhouse gases with plans, actions, and strategies that include (but are not limited to):

- Reducing emissions from construction and operations
- Using more fuel-efficient fleets
- Implementing and expanding travel demand management programs
- Encouraging eco-driving
- Providing mitigation for development projects
- Improving pedestrian, bicycle, and public transit infrastructure and operations (healthy transportation)
- Investing in higher density, mixed use, and transit-oriented developments (smart growth)

Regional GHG Tracking and Evaluation in RTPs

MassDOT coordinated with MPOs and regional planning agency (RPA) staffs on the implementation of GHG tracking and evaluation in development of each MPO's 2012 RTPs,

which were adopted in September 2011. This collaboration has continued for the MPO's 2016 RTPs and 2016-19 TIPs. Working together, MassDOT and the MPOs have attained the following milestones:

- Modeling and long-range statewide projections for GHG emissions resulting from the transportation sector for use before final RTP endorsement. Using the Boston MPO's regional travel demand model and the statewide travel demand model for the remainder of the state, GHG emissions will be projected for 2020 no-build and build conditions, and for 2040 no-build and build conditions. The results of this modeling will be available before the endorsement of this RTP and the MPO staff will present on the results to the MPO membership before a vote on endorsement.

- All of the MPOs will include GHG emission reduction projections in their RTPs, along with a discussion of climate change and a statement of MPO support for reducing GHG emissions as a regional goal.

MassDOT, using its statewide travel demand model, will provide the NP&EDC with statewide estimates of CO_2 emissions resulting from the collective list of all recommended projects in all the Massachusetts RTPs combined (and supplemented by CO_2 emission reduction results for smaller, "off-model" projects supplied by the MPO). Emissions will be estimated using the new (2014) MOVES model, and also incorporate the latest planning assumptions including updated socio-economic projections for the Commonwealth.

The project mix from this RTP (and all other RTPs) – modeled for both 2020 and 2040 using an Action (Build) vs. Baseline (No-Build) analysis to determine the CO_2 emissions attributed to all MPO's mix of projects and smart-growth land use assumptions – is expected to show a neutral shift toward meeting the statewide greenhouse gas emissions reduction goal of 25 percent below 1990 levels by the year 2020, and 80 percent below 1990 levels by 2050. The reason for the anticipated neutral shift is that early indicators have shown that major infrastructure projects, both individually and collectively, would not trigger a significant change in GHG emission levels.

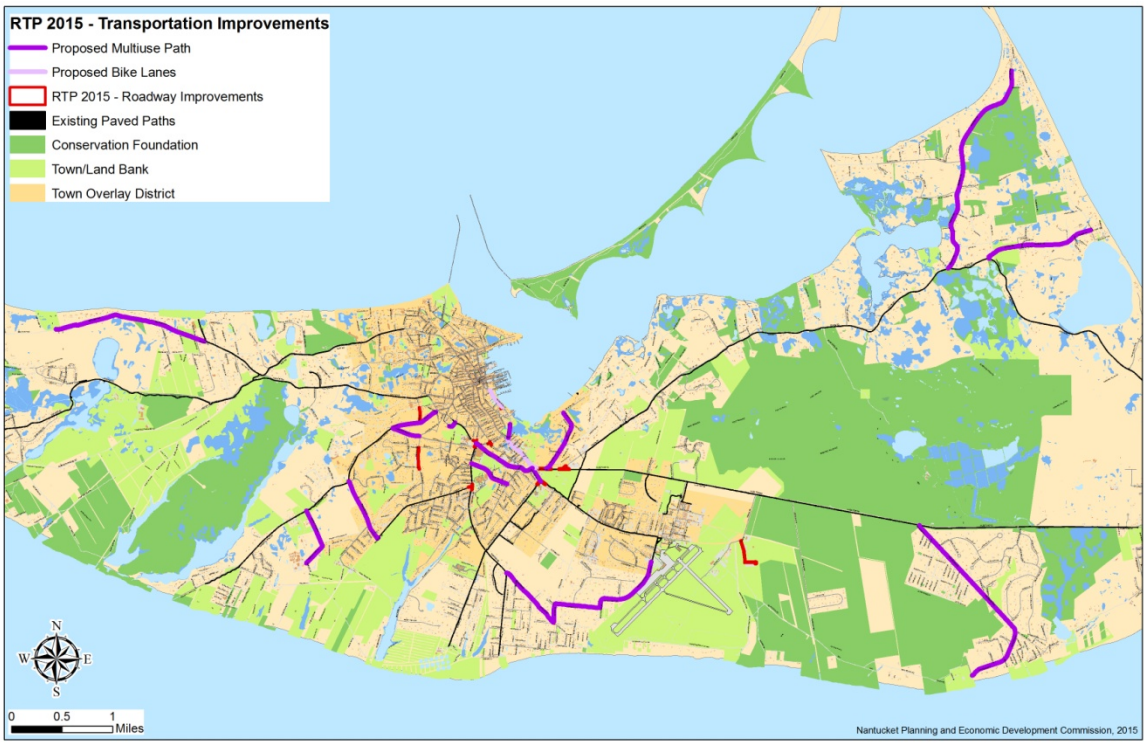
Working closely with MassDOT, the NP&EDC continues to make efforts toward progress through planning activities to meet the GHG reductions targets and complying with the requirements of the GWSA. As part of this activity, the MPO will provide further public information on the topic and will continue to advocate for steps needed to accomplish the MPO's and Commonwealth's goals for greenhouse gas reductions.

13. LIVABILITY

The discussion of the relationship between infrastructure and community needs, specifically to improve a community's 'livability,' to enhance the environmental sensitivity of roads and bridges and to help states explore multi-modal transportation options was a federal requirement for this update to the RTP. Livability is defined by the Federal Highway Administration as tying the quality and location of transportation facilities to broader opportunities such as access to good jobs, affordable housing, quality schools, and safe streets. This includes addressing safety and capacity issues on all roads through better planning and design, maximizing and expanding new technologies such as ITS and the use of quiet pavements, using Travel Demand Management approaches to system planning and operations, etc.

The primary example of how Nantucket is attempting to improve community livability is through the expansion and increased utilization of the successful public transportation and bike path programs, as well as through the recommendations of the recent *Wilkes Square Redevelopment Study*. The goals improving public transportation and bike / pedestrian facilities are discussed in section 3.

The recommendations for Wilkes Square include the removal of an unsafe and hazardous fuel tank farm, and including a parking garage to address the deficiency of parking supply, an off street public transit stop, and other public uses. This recommendation is discussed in section 7.



Map 37. Recommended Transportation Capital Projects

14. TRANSPORTATION ACTION PLAN

14.1. PROJECT EVALUATION

As required by the Massachusetts Department of Transportation, the NP&EDC endorsed a system to evaluate and prioritize projects in May 2004, which was designed to be similar to other evaluation criteria endorsed by other Regional Planning Agencies in the Commonwealth. The NP&EDC endorsed evaluation criteria considered the degree of improvement to the condition, mobility, and safety of a project, as well as a sustainability criterion that evaluates impacts to such areas as the environment, affordable housing, and businesses.

Each criterion (condition, mobility, safety, and sustainability) consists of more specific factors and measures used for scoring. The scoring system has been slightly modified from 2004 to utilize a numerical range from -1 (negative impact) to +1 (positive impact) to assess, or score, the degree of impact or improvement. A score of zero is considered not applicable or having no degree of impact or improvement.

The tables below provide a listing of each transportation improvement project recommended in the previous sections and are sorted by facility type. Each table consists of the project's status (see table 27 below), the criteria score, the total number of points from each criteria measurement, and the average score for the project's measurements. These tables are also sorted by the total number of points received for each measurement. The total scoring of each project is found in Appendix 3.

Table 27. Description of Project Status

A	Design complete, ready for construction
B	Design nearly complete (75% design accepted)
C	Design initiated, 25% design accepted
D	Design initiated, 25% plans not accepted by MassHighway
E	Project funded, design to be initiated
F	Project is unfunded

14.1.1. Roadway and Bridge Improvements

Table 28. Evaluation of Roadway Projects

Project	Status	Cond.	Mob.	Safe.	Sust.	Tot.
Surfside Rd at Bartlett Rd	F	0.8	1.0	1.0	0.29	11
Fairgrounds Rd at Old South Rd	F	0.5	0.8	1.0	0.29	11
Four Corners	F	1.0	0.8	1.0	0.21	11
Milestone Rotary	F	0.0	1.0	1.0	0.14	9
Winn St	F	1.0	0.4	1.0	0.0	6
First Way	F	1.0	0.4	1.0	0.0	6
Milestone @ Polpis	F	0.5	0.2	0.0	0.07	3
Milestone @ Monomoy	F	0.5	0.2	0.0	0.07	3
Washington @ Francis	F	0.5	0.4	0.5	0.07	3
Pleasant @ Williams	F	0.58	0.0	0.5	0.07	3
Friendship Lane - 1,200 ft	F	1.0	0.4	0.0	-0.07	3
Industry and Shadbush Rds - 1,800 ft	F	1.0	0.0	0.0	0.07	3
Boulevarde to Airport Rd	F	1.0	0.4	0.5	-0.14	3

14.1.2. Bicycle Improvements

Table 29. Evaluation of Bicycle Projects

Project	Status	Cond.	Mob.	Safe.	Sust.	Tot.
Mill Hill Path	D	1.0	0.8	0.5	0.07	8
Milk St Ext Path	D	1.0	0.8	0.5	0.21	10
Intown Phase 1	A	1.0	0.8	0.5	0.07	8
Intown Orange St Phase	F	1.0	0.8	0.5	0.14	9
Intown Washington Phase	F	1.0	0.8	0.5	0.29	11

Sparks Ave	F	0.5	0.6	1.0	0.36	11
First Way Path	F	1.0	0.6	0.5	0.43	12
Tom Nevers	F	1.0	0.6	0.5	0.21	9
Bartlett Farm Rd	F	1.0	0.6	0.5	0.07	7
Somerset Ln	F	1.0	0.6	0.5	0.14	8
Wauwinet	F	1.0	0.8	1.0	0.0	8
Quidnet	F	1.0	0.8	0.5	0.0	7
Monomoy Rd	F	1.0	0.6	0.5	0.0	6
Boulevarde	F	1.0	0.6	0.5	0.07	7
Hummock Pond to Vesper	F	1.0	0.8	0.5	0.21	10
Old South – south link	F	0.5	0.2	0.5	0.21	6
Eel Point Path Ext	F	1.0	0.6	0.5	0.0	6

14.2. FINANCIAL PLAN

14.2.1. Financial Constraint: Highway Projects

This section demonstrates financial constraint of this RTP. Projects listed have been designated a timeframe within which to be implemented that would not exceed the estimated available federal funding for that timeframe. The estimated available funding only considers federal and state sources, and incorporates a 3% rate of inflation over time. The project costs were derived from studies completed by the NP&EDC (see section 2.9), and have an annual inflation rate of 4% added to the cost estimate to show the estimated cost of the project at the time of implementation. Project cost estimates were derived from planning studies completed and accepted by the NP&EDC. It can be seen in the tables in this section that the "total programmed" funds for each timeframe are less than the total shown in the "anticipated available funding" for each corresponding time frame, meaning financial constraint is shown by having the funding expenditures less than the available funding.

The Federal Highway Administration funds and State Highway and Bridge funds were projected over 5 year blocks of time statewide for the following funding categories (local aid funding sources such as Chapter 90 and the MassWorks programs were excluded from MassDOT funding projections):

- **Major Infrastructure Projects** - funding is based on the regional share formula for the Statewide Highway Funds developed by the Massachusetts Association of Regional Planning Agencies (MARPA).
- **Federal Aid Bridge Projects** - Projected regional funding for bridge improvements and repairs is based on each region's percentage of federal-aid eligible bridges.
- **National Highway System/Interstate Maintenance** (NHS/IM) – Nantucket is not eligible for funding in this category since there are no NHS roadways on island.
- **Statewide Maintenance** - Projected regional funding for interstate maintenance projects is based on the regional share of Interstate lane mileage excluding the Massachusetts Turnpike.

- **Regional Discretionary Funding** - funding is based on the regional share formula for the Statewide Highway Funds developed by the Massachusetts Association of Regional Planning Agencies (MARPA).

Table 30. Anticipated Funding for Major Infrastructure Project (MassDOT)

Project	Section Ref.	Cost Estimate	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040
No Major Infrastructure Projects Proposed	n/a	n/a	-	-	-	-	-
Total Programmed	**-**	**n/a**	**-**	**-**	**-**	**-**	**-**
Anticipated Federal Funding	**-**	**-**	**$358,000**	**$481,000**	**$727,000**	**$888,000**	**$1,030,000**

Table 31. Anticipated Funding for Federal Aid Bridge Projects (MassDOT)

Project	Section Ref.	Cost Estimate	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040
No Bridge Projects Proposed	n/a	n/a	-	-	-	-	-
Total Programmed	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Anticipated Federal Funding	**-**	**-**	**$2,473,000**	**$2,724,000**	**$4,972,000**	**$4,972,000**	**$5,764,000**

Table 32. Anticipated Funding for Statewide Maintenance (MassDOT)

Project	Section Ref.	Cost Estimate	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040
Statewide Operation and Maintenance	4.7	-	$1,111,000	$1,288,000	$1,493,000	$1,730,000	$2,006,000
Total Programmed	**-**	**-**	**$1,111,000**	**$1,288,000**	**$1,493,000**	**$1,730,000**	**$2,006,000**
Anticipated Federal Funding	**-**	**-**	**$1,565,000**	**$2,435,000**	**$3,449,000**	**$4,326,000**	**$5,015,000**

Table 33. TIP Eligible (Federal/State) Project Schedule (includes 4% annual inflation) (MassDOT)

Project	Cost Estimate	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040
In-Town Bike Path, Phase 1	$1,200,000	$384,065				
Surfside Rd at Bartlett Rd	$700,000	$819,000				
Fairgrounds Rd at Old South Rd	$700,000	$819,000				
In-Town Bike Path, Phase 2	$385,000		$468,000			
In-Town Bike Path, Phase 3	$440,000		$535,000			
Four Corners	$900,000		$1,280,000			
Milestone Rotary	$950,000			$1,406,000		
Milestone Rd at Polpis Rd	$500,000			$740,000		
Milestone Rd at Monomoy Rd	$500,000			$740,000		
Tom Nevers Rd Path, Phase 1	$1,478,400				$2,700,000	
Somerset Lane Path	$739,000					$1,600,000
Bartlett Farm Road Path	$654,000					$1,400,000
Pavement Management (balance of unspent funds)		$239,260	$97,218	$88,330	$667,912	$628,198
Total Programmed		**$2,022,065**	**$2,283,000**	**$2,886,000**	**$2,700,000**	**$3,000,000**
Anticipated Federal Funding		**$2,261,325**	**$2,380,218**	**$2,974,330**	**$3,367,912**	**$3,628,198**

Table 34. Illustrative Projects (to be funded locally or with other sources)

Multi-use Paths and Bike Lanes

Project (Italics = Local project)	Funding Source	Construction Cost	Status	Evaluation Score
Mill Hill Path	Local	$200,000	D	8
Milk Street Ext Path	Local	$470,000	D	10
Sparks Avenue Path	Local	$459,000	F	11
First Way Path	Local	$643,000	F	12
Bartlett Farm Road	Local	$654,000	F	7
Quidnet Road Path	Local	$1,715,000	F	7
Monomoy Road Path	Local	$700,000	F	6
Boulevarde Path	Local	$2,220,000	F	7
Old South Road Path – south side	Local	$122,000	F	10
Hummock Pond Rd Path Extension	Local	$250,000	D	6
Eel Point Road Path Extension	Local	$1,627,000	F	6

Roadway Improvements

Project (Italics = Local project)	Funding Source	Construction Cost	Status	Evaluation Score
First Way Roadway Improvements	Local	$2,000,000	F	6

Winn Street - 800 ft	Local	$280,000	F	6
Washington St at Francis St	Local	$350,000	F	5
Pleasant St at Williams/Cherry St	Local	$150,000	F	3
Friendship Lane - 1,200 ft	Local	$420,000	F	3
Industry and Shadbush Rds - 1,800 ft	Local	$630,000	F	3
Boulevarde to Airport Rd	Local	$3,700,000	F	3

Sidewalk Improvements*

Project (Italics = Local project)	Funding Source	Construction Cost
Sidewalk Replacements	Local	$2,200,000
Sidewalk/Path Modifications	Local	$2,500,000
Sidewalk Additions	Local	$4,000,000

* High priority sidewalks – Main Street between Centre and Federal Streets, Federal Street (west side) between Main and Chestnut Streets, Centre Street between Broad and Chestnut Streets, India Street abutting Atheneum, and Broad Street (north side) between Centre and Federal Streets.

14.2.2. Financial Constraint: Transit Projects

The Commonwealth has three Regional Transit Authorities (Franklin, Martha's Vineyard and Nantucket) which do not receive 5307 Urban Formula funds and therefore rely on 5311 Rural Grant funds as their sole source of federal funding. The state-wide funding totals for the 5311 program are provided in Table 52 below.

The 5311 funds are distributed based on a 1998 state management plan established by the Commonwealth. The Commonwealth, in consultation with the Regional Transit Authorities, is reviewing rural service provided in the different regions and is revising the distribution formula based on available 5311 funds and actual rural service provided. The regions have an expectation of receiving a reasonable distribution of 5311 funding based on this rural service based formula.

Table 36 shows the projected available funding for public transit. The 5310 targets (for Elderly and Disabled services) were derived by projecting historical state and federal funding patterns and state capital assistance provided to the NRTA.

Table 35. Projected Available Federal Transit Program Funding (MassDOT)

Description	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040
Urbanized Area Formula (5307)*	-	-	-	-	-
Capital Fixed Guideway Program (5309)*	-	-	-	-	-
Elderly & Disabled (5310)	TBD	TBD	TBD	TBD	TBD

Non-Urbanized Area Formula (5311)**	$2,808,898	$3,025,982	$3,259,842	$3,511,777	$3,783,180

Table 37. Projected Available Commonwealth Transit Program Funding (MassDOT)

Description	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040
State Contract Assistance	TBD	TBD	TBD	TBD	TBD
RTA Capital Assistance Program (RTACAP)	TBD	TBD	TBD	TBD	TBD
RTA Intermodal Assistance (ITCCAP)	-	-	-	-	-

Table 38. Projected Available Statewide Transit Program Funding (MassDOT)

Description	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040
Intercity Bus (5311)	$2,808,898	$3,025,982	$3,259,842	$3,511,777	$3,783,180
Rural Transportation Assistance (RTAP)	TBD	TBD	TBD	TBD	TBD
Private non-profits (PNP)	TBD	TBD	TBD	TBD	TBD
Councils on Aging (COA)	TBD	TBD	TBD	TBD	TBD
MassDOT Administration	TBD	TBD	TBD	TBD	TBD
Mobility Assistance Program (MAP)	TBD	TBD	TBD	TBD	TBD

14.2.3. Illustrative Projects: Transit

14.2.3.1. 5310 Illustrative Projects

The NRTA has no illustrative projects using the Federal 5310 transit funding source.

14.2.3.2. 5311 Illustrative Projects

Table 36 lists the illustrative operations, not currently offered, that the NRTA could offer if additional funding becomes available.

14.2.3.3. Illustrative Transit Capital Projects

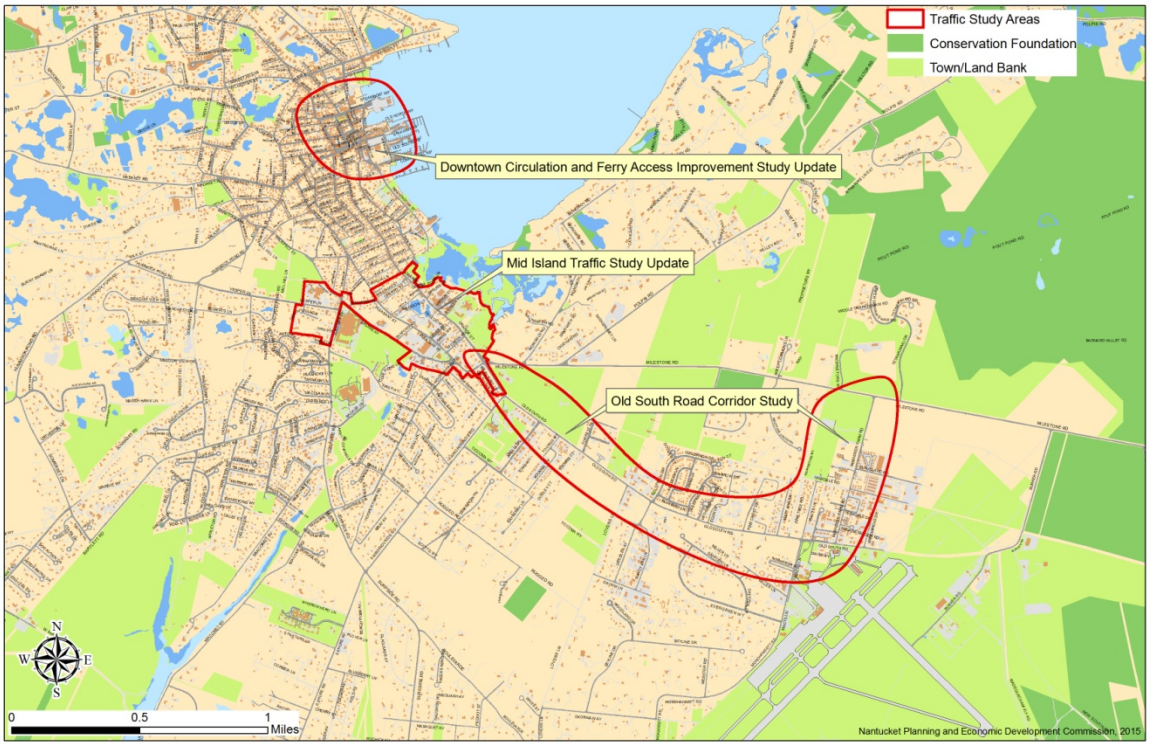
Historically the NRTA received RTA Capital funds to meet its capital needs. The NRTA's fixed route fleet replacement schedule has been established to replace two (2) vehicles per fiscal year. The available Statewide capital funding is currently not sufficient to realize the recommended replacement program. As a result, if no additional funding is provided, the NRTA will be unable to provide a vehicle replacement program that satisfied the needs of the system.

The NRTA will continue to seek capital funding through the Commonwealth's RTA Capital program. Bus replacements and purchases will continue to be requested through this program as well as any pertinent ITS projects, facility improvements or bus stop amenities.

14.3. OTHER ACTIONS

14.3.1. Future Traffic Study Areas

As noted in section 2.9, a number of area plans and traffic studies have been completed and accepted by the NP&EDC to help inform goals, policies, and capital project needs. As the community grows and conditions in different areas change, the studies and plans for those areas should be updated to reflect changing conditions and issues that need to be addressed. Additionally, other areas of the island without an Area Plan or traffic study may be due to have a planning strategy developed to identify issues and possible solutions that are supported by the community. The following is a description of the areas that would need a new or updated traffic analysis and strategy to address transportation concerns. These planning activities could be included in the NP&EDC's UPWP, or funded though local sources with participation and oversight by NP&EDC staff.



Map 38. Future Multi-modal Traffic Study Areas

14.3.1.1. Old South Road Corridor Study

As described in Chapter 4, traffic counts conducted by the NP&EDC show that Old South Road is one of the busier roadways on island. Additionally, records from the Massachusetts Registry of Motor Vehicles shows there are also a high number of crashes, particularly between Lover's Lane and Airport Road. As this area is currently zoned to allow more growth in the future, and as there are already a number of multi-modal facilities (multi-use paths and public transportation) along the roadway, a traffic study along this corridor should consider what the future build out impacts will be to the volume of traffic along the roadway, and how to improve the safety of turning movements and reduce queuing at intersecting roadways, improve convenient access to and provide sufficient capacity of public transportation services, and increase bicycle and pedestrian connectivity with new sidewalks and paths. The bounds of the area should include all of Old South Road and Nobadeer Farm Road, and include key intersections such as the Milestone Rotary, Fairgrounds Road, Amelia Drive, and Airport Road.

14.3.1.2. Downtown Circulation and Ferry Access Improvement Study Update

The original study for this area was completed in 2008 and included a number of recommendations for improving traffic flow, wayfinding, parking, and public transportation. Although most of these recommendations have been tested and may still be in effect, the changing demands and needs in the downtown area, along with anticipated increase in ferry user activity with additional future high speed ferry trips, warrant an update in the traffic data for all modes and an assessment of conditions and opportunities that would conform with the goals of this Transportation Plan.

14.3.1.3. Mid Island Traffic Study Update

As described above for the downtown area, the traffic study that was previously conducted in 2005 for the mid-island area is due to be updated. Following the implementation of a number of traffic improvements recommended in the 2005 study, such as the Sparks Avenue Roundabout and streetscape improvements along Pleasant Street, and development and redevelopment of a number of properties in the mid-island area, an updated evaluation and strategy for the area is warranted. This update would include a re-evaluation of key intersections that were identified in the previous study as experiencing safety and congestion concerns, such as the Four Corners and Williams Street at Pleasant Street intersections, as well as improvements necessary with the redesign of the school campus and hospital property.

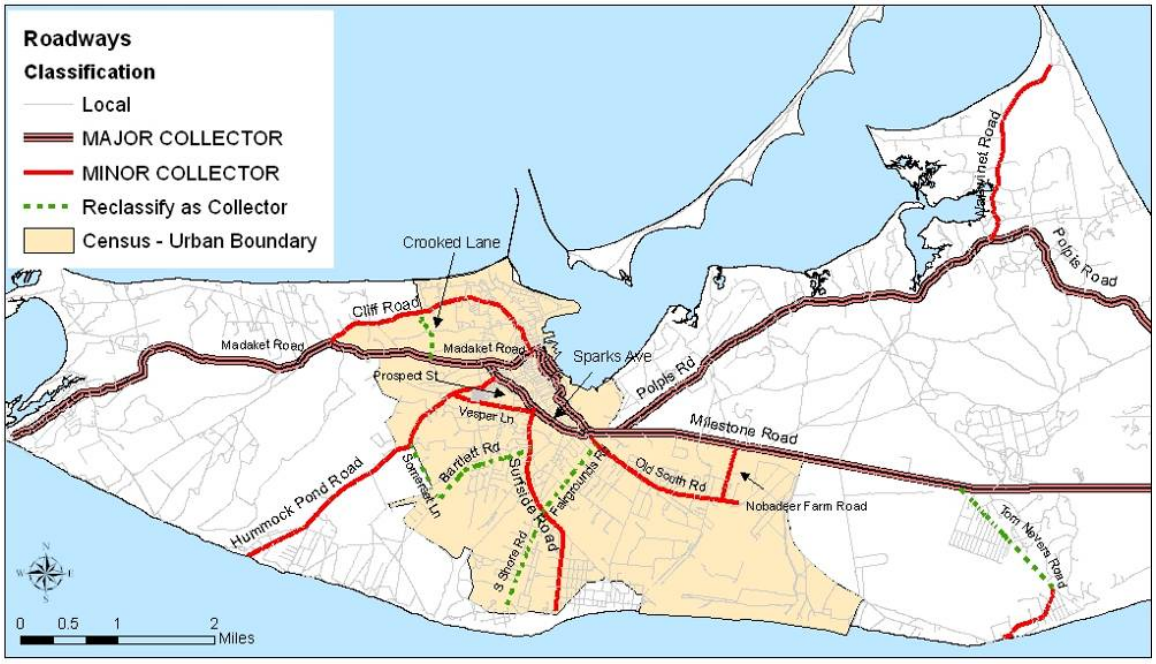
14.3.2. Roadway Reclassifications

Land development and accompanying traffic growth has created the need to revisit the classification of some roadway on the island. The following roadway should be considered for reclassification (see Map 38):

Local to Collector:

- Fairgrounds Road – between Old South Road and Surfside Road.
- Bartlett Road – between Surfside Road and Raceway Drive.

- Somerset Road / Raceway Drive – between Bartlett Road and Hummock Pond Road.
- Tom Nevers Road – between Milestone Road and Sankaty Road.
- South Shore Road – between Surfside Road and end of roadway.
- Airport Road – between Old South Road and Miller's Lane.
- Crooked Lane – between Cliff Road and Madaket Road.

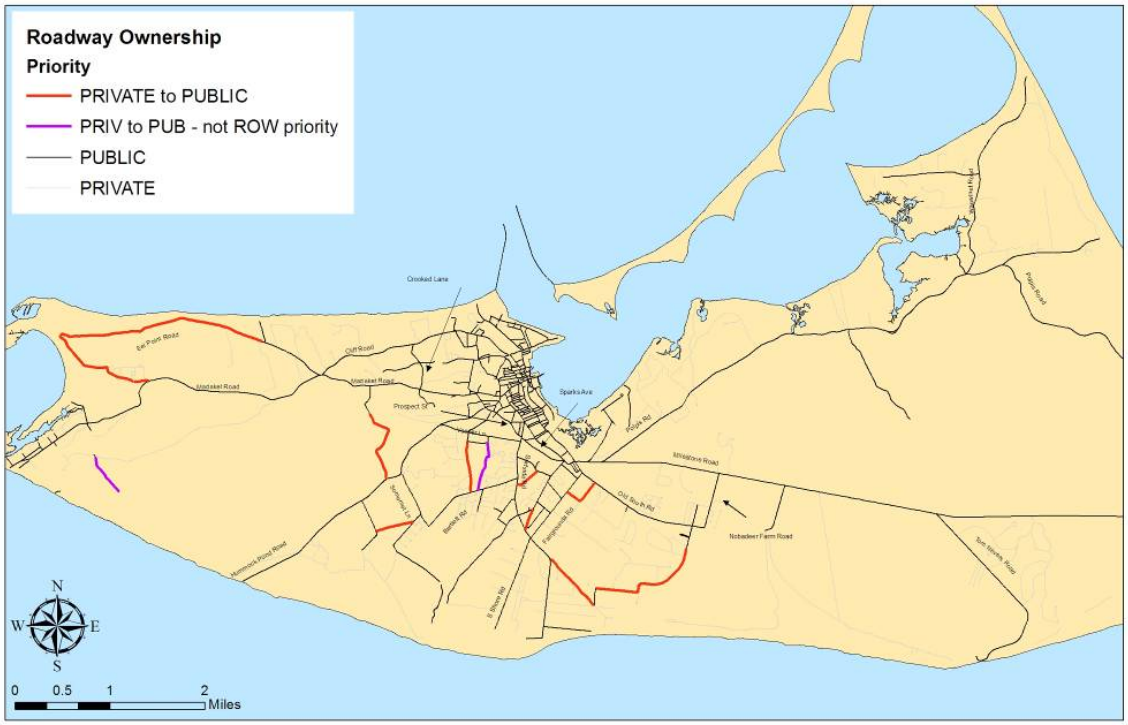


Map 39. Roadway Reclassifications

14.3.3. Public Acquisition of Private Ways

There are a numbers of private ways that have been increasingly utilized for commuter and safety access and need to be improved and maintained at an acceptable standard. The following private ways are recommended for acquisition by the Nantucket Roads and Right of Way Committee (see Map 39):

1. Boulevarde, Lovers Lane, Clifford Street, Orkowaw Avenue, Monohansett Road (from Surfside Road to the Airport)
2. Millbrook Road (from Madaket Road to Hummock Pond Road)
3. Eel Point Road and Warren's Landing Road (private road sections)
4. Somerset Road and Friendship Lane (from Bartlett Road to Joy Street)
5. Smooth Hummocks Way (from Somerset to Bartlett Farm Road)
6. First Way/Backus Lane connector
7. Amelia Drive to Ticcoma Way to Fairgrounds Road
8. Hooper Farm Road (unpaved portion from Surfside Drive to Surfside Road)
9. Cato Lane (from Bartlett Road to Vesper Lane)
10. Red Barn Road (from Massasoit Bridge to Sheep Pond Road)



Map 40. Map of Private to Public Ways

15. PLAN SUMMARY

The 2016 Regional Transportation Plan for Nantucket serves as a strategy for targeting federal, state, and local funding resources towards transportation investments that are **safe, convenient, economical, and sensitive to the character of the island**. The process for developing this strategy included outreach to the island's transportation stakeholders, which included committees that advocate for the needs of the eldery, disabled, low income, and limited English proficiency populations. As a seasonal tourism based economy dependant on the preservation of historic and environmental assets, investments in transportation are targeted at projects with the greatest ability to improve livability and accessibility of all users while minimizing or avoiding impacts to the island's resources.

The projects recommended in this plan are in various stages of readiness and refinement, but have been evaluated and scored to understand, at least at a conceptual level, conformity to the community's goals and objectives. Projects listed in this plan that are located in high traffic and growing areas, address safety and the needs of all transportation system users, and minimize impacts to the island and community are given high priority in the Action Plan.

The priority projects for this plan include bicycle and pedestrian improvements in and around the downtown core area (i.e., the In-Town Bike Path and sidewalk improvements), intersection improvements along the high traffic corridors of mid-island (i.e., Surfside Road at Bartlett Road, and Old South Road at Fairgrounds Road), off-season public transportation (primarily for the Mid-Island and Miacomet routes), and continued dedication of planning resources to develop strategies for improving transportation conditions and livability within the more densely developed areas of the Town Overlay District – downtown, mid-island, and Old South Road.

Since there are limitations through the federally funded Transportation Improvement Program (TIP), it is necessary to secure funding from other public and/or even private sources if these priority improvements are to be realized in the short term. Funding from local sources will continue to be required for design and permitting of TIP eligible projects, as well as expanding public transportation service, but will also be critical to implement the scope of pedestrian improvements described in Section 6.7.

16.AIR QUALITY CONFORMITY

Introduction

The 1990 Clean Air Act Amendments (CAAA) require Metropolitan Planning Organizations within ozone nonattainment areas to perform air quality conformity determinations prior to the approval of Regional Transportation Plans (RTPs) and Transportation Improvement Programs (TIPs). Conformity is a way to ensure that federal funding and approval goes to those transportation activities that are consistent with air quality goals. This section presents information and analyses for the air quality conformity determination for the 2012 Regional Transportation Plan of the Nantucket MPO, as required by Federal Regulations 40 CFR Parts 51 and 93, and the Massachusetts Conformity Regulations (310 CMR 60.03). This information and analyses include: regulatory framework, conformity requirements, planning assumptions, emissions budgets, and conformity consultation procedures.

Background

The Commonwealth of Massachusetts is classified as serious nonattainment for ozone, and is divided into two nonattainment areas. The Eastern Massachusetts ozone nonattainment area includes Barnstable, Bristol, Dukes, Essex, Middlesex, Nantucket, Norfolk, Suffolk, and Worcester counties. Berkshire, Franklin, Hampden, and Hampshire counties comprise the Western Massachusetts ozone nonattainment area. With these classifications, the 1990 Clean Air Act Amendments (CAAA) required the Commonwealth to reduce its emissions of volatile organic compounds (VOCs) and nitrogen oxides (NOx), the two major precursors to ozone formation to achieve attainment of the ozone standard.

In April 2002, the cities of Lowell, Waltham, Worcester and Springfield were re-designated to attainment for carbon monoxide with EPA-approved limited maintenance plans. In April 1996, the communities of Boston, Cambridge, Chelsea, Everett, Malden, Medford, Quincy, Revere, and Somerville were classified as attainment for carbon monoxide (CO). Air quality conformity analysis must still be completed in these communities, as they have a carbon monoxide maintenance plan approved into the state implementation plan (SIP). The year 2010 carbon monoxide motor vehicle emission budget established for the Boston CO attainment area with a maintenance plan is 228.33 tons of carbon monoxide per winter day.

A prior conformity determination for all RTPs occurred in 2007, when the Federal Highway Administration (FHWA) – in consultation with the Environmental Protection Agency (EPA New England) and the Massachusetts Department of Environmental Protection (DEP) – confirmed that all 13 of the RTPs for the year 2007 in Massachusetts were in conformity with the Massachusetts State Implementation Plan (SIP). A summary of major conformity milestones in recent years is as follows:

Between 2003 and 2006, several new conformity determinations were made that were triggered by various events, including: The 2003 regional transportation plans, a change in designation from the one-hour ozone standard to an eight-hour ozone standard, and various changes to regional TIPs that involved reprogramming transportation projects across analysis years.

In 2007, air quality analyses were conducted on behalf of all the 2007 Regional Transportation Plans (RTPs), the purposes of which were to evaluate the RTPs' air quality impacts on the SIP.

Conformity determinations were performed to ensure that all regionally significant projects were included in the RTPs. The Massachusetts Department of Transportation found the emission levels from the 2007 Regional Transportation Plans to be in conformance with the SIP.

On April 2, 2008, EPA found that the 2008 and 2009 motor vehicle emissions budgets (MVEBs) in the January 31, 2008 Massachusetts 8-hour ozone State Implementation Plan revision were adequate for transportation conformity purposes. The submittal included 2008 and 2009 MVEBs for the Boston-Lawrence-Worcester (Eastern Massachusetts) and Springfield (Western Massachusetts) 8-hour ozone nonattainment areas. Massachusetts submitted these budgets as part of the 8-hour ozone attainment demonstration and reasonable further progress plan for both nonattainment areas, and as a result of EPA's adequacy finding, these budgets were required to be used for conformity determinations. EPA later determined (in 2010) that only the most recent MVEBs - 2009 - be used for future conformity determinations.

In 2010, air quality analyses were conducted on behalf of all the 2011-2014 Regional Transportation Improvement Programs (TIPs), the purposes of which were to evaluate the TIPs' air quality impacts on the SIP. Conformity determinations were performed to ensure that all regionally significant projects were included in the TIPs. The Massachusetts Department of Transportation found the emission levels from the 2011-2014 TIPs to be in conformance with the SIP. On November 15, 2010, EPA confirmed that both the Eastern and Western Massachusetts Non-Attainment areas collectively demonstrated transportation conformity, with concurrence from Massachusetts DEP on 11/23/10. On December 22, 2010, FHWA and FTA determined that the TIPs were in conformity with the Clean Air Act and the EPA conformity regulations (40 CFR Part 51).

Conformity Regulations

The CAAA revised the requirements for designated MPOs to perform conformity determinations by ozone non-attainment area for their RTPs and TIPs. Section 176 of the CAAA defines conformity to a State Implementation Plan to mean conformity to the plan's purpose of eliminating or reducing the severity and number of violations of the National Ambient Air Quality Standards (NAAQS) and achieving expeditious attainment of the standards. The Nantucket MPO must certify that all activities outlined in the 2012 Nantucket Regional Transportation Plan:

- *will not cause or contribute to any new violation of any standard in any area*
- *will not increase the frequency or severity of any existing violation of any standard in any area*
- *will not delay the timely attainment of any standard or any required interim emission reductions or other milestones in any area*

The federal conformity regulations from EPA set forth requirements for determining conformity of Transportation Plans, Transportation Improvement Programs, and individual projects. The requirements of the conformity analysis are summarized below and will be explained in detail in this conformity determination:

- Conformity Criteria

- *Horizon Years*
- *Latest planning assumptions*
- *Latest emission model used*
- *Timely implementation of transportation control measures (TCMs)*
- *Conformity in accordance with the consultation procedures and SIP revisions*
- *Public Participation Procedures*
- *Financially Constrained Document*

- Procedures for Determining Regional Transportation Emissions

- The Conformity Test
  - *Consistent with emission budgets set forth in SIP*
  - *Contribute to reductions in CO nonattainment areas*

In addition, the regulations set specific requirements for different time periods depending on the timeframe of the Commonwealth's SIP submittals to EPA. These periods are defined as follows:

> ***Control Strategy Period:*** Once a control strategy SIP has been submitted to EPA, EPA has to make a positive adequacy determination of the mobile source emission budget before such budget can be used for conformity purposes. The conformity test in this period is consistency with the mobile source emission budget.
>
> ***Maintenance Period*** is the period of time beginning when the Commonwealth submits and EPA approves a request for redesignation to an attainment area, and lasting for 20 years. The conformity test in this period is consistency with the mobile source emission budget.

Horizon Year Requirements

Horizon years for regional and state model analyses have been established following 40 CFR 93.106(a) of the Federal Conformity Regulations. The years for which the regional and state transportation models were run for ozone precursor emission estimates are shown below:

2010: Milestone Year – This year is now being used by the statewide travel demand model as the new base year for calculation of emission reductions of VOCs and NOx.

2016: Milestone Year and Analysis Year: This year is used to show conformity with the existing emission budgets for ozone precursors in Western Massachusetts.

2020: Analysis Year

2025: Analysis Year

2035: Horizon Year – last forecast year of the regional transportation plan

Latest Planning Assumptions

Section 93.110 of the Federal Conformity Regulations outlines the requirements for the most recent planning assumptions that must be in place at the time of the conformity determination. Assumptions must be derived from the estimates of current and future population, households, employment, travel, and congestion most recently developed by the MPO. For the 2012 Nantucket Regional Transportation Plan and other regional plans, the MassDOT developed a series of forecasts – in cooperation with all the MPOs – that represent the most recent planning assumptions for all of Massachusetts.

Transit Operating Policy Assumptions

For the (Region) MPO, the operating policies and assumed transit ridership have not changed since the conformity determination prepared for the 2007 Transportation Plan.

Latest Emissions Model

Emission factors used for calculating emission changes were determined using MOBILE 6, the model used by DEP in determining motor vehicle emission budgets. Emission factors for motor vehicles are specific to each model year, pollutant type, temperature, and travel speed. MOBILE 6 requires a wide range of input parameters including inspection and maintenance program information and other data such as anti-tampering rates, hot/cold start mix, emission failure rates, vehicle fleet mix, fleet age distribution, etc. The input variables used in this conformity determination were received from DEP and approved by EPA.

Timely Implementation of Transportation Control Measures

Transportation Control Measures (TCMs) have been required in the SIP in revisions submitted to EPA in 1979 and 1982. All SIP TCMs have been accomplished through construction or through implementation of ongoing programs. All of the projects have been included in the Region's Transportation Plan (present of past) as recommended projects or projects requiring further study.

DEP submitted to EPA its strategy of programs to show Reasonable Further Progress of a 15% reduction of VOCs in 1996 and the further 9% reduction of NOx toward attainment of the National Ambient Air Quality Standards (NAAQS) for ozone in 1999. Within that strategy there are no specific TCM projects. The strategy does call for traffic flow improvements to reduce congestion and, therefore, improve air quality. Other transportation-related projects that have been included in the SIP control strategy are listed below:

- *Enhanced Inspection and Maintenance Program*
- *California Low Emission Vehicle Program*
- *Reformulated Gasoline for On- and Off-Road Vehicles*
- *Stage II Vapor Recovery at Gasoline Refueling Stations*
- *Tier I Federal Vehicle Standards*

Consultation Procedures

The final conformity regulations require that the MPO make a conformity determination according to consultation procedures set out in the federal and state regulations, and the MPO must also follow public involvement procedures established under federal metropolitan transportation planning regulations. The consultation requirements of both the state and federal regulations require that the (Region) MPO (and all other MPOs), MassDOT, Mass. DEP, US EPA - Region 1 and FHWA – Massachusetts Division, consult on the following issues:

- *Selection of regional emissions analysis models including model development and assessment of project design factors for modeling*
- *Selection of inputs to the most recent EPA-approved emissions factor model*
- *Selection of CO hotspot modeling procedures, as necessary*
- *Identification of regionally significant projects to be included in the regional emissions analysis*
- *Identification of projects which have changed in design and scope*
- *Identification of exempt projects*
- *Identification of exempt projects that should be treated as non-exempt because of adverse air quality impacts*
- *Identification of the latest planning assumptions and determination of consistency with SIP assumptions*

These issues have all been addressed through consultation among the agencies listed above.

Public Participation Procedures

Title 23 CFR Section 450.322 and 310 CMR 60.03(6)(h) require that the development of the Regional Transportation Plan, TIP, and related certification documents provide an adequate opportunity for public review and comment. Section 450.316(b) also establishes the outline for MPO public participation programs.

The NP&EDC conducted a public review period for of the draft Regional Transportation Plan and TIP beginning July 21, 2011 and ending August 22, 2011. Copies of both documents were provided on the NP&EDC's website and hard copies were provided at the NP&EDC's office, the Nantucket Town Administration office, and the Nantucket Atheneum. The NP&EDC also held a public hearing for both documents on August 1, 2011.

Financial Consistency

Title 23 CFR Section 450.322 and 40 CFR 93.108 require the 2012 Nantucket Regional Transportation Plan to "be financially constrained by year and include a financial plan that demonstrates which projects can be implemented using current revenue sources and which projects are to be implemented using proposed revenue sources."

The 2012 Plan is financially constrained to projections of federal and state resources reasonably expected to be available during the appropriate time frame. Projections of federal resources are based upon the estimated apportionment of the most recent federal authorizations, as allocated to the region by the state or as allocated among the various MPOs according to federal formulae or MPO agreement. Projections of state resources are based upon the allocations contained in the

current Transportation Bond Bill and historic trends. Therefore, the 2012 Plan substantially complies with the federal requirements relating to financial planning.

Model Specific Information

40 CFR Part 93.111 of the federal regulations outlines requirements to be used in the network-based transportation demand models. These requirements include modeling methods and functional relationships to be used in accordance with acceptable professional practice and reasonable for purposes of emission estimation. MassDOT, on behalf of the Nantucket MPO, has used the methods described in the conformity regulations in the analysis of this 2012 Regional Transportation Plan.

Highway Performance Monitoring System Adjustments

As stated in EPA guidance, all areas of serious ozone and carbon monoxide nonattainment must use FHWA's Performance Monitoring System (HPMS) to track daily vehicle-miles of travel (VMT) prior to attainment to ensure that the state is in line with commitments made in reaching attainment of the ambient air quality standards by the required attainment dates. MassDOT provided HPMS information to DEP. DEP used this information in setting mobile-source budgets for VOC, NOx, and CO in all SIP revisions prior to 1997. DEP has since revised its VOC and NOx budgets using transportation-demand model runs. However, the models must still be compared to HPMS data since HPMS remains the accepted tracking procedure as outlined in the regulations.

The conformity regulations require that all model-based VMT be compared with the HPMS VMT to ensure that the region is in line with VMT and emission projections made by DEP. An adjustment factor that compares the 2010 HPMS VMT to the 2010 transportation model VMT has been developed. This adjustment factor is then applied to all modeled VOC and NOx emissions for the years 2016 through 2035 to ensure consistency with EPA-accepted procedures.

$$\frac{\text{2010 HPMS VMT}}{\text{2010 Modled VMT}} = \text{Adjustment factor for VOC and NOx} = \frac{153{,}000}{71{,}899} = 2.128 \text{ for Nantucket}$$

HPMS adjustment factors, calculated on a regional basis, are applied to the model output of future scenarios, and they change as base-year models are updated or improved, or as HPMS data is revised or updated.

Changes in Project Design since the Last Conformity Determination Analysis

The Commonwealth requires that any change in project design from the previous conformity determination for the region is identified. Changes that have occurred since the last conformity determination in 2010 are as follows:

The modeled base year has changed from 2007 to 2010.
A new analysis year has been included in the conformity determination. An air quality analysis has been completed for 2016. This complies with EPA's Transportation Conformity Rule Restructuring Amendments (40 CFR Part 93.118, expected to become effective August 2011) which states that "if the attainment date has not yet been established, the first analysis year must

be no more than five years beyond the year in which the conformity determination is being made." (2011 base to 2016 analysis year).
Emission factors have been developed for 2010, 2016, 2020, 2025, and 2035 using Mobile 6.2 with inputs approved by MassDEP and US EPA.
New HPMS adjustment factors have been developed for the new 2010 base year.

Procedures for Determining Regional Transportation Emissions

The federal conformity regulations set specific requirements for determining transportation emissions, which are estimated from a combination of emission rates, HPMS volume data, and travel demand model projections. Travel demand models use estimates of population, households, and employment to project future travel volumes and patterns. Section 2.4 the Plan presents these estimates as part of the existing and future regional transportation system.

Only "regionally significant" projects are required to be included in the travel demand modeling efforts. The final federal conformity regulations define regionally significant as follows:

> ***Regionally significant:*** *a transportation project (other than an exempt project) that is on a facility which serves regional transportation needs (such as access to and from the area outside of the region, major activity centers in the region, major planned developments such as new retail malls, sport complexes, etc., or transportation terminals as well as most terminals themselves) and would be included in the modeling of a metropolitan area's transportation network, including at a minimum all principal arterial highways and all fixed guideway transit facilities that offer an alternative to regional highway travel.*

In addition, specific classes of projects have been exempted from regional modeling emissions analysis. The categories of exempt projects include:

- *Intersection channelization projects*
- *Intersection signalization projects at individual intersections*
- *Interchange reconfiguration projects*
- *Changes in vertical and horizontal alignment*
- *Truck size and weight inspection stations*
- *Bus terminals and transfer points*

Previous conformity amendments now allow traffic signal synchronization projects to be exempt from conformity determinations prior to their funding, approval or implementation. However, once they are implemented, they must be included in conformity determinations for future plans and TIPs.

The milestone and analysis year transportation model networks are composed of projects proposed in this RTP. Projects in these networks consist of all in-place regionally significant projects that can reasonably be expected to be completed by a given analysis/horizon year with consideration of available funding commitments. This project group would include, but not be limited to, regionally significant projects where at least one of the following steps has occurred within the past three years:

- Comes from the first year of a previously conforming TIP,
- Completed the NEPA process, or
- Currently under construction or are undergoing right-of-way acquisition

A complete listing of future regionally significant projects for the entire Eastern Massachusetts Ozone Non-Attainment Area is provided below:

Regionally Significant Projects Included in the Regional Transportation Models for the Eastern Massachusetts Ozone Non-Attainment Area

Analysis Year	**Community**	**Description of Projects Under Construction – Boston Region**
2016	Bedford, Burlington	Middlesex Turnpike Improvements Phases 1and 2
2016	Bellingham	Pulaski Boulevard
2016	Boston	Fairmount Line Improvements, including new stations
2016	Boston	East Boston Haul Road/Chelsea Truck Route (new grade separated roadway)
2016	Concord, Lincoln	Route 2/Crosby's Corner (grade separation)
2016	Danvers	Route 128/Route 35 and Route 62
2016	Hudson	Route 85 (capacity improvements from Marlborough TL to Rt 62)
2016	Marshfield	Route 139 Widening (to 4 lanes between School St. and Furnace St.)
2016	Quincy	Quincy Center Concourse, Phase 2 (new roadway: Parking Way to Hancock
2016	Randolph to Wellesley	Route 128 Additional Lanes
2016	Somerville	Assembly Square Orange Line Station
2016	Somerville	Assembly Square Roadways (new and reconfigured)
2016	Weymouth, Hingham, Rockland	South Weymouth Naval Air Station Access Improvements
2016	Regionwide	1000 Additional Park and Ride Spaces
Analysis Year	**Community**	**Description of Recommended Plan Projects– Boston Region**
2016	Beverly	Beverly Station Commuter Rail Parking Garage
2016	Boston	Conley Haul Road
2016	Salem	Salem Station Commuter Rail Parking Garage Expansion
2016	Somerville, Cambridge, Medford	Green Line Extension to Medford Hillside/Union Square
2016	Weymouth	Route 18 Capacity Improvements
2020	Bedford, Burlington, Billerica	Middlesex Turnpike Improvements Phase 3 – widening Plank St. to Manning
2020	Boston	Sullivan Square/Rutherford Avenue Improvements
2020	Hanover	Route 53 Final Phase (widening to 4 lanes between Rt 3 and Rt 123)
2020	Salem	Bridge Street (widening to 4 lanes between Flint and Washington St.)
2020	Somerville, Medford	Green Line Extension to Mystic Valley Parkway (Route 16)
2025	Canton	I-95 (NB)/Dedham Street Ramp/Dedham Street Corridor (new ramp with widening on Dedham St. from I-95 to University Ave.)
2025	Canton	I-95/I-93 Interchange (new direct connect ramps)
2025	Newton, Needham	Needham Street/Highland Avenue (includes widening Charles River Bridge)
2025	Woburn	Montvale Avenue (widening between Central St. to east of Washington St.)
2025	Woburn	New Boston Street Bridge (reestablish connection over MBTA Lowell line)
2035	Braintree	Braintree Split - I-93/Route 3 Interchange
2035	Framingham	Route 126/135 Grade Separation
2035	Reading, Woburn, Stoneham	I-93/I-95 Interchange (new direct connect ramps)
2035	Revere, Malden, Saugus	Route 1 (widening from 4 to 6 lanes between Copeland Circle and Rt. 99)
2035	Wilmington	Tri-Town Interchange (new “Lowell Junction” interchange on I-93 between Route 125 and Dascomb Rd.)
Analysis Year	**Community**	**Project Description - Cape Cod Region**
2020	Barnstable	Yarmouth Rd. /Rt 28 (widening to 4 lanes) with Hyannis Access Improvements
2025	Bourne	Route 6 Exit 1 WB on-ramp changes and interchange improvements

2035	Bourne	Route 25 Access Ramp widening / Belmont Circle two-way travel
2035	Capewide	Daily Passenger Rail Service: Hyannis to Buzzard's Bay, Middleborough
2035	Mashpee	Mashpee Rotary Ring Roads (connectors, Great Neck Rd, Routes 28 and151)
Analysis Year	**Community**	**Project Description - Central Massachusetts Region**
2016	Northborough	Rt 20 Church to South, signal coordination in corridor
2016	Shrewsbury/Worcester	Rt 9 Bridge over Lake Quinsigamond: widening, additional lane each direction
2016	Auburn	Rt 12/20 to Auburn TL capacity improvements and raised median
2016	Worcester	Lincoln/Highland/Pleasant Streets intersection corridor improvements, minor widening, select signal coordination
2016	Worcester	Route 20 Widening to a consistent 4 lanes
2020	Charlton, Oxford	Route 20 Widening to a consistent 4 lanes
2025	Westborough, Hopkinton	I-90/I-495 and I-495/Rt 9 Interchange Improvements (CD or frontage roads)
2035	Worcester	Route 122/122A Madison St/Chandler St. Kelley Square to Pleasant St: various improvements and signal coordination
2035	Worcester	I-290 Hope Ave. (to full interchange and roundabout at Webster and Hope)
2035	Millbury, Sutton	Route 146 Improvements: Route 122A to Central Turnpike
Analysis Year	**Community**	**Project Description – Martha's Vineyard Region**
n/a	n/a	none
Analysis Year	**Community**	**Project Description – Merrimack Valley Region**
2016	Amesbury	Route 110 from I-495 to I-95 (widen from 2 lanes to 4)
2020	Newburyport, Amesbury	I-95 over Merrimack River (Whittier Bridge widening from 6 to 8 lanes)
2020	Methuen	Route 110/113 (Methuen Rotary – new interchange ramps at I-93)
2025	Lawrence, North Andover	Route 114 (widening from I-495 to Waverly Road)
2035	Andover	Tri-Town Interchange (new "Lowell Junction" interchange on I-93 between Route 125 and Dascomb Rd.) and I-93 widening to 4 lanes in each direction from new interchange/current "lane drop" area to I-495.
Analysis Year	**Community**	**Project Description – Montachusett Region**
2016	Fitchburg/Westminster	New Wachusett Commuter Rail Station
2016	Ayer to South Acton	Fitchburg Line Commuter Rail Improvements (double track)
2020	Leominster	Route 13 Hawes St. to Prospect St. (some widening, new signals, etc)
2025	Athol	New Interchange on Route 2 at South Athol Road
Analysis Year	**Community**	**Project Description – Nantucket Region**
n/a	n/a	none
Analysis Year	**Community**	**Project Description – Northern Middlesex Region**
2016	Westford	Route 110 Minot's Corner to Nixon widen to 4 lanes
2020	Billerica	Middlesex Turnpike Improvements Phase 3 – widening Plank St. to Manning
2035	Tewksbury	Tri-Town Interchange (new "Lowell Junction" interchange on I-93 between Route 125 and Dascomb Rd.) and I-93 widening to 4 lanes in each direction from new interchange/current "lane drop" area to I-495.
2035	Westford	I-495 at Boston Road (Exit 32) widening of on and off ramps
2035	Lowell, Tewksbury, Chelmsford, and Westford	I-495 Additional travel lane each direction between Exits 32 and 35 and between Exits 37 and 40
2035	Lowell	Wood Street, Rourke Bridge: new bridge, widening and corridor improvements
Analysis Year	**Community**	**Project Description – Old Colony Region**
2016	Abington	Route 18 - Widening to 4 Lanes from Route 139 to Highland Rd.
2020	Brockton	Route 123 - Widen from Route 24 to Angus Beaton Drive
2020	Bridgewater	Route 24 - Add Northbound Slip Ramp from Route 104 WB to Route 24 NB

2020	Plymouth	Route 3 - Add Northbound on-Ramp at Long Pond Road (Exit 5)
2020	Plymouth	Long Pond Road Bridge widening (Exit 5)
2025	Brockton	Main Street,Warren Avenue,Spring Street,West Elm Street,Belmont Street - Reestablish Two-Way Circulation
2025	West Bridgewater	Route 106 - Widening from 2 to 4 Lanes between Route 24 and Route 28
2035	Plymouth	Route 3 – Add NB Off-ramp to Plimouth Plantation Hwy (Exit 4)
2035	Plymouth	Route 25 - Add New Interchange Before Exit 1 and connect to Bourne Road
2035	West Bridgewater	Route 28, Route 106, Central Square Signal and intersection coordination
Analysis Year	**Community**	**Project Description – Southeastern Massachusetts Region**
2016	Fall River, Somerset	New Brightman Street Bridge - capacity improvements to 4 lane divided facility
2016	Fall River	Route 79/Davol Street (interchange improvements and new traffic circulation)
2016	Freetown	Route 24 - New Interchange (Exit 8 ½)
2016	Mansfield	Route 140 / I-495 New Southbound On-Ramp
2020	Dartmouth	Route 6 (Faunce Corner Rd) / I-195 Interchange - Bridge Widening to 5 Lanes
2035	Taunton	Route 24 / 140 - Interchange Reconstruction

Air Quality Conformity Analysis

The emissions from the following MPOs have been combined to show conformity with the SIP for the Eastern Massachusetts Ozone Nonattainment Area:

- Cape Cod MPO
- Central Massachusetts MPO
- Merrimack Valley MPO
- Boston MPO
- Montachusett Region MPO
- Northern Middlesex MPO
- Old Colony MPO
- Southeastern Region MPO
- Martha's Vineyard Commission*
- Nantucket Planning and Economic Development Commission*

* These regions do not contain any official urbanized areas, but are considered to be MPOs for planning purposes.

All the Massachusetts MPOs and MassDOT continue to meet the requirements of air quality conformity according to the Code of Federal Regulations, and as evaluated through inter-agency consultation. Specifically:

On March 6, 2015, (80 FR 12264, effective April 6, 2015) EPA published the Final Rulemaking, "Implementation of the 2008 National Ambient Air Quality Standards (NAAQS) for Ozone: State Implementation Plan Requirements; Final Rule." This rulemaking removed transportation conformity to the 1997 Ozone NAAQS (the standard referenced by CLF and the subject of a 12/23/14 DC Circuit Court decision).

Link to Final EPA Rulemaking: http://www.gpo.gov/fdsys/pkg/FR-2015-03-06/pdf/2015-04012.pdf

Since the RTPs have been developed, reviewed, and will be approved after April 6, 2015, air quality conformity determinations to the 1997 Ozone NAAQS are no longer required, as those standards and all associated area designations have been permanently replaced by the 2008 NAAQS, which (with actually a stricter level of allowable ozone concentration than the 1997 standards) no longer designate Massachusetts as a non-attainment area(s) for ozone (except for Dukes County – see below).

Through the Interagency air quality consultation process (involving U.S. DOT, EPA, MassDEP, MassDOT, and the MPOs) the latest EPA rulemakings, the referenced court decision, ozone standards and area designations were all reviewed. Specific transportation conformity requirements in Massachusetts for this RTP round are as follows:

- No conformity determination is required for the 2008 Ozone NAAQS, as Dukes County (the only designated non-attainment area) is classified as an "isolated rural nonattainment area" and therefore only needs to evaluate transportation conformity when the Martha Vineyard Commission has a "regionally significant" project that would trigger conformity.

- The Boston carbon monoxide attainment area with a current maintenance plan in place (with a carbon monoxide motor vehicle emission budget) will prepare a carbon monoxide air quality analysis for the Boston Area (nine communities).

- The Lowell, Waltham, Worcester and Springfield Areas are classified attainment with a limited maintenance plan in place. No regional air quality analysis is required in limited maintenance plan areas as emissions may be treated as essentially not constraining for the length of the maintenance period because it is unreasonable to expect that such areas will experience so much growth in that period that a violation of the carbon monoxide NAAQS would result. Therefore, in areas with approved limited maintenance plans, Federal actions requiring conformity determinations under the transportation conformity rule are considered to satisfy the "budget test." All other transportation conformity requirements under 40 CFR 93.109(b) continue to apply in limited maintenance areas, including project level conformity determinations based on carbon monoxide hot spot analyses under 40 CFR 93.116.

In consideration of the comments received, combined with MassDOT's greenhouse gas (GHG) reporting requirements for the Commonwealth's Global Warming Solutions Act (310 CMR 60.05), MassDOT will conduct a "conformity-related" emissions analysis for ozone precursors, consistent with the 1997 NAAQS standards (currently superseded by the 2008 NAAQS). This emissions analysis will be for informational purposes only (as it is currently NOT federally required), and will be contained in a separate air quality document (also to include GHG emissions analysis) that will be completed at the end of August 2015 – the results of which will then be available to the MPOs, the Massachusetts Executive Office of Energy and Environmental Affairs (and affiliate agencies), and all other interested parties.

Using the latest planning assumptions, the Massachusetts Department of Transportation, Office of Transportation Planning, in coordination with MPO staff, estimated the emissions for VOC and NOx for all MPOs in Eastern Massachusetts through a combination of the statewide and

Boston Region travel demand models. The VOC mobile source emission budget for 2009 and beyond for the Eastern Massachusetts Nonattainment Area has been set at 63.50 tons per summer day and the 2009 (and beyond) mobile source budget for NOx is 174.96 tons per summer day. As shown in Tables 1 and 2, the results of the air quality analysis demonstrate that the VOC and NOx emissions from all Action scenarios are less than the VOC and NOx emissions budgets for the Eastern Massachusetts Nonattainment Area:

TABLE 1
VOC Emissions Estimates for the Eastern Massachusetts Ozone Nonattainment Area
(all emissions in tons per summer day)

Year	Nantucket Action Emissions	Eastern MA Action Emissions	Budget	Difference (Action – Budget)
2010	n/a	64.974	n/a	n/a
2016	0.0491	36.232	63.50	-27.268
2020	0.0455	32.386	63.50	-31.114
2025	0.0447	30.988	63.50	-32.512
2035	0.0503	31.063	63.50	-32.437

TABLE 2
NOx Emissions Estimates for the Eastern Massachusetts Ozone Nonattainment Area
(all emissions in tons per summer day)

Year	Nantucket Action Emissions	Eastern MA Action Emissions	Budget	Difference (Action – Budget)
2010	n/a	178.925	n/a	n/a
2016	0.0763	66.219	174.96	-108.741
2020	0.0525	45.188	174.96	-129.772
2025	0.0421	36.521	174.96	-138.439
2035	0.0402	29.038	174.96	-145.922

The Nantucket MPO has conducted an air quality analysis of the 2012 Nantucket Regional Transportation Plan and its latest conformity determination. The purpose of the analysis is to evaluate the air quality impacts of the Plan on the SIP. The analysis evaluates the change in ozone precursor emissions (VOCs, and NOx) due to the implementation of the 2012 Nantucket Regional Transportation Plan. The modeling procedures and assumptions used in this air quality analysis follow guidance from EPA and the Commonwealth and are consistent with all present and past procedures used by the Massachusetts DEP to develop and amend the SIP.

MassDOT has found the emission levels from all MPOs in Eastern Massachusetts – including from the 2012 Nantucket Regional Transportation Plan – to be in conformance with the SIP according to conformity criteria. Specifically, the following conditions are met:

- The VOC emissions for the Action (build) scenarios are less than the 2009 VOC motor vehicle emission budget for analysis years 2016 through 2035.
- The NOx emissions for the Action (build) scenario are less than the 2009 NOx motor vehicle emission budget for analysis years 2016 through 2035.

In accordance with Section 176(c)(4) of the Clean Air Act as amended in 1990, the MPO for the Nantucket Region has completed its review and hereby certifies that the 2016 Nantucket Regional Transportation Plan and its latest conformity determination satisfies the conformity criteria where applicable, and therefore conditionally conforms with 40 CFR Parts 51 and 93, and 310 CMR 60.03, and is consistent with the air quality goals in the Massachusetts State Implementation Plan.

17. APPENDIX 1 – COMMENT LETTERS

18. APPENDIX 2 – FUNDING TABLES

19. APPENDIX 3 – PROJECT EVALUATION