

This Section of the Comprehensive Plan involves infrastructure -- roads, water supply, wastewater and stormwater management, solid and hazardous waste, and town facilities providing services to the community. Barnstable has kept up admirably with capital facility and service needs considering rapid growth, increasing maintenance and improvement costs, and Proposition 2 ½ constraints. However, some of Barnstable's facility and infrastructure is overburdened, outdated and in need of repair.

The Open Space and Recreation Plan, included in the Appendix and incorporated by reference as part of this plan, details Park and Open Space facilities and management.

Infrastructure and Facilities

This section analyzes existing facilities and infrastructure and explores future facilities and infrastructure necessary to accommodate new growth or redevelopment.

The overall goal for infrastructure and facilities is to provide a service delivery system that is efficient, effective and economical and that provides a range of public services adequate to meet the economic, social and individual needs of residents. This section of the CP addresses a wide variety of services and facilities including services provided by other public agencies that require coordination with the town. These services include:

- 4.1 Transportation
- 4.2 Solid and Hazardous Waste
- 4.3 Wastewater
- 4.4 Water Supply
- 4.5 Stormwater
- 4.6 Town Facilities
- 4.7 Energy

Providing Adequate Facilities

Community facilities include wastewater facilities, transfer station, water suppliers, law enforcement, fire services and town administration facilities. Regional facilities include Cape Cod Hospital, Cape Cod Community College, Hyannis Transportation Center, Barnstable Municipal Airport, and town harbors that support facilities that provide marine transportation to the Islands.

Based on land use policies and designations in this plan, sufficient infrastructure are provided, including facilities for police, government, recreation, education, community activities, and waste disposal. The town will cooperate with the quasi-public infrastructure providers for water supply, library, health, fire protection, and other services to ensure coordination of these facilities for appropriate service provision.

Infrastructure and Facility Prioritization

Plans for infrastructure and infrastructure improvements will be funded and implemented according to land use designations and policies defined in Section 1 of this CP including concurrency. Concurrency is the timing of infrastructure and services necessary to mitigate impacts of development without decreasing existing levels of service. If a proposed development is determined to cause levels of service to decline, then the development may not be permitted unless the impacts are mitigated or there is funding in place to mitigate these impacts. Concurrency is required for wastewater, water supply, traffic and stormwater infrastructure and service provision.

Regional Facilities

The Town of Barnstable hosts regional facilities, which provide goods and services to residents of other towns as well as Martha's Vineyard and Nantucket. These facilities provide valuable services from which Barnstable derives economic activity, yet these activities also create infrastructure impacts. Since many of these facilities are tax-exempt, their impacts to the town such as increased traffic congestion, increased need for roadway maintenance, water use, wastewater treatment for example are not mitigated through property taxes. A balance must be created to ensure that economic impacts from these facilities do not outweigh their economic benefit.

These regional facilities include county government, land, air and sea transportation facilities, healthcare facilities and educational institutions.

Funding Infrastructure and Facilities

Debt Management

To provide for debt management and capital planning, as well as enhance the town's reputation for managing its debt in a responsive manner, the Town Council strategic plan includes a set of comprehensive financial strategies:

- Establish rainy day/budget stabilization reserves
- Prioritized spending plans
- A formalized capital improvement plan

- Long-term financial planning for all liabilities
- Pay-as-you-go financing strategies as part of operating and capital budgets
- 10 year financial forecasts

The Town will develop a capital plan to fund infrastructure required to meet the service demand of existing growth and prepare for new growth anticipated through existing land use regulations. This capital plan will include the existing Capital Improvement Program, state grant funds, enterprise accounts, direct mitigation and applicable programs of the Commonwealth's Office of Business Development. These State programs will be evaluated for their effectiveness and ability to provide financing options where the town is not able to do so through existing funding mechanisms or the creation of enterprise accounts.

The Capital Improvement Program (CIP), a five-year action plan, serves as a link between planning and programming projects requiring town funding. The CIP fiscal constraints and funding sources are a limiting factor to infrastructure expansion and improvement. The CIP has a direct relationship to the rate and location of new growth, infill development and redevelopment. The capital improvement program also includes the following sources of funds in addition to town revenue:

Direct Mitigation. Impacts from proposed development will be mitigated by one or more of the following methods.

- Impact fees may be adopted town wide to address wastewater, water supply, open space, parking, transit, roadway and traffic improvements, landscaping, lighting and pedestrian amenities.
- Physical improvements by developers through regulatory agreements
- Development of Regional Impact (DRI) mitigation fees collected by CCC and disbursed to the town for specific projects that fulfill the conditions of the DRI approval in which the mitigation was required.

Massachusetts Office of Business Development (MOBD) Programs.

MOBD works with companies and municipalities to help them take advantage of economic incentive programs that are available. MOBD also assists companies in navigating and obtaining the technical, human, financial and siting resources necessary to expand and/or re-locate in MA. The Massachusetts Office of Business Development administers the EDIP, DIF and MORE jobs programs. The EDIP includes the Special Tax Assessment and Tax Increment Financing programs.

Special Tax Assessment (STA)

Covers both the existing and new value of the real estate owned or leased by the prospective Certified Project candidate. In year one, the tax is zero percent of the existing and new assessed value of the real estate. In year two, up to 25% of the assessed value is taxed. In year three, up to 50% of the assessed value is taxed. In year four, up to 75% of the assessed value is taxed. In years five and following, up to 100% of the assessed value is taxed. The Special Tax Assessment is for a period of no less than five and no more than twenty years.

Tax Increment Financing (TIF)

Massachusetts' version of Tax Increment Financing allows municipalities to provide flexible targeted incentives to stimulate job-creating development. The TIF Plan, completed by the municipality, describes proposed public and private investment in the TIF Zone, and is agreed upon by the municipality and all the private owners in the TIF Zone. The municipality and the prospective Certified Project candidate agree to a property tax exemption based on a percentage of the value added through new construction or significant improvement for a period of no less than five and no more than twenty years.

The real estate taxes generated by the new increased assessed value are then allocated by the agreed-upon percentage of value added to one or more of three categories. The categories are:

- Exemption from real estate taxes.
- Payment of real estate taxes.
- Payment of betterment fee in lieu of real estate taxes to finance related infrastructure.

District Improvement Finance Program (DIF)

The District Improvement Finance Program (DIF) is a public financing alternative available to all cities and towns in the Commonwealth. The DIF enables municipalities to fund public works, infrastructure and development projects by allocating future, incremental tax revenues collected from a predefined district to pay project costs.

Massachusetts Opportunity Relocation and Expansion (MORE) Jobs Capital Program

The Massachusetts Opportunity Relocation and Expansion (MORE) Jobs Capital Program provides \$100 million in grant funding for public

infrastructure improvements needed to support business expansion in the Commonwealth of Massachusetts. The purpose of the program is to stimulate job creation and economic growth across the state by providing the public infrastructure developments companies need. MORE was established in an economic stimulus bill and signed into law on June 24, 2006 (Chapter 123 of the Acts of 2006).

Section 4.1 Transportation

Introduction

The transportation system enables people and products to move into, out of and around Barnstable. The key elements of our transportation system are: roadways, public transit such as buses, trains, air travel and ferry service and their associated facilities. For the purposes of this discussion, the transportation system also includes sidewalks and other walkways, bikeways, and parking facilities. The transportation system should provide acceptable service for existing needs of the community and be able to provide for planned growth in the community.

Roadways serve several functions. The roadway network's primary function is to provide vehicle circulation for private users and public transit. Because of long established land use patterns the personal motor vehicle is the primary form of transportation in Barnstable. Roads also provide rights-of-way for public utilities, such as sewer, water, gas and electric lines, both above and below ground.

Sidewalks are important to the character and function of the village centers. They are also necessary to the schools and some commercial areas. A map of existing and proposed sidewalk routes is included in the Map Section. Other walkways include walking trails and ways to water which are used primarily for recreation.

There are a few dedicated bike paths in Barnstable but for the most part bicycle travel takes place on the roadway network. Plans are finalized for a dedicated bikeway between Hyannis and Yarmouth using abandoned rail lines that will link to the Cape Cod Rail Trail. A map of existing and proposed bicycle paths and routes is included in the Map Section.

Parking infrastructure is very important in our auto dependent environment. The majority of parking infrastructure is privately owned, associated with commercial or industrial property. Some additional parking is associated with

institutional uses and town owned properties. Parking goals include reducing excess parking greyfields and encouraging shared parking and construction of decked and/or first floor parking in appropriate locations.

Public transit in Barnstable includes local fixed route and limited demand bus service, inter-city bus service that can link passengers to rail service, air service from Barnstable Municipal Airport in Hyannis and ferry service to the Islands.

Major Transportation Issues

Hyannis Transportation Center

The Cape Cod Regional Transportation Authority (RTA) has built, on the 10.8-acre railroad terminal site owned by the state, the Hyannis Transportation Center (HTC) that serves as a bus terminal, a maintenance facility, and the RTA office. The Town of Barnstable wants the Center to act as a "hub", with coordination of satellite parking, shuttle, railroad, bus, airport, and ferry services.

Given its location in an area where air, bus, ferry and automobile travel options converge, these intermodal goals are sound. The Town is engaged in a bikeway project that provides a link from the Cape Cod Bikeway to HTC transportation options and downtown Hyannis. The Steamship Authority, a primary provider of water transportation for freight and passengers traveling to the Islands, has a parking lot near the HTC. While the Steamship Authority does have a seasonal shuttle service, it is not sufficient to address existing demand. Currently there is no direct public transit or pedestrian connections for island ferry passengers from the airport, remote parking or the HTC. Needed improvements include shuttle service between the airport and the HTC, increased local and regional bus service and remote parking with intermodal connections for travelers going to and coming from the Islands.

At present, inter-city and intra-city bus service does not provide an adequate alternative to the automobile. Ridership and inter-modal efficiency could be increased by integrating and coordinating all modes of transportation such as railroad, ferries, parking facilities, and the Barnstable Municipal Airport.

A reliable and conveniently scheduled shuttle bus system compatible with the ferry arrivals and departures would reduce congestion in downtown Hyannis, improve passenger travel experience and encourage development of remote

parking away from the harbor. This would allow land currently used for parking to develop uses that are more appropriate to this exceptional location a goal of the Downtown Hyannis GIZ.

Hyannis Access Study

The Commonwealth's Executive Office of Transportation is conducting a comprehensive study of the greater Hyannis area in the Town of Barnstable that will examine and recommend ways to improve overall transportation mobility for residents, businesses, and visitors, while minimizing impacts to neighborhoods and communities.

Hyannis Access Study: This study of the greater Hyannis area in the Town of Barnstable will examine and recommend ways to improve overall transportation mobility for residents, businesses, and visitors, while minimizing impacts to neighborhoods and communities. A full range of alternatives will be developed and analyzed as the study progresses. Possible alternatives include transportation demand management and other "non-highway" options in addition to potential roadway improvements. A recommended plan of short-term and long-term improvements - based on the alternatives analysis and the collective input of many stakeholders - will be produced. A task force has been formed to provide an open and participatory forum for community involvement and input into the entire study.

Parking

The Town of Barnstable's goal for parking management is to provide accessible facilities that meet community needs in accordance with best land use practice.

The majority of parking areas in Barnstable are privately owned and located in commercial areas with paved lots associated with commercial, industrial and institutional uses. Priority for parking management should be given to the Downtown Hyannis GIZ and the Route 132 Regional Commercial Center. The time has come for Barnstable to seek opportunities for parking structures in these heavily traveled areas. These parking structures, designed and sited with full consideration of community character will also provide opportunities to redevelop greyfields into green space and viable commercial spaces that support the downtown revitalization and sustainable redevelopment in the Route 132 area.

The town will explore public private partnerships that will foster shuttle bus service from satellite parking facilities to recreational areas, visitor attractions, commercial areas and other destinations.

Parking Regulations

Incentives for shared parking and reduced parking requirements will be developed for all areas. In more intensively developed commercial and mixed-use areas incentives for decked parking, ground floor parking and, where feasible, underground parking will be developed.

Additionally parking regulation changes should be evaluated for all commercial and industrial uses. Many existing parking spaces go unused even during peak demand periods. The village and auto oriented Route 28 business districts are also subject to excessive parking requirements that must be evaluated.

Roadways

The importance of the roads is evidenced by the approximately 40 million vehicle trips that the more than 40,000 residents made using the network of roads and the tens of millions more trips local business generated during the same period. Deferred maintenance and increasing traffic loadings result in an accelerated deterioration of the roadways.

The road network consists of three major regional east-west roads – Route 6A, Route 6 and Route 28, and four regional roads that connect to the east-west roads - Willow Street, Route 132, Phinney's Lane and Route 149. Connecting to these, an intricate network of local streets reflects incremental development over hundreds of years; however, the majority of residential subdivision roadway construction has taken place over the last 30 years. Barnstable's roadway system is strained by local and regional residential and commercial growth.

There are 498 miles of public roadways within Barnstable's corporate limits. Of this total, approximately 220 miles are town owned roads. The town is solely responsible for the maintenance and upkeep of these roadways. Privately owned public roads are roads created through subdivision control or other means that have not been accepted by the Town according to the provisions of Massachusetts General Law.

There are 174.37 miles of private roads within Barnstable. Many private roads carry a great deal of traffic and play an important role in the movement of traffic throughout the town. In the past, the town has performed limited maintenance and emergency repairs on private roads to guarantee emergency vehicle and school bus access. This policy should be evaluated each year during the capital budget process.

Additional roadways are categorized as: 27 miles of ancient ways; 50.24 miles of county roads; 27.73 miles of state roads; and .03 miles of roadway classified as “other”.

Functional Classification of Roadways

The Town of Barnstable Department of Public Works maintains a functional classification list of the Town roadway network that incorporates Federal Highway Administration (FHWA) criteria for the National Highway System (NHS) and Massachusetts Highway Department (MHD) for other roads. These criteria are used to classify the roads within urban and rural areas into several systems: Principal Arterial System including Arterials and Extensions, Minor Arterial System, Collector System, and Local Street System.

Principal Arterials (including Arterials and Extensions) principally provide for pass-through of regional traffic and access to major activity centers.

Minor Arterials principally distribute regional traffic to small activity centers and, on a limited basis, land access.

Collectors principally provide both land access and traffic circulation.

Local/Subdivision Streets principally provide access to abutting lands and connections to higher order categories.

Using data provided by the Engineering Department, (**Appendix**) the Town has mapped roadways (**Map Section**) and classified them according to Planning Board Subdivision Rules and Regulation designations. The Engineering and Growth Management Departments see a benefit to developing one classification system for roadways. The Engineering Department will have an intern work on this task. Classifications will be developed using town policies, review of the 2006 MassHighway Project Development and Design Guidebook and Cape Cod Commission roadway classification system.

Roadway Function, Design and Land Use Designations

The Land Use designations in this plan consider transportation planning as a key component. As is the case with all infrastructure improvements, roadways will be improved in accordance with the land use designations for the area they serve. Roadway widening or signalization is not planned in areas not designated for growth or redevelopment. Instead these areas will be prioritized for maintenance of existing roadways and in some cases pavement reduction. The Subdivision Rules and Regulations and DPW policies must be revised to include road construction standards based on land use designations and incorporate context sensitive design process. This step is necessary to coordinate this significant capital expenditure with Town land use goals.

The traditional village centers are categorized as pedestrian oriented areas needing roadway infrastructure investment only to enhance existing function, including stormwater management improvements, or community character. These areas may benefit from pavement reduction along some village center roadway segments and intersections.

The commercial nodes along the Route 28 Corridor are automobile oriented. Land uses in these areas must be carefully managed for their impacts to traffic congestion, access management and community character. These planning nodes are already substantially built out so focus now turns to providing incentives to achieve interconnections between developments, reduce curb cuts and paved areas as redevelopment takes place. The entire length of this key highway corridor is owned by the state and managed by Massachusetts Highway Department, District 5 (MHD). The town works with MHD directly and through participation in county groups. Overall, the town has less direct influence over road widening, stormwater management and signalization on this roadway than on a town owned roadway, but strong efforts must be made to implement town policies through funding and design review processes.

Given the intense growth of the last few decades, the unique constraints of the Cape Cod economy and environment, perhaps it is time to explore the re-establishment of a Cape Cod Massachusetts Highway Department District.

The most effective action the town can implement to mitigate impacts of auto oriented highway development is to implement new local regulations. A thorough analysis of parking, interconnection and shared access regulations

is critically important. These regulations may be revised or developed to provide incentives that will relieve some congestion, improve traffic flow and consolidate site access.

The growth center in Hyannis has a full set of transportation infrastructure improvements planned and approved as part of the Growth Incentive Zone (GIZ) process. To accommodate planned growth, improvements are required within the GIZ and at critical intersections and roadway links around the GIZ. This includes improvements to Route 28, a state highway. Estimates by Vollmer Associates, LLP indicate about forty percent (40%) of traffic on Main Street in Hyannis is through traffic – motorists using an alternate route to avoid Route 28 and Airport Rotary congestion.

No new road construction is planned for this growth center. Instead methods to reduce automobile use including sidewalk improvements and new construction, bicycle rack installation, bicycle lanes and path designation and construction, additional transit infrastructure between municipal parking and traveler destinations and a Travel Demand Management program to encourage car-pooling will be used. A full description of these planned improvements can be found in the Downtown Hyannis Growth Incentive Zone Application. **(Appendix)**

In areas designated for redevelopment a combination of strategies proposed for village centers and highway commercial nodes may be used. Incentives for access management and interconnections must blend with incentives for a stronger pedestrian element in appropriate areas such as portions of West Main Street in Hyannis.

In residential areas, road improvements should focus on surrounding land use, enhancing or creating pedestrian accommodations where roads connect to nearby commercial, recreational or school uses. Care should be taken to improve overall streetscape in residential neighborhoods using tree plantings, low maintenance landscape materials and traffic calming enhancements where appropriate.

The Subdivision Rules and Regulations will be reviewed to ensure that incentives are in place for interconnecting neighborhoods through roadway or pedestrian connections.

Context Sensitive Roadway Design

This process includes outreach to the community affected by planned roadway or intersection construction or improvements. Outreach to abutters, users and other stakeholders commences before the design process begins. Engaging in collaborative problem solving to address the planned repair or improvement results in a design that more comprehensively encompasses safety, community character, access, landscape and other community concerns. This process is critically important in the Village Centers but should become standard practice for all projects except emergency repairs.

In all areas of Barnstable, context sensitive design requires an evaluation of Level of Service (LOS), both existing and future, based on average year round conditions. The type of improvements used to address LOS shall be based upon land use designation and community character factors such as pedestrian activity, cultural landscapes, historic structures including stone walls, tree stock and neighborhood response to the design process.

On some portions of Route 28, Route 132, Yarmouth Road/Willow Street and possibly Barnstable Road limited widening of stressed roadway segments may be desirable.

In the Growth Center, the acceptable level of service is D and in some cases E. This designation results from the Growth Incentive Zone (GIZ) infrastructure inventory, analysis and planning process as specified by the Cape Cod Commission GIZ approval. Limited structural improvements that encourage pedestrian activity, support community character, enhance commerce and allow safe efficient access to other modes of travel are encouraged

The Route 132 Regional Commercial Center and the Auto Oriented Route 28 Corridor Nodes may require limited structural improvements to alleviate congestion and promote safe travel where existing or future traffic conditions interfere with commerce, increase travel time and/or impact safe travel.

In Village Centers, Low Density Residential areas and Medium Density Residential areas, structural improvements generally are not desirable. However, along regional corridors that transverse these areas structural improvements, including widening, may be necessary to alleviate extreme congestion or address overriding safety concerns.

The West Main Street Corridor in Hyannis may require structural improvements. Limited widening may be necessary to improve pedestrian amenities, enhance streetscape, support a neighborhood core, alleviate extreme congestion or address overriding safety concerns.

Sidewalks

There are approximately 66 miles of sidewalks throughout the town with a majority located in villages and commercial areas. The Department of Public Works and the Engineering Department use The Town of Barnstable Sidewalk Plan (**Appendix**), developed with the Growth Management Department, to guide sidewalk repair, improvement and construction. This planning study documents the need for additional sidewalks that must be prioritized among other capital improvement projects.

The Sidewalk Plan includes projects prioritized by location near village centers, recreation lands, local and regional service areas; school priorities; and interconnections to existing sidewalk networks.

Land use designations should inform sidewalk planning priorities. Pedestrian and bike linkages to neighborhoods, village centers and recreational and visitor attractions should be planned. Linking recreational facilities, schools, village centers, and other destinations with bike paths and sidewalks was named as a priority during the village visioning. This planning study should be revised annually as projects are completed and should be included the listed priorities.

Bikeways

Barnstable has two bike paths totaling 4.8 miles in length. Bike paths are characterized by a separated right of way while bike routes are roadways with wide shoulders that have been designated for bicycle use. Barnstable has 41.2 miles of bike routes.

Bike Paths

Bike paths should be linked with a regional network of bikeways throughout Cape Cod. Barnstable has three bikeways that qualify as bike paths:

- The Route 28 Bike Path runs along Route 28 from Bearses Way to Old Stage Road. Constructed in 1980 this path is 2.5 miles long and has 28 roadway crossings.
- The Old Stage Road Bike Path begins at Route 149 continues along the service road and turns down Old Stage Road where it ends at Race

Lane where it connects to the Centerville sidewalk network. This path is 1.9 miles long and has six roadway crossings.

- The Hyannis Transportation Center Path runs from Route 28 to Main Street in Hyannis. This path is .4 miles long and has three roadway crossings.

Bike Routes

Bike routes in Barnstable include Race Lane, Newtown Road, Main Street in Cotuit and Centerville, South County Road, Church Street, Parker Road, Phinney's Lane and Pitcher's Way.

Another bike route in Barnstable is the Claire Saltonstall Bikeway, a state designated Bicycle Route. This route is designated from Boston to Woods Hole and Provincetown. It travels across the Sagamore Bridge, along the Service Road in Sandwich and then runs through Barnstable on the Service Road. It continues down Route 132 to Phinney's Lane and Hyannis Road where it then travels along Route 6A into Yarmouth.

The Town of Barnstable has planned a regional bikeway system to connect existing bikeways with interconnecting links. This regional bikeway may be funded through ISTE funding, but other funding sources will be actively pursued. There is enthusiasm from interested parties and towns Cape-wide with the prospect of a regional system. Discussions entail the overall goal as the possibility of two systems; one as a regional system that directly connects with abutting towns' systems and the other a town wide system that links village centers and recreational areas. A map of the Planned Bikeway is included in the Map Section of this plan.

An active project concept, the Trans Barnstable Bikeway, proposes to link the Claire Saltonstall Bikeway through Barnstable to Yarmouth. This proposal also links the eastern portion of the bikeway with the Cape Cod Pathways network.

Following the existing Saltonstall route designation the project would take advantage of the Route 132 reconstruction project the proposal will provide bicycle crossing accommodations at the intersection with Attucks Lane. The next section would use existing roadways to move cyclists along Attucks Lane, Phinney's Lane, Kidd's Hill Road, Independence Drive then to Mary Dunn Road. The next segment requires the cooperation of the Division of Fish and Wildlife (DFW) for a limited route through that property on to Willow Street to access Higgins Crowell Road in Yarmouth.

This project has three segments: Service Road segment requires a bicycle crossing of Route 149 to link two sections of the Service Road. This crossing could also serve as a Cape Cod Pathway link. The Hathaway Pond section involves the Route 132 crossing described above. The last section the Mary Dunn section is the most problematic requiring ongoing legal research, planning, funding and interaction with DFW.

Section 4.2 Solid and Hazardous Waste Disposal

Goals include diverting 30% of solid waste from incineration and transfer station facilities to recycling and compost programs. A town-wide emergency response plan for spills of hazardous waste is to be finalized and the locations of approved facilities for disposing of hazardous waste made readily available to all residents. Ordinance 108 requires all municipal agencies, home occupations and commercial businesses that handle, produce, sell and dispose of hazardous material to register with the Health Division. An ordinance preventing large-scale users from operating in wellhead protection districts should be implemented.

Sources of solid waste are:

- 1. Household
- 2. Non-household
 - a. Commercial Establishments
 - b. Manufacturing Establishments
 - c. Town Facilities
 - d. Construction Contractors

Transfer Station

The various types of solid waste produced in the town are handled at the Barnstable Solid Waste Management Facility in Marstons Mills. The transfer station area encompasses approximately 64 acres and has been used for dumping, landfill, transfer and recycling purposes for more than sixty years. The Residential Solid Waste Transfer Station and Recycling Facility in Marstons Mills is now open seven days a week.

On August 18, 2001, the Barnstable Town Council passed a municipal recycling ordinance in support of the State’s initiative to remove banned wastes from the waste stream. The ordinance requires that commercial trash haulers provide their customers the option of a waste recycling service at a reasonable cost.

Barnstable residents have two options for recycling: 1) to take their recyclables to the Residential Solid Waste Transfer Station and Recycling Facility in Marstons Mills, or 2) to have their commercial trash hauler collect their recyclables curbside. The cost of curbside collection by private haulers varies. There is no charge for basic recycling to residents of the Town of Barnstable at the Residential Transfer Station and Recycling Facility. For some items, such as white goods, tires and cathode ray tubes, the Town must pay a recycler to remove and process items so the Town charges a fee to offset these costs.

The Residential Solid Waste Transfer Station now provides easily accessible and convenient waste disposal for residents. The transfer station’s recycling facilities provide an opportunity for all residents to reduce the town’s solid waste production. Household product recycling is now supplemented with facilities for recycling leaves, scrap metal, white goods, motor oil, televisions, rechargeable batteries, computer monitors, tires, paint, mattresses, mercury products and fluorescent bulbs. Cell phone and book recycling is also available. The recycling program also supports clothing and bottle redemption donations as well as a swap shop. The construction and demolition transfer service allows residents and small business owners to dispose of this debris more easily. The transfer station also offers household hazardous waste collections.

To achieve the goal of increasing the recycled percentage of the solid waste stream, the Town will develop and implement programs to help private trash haulers become more involved in solid waste reduction. Programs such as curbside pickup of recyclables must also be examined and evaluated.

Hazardous Waste

According to recent information gathered from the Department of Environmental Protection (DEP), there are approximately 22 sites in the town that are confirmed hazardous waste sites. Approximately 31 compliant locations must continue to be monitored, investigated, or are being operated to achieve a permanent solution. There are approximately 174 sites that are considered clean according to the Response Action Outcome (RAO) class, which indicates the release has been eliminated, reduced, that a permanent solution has been achieved, or that “no significant risk” exists.

The Town shall review its regulations and ordinances to ensure maximum protection from hazardous waste for drinking water supply and general public safety.

Hazardous Materials Mitigation

The development review process for proposed uses that stock large quantities of items classified as hazardous material require mitigation that protects drinking water resources. The town has benefited from this strategy and should continue to provide clear direction for programs to be continued or created.

The Town has adopted two ordinances: Chapter 108: Hazardous Materials and Chapter 326: Fuel and Chemical Storage Tanks. Each commercial business and municipal facility is inventoried for type and quantity of hazardous materials. The ordinances' function is to educate employees and business owners about proper storing, handling, and disposal methods for hazardous materials. The Health Department conducts unannounced site inspections at least once per year with follow-up inspections to ensure that any violations of these ordinances are corrected.

These ordinances shall be evaluated for effectiveness and updated as necessary to ensure maximum protection for drinking water supplies and public safety.

Comprehensive Water Supply Assessment

To encourage development and implementation of a water resource supply management program for the entire town, Barnstable will conduct the Town of Barnstable Comprehensive Water Supply Assessment. This assessment, conducted in cooperation with the private water companies, shall include short term and long-term water supply needs of the entire town; water supply management needs; land acquisition needs; land protection needs; and a comprehensive strategy for implementing recommendations.

Water Supply Coordination

In Barnstable, four water companies provide water via localized distribution systems to approximately 49,571 customers. The non-municipal water suppliers are Barnstable Fire District (BFD), Centerville-Osterville-Marstons Mills Fire District (COMM) and the Cotuit Fire District (CFD). The only town owned supplier is the Hyannis Water Company, formerly the Barnstable Water Company (BWC). These water suppliers own and maintain 443 miles of mains, 16 interconnections between the water suppliers in Barnstable and abutting towns, 41 wells and 10 storage tanks. They pump over 2 billion gallons of water per year and own approximately 1233 acres of watershed property.

Water suppliers make decisions as to the expansion or extension of the water infrastructure based on their own judgment and availability of funds. The water districts maintain their own infrastructure and plan their own capital expenditures to improve the supply and distribution systems, increase pumping capacity, and respond to other water quality/quantity issues. Where no public water supply is available, residents and businesses rely on individual on-site wells for their potable water needs.

Currently the Water Quality Advisory Committee, a group that includes representatives from all water suppliers, meets several times a year to discuss and coordinate water supply issues across all jurisdictions.

Section 4.5 Stormwater Management

As the roadway network and number of paved parking surfaces grow to serve new residential and commercial development, so will the need to effectively and safely manage the stormwater that flows from these impervious surfaces. Stormwater runoff from roadways and paved areas has impacted drinking water supply, shellfish beds and other natural resources. Infrastructure must be designed and extended to capture and treat the runoff before it reaches environmentally sensitive areas. The town must continue to implement a stormwater management plan.

Contamination from Runoff

Infrastructure must be designed and extended to capture and treat the runoff before it reaches environmentally sensitive areas. Runoff must be filtered by swales or other means to improve the quality of coastal waters. After the first 1 inch of rainfall, these stormwater management systems shall be designed to have backup retention or detention basins. Recreational resources and fisheries can be better served through the closure or limitation of direct discharge points and the disposal of the stormwater by other means.

An exemplary stormwater attenuation project is part of the Joshua's/Stewart's Creek Improvement Project. Implemented by Four Points Sheraton Hyannis Resort, the typical design for this stormwater management application would be a stone lined pit. Four Points hired a firm to design an actual wetland basin to intercept and treat their parking lot runoff. Constructed in 2004 it now protects Joshua's Creek from bank erosion and pollution runoff. It is also very scenic, adds valuable wildlife habitat to the creek's river corridor, and complements the town's restoration project.

The town will continue to study the existing practice for application of sand and salt on roadways to determine best ratio for safety, prevention of groundwater contamination, and catch basin maintenance. The Town will also continue to monitor areas where water supply wells show high salt content and adjust sand and salt application or improve stormwater management accordingly.

Sustainable Stormwater Management Techniques

Through development review and regulation, the Town must adopt and implement sustainable stormwater management techniques, like those adopted for the GIZ or using Low Impact Development technology, through out the entire town. To fully protect salt water estuaries, freshwater bodies, the aquifer, shellfish and other natural resources from stormwater impacts and to prevent flooding from storms, the town will continue adaptive management and best management practices for stormwater through a town-wide Stormwater Management Plan. The ultimate goal is to have all stormwater discharge treated to appropriate levels through adaptive management and best management practices and to provide high quality stormwater recharge to water resources.

Section 4.6 Town Facilities

In order to deliver high-quality services to Barnstable residents, the town maintains, or in some cases shares, in the maintenance of the following facilities that provide services to residents and visitors:

- Town Hall Complex
- Water Pollution Control Facility
- Hyannis Water Company
- Structures and Grounds Maintenance Facility
- Highway Building
- Marine and Environmental Affairs Building
- Police Department Headquarters
- Senior Center
- Youth and Community Center/Kennedy Rink
- School Administration Building
- Schools
- Village Libraries
- Town harbors, landings and ways to water
- Recreational Facilities such as Cape Cod Airfield, Fairgrounds and Hyannis Golf Courses, structures at Sandy Neck and other beaches.
- Trayser – Coast Guard Heritage Museum

- Zion Union Church Museum
- Lombard property structures, including the Old Selectmen’s Building and Community Building
- Hyannis National Guard Armory building

Through these facilities the Town strives to maintain existing levels of service for residents and visitors. The extraordinary growth experienced in the last thirty years placed demands on infrastructure and facilities that are still not fully addressed. As residential and non-residential growth continues, service demand continues to grow. The Town must responsibly assess its ability to meet increased service demand. By examining existing fiscal constraints, other available funding mechanisms and projections for growth allowed by land use regulation, the Town will discover where balance is lacking in the facilities and infrastructure/growth equation. Methods of funding services for new growth must be identified and implemented. To help address these shortfalls, new development and infill must include impact assessment and mitigation.

Section 4.8 Energy

An effective energy policy and implementation program should include energy efficiency, distributed generation, renewable energy components and a plan to measure, monitor and reduce energy consumption town wide. The Town of Barnstable implemented a municipal energy plan in 2002, and continues to refine and enhance this plan on an ongoing basis.

Town of Barnstable Initiatives

Barnstable is one of only two Cape & Islands communities with explicit policy commitments addressing threats posed by climate change. Falmouth, the other participating Cape community, and Barnstable officials have met to discuss local initiatives geared toward reducing greenhouse gas emissions (GHGE) and other town energy policy objectives. In 2002, Barnstable joined the Cities for Climate Protection™ campaign administered by the International Council for Local Environmental Initiatives (ICLEI). Barnstable has inventoried GHGE, established emissions reduction targets and timelines, and begun implementing the systematic efforts required to achieve policy goals.

Green Program

In November of 2003 the Barnstable Town Council resolved to set a goal of reducing greenhouse gas emissions by 20% within the next 10 years. To

achieve this goal, Town Council created the Green Team. This team implements the Council's "Resolve in Support of the Cities for Climate Protection Campaign" which states: "The purpose of the Green Team Committee is to create an Action Plan to implement town policies relative to the reduction of community and municipal greenhouse gas emissions, recycling and energy efficiency."

The Green Team is an interdepartmental collaboration that identifies proactive methods of reducing energy consumption and costs through management efforts that make environmental sense. Components include green building construction and renovation; green land management; on-site energy generation; use of green vehicles; recycling; government procurement and consumption practices; collaboration with the schools and employee initiatives.

Green House Gas Emission (GHGE) Reduction Policy

As charged by the Barnstable Town Council, the Green Team continues to work on its policy for reduction of GHGE. A grant funded base line inventory was completed three and half years ago, initiatives on the division and department level have addressed lowering the levels through direct and indirect actions such as changing fuel, replacing vehicles and upgrading equipment. The next milestone is to prepare a five year inventory update that will compare levels to this base line and measure progress towards the Town's goal of a 20% emission reduction by 2013.

Specific efforts include using a 5% biodiesel blend for Department of Public Works vehicles. (The DPW is looking to increase the blend to 20%), a comprehensive examination of the municipal fleet targeting the reduction of the number of miles driven by Municipal vehicles, and energy consumption in Town and School buildings being monitored so that energy reduction strategies can be implemented.

School and Town Collaboration

Green Team members have met with faculty representing school recycling and energy awareness groups from Barnstable High School, Barnstable Middle School and Horace Mann Charter School. Together they discussed recycling and the logistical issues surrounding the collection and disposal of recyclables, energy efficiency initiatives, and opportunities to increase student awareness about renewable energy. The group agreed to build on the cooperation between Town and school, share information, and continue meeting regularly.

Through the "Solarize Our Schools" program from the Massachusetts Technology Collaborative (MTC) and Cape Light Compact, a photovoltaic (PV) system was installed in the high school last year at no cost to the Town. This 2 kilowatt PV system was donated to the High School as part of Green Energy Choices funds made available to the Town. These funds are generated when residents choose to buy Green Energy through the Cape Light Compact. Nearly three percent of Barnstable residents opt to buy Green Energy that is generated using renewable sources such as wind, water, solar and biomass.

Outreach and Education

Barnstable residents pay some of the highest energy costs in the nation. Electricity costs the residential customer on average 18 cents per kilowatt-hour as of July 2007. Using municipal efforts as a model, the Town's Green Team promotes energy efficiency and awareness to residents and the business sector. The Town should consider expanding its support of student initiatives in the schools.

Consistency

This plan adopts the Regional Policy Plan Goals 4.1.1, 4.1.2, 4.1.3, 4.2.1, 4.3.1, 4.4.1, 4.4.2, and 4.5.1. In lieu of adopting the Minimum Performance Standards, the following sections outline Barnstable's action plan in support of these goals.

Section 4.1 Transportation

Goal 4.1.1 The town will improve safety and quality of roadway network traffic circulation and will coordinate and encourage alternate modes of transportation, preserve character in context of surrounding community and protect natural resources to the maximum extent possible.

Action 4.1.1.1 The Department of Public Works' Functional Classification of Roadways list will continue to classify Town roadway network within designated urban and rural areas of Barnstable.

Strategies

- This list will be reviewed and amended as necessary to ensure that classifications are appropriate for designated land use categories.

- The Subdivision Rules and Regulations should be reviewed and amended as necessary to incorporate these classifications where these classifications support a designated land use category.

Action 4.1.1.2 The Department of Public Works recognizes the Cape Cod Commission Classification of Roadways based on their function and capacity in accordance with the current version of the Cape Cod Commission's Regional Policy Plan, Cape Cod Classification Map.

Action 4.1.1.3 Continue to inventory, maintain and preserve Scenic Roads. Residents and civic associations should continue to nominate Scenic Roads for official designation by Town Council.

Action 4.1.1.4 The Functional Roadway Classification system should be consistent with CP land use designations. Where inconsistencies currently exist land use designations will take precedence.

Strategies

- Non-residential development or redevelopment that is not located in a growth center, increases vehicle trips and/or peak hour trips will submit a traffic assessment, based on highest peak hour conditions. The assessment will evaluate the impacts to traffic circulation, roadway and intersection operations and safe travel. Developments will mitigate these roadway infrastructure impacts.
- Multi-family residences of three or more units that are not located in a high-density residential area, increase vehicle trips, and/or increase peak hour trips will submit a traffic assessment based on highest peak hour conditions which evaluates the impacts to traffic circulation, roadway and intersection operations and safe travel. Developments will mitigate these impacts on roadway infrastructure.
- Access management methods such as shared access, interconnections between developments and shared parking will be required for all commercial and multi family residential (of three or more units) development or redevelopment. Development and redevelopment that does not incorporate access management will require a special permit. The Zoning Ordinance will be amended to include this provision.
- In Village Centers, Auto Oriented Transportation Corridor Nodes, the Growth Center and the Regional Commercial Center parking will be provided on the side or rear of the building away from the roadways. The Zoning Ordinance will be amended to include this provision.
- In all locations promote trip reduction, encourage pedestrian paths

between land uses, and support transportation options that provide an alternative to the automobile whenever possible.

Action 4.1.1.5 All subdivision land will comply with the requirements of the Functional Roadway Classification system, including Subdivision Rules and Regulations specific right-of-way and paving standards.

Strategies

- The SRR should be amended to include design and construction requirements that are consistent with the Functional Classification of Roadways.
- Non-commercial and multi-family development subdivision right-of-way width will include specific criteria for sidewalks and/or bike paths in addition to paving, curbing, stormwater management and utility location. Sidewalks and bike paths will be incorporated in the planning and design for residential subdivisions.

Goal 4.1.2 The town should establish roadway and intersection levels of service (LOS), considering the Cape Cod Commission's Regional Policy Plan, that are consistent with land use designations identified in this Plan. It is preferred that these LOS standards be met through non-structural improvements but a combination of both structural and non-structural may be considered. The following action items shall apply to driveways during DRI review and to the maximum extent feasible during local review. During review by local boards and officials the following action items shall be applied to the maximum extent feasible:

Action 4.1.2.1 The impact of development and redevelopment on local roads and on regional roads not located within or directly connected to Growth Centers or Regional Commercial Centers shall not degrade traffic flow or intersection operation below LOS "C", based on highest peak hour traffic volumes.

Action 4.1.2.2 Prevent out of character structural improvements such as widening, inappropriate signage, striping or other traffic control mechanisms within Village Centers by allowing the level of service to be reduced when there is adequate provision for safe pedestrian traffic.

Action 4.1.2.3 Within the Downtown Hyannis GIZ, levels of service may be reduced to LOS "E" when there is adequate provision for safe pedestrian traffic.

Action 4.1.2.4 The Town should develop a reasonable LOS policy for the Regional Commercial Center before proceeding with designating this area a Growth Center.

Action 4.1.2.5 Outside the designated Growth Center, development and redevelopment, at the minimum, should maintain or improve LOS in the area impacted by new trips generated.

Action 4.1.2.6 As deemed necessary by local boards and officials, LOS analysis and full or partial mitigation of project traffic impacts may be required.

Goal 4.1.3 Mitigate traffic, community character, and environmental impacts from regional transportation facilities.

Action 4.1.3.1 Integrate facilities and operations of the Barnstable Municipal Airport with multi-modal facilities and operations to provide intermodal links.

Strategies

- Provide a year round direct transportation link for passengers between the Hyannis Transportation Center, regional health care facilities, shopping areas and other popular destinations.
- Provide a new entrance to the airport that provides appropriate alternate access.
- The town will continue to coordinate the planning and provision of multi-modal transportation opportunities with the Cape Cod Regional Transit Authority (RTA), local, state and federal entities.
- Explore with the RTA and local business organizations the feasibility of a town-wide bus system interconnecting village centers, regional facilities, transit and other destinations.

Action 4.1.3.2 Integrate Hyannis Transportation Center facilities and operations with the other multi-modal facilities and operations to provide intermodal links.

Strategies

- Provide adequate parking and pedestrian access and encourage intermodal linkages, coordinated facilities and operations at Hyannis Transportation Center.
- The town should explore the feasibility of on-street bus rapid transit

(BRT) for regional transportation corridors.

- Explore the potential for Transit Oriented Development on the Hyannis Transportation Center site.

Action 4.1.3.3 Integrate Island ferry service facilities and operations with other multi-modal facilities and operations including, but not limited to, remote parking access, bicycle access and enhanced pedestrian access.

Strategy

- To ensure safety on local roadways explore the establishment of a designated truck route for freight carriers traveling to the Steamship Authority terminal.

Action 4.1.3.4 Explore re-establishment or expansion of railroad service to provide off road freight alternatives. Railroad service should also be explored as an alternative to the automobile for visitors and commuters.

Goal 4.1.4 Implement the bikeway system connecting major activities and linking with bikeways in neighboring towns.

Action 4.1.4.1 Implement the Barnstable Bikeway Network Plan, which includes locations for bike lanes, bike paths and bike routes.

Strategies

- The bikeway system will link public facilities, including recreation areas, conservation areas, village centers, educational facilities, the Hyannis Transportation Center, and will connect with other bike paths/bike lanes within the town, where feasible.
- Continue process for approval of the east-west route connecting to Yarmouth Bikeway System.
- Pursue funding from Federal, State, County and other grants or funding programs.
- Continue to address safety and convenience accommodations for bicyclists such as bike racks and signage. Bike racks will be placed at all publicly owned facilities.
- On demand bicycle resources will be explored and encouraged.

Action 4.1.4.2 Coordinate regional bikeway planning with adjacent towns and the Cape Cod Commission.

Action 4.1.4.3 Accommodations for intermodal connections, such as bike racks on trains, buses, at workplaces, remote parking facilities and shopping areas, will be encouraged whenever possible

Action 4.1.4.4 Wherever feasible, roads should include bike lanes and appropriate curbing, pavement markings and signage.

Strategy

Where feasible in road resurfacing or reconstruction projects, bike lanes or bike paths will be considered in the design as described in the Barnstable Bikeway Plan.

Action 4.1.4.5 Development and redevelopment will incorporate provisions for bicyclists.

Goal 4.1.5 The town will improve existing pedestrian facilities and develop additional facilities to improve safety, encourage pedestrian activity and preserve or improve roadway appearance in context with surrounding community.

Action 4.1.5.1 The town will continue to update the **Sidewalk Plan** that will include locations of sidewalks, priorities of construction, and funding sources.

Strategies

- Sidewalks should be prioritized, based on source and destination of pedestrians, to high traffic areas including arterials and collectors and streets within Village Centers.
- Sidewalks should be installed on arterial and collector roadways for pedestrian safety and to provide safe walking routes to schools.
- Development and redevelopment will incorporate provisions for pedestrians in the site design with particular emphasis on pedestrian safety within parking lot design.
- All new and significant redevelopment sidewalk projects should use a context sensitive design as early in the design process as possible.

Goal 4.1.6 Adequate on-site and off-site parking should meet the needs of the community. The needs within the Growth Center and the Route 132 Regional Commercial Center are a priority for parking needs analysis, planning studies and infrastructure improvements. Promote shuttle bus service from satellite parking facilities to recreational areas, visitor attractions, commercial areas and other popular destinations.

Action 4.1.6.1 The town will promote the use of existing parking facilities to their full capacity, ensuring safe access and attractive landscaping and by supporting decked and first floor parking in the growth center, regional commercial center and, as may be appropriate, other commercial areas.

Strategies

- Using a coordinated wayfinding strategy, expand existing signage to include wayfinding signs to major parking facilities.
- Improve existing walkways and create new walkways to parking lots, including landscaping, lighting and signage within the downtown Hyannis area, regional commercial center, and other village centers.
- Adopt regulations and design guidelines to encourage decked, first floor parking and, where feasible, underground parking garages.
- In coordination with shuttle service establishment and seasonal and/or weekly use patterns, parking facilities at the Cape Cod Community College, school parking lots, Hyannis Transportation Center, airport, or other facilities should be used as daytime remote parking for visitor destinations during peak season.
- Develop and promote satellite parking with supporting shuttle services for Island ferry travelers.
- Parking lots and parking facilities will be constructed, landscaped, and maintained in a manner that retains surrounding community character. Specific landscaping guidelines for parking lots and facilities should be developed and adopted by Planning Board, Board of Appeals and Site Plan Review.
- Where on-site parking is not feasible, developments may contribute to the creation of public parking facilities and/or multi-modal facilities.
- The town should amend existing parking regulations within the zoning ordinance to reduce parking requirements for development and redevelopment that provide an alternative to single occupant auto usage such as car/van pooling and/or other transportation options.

Goal 4.1.7 Public and private sectors should participate in improvement of traffic circulation and safety through traffic improvement and mitigation programs.

Action 4.1.7.1 The Town should improve existing traffic flow, safety, and signage to reduce congestion along roadways by adopting a traffic management system that minimizes confusion for residents and visitors alike.

Strategies

- Develop a comprehensive unified signage and wayfinding plan to direct motorists to transportation facilities, downtown Hyannis, remote parking, and areas of special interest.
- Continue and support seasonal shuttle services provided by the Hyannis Main Street Business Improvement District, the Town and local businesses.
- The Town should pursue every opportunity to work within Southeastern Massachusetts to mitigate the impact of Island freight deliveries.
- Continue to work with the Cape Cod Regional Transit Authority and neighboring towns to coordinate public transportation for residents and visitors.
- In the Airport Rotary area determine the feasibility of the following traffic management methods through the Hyannis Access Study and other Town programs:
 - Reconstruction of Route 28 at selected locations
 - Structural and non-structural improvements to the Airport Rotary.
 - Continue to develop new access to the airport.
 - Complete improvements to coordinate with the Town of Yarmouth Willow Street project.
 - Right lane through signal at intersections where appropriate and necessary.
 - Implement interconnection of traffic signals as signals are installed or upgraded.
 - Explore and implement mitigation procedures such as impact fees and direct mitigation.

Action 4.1.7.2 Plans for development and redevelopment will make provisions to mitigate traffic impacts based on the highest peak condition, utilizing structural and/or non-structural improvements with special emphasis on alternatives to the use of private automobiles. Such mitigation will take into account road function and classification, as well as the impacts on the natural resources, economy, level of service, community character, scenic views, and historic resources.

Strategies

- The Town prefers that necessary roadway improvements will occur concurrently with the construction of any development and/or applicants will make a contribution of funds to the town in lieu thereof.
- The town will explore crediting up to a 25% of project vehicle trips for development and redevelopment that provide practical alternatives to the

- single occupancy vehicle such as transit.
- Require development and redevelopment, through the permitting process, to incorporate recommended traffic and congestion management procedures including parking lot and access interconnection, pedestrian walkways and bike paths between neighboring development sites.
- Development and redevelopment may provide non-structural mitigation that reduces automobile trips and peak traffic demands such as demand management, providing shuttle bus services, car or van pooling, and promoting pedestrian and bicycle accessibility.
- Development and redevelopment may provide structural mitigation to reduce automobile trips, such as the construction of sidewalks, bicycle paths and shuttle bus stops. Such construction should not degrade environmentally sensitive areas, surrounding community character, landscapes, natural resources, economy, level of service, scenic views, and historic resources.
- Development and redevelopment may provide demand and systems management, such as changes to pavement markings, signage, signal timing, optimization of existing traffic lights, turn restrictions, changes in traffic patterns, limited removal of obstructions to safe sight distances, curb cut consolidation, and conflict point reduction. Traffic demand management is the priority; however, all systems should be considered.
- If it is demonstrated to the satisfaction of the town that other forms of mitigation are inadequate to alleviate a project's impact on traffic safety and operations, development and redevelopment may provide structural mitigation as follows:
 - Structural mitigation includes new signalization, new road links, intersection realignment, road widening, intersection construction or other improvements only in areas where environmentally sensitive natural resources, economy, level of service, community character, scenic views, and historic resources would not be degraded by the mitigation.
 - Structural mitigation projects may be allowed only when such proposals are included in, coordinate with and are consistent with planned for roadway improvements.

Goal 4.1.8 The town will continue to protect its significant public investments in roadways with the roadway infrastructure maintenance program that will, to the maximum extent possible, preserve character of individual roadways and protect adjacent natural resources.

Action 4.1.8.1 The Town of Barnstable Department of Public Works (DPW) will continue to repair and maintain roadways throughout the town to the maximum extent possible, giving priority to roadways with pavement in the worst condition and to roadways bearing a significant amount of traffic to limit the need to reconstruct them. The funding of this work will come from a combination of sources including general fund revenues, betterments, grants, and gifts.

Strategies

- To avoid costly road reconstruction, roads should be maintained in the best possible condition. DPW should continue to evaluate road pavement conditions and continue to conduct traffic counts to prioritize paving projects through the Pavement Condition Index (PCI) and the Pavement Management Program (PMP).
- DPW will continue to prepare an annual report that identifies problems and accomplishments and lists deferred road maintenance projects. This report is included in the CIP and the annual town Report

Section 4.2 Solid and Hazardous Waste Disposal

Goal 4.2.1 The Town shall work to increase source reduction, recycling, composting, incineration, and transfer to SEMASS to reduce the solid waste stream.

Action 4.2.1.1 Thirty (30) percent of municipal solid waste delivered to the transfer station shall be diverted from incineration and landfill facilities through recycling and composting programs and forty (40) percent shall be diverted by 2010.

Strategy

- The Town shall continue to encourage an increase in residential recycling waste to be recycling at the transfer station through its public education program.

Action 4.2.1.2 Amend the Zoning Ordinance and other applicable regulations to require non-residential land uses to include adequate, sanitary storage for recyclable materials. A solid and hazardous waste management plan shall be required.

Action 4.2.1.3 Evaluate existing ordinances and regulations to ensure that construction and demolition debris will be properly disposed of.

Goal 4.2.2 Hazardous waste generated in the Town of Barnstable shall be disposed in an environmentally sound manner.

Action 4.2.2.1 A coordinated town-wide hazardous waste emergency response plan shall be maintained by the Town and the independent fire districts.

Strategy

- The Town of Barnstable in coordination with the town's fire districts shall finalize and maintain an emergency response plan for spills of hazardous materials during transit.

Action 4.2.2.2 Continue and expand the Household Hazardous Waste Collection program.

Action 4.2.2.3 All land uses shall comply with Hazardous Waste Regulations.

Strategies

- Land uses that require treatment, generation, storage, and disposal of hazardous wastes or hazardous materials, with the exception household quantities, are prohibited and should continue to be excluded from drinking water protection districts.
- The Town of Barnstable will continue to refine hazardous materials ordinance and regulations to ensure maximum protection of drinking water supplies and public safety.

Section 4.3 Wastewater Infrastructure

Goal 4.3.1 Provide adequate wastewater treatment facilities to meet community need while protecting the quality and quantity of our sole source aquifer.

Action 4.3.1.1 Because water use equals sewage flows, effective wastewater management begins with water use conservation. To reduce impacts to Town wide wastewater infrastructure, including effluent discharge sites, water conservation programs will be developed.

Strategies

- Through a Comprehensive Water Supply Assessment, encourage coordination between water and wastewater infrastructure managers with joint meetings of drinking water suppliers, water committees and the Town.

- To lessen the burden on wastewater infrastructure, encourage water conservation through alternative pricing strategies.
- To the extent necessary, identify and acquire appropriate effluent disposal sites that do not adversely impact drinking water supplies.

Action 4.3.1.2 The current Wastewater Facilities Plan (WFP) will be updated as required by such factors as growth, environmental impact or regulatory requirements to address the community's wastewater needs as prescribed by regional, state and federal regulations.

Strategies

- Upgrade and/or expansion of the existing centralized WPCF to respond to priority needs while conforming to the requirements of the groundwater discharge permit and approved WFP.
- Expansion of the sewage collection system for the existing treatment facility will be performed in such a manner to improve groundwater quality consistent with WFP provisions.
- As effluent discharge and well pumping rates increase with increased water use and expansion of the sewage system the Town will continue to monitor the effect of the wastewater treatment facility discharge on water supplies.

Action 4.3.1.3 The town will guide the use of decentralized wastewater infrastructure to ensure maximum mitigation of their impacts.

Strategies

- Identify areas of concern outside of the existing treatment system's service area and define alternative decentralized methods of treatment that may include on-site innovative treatment systems, communal systems, package treatment plants or other approved alternatives. The long-term ownership, operation, maintenance and replacement will be secured through appropriate regulatory processes.
- Through the local Harbor Management Plan process the Town will identify areas where additional infrastructure is needed for recreational boating uses.
- Develop regulations to ensure that decentralized wastewater infrastructure is designed to be consistent so as to easily connect with town wastewater infrastructure when it becomes available or when connection is desirable.

Action 4.3.1.4 Develop wastewater performance standards for on-site disposal systems in order to address the areas of greatest need.

Strategies

- Define thresholds for application of on-site wastewater disposal system alternatives and the structural or non-structural measures needed to correct water quality problems.
- Continue the MEP program to evaluate extent of the existing and potential nitrate contamination of drinking water supply and coastal resources from on-site wastewater disposal systems and the need for wastewater infrastructure or other measures to reduce such contamination.
- Evaluate the extent of existing and potential phosphorous contamination of drinking water and pond resources from on-site wastewater disposal systems and the need for wastewater infrastructure or other measures to reduce contamination.
- Identify the source and transport of pollutants that could pass through a wastewater treatment facility untreated or inadequately treated, thus harming the facility's physical, chemical, or biological processes and so preventing it from complying with regulatory requirements.

Action 4.3.1.5 Develop and implement public education programs for owners of on-site septic systems.

Strategy

- Research existing programs and partner with other organizations where possible.

Section 4.4 Water Supply Infrastructure

Goal 4.4.1 Ensure that all areas of town will be provided with adequate drinking water supply, quality, flow and pressure to meet demand.

Action 4.4.1.1 Coordinate a Comprehensive Water Supply Assessment.

Strategy

- This assessment, conducted in cooperation with the private water companies, will include short term and long-term water supply needs of the entire town; water supply management needs; land acquisition needs; land protection needs; and a comprehensive strategy for implementing recommendations.

Action 4.4.1.2 Continue to update the zones of contribution GIS model. Protect land, the primary infrastructure for providing drinking water, where existing, proven future, and potential future wells are or may be located.

Action 4.4.1.3 Identify, map and monitor areas without public water supply or wastewater infrastructure. Share information with private water suppliers who may be able to extend their infrastructure should water quality decline in these areas.

Section 4.5 Stormwater Infrastructure

Goal 4.5.1 Protect salt water estuaries, freshwater bodies, the aquifer, shellfish and other natural resources from stormwater impacts; prevent flooding from storms; continue inventory of all stormwater infrastructure and incorporate into GIS; maintain existing stormwater infrastructure in conformance with state and federal regulations; study stormwater infiltration and contaminants and the need for structural upgrades; provide high quality stormwater recharge to water resources. The ultimate goal is to have all stormwater discharge treated to appropriate levels through adaptive management and best management practices.

Action 4.5.1.1 The town will continue adaptive management of stormwater through the town wide Stormwater Management Plan.

Strategies

- Study key areas such as bathing beaches, shellfishing habitat, recreational areas, inland and coastal wetlands and natural resources to for regulatory needs, including CIP funded stormwater infrastructure redesign.
- To ensure optimal function, the Town will clean and maintain stormwater infrastructure as necessary.
- Areas impacted by stormwater outflow will be studied and tested on a regular basis. Identify, upgrade and/or install appropriate technologies for maximum reduction of these impacts.

Action 4.5.1.2 Capital programs and management plans will be allocated to stormwater management projects to prevent untreated direct runoff from entering water bodies and impacting sensitive habitat areas.

Strategies

- New development and redevelopment will be required to retain all impervious surface runoff on-site.

- The town will design all roads to meet the best management practices for stormwater retention.
- After the first 1 inch of rainfall, these stormwater management systems will be designed to have backup retention or detention basins.

Section 4.6 Facilities

Goal 4.6.1 Provide well-maintained public facilities and services that serve the current and future social, economic, cultural, safety, traffic, and communication needs of the community; that are equitably distributed; and are provided with minimal environmental impact.

Action 4.6.1.1 The Town will provide public facilities and services in a manner that is consistent with and supports the land use and growth management strategies in this plan.

Action 4.6.1.2 When allocating resources to meet capital needs, the Town will consider major maintenance of existing facilities, revenue from the disposition of existing facilities and the provision of new or expanded facilities.

Action 4.6.1.3 The Town will ensure that those facilities and services necessary to support development and redevelopment will be adequate to serve the development at the time the development is available for occupancy or use, without decreasing levels of service adopted by this plan.

Action 4.6.1.4 The Town will maintain an inventory of existing capital facilities owned by public entities, showing location and capacities of such facilities.

Action 4.6.1.5 The Town will maintain a financing plan to finance needed capital facilities within projected funding capacities and based on adopted level of service standards. The financing plan will be updated annually and will include opportunities for public participation early in the process. Planned capital expenditures will be appropriated in the Town's annual budget. In case of emergency, the financing plan and budget covered by the plan may be amended more frequently.

Action 4.6.1.6 Funding of major capital facilities will typically rely on long-term financing and not on current revenues. The term of the financing should generally be no longer than the useful life of the facility.

Action 4.6.1.7 The Town will continue to develop and update debt management and cash reserves policies.

Action 4.6.1.8 The Town may apply various alternative funding mechanisms in the development of capital improvements identified in the Capital Facilities Section to optimize use of limited Town resources. Such mechanisms include joint ventures with the private sector, grants, or other means.

Action 4.6.1.9 The Town will support and encourage the joint planning, siting, development and use of public facilities and services with other governmental or community organizations in areas of mutual concern and benefit in order to maximize efficiency, reduce costs, and minimize impacts on the environment.

Action 4.6.1.10 The Town will coordinate with other public entities that provide public services within the Town to ensure that the Capital Facilities Plans of each of these entities are consistent with the Town's Comprehensive Plan. The Town will strive to coordinate with the other public entities during the annual update to the Capital Facilities Plan.

Action 4.6.1.11 Services provided through enterprise accounts including, but not limited, to Water Pollution Control, Solid Waste Division, Sandy Neck, Barnstable Municipal Airport, Fairgrounds and Hyannis Golf Courses and Town Marinas will be paid primarily by users, except in unusual circumstances where the public benefit may justify the use of general funds. When facility improvements provide benefits primarily to a limited group of users the costs will generally be paid by the benefited parties through Local Improvement Districts (LIDs) or other means.

Action 4.6.1.12 The capital facilities identified in the elements of the Comprehensive Plan will be included in subsequent five-year financing plans.

Goal 4.6.2 Provide high quality public safety services for the residents of Barnstable through cost effective maintenance and upgrade of facilities and equipment.

Action 4.6.2.1 Maintain and purchase vehicles and equipment as necessary to meet applicable standards.

Action 4.6.2.2 Upgrade and maintain emergency communication equipment.

Action 4.6.2.3 Personnel levels should be consistent with population and demographic needs.

Action 4.6.2.4 Consider the impact of new development presenting extraordinary impacts on Barnstable's public safety services during project review and mitigate those impacts to the extent feasible.

Goal 4.6.3 Provide educational facilities to meet the present and future needs of Barnstable residents.

Action 4.6.3.1 Continue to work with school department to plan for and fund facility maintenance and upgrade of school properties.

Action 4.6.3.2 Consider allocating funds from school property sales revenue to remaining school facilities.

Action 4.6.3.3 Because of the scarcity of developable land and the cyclical nature of population trends, the Town should identify and secure or retain land for future school facility expansion.

Action 4.6.3.4 Ensure that buildout projections and residential development approvals are communicated to the affected public school district in a timely manner so they can plan effectively for future needs.

Goal 4.6.4 Continue existing operations at the Barnstable Municipal Airport.

Action 4.6.4.1 The Airport Commission shall coordinate all master planning activities with the Town's planning agencies and staff.

Action 4.6.4.2 Airport expansion plans should be consistent with population and demographic needs.

Action 4.6.4.3 Actively explore integration of multi-modal transportation services with airport services.

Section 4.7 Energy

Goal 4.7.1 Encourage energy conservation and improved energy efficiency.

Action 4.7.1.1 Develop and adopt design standards for development and redevelopment that promote efficient energy use such as orienting structures for solar gain; maintaining solar access for adjacent sites and using energy efficient landscape and building methods and materials.

Action 4.7.1.2 Adopt development review standards for all development and redevelopment that encourage energy efficient construction techniques.

Action 4.7.1.3 Encourage energy saving transportation activities including carpooling, mass transit programs, bicycling and walking.

Action 4.7.1.4 Continue to increase use of alternative fuels for Barnstable's municipal vehicle fleet.

Action 4.7.1.5 Explore grant funding or other funding means for the five year update of the GHGE inventory.

Action 4.7.1.6 Expand Green Team support of student energy initiatives for schools.

Goal 4.7.2 Promote the collecting and proper disposal of recyclable items in the work place.

Action 4.7.2.1 Develop a Town wide standard to remove paper, plastic and other recyclable materials from the trash stream

Action 4.7.2.2 Encourage full municipal participation in workplace recycling with a top down commitment.

Action 4.7.2.3 Encourage a commitment to reduce consumption of materials and promote reuse of items in the workplace where practical.

Action 4.7.2.4 Continue to increase procurement of recycled content items.

Action 4.7.2.5 Expand Green Team student recycling initiatives for schools that do not have programs and support existing programs for schools that have programs in place.

Goal 4.7.3 Promote investment in distributed power generation and renewable energy systems on municipal property.

Action 4.7.3.1 Develop and implement a program that ensures consideration of this goal in the planning stages of every Town and School project.

Action 4.7.3.2 Develop and implement a cost benefit analysis model to show return on investment for distributed power generation, cogeneration and renewable energy projects.

Action 4.7.3.3 Pursue grants and alternative funding for photovoltaic, wind and bio mass energy systems.

Action 4.7.3.4 Promote these alternative energy initiatives through regular public outreach using Town and school cable channels and other media.