CAPE COD COMMISSION

Regional Policy Plan



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Cape Cod Regional Policy Plan

Approved by the Barnstable County Assembly of Delegates and County Commissioners
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Table of Contents

Vision 1

I. Introduction 2

Background 2
Planning Process 2
Residents Survey 3
Public Meetings 4
Organization 5
Regional Policy Plan and the Regulatory Process 5
Development of Regional Impact (DRI) Thresholds 6
Definitions 7
Abbreviations 10

II. Issues, Goals, Policies, Implementation 11

A Growth Policy for Cape Cod 11
1. Land Use/Growth Management 14
2. Natural Resources 19
    2.1 Water Resources 19
    2.2 Coastal Resources 28
    2.3 Wetlands 38
    2.4 Wildlife and Plant Habitat 42
    2.5 Open Space Protection and Recreation 46
    2.6 Air Quality 52
3. Economic Development 55
4. Community Facilities and Services 67
    4.1 Transportation 67
    4.2 Solid and Hazardous Waste Management 75
    4.3 Capital Facilities and Infrastructure 81
    4.4 Energy 86
5. Affordable Housing 91
6. Heritage Preservation/Community Character 98

III. Resources of Regional Importance 105

IV. Regional Coordination 111

Guide to Issue Areas



Land Use/Growth Management
14



Economic Development
55



Water Resources
19



Transportation
67



Coastal Resources
28



Solid and Hazardous Waste Management
75



Wetlands
38



Capital Facilities and Infrastructure
81



Wildlife and Plant Habitat
42



Energy
86



Open Space Protection and Recreation
46



Affordable Housing
91



Air Quality
52



Heritage Preservation/Community Character
98

Regional Policy Plan

A Vision

The Regional Policy Plan is an expression of the shared aspirations of Cape Codders for the future. It is also a commitment by Barnstable County, in exercising its authority under the Cape Cod Commission Act, to serve as steward and trustee of the natural and cultural resources of Cape Cod and to work toward the development of a sustainable regional economy.

It is a Plan that recognizes the Cape as a fragile and beautiful place: a land of pine barren, kettle pond and sand dune; piping plover and gray seal; beach, salt marsh and bay; village lane and stone wall. It is a Plan that seeks to protect habitat, in the awareness that Cape Cod is home to endangered species of global significance. It is a Plan to conserve a cultural landscape shaped slowly over 10,000 years of human habitation.

The Plan also recognizes that Cape Cod is home to almost 200,000 yearround residents, provider of jobs for over 70,000 and the seasonal destination for millions of visitors. It is a Plan about creating the conditions for good jobs and decent, affordable housing. And it is necessarily a Plan to address problems such as traffic jams, waste disposal, and contaminated ground water, and deal with a range of land uses and forms of development from rural to urban.

The Plan recognizes that Cape Cod is a finite place, with a limited capacity to sustain new growth. It is a Plan that seeks to articulate a collective vision, to define the essence of Cape Cod, to assure its distinctiveness, and to discover a way for us to inhabit and enjoy the Cape without turning it into merely another place. It is a Plan to protect the best of Cape Cod and repair the mistakes of the past.

Not merely a vision, the Regional Policy Plan is a set of expectations and standards: High expectations that the quality of development on Cape Cod will be good, and clear standards to ensure that those seeking to develop Cape Cod will face predictable requirements.

The Regional Policy Plan will come to life only through the continuing work of many individuals — those who serve on the Cape Cod Commission and weigh the benefits and detriments of Developments of Regional Impact, delegates to the Barnstable County Assembly who designate Districts of Critical Planning Concern, members of Local Planning Committees who prepare Local Comprehensive Plans, state and federal officials who seek to make their agency's actions compatible with the goals and policies of the Plan, developers who build the new Cape Cod, and, above all, citizens who actively participate in the formulation of a vision for their individual communities. For all of them, this Plan will serve as a guide to the future of Cape Cod.

I. Introduction

Background

The Cape Cod Commission Act was approved by the voters of Barnstable County in March 1990. Under the Act, the purpose of the Cape Cod Commission is to further "the conservation and preservation of natural undeveloped areas, wildlife, flora and habitats for endangered species; the preservation of coastal resources including aquaculture; the protection of ground water, surface water and ocean water quality, as well as the other natural resources of Cape Cod; balanced economic growth; the provision of adequate capital facilities, including transportation, water supply, and solid, sanitary and hazardous waste disposal facilities; the coordination of the provision of adequate capital facilities with the achievement of other goals; the development of an adequate supply of fair affordable housing; and the preservation of historical, cultural, archaeological, architectural, and recreational values."

The Commission is charged with reviewing and regulating Developments of Regional Impact, recommending designation of Districts of Critical Planning Concern, and preparing and overseeing implementation of a regional land use policy plan. The purpose of the Regional Policy Plan is to outline a coherent set of planning policies and objectives to guide development on Cape Cod and to protect its resources. The Act requires that the Regional Policy Plan identify the Cape's critical resources and management needs, establish a growth policy for the Cape, set regional goals, and develop a policy for coordinating local, regional and other planning activities.

The Regional Policy Plan is both a planning and a regulatory document and serves several purposes simultaneously. It establishes review and regulatory policies that the Commission will apply to Developments of Regional Impact. As such, it provides direction for developers and the general public as to the standards that the Commission will require of development and redevelopment that falls within its jurisdiction. It also provides the framework for town local comprehensive planning efforts, and is used as a basis for the Commission's review of Local Comprehensive Plans for consistency with County policies. Finally, the Plan identifies key resources of regional concern that may deserve special recognition and protection through the creation of Districts of Critical Planning Concern or other types of planning efforts.

Planning Process

The Regional Policy Plan was originally created in 1990, the product of a planning process that was initiated shortly after the formation of the Cape Cod Commission. The Plan was drafted under the direction of the Planning Committee of the Commission, and was formed by extensive public participation and comment. Staff members with expertise in the areas of water resources, transportation, solid and hazardous waste management, land use, open space, housing, historic preservation, economic development, wetlands, wildlife and coastal resources participated in formulating the recommendations in their areas of interest. Members of the Planning Committee conducted a detailed review of all draft materials as they were produced, and supervised the revisions in response to public comments.

The Cape Cod Commission Act requires that the Regional Policy Plan be reviewed and updated every five years. The Commission initiated the first five year review of the Plan in the summer of 1995. The five year review process has followed a similar process to the creation of the Plan. The Commission hosted a series of public hear-

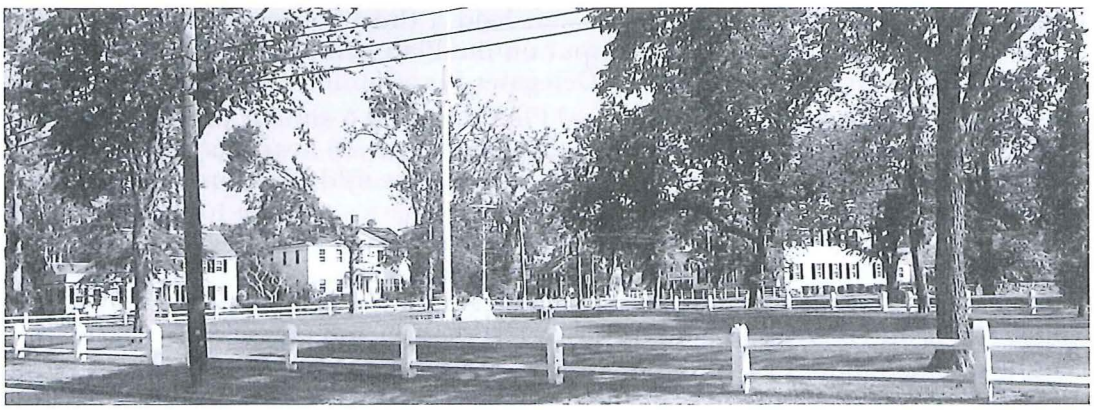
ings and workshops to examine different aspects of the Plan (see below) and utilized a residents survey to gauge public sentiment about a variety of planning and development issues.

The Local Planning Committees from each of the 15 Cape Towns played an important role in both the creation and the update of the Regional Policy Plan. Appointed by the local Boards of Selectmen, the Local Planning Committees have worked with the Commission staff and the Planning Committee to identify important issues and comment on the goals and policies of the Plan as they have been drafted. Made up of members of local planning boards and other relevant town committees (such as conservation commissions, historic commissions, boards of health and related groups), the Local Planning Committees have a crucial role in implementing the recommendations of the Regional Policy Plan through the development of Local Comprehensive Plans. These Committees have provided an important perspective in developing and updating the Regional Policy Plan by identifying the regional differences and problems that needed to be addressed in the Plan.

Residents Survey

In 1990, the Commission contracted with Clark University to conduct an indepth opinion survey of Cape Cod residents as part of the planning process for the Regional Policy Plan. The purpose of the survey was to ascertain residents' views on a broad range of questions relevant to the Plan such as:

- What kinds and levels of economic development are preferred by Cape residents?
- What resources are residents prepared to commit to support preferred levels of development?
- What are residents' environmental concerns and priorities for Cape Cod and their individual towns?
- What issues do residents feel the Commission should work on?
- What are residents' views about various regulations and guidelines the Commission might implement?



Falmouth Town Green

The survey was distributed to 4000 Cape residents who were selected through a scientifically developed random sample. The large sample size was needed in order to compare results town by town. More than 2400 questionnaires were returned, for an exceptionally strong response rate of 67%. The findings of the survey indicated strong support for protection of the Cape's water supply and surface waters, preservation of historic areas and open space, and control of traffic congestion, as well as support for clean light industry and new cultural facilities.

For the 1995 update of the Regional Policy Plan, the Commission engaged the Center for Survey Research at the University of Massachusetts at Boston to gather citizen input by means of a similar sample survey. The 1995 survey was designed to obtain Cape-wide results and so used a smaller sample of 950 households. The 1995 survey also had a strong response rate; 63% of those sampled responded. Statistically, this sample size and response rate provides a 95% confidence that the responses are accurate within plus or minus 4.4 percentage points. The study validated and reaffirmed the results of the 1990 survey, indicating strong support for protection of natural resources, open space and community character. The results of the surveys have been an important part of the background material for both the creation and the update of the Plan.

Public Meetings

The Commission conducted a series of public meetings during both the formulation and the update of the Regional Policy Plan in order to solicit input from citizens, town officials, and interest groups. The staff also held numerous meetings with technical experts, scientists, citizen advocates and state officials to research specific topics of concern. In August and September of 1990, there were three public sessions, one in each part of the Cape, to identify the issues that should be covered in the Plan.

In the fall of 1990, the Commission hosted a second set of workshops, each focused on a particular subject area. Draft goals and policies in each area were circulated for review prior to these five workshops, and individuals and organizations with particular expertise or interest in each subject were specifically invited to attend. The Planning Committee and staff of the Commission reviewed the testimony and written comments in detail and prepared a substantially revised draft that was reviewed by the full Commission in January of 1991 and presented to the public in another series of Cape-wide public hearings in February and March. These hearings were also well-attended, with more than 300 persons participating.

The official Draft Regional Policy Plan was issued on March 27, 1991. More than 650 copies of the draft were distributed to individuals and organizations throughout Barnstable County, as well as to interested state agencies. Following the issuance of the Draft Plan, the Commission held a third set of regional hearings in mid-May to solicit further public input on the Plan before it was revised and forwarded to the County Assembly of Delegates for adoption as a County Ordinance.

The five year update of the Regional Plan followed a similar process. Starting in the summer of 1995, the Commission held three regional hearings, one in each part of the Cape, to scope the most important issues to be addressed in the Plan update. During the fall of 1995, the Commission held a series of nine topical workshops covering in greater detail the individual sections of the plan, including land use/growth management, water and coastal resources, economic development, affordable housing, capital facilities, waste management, energy, wetlands and wildlife, open space and recreation, and historic preservation and community character.

During the winter of 1996, Commission staff worked with the Planning Committee of the Commission to redraft each section of the Regional Policy Plan, based on the input received at the public hearings and workshops, and the responses to the Residents Survey. The Commission held four more regional hearings on the revised draft of the Plan in the summer of 1996, before forwarding it to the Barnstable County Assembly of Delegates. The Assembly of Delegates and the County Commissioners must approve the amended Plan as a County ordinance in order for it to take effect.

Organization of the Regional Policy Plan

Section I of the Regional Policy Plan contains an Introduction and Definitions for key terms contained in the Plan, as well as a listing of common abbreviations. Section II of the Plan presents a Growth Policy for Cape Cod and contains background or Issue Papers that define the scope of issues and the nature of problems to be addressed in the Plan. This section also contains numbered Goals and Policies that cover each of the issue areas. Finally, this section of the Plan addresses Implementation, with specified Commission Actions and Recommended Town Actions. The Commission Actions are listed in order of priority and contain activities that the Commission or staff will undertake in order to further the goals and policies in the Regional Policy Plan. It is anticipated that these actions will be undertaken over a period of years utilizing existing staff and funding. The activities listed as Recommended Town Actions comprise actions that towns will be encouraged to carry out in order to further the goals and policies in the Regional Policy Plan. Towns are expected to consider each of these actions in their Local Comprehensive Plans. The Commission has developed Guidelines for Local Comprehensive Plans as a separate document.

Section III of the Plan delineates Resources of Regional Importance on Cape Cod. Those resource areas that may benefit from better management are likely candidates for nomination as Districts of Critical Planning Concern. Section IV outlines a strategy for coordinating regional and local planning efforts, including the activities of private parties and local, state and federal governmental authorities.

Regional Policy Plan and the Regulatory Process

Application of the Regulations

The Regional Policy Plan does not change or alter any existing local, state or federal regulations. The requirements set forth in the Plan are in addition to other regulatory requirements and do not exempt any person from complying with applicable local, state and federal laws.

The Regional Policy Plan includes broad goals which set the direction for future and more detailed policies that specify how those goals can be accomplished. Included in these policies are both Minimum Performance Standards and Other Development Review Policies. The Minimum Performance Standards of the Regional Policy Plan set forth the minimum standards that future development on Cape Cod is required to meet. Developments of Regional Impact are required to comply with all the Minimum Performance Standards of the Plan. The towns that choose to prepare Local Comprehensive Plans will incorporate consistent standards in their Local Comprehensive Plans and implementing regulations.

The Other Development Review Policies of the Plan are standards that the County desires to promote. The attainment of these standards shall be considered as a benefit in the Commission's weighing of benefits and detriments of a Development of Regional Impact as required by the Act. These are also the standards that the County urges towns to support through their Local Comprehensive Plans. Because these Policies are recommended rather than required, they contain terms such as "should" and "encouraged."

The Regional Policy Plan also references numerous Technical Bulletins. The Technical Bulletins are policy guidance documents which explain in greater detail how some of the technical standards (such as traffic, nitrogen loading, open space, natural resources, lighting and design) of the Plan can be met. The Technical Bulletins are not regulations, but they provide guidance as to how to prepare technical studies needed to demonstrate compliance with the Minimum Performance Standards of the Plan.

The Regional Policy Plan also references four official maps which are hereby adopted as part of the Plan: Cape Cod Water Resources Classification Maps I and II, Cape Cod Significant Natural Resources Areas Map, and Cape Cod Functional Classification of Highways Map.

In general, the Minimum Performance Standards and Other Development Review Policies of the Regional Policy Plan are intended to be used by both the Commission and local regulatory authorities such as planning boards, boards of health, conservation commissions, historical commissions and similar bodies once they have adopted a Local Comprehensive Plan and it has been certified by the Commission. However, in some instances, the Standards apply only to Developments of Regional Impact (DRIs); when this is the case, the text of the Regional Policy Plan specifies that the Standard is for DRIs. In other instances, there are Minimum Performance Standards and Other Development Review Policies which are designed for projects that are not subject to Commission review as DRIs. In these instances, the Standards and Policies are intended for the towns to apply through their local regulations.

Flexibility

The Minimum Performance Standards are mandatory standards, hence, they use the word "shall". However, if it can be demonstrated by an applicant that the interests protected by a given Minimum Performance Standard can be achieved by an alternate approach including appropriate mitigation, the Commission or the Local Permitting Authority may modify the application of these standards. In approving such a modification, the Commission or the Local Permitting Agency must make a finding that the proposed use will not be more detrimental to the protected resource than would be allowable under the applicable Minimum Performance Standard. The burden of proof to demonstrate that such a modification is acceptable on that basis shall be on the applicant.

Private Property Rights

In some circumstances, property subject to regulation may be left with no remaining reasonable use due to the application of one or more of the Minimum Performance Standards of the Plan. In such cases, the Commission or the local permitting authority (e.g. the planning board, conservation commission, board of health, etc.) may modify the application of such standard(s) provided that the applicant demonstrates that he or she has complied to the maximum extent feasible with the relevant Performance Standard(s). Local authorities should incorporate into their bylaws and regulations provisions for special permits or variances to deal with such situations. The intent of this section is to ensure that reasonable use may be made of such property; however, the extent of use shall be limited in so far as is necessary to protect the resource(s) of interest, and to ensure that there is no foreseeable danger to the public health or safety. The burden of proof shall be on the applicant to demonstrate maximum feasible compliance with the relevant Performance Standard(s).

Developments of Regional Impact Thresholds

The Regional Policy Plan does not alter any of the standards and criteria for Developments of Regional Impact set forth in Chapter A, Section 3 of the Code of Cape Cod Commission Regulations (Enabling Regulations for the Purpose of Reviewing Proposed Developments of Regional Impact). However, in accordance with Section 12(f) of the Act, the Commission may review those standards and criteria in light of its experience with the regulatory process, and make recommendations to the Assembly of Delegates as to necessary modifications in the future. The Commission may propose and the Assembly may adopt different standards and criteria for Developments of Regional Impact for different areas of Barnstable County.

Definitions

The definitions outlined below are designed specifically for their application in the Regional Policy Plan. They may not be identical to definitions used in the Cape Cod Commission Act or in other state and local programs. Except where specifically defined herein, all words in the Regional Policy Plan carry their customary meanings.

Affordable Housing - Dwelling units available at a cost of no more than 30% of gross household income to households at or below 80% of the county median income as reported by the U.S. Department of Housing and Urban Development (HUD), including units listed under MGL C. 40B and the state's Local Initiative Program.

Archaeological Site - Any area where artifacts, remains or any other evidence of a historical or prehistorical nature of 100 years old or more are found below or on the surface of the earth. These artifacts must have archaeological significance as determined by the Massachusetts Historical Commission or other knowledgeable persons or agencies. Artifacts may include, but are not limited to: objects of antiquity, Native American, colonial or industrial relics, or fossils.

Cluster Development - A form of development that permits a reduction in lot area requirements, frontage and setbacks to allow development on the most appropriate portions of a parcel of land in return for provision of a compensatory amount of permanently protected open space within the property subject to a development application.

Coastal Bank - The seaward face or side of any elevated land form, other than a coastal dune, which lies at the landward edge of a coastal beach, land subject to tidal action, or other wetland. Any minor discontinuity of the slope notwithstanding, the top of the bank shall be as defined in the Department of Environmental Protection's (DEP) Policy 92-1, Definition and Delineation Criteria for Coastal Bank, dated March 3, 1992.

Development - Any of the following undertaken by any person: any building, construction, mining, extraction, dredging, filling, excavation, or drilling activity or operation; the division of land into parcels; the clearing of land as an adjunct of construction; or the deposit of refuse, solid or liquid waste or fill on a parcel of land or in any water area.

Growth/Activity Centers - Existing and/or new areas designated by the towns through Local Comprehensive Plans and certified by the Commission as suitable locations for new growth and redevelopment. There are three general categories of growth/activity centers:

Village Growth/Activity Centers - Small, pedestrian-oriented settlements which are suitable for a mix of residential and compatible small-scale commercial uses.

Regional Growth/Activity Centers - Developed areas providing a wide range of commercial goods and services for the immediately surrounding area as well as for a larger region.

Industrial Growth/Activity Centers - Special districts designed to accommodate manufacturing, warehousing, transportation terminals, wholesale business, and related uses. Towns may expand and/or refine the growth/activity center categories through their Local Comprehensive Plans.

Hazardous Material - Any: chemical; combustible liquid; compressed gas; explosive; flammable aerosol, gas, liquid or solid; hazardous chemical; health hazard; mixture; organic peroxide; oxidizer; physical hazard; pyrophoric; unstable (reactive) or water reactive, as defined under Title 29 of the Code of Federal Regulations, Section 1910.1200(c), and any other chemical, material or substance identified by the Cape Cod Commission as hazardous based on available scientific evidence. This includes, but is not limited to, petroleum products, solvents, oil-based paint and pesticides. Hazardous materials do not include Hazardous Wastes, tobacco products, wood products, foods, drugs, alcoholic beverages, cosmetics and any hazardous material used by employees in the workplace in household quantities as defined below.

Hazardous Waste - Any waste material as defined in the Massachusetts Hazardous Waste Regulations, 310 CMR Section 30.010. This includes, but is not limited to, waste oil, waste solvents, waste oil-based paint and waste pesticides.

Hazardous Material or Waste, Household Quantity of - Any or all of the following:

i) 275 gallons or less of oil on site at any time to be used for heating of a structure or to supply an emergency generator, and

ii) 25 gallons (or the dry weight equivalent) or less of other hazardous materials on site at any time, including oil not used for heating or to supply an emergency generator, and

iii) a quantity of hazardous waste at the Very Small Quantity Generator level as defined in the Massachusetts Hazardous Waste Regulations, 310 CMR Section 30.353.

Historic Structure - Any building, structure or site which is now listed or is qualified to be listed on the National or State Registers of Historic Places as determined by the State Historic Preservation Officer in consultation with the applicable local historical commission. Qualifications for listing shall be those administered by the Mass. Historical Commission, including but not limited to:

a) association with events that are historically significant;

b) association with person(s) significant in our past;

c) embodiment of distinctive characteristics of a type, period, or method of construction; and

d) likelihood of yielding information significant in history or pre-history.

Impact Fees - An assessment paid by a person undertaking a development to a municipality or municipalities pursuant to the provisions of Section 15 of the Cape Cod Commission Act, designed to offset the impacts of a development. Impact fees may include, but are not limited to, creation or improvement of streets, sewers, water supplies, parks, schools, affordable housing and similar capital facilities.

Infill - The development of new housing, commercial or other buildings on scattered vacant or underutilized sites within existing substantially built-up areas.

Infrastructure - Facilities and services needed to sustain residential, commercial and industrial development including, but not limited to, water supply and distribution facilities, sewage collection and treatment facilities, streets and roads, communications, energy, and public facilities such as schools and fire stations.

Intersection Widening - Any increase in the width of pavement or constructed roadway surface at the junction of two or more roads or driveways, or a combination thereof.

Land Subject to Coastal Storm Flowage - Land subject to inundation caused by coastal storms up to and including the 100 year flood, surge of record, or flood of record, whichever is greater. The 100 year flood (or base flood as it is also referred to) means the flood having a one percent chance of being equaled or exceeded in any given year. The seaward limit is mean low water.

Level of Service (LOS) - A measure of public facility and service quality for a variety of services such as roads, schools, parks, open space, police and fire protection and other related services; in particular, for roads, a standardized, qualitative measure of vehicle operating conditions on a roadway based on criteria including speed, travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience and operating costs. LOS for roads shall be determined based on the most recent edition of the Transportation Research Board's Highway Capacity Manual.

Mitigation - Appropriate measures which, at a minimum, offset any adverse impacts of a proposed development.

Open Space - Land set aside and permanently restricted for conservation, agriculture or recreation purposes by a municipality, nonprofit conservation organization or land trust, homeowners association, or person. As appropriate to the site, open space may include woodlands, pasture, landscaped areas, gardens or play areas, golf courses, walking and riding trails, and similar areas, but shall not include structures such as tennis courts, buildings, swimming pools, or other impervious areas. Open Space

may be open for public use or access to such areas may be restricted.

Redevelopment - The reconstruction, reuse or change in use of any developed property, including but not limited to the following: any increase in the intensity of use of already developed land, such as an increase in the number of dwelling units in a structure or change to a commercial or industrial use from a less intensive use; enlargement of a structure; additions to usable interior floor area within residential, commercial and industrial buildings; and the conversion of a seasonal use or dwelling to year-round use.

Regional Facilities - Publicly or privately owned facilities and services used by residents of more than one town, including but not limited to, streets, schools, parks, recreational facilities, water supplies, waste disposal facilities, social services, health care facilities, transportation facilities and emergency services.

Resource Area - Any wetland, coastal bank, coastal dune and/or coastal beach as defined herein.

Road Widening - Any increase in the width of pavement or constructed roadway surface.

Seasonal Dwelling - A residential structure that lacks one or more of the basic amenities or utilities required for year-round occupancy such as a permanent heating system, insulation, and/or year-round usable plumbing.

Seasonal Use - A residential, commercial or industrial structure or use that lacks one or more of the basic amenities or utilities required for year-round occupancy such as a permanent heating system, insulation, and/or yearround usable plumbing.

Significant Natural Resource Area - Areas as shown on the Cape Cod Significant Natural Resource Area Map dated September 5, 1996, as amended, including wellhead protection areas, designated potential public water supply areas, rare species habitat, priority natural communities, wetlands, critical upland areas, unfragmented forest habitat, and land within 350 feet of vernal pools and 300 feet of ponds.

Strip Commercial Development - Continuous or intermittent linear roadside development located outside designated growth/activity centers, generally one store deep, generally characterized by multiple roadway access points, highly visible off-street parking, an assortment of commercial uses with direct access to abutting roads.

Transfer of Development Rights (TDR) - A technique that allows owners of land to transfer all or some of the rights to develop that land to another designated area.

Vernal Pool - A seasonal fresh water body contained in a confined basin depression that holds water for at least two consecutive months in most years, is free of adult fish populations and provides breeding habitat for amphibians and invertebrates and other important habitat. Vernal pools must be mapped and certified by the Massachusetts Natural Heritage and Endangered Species Program or identified in the field as eligible for certification by a professional wildlife biologist.

Water-Dependent Use - Any use that requires direct access to or location in fresh and marine waters and therefore cannot be located away from said waters, including but not limited to, those uses identified by Chapter 91 regulations. Examples include: commercial or recreational boating and fishing facilities, water based transportation and recreational facilities, pedestrian facilities that promote public use and enjoyment of the shoreline, facilities that are related to marine research and education, aquaculture facilities and cranberry bogs, beach nourishment, dredging, shoreline protection structures, water level control facilities, and any other uses or facilities that cannot be reasonably located away from the shoreline.

Wetland - An inland area of 500 square feet or greater or a coastal area including wet meadows, marshes, swamps, bogs, and areas of flowing or standing water, such as rivers, streams and ponds. Wetlands may border water bodies or may be isolated. Wetlands are characterized by the presence of wetland vegetation and hydrology as generally described in the Wetlands Protection Act and these boundaries of these areas shall generally be delineated in accordance with the boundary delineation methods set forth in the relevant sections of 310 CMR 10.00. These include 10.32(2), 10.33(2), 10.35(2), 10.55(2) with the exception of the "bordering" requirement, and 10.56(2).

Abbreviations

ACEC	Area of Critical Environmental Concern
AASHTO	American Association of State Highway Transportation Officials
CCAMP	Cape Cod Aquifer Management Project
CCC	Cape Cod Commission
CCPEDC	Cape Cod Planning and Economic Development Commission
CCEDC	Cape Cod Economic Development Council
CMR	Code of Massachusetts Regulations
CCRTA	Cape Cod Regional Transit Authority
DCPC	District of Critical Planning Concern
DEM	Massachusetts Department of Environmental Management
DEP	Massachusetts Department of Environmental Protection
DRI	Development of Regional Impact
EOTC	Executive Office of Transportation and Construction
FEMA	Federal Emergency Management Agency
GIS	Geographic Information System
gpd	gallons per day
HUD	U.S. Department of Housing and Urban Development
LHA	Local Housing Authority
LEV	low emission vehicle
LOS	Level of Service
MCZM	Massachusetts Coastal Zone Management
MHD	Massachusetts Highway Department
MEPA	Massachusetts Environmental Policy Act
MGL	Massachusetts General Laws
MHC	Massachusetts Historical Commission
MPO	Metropolitan Planning Organization
MPS	Minimum Performance Standard
ppm	parts per million
PSTF	Private Sewage Treatment Facility
SCS	Soil Conservation Service
SEMASS	Southeastern Massachusetts Resource Recovery Facility
TDR	Transfer of Development Rights
USGS	United States Geological Survey
VOC	volatile organic compounds
ZOC	Zone of Contribution

II. Issues, Goals and Policies, Implementation

A Growth Policy for Cape Cod

Concern about the rate of population growth and land use change on Cape Cod was one of the major factors leading to the passage of the Cape Cod Commission Act. From 1980 to 1990 the population of Barnstable County grew by 38,680 persons, a growth rate of 26%. The population of Massachusetts as a whole grew only 5% during the same period. The number of housing units on the Cape more than doubled between 1970 and 1990 (from 65,676 to 135,192). Even during the recession years of the early 1990s, the Cape's population continued to grow: The U.S. Census Bureau estimates that the Cape's population increased 5.13% from 1990 to 1994 (from 186,605 to 196,178). The state's population grew by only 0.41% during that same time period.

With the increase in population have come other changes. Portions of Cape Cod's sole source aquifer have been contaminated by incompatible uses, discharges of hazardous materials and excessive densities; traffic congestion has worsened steadily, approaching gridlock conditions in some locations during the summer months; thousands of acres had to be closed to shellfishing due to pollution; open space and scenic vistas have been lost to residential subdivisions and overhead utility lines, and the architectural quality and economic viability of the Cape's historic villages have been undermined by commercial sprawl.



In the 1995 Cape Cod Residents' Survey, respondents indicated that the following factors were very important in their decision to live on Cape Cod: 60% cited the air and water quality, 60% cited safety from crime, 55% cited proximity to the coast, 52% cited the rural character of the Cape, and 48% cited the small town life style. Respondents ranked traffic congestion, population growth, ground water pollution, pollution of coastal waters, loss of open space and tax increases as the most serious problems facing the Cape in the next five years. Fifty-four percent (54%) of the respondents indicated that over the past 25 years population growth in their town has worsened the quality of life.

There have been many attempts to project future year-round and seasonal population growth on the Cape. While changing economic conditions make any accurate estimates difficult, past trends give cause for

concern. There are currently more than 15,000 vacant subdivision lots on Cape Cod; thousands of houses are listed for sale; there is more than 2 million square feet of vacant commercial space. From 1990 to 1994, 6,928 new homes were approved for construction; commercial construction too has continued apace. Under existing regulations, the build-out potential of the Cape is substantial and population growth is expected to continue. If not properly managed, such growth could result in additional environmental degradation and a diminished quality of life, which in turn could undermine the economic health of the region.

When the Regional Policy Plan was first developed in 1990, the Growth Policy stated that it was not the intention of the Regional Policy Plan to set a maximum desirable population level for the Cape. The amount of growth which could be accommodated on Cape Cod would depend in large part on natural resource constraints and public investment decisions made by the towns and the county over the coming years. Since that time, much attention has been focused on the capacity constraints of the Cape. Residents, visitors and local officials are asking how much capacity we have in our water supply, transportation network, natural systems and municipal fiscal resources. How much additional growth can the natural resources and municipal service systems of the Cape accommodate before the quality, integrity or efficiency of those systems is compromised?

Over the last few years, the Commission has been developing a methodology for analyzing capacity limits. An Outer Cape Capacity Study, covering the towns of Provincetown, Truro, Wellfleet and Eastham is nearing completion. Its findings show that the growth of the Outer Cape is severely constrained by its transportation infrastructure and water supply. Without changes in local zoning, projected build-out levels will produce traffic grid-lock and degraded drinking water quality in the future. Similar studies are underway for other parts of the Cape. While the findings may differ from place to place, it seems clear that the Cape has only a finite capacity to grow without endangering its environmental health and quality of life. The towns and region must address not just the rate of growth but also the ultimate amount of growth that can be accommodated.

In the 1995 Cape Cod Residents Survey, 86% of the respondents thought that population growth will be a serious problem for the Cape in the next five years. Sixty percent (60%) supported the idea of establishing a population size limit for their town. While respondents ranked tax increases as one of the problems that they were most concerned about in their own town, they were willing to both increase taxes and support more stringent land use regulations in order to limit population growth. Sixty-seven percent (67%) supported a town land acquisition program to limit population growth and 71% supported more stringent land use regulation to limit growth.

It is the purpose of the Regional Policy Plan to protect the resources and interests identified in the Cape Cod Commission Act and to ensure that land use planning and management on the Cape are coordinated, especially along municipal boundaries. It is also the responsibility of the Regional Policy Plan to recognize the Cape's capacity constraints and to provide guidance to the towns as to how to control growth. To that end, the following broad principles will apply:

Growth Rate

The rate of growth for any town should not exceed the ability of that town to provide the services necessary to support that growth. New development should be required to pay its own way - i.e. to either provide or contribute to the provision of the necessary facilities and services to manage the demands created by that development. The provision of those services should be timed to meet the demand created by new development. Public and private investments should be coordinated to both control the rate of growth and direct new development into appropriate locations.

Nature of Growth

Population growth and economic development should not damage the natural environment or the character of the Cape's communities. Sensitive resources such as high quality ground water and surface water, wetlands, plant and wildlife habitat should be identified and protected. Redevelopment should be encouraged to revitalize existing growth/activity centers, enhance community character, and protect remaining open space. New development should respect the integrity of the Cape's scenic, historic and architectural character. Economic development efforts should enhance the Cape's environmental and cultural strengths and provide a diversity of employment opportunities for Cape residents.

Amount of Growth

The Commission and the towns must assess both regional and local capacity limits and take steps to ensure that the amount of future growth is sustainable. The cumulative effects of even small changes in land use can create major strains on the Cape's resources and character. Both changes in local zoning regulations and more aggressive land acquisition efforts may be needed to control future population growth. Ultimate build-out levels for each town should be based not only on the carrying capacity of the natural environment to sustain the impacts of development, but on the vision of the residents of each community concerning what kind of place they want their community to be.

In summary, the goals and policies of the Regional Policy Plan are designed to provide both guidelines for evaluating Developments of Regional Impact and a framework for the development of Local Comprehensive Plans. The Minimum Performance Standards and Other Development Review Policies are designed to ensure that new growth complies with the broad principles outlined herein. The Implementation Actions articulate what research and actions are needed to achieve an effective growth policy for the Cape. The County is committed to carrying out this program.



1. Land Use/Growth Management

1. Issue Area: Land Use/Growth Management



The issues of land use and growth management are inseparable from many of the other issues addressed in the Regional Policy Plan including transportation, air quality, economic development, capital facilities, affordable housing, community character, open space and others. It is important that all of these issues be carefully balanced with priority given to maintaining the character of communities on the Cape, the high quality of the Cape's drinking water, and the overall quality of life that both residents and visitors enjoy. In the past there has been no regional mechanism for regulating development on Cape Cod. With the adoption of the Cape Cod Commission Act there now exists a process for protecting resources of greater than local significance and mitigating adverse development impacts.

Concern about the rate of development on Cape Cod was one of the major factors leading to passage of the Cape Cod Commission Act. MacConnell land use data from the University of Massachusetts indicate that over 35,500 acres of forest and agricultural land were lost to development between 1971 and 1990. The majority of this land (29,212 acres) was developed for residential purposes. The remainder was used for recreational development (1723 acres), commercial growth (1612 acres), industrial growth (1116 acres), public land/urban open space (1110 acres), waste disposal (536 acres), and transportation (311 acres). Development currently covers more than 33% of the Cape's land area.

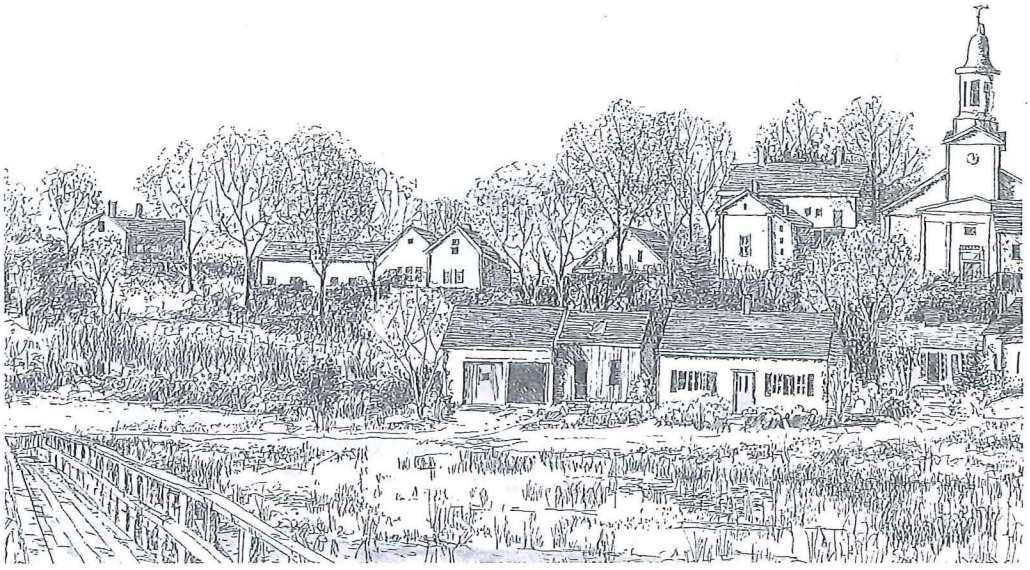
A significant problem on Cape Cod has been the land consumptive pattern of development. Residents and visitors alike have expressed concern about the loss of community character on the Cape. Sprawling subdivisions, highly visible utility lines and strip development along major roads have blurred the boundaries between village centers and rural areas. In some cases, existing zoning and subdivision regulations have contributed to the problem. Because of concerns about degradation of water quality and loss of rural character, most towns increased their minimum lot sizes during the 1980s. The result is that on average, land consumption per dwelling unit has increased.

While such land use patterns can adversely affect the appearance of the Cape's communities, their other effects are even more far-reaching. Traffic congestion and air quality are worsened by numerous curb cuts and many short trips between destinations. Pedestrians lose the ability to walk to and around downtowns and village centers. Open space is lost and wildlife habitat fragmented. Scenic views are impaired by overhead utility lines. In many cases, downtown businesses experience adverse impacts from commercial development outside village centers. While some have advocated cluster and mixed use development as an alternative to sprawl, many local bylaws either prohibit such development, limit it to large parcels of land, or discourage its use by making it more difficult and time-consuming for the developer than conventional development.

Early zoning regulations on the Cape set a "blueprint" for development that often did not sufficiently recognize environmental constraints. In some areas, the den-

sity of development is too high to be adequately served by conventional septic systems and water quality and public health problems have resulted. In others, zoning has permitted commercial and industrial development over sensitive aquifer areas. In many locations, a "wall" of development along shorelines has blocked public access to waterfront areas and resulted in eutrophication of surface waters. Similar adverse effects have occurred where a large number of seasonal cottages have been converted to year-round use without adequate upgrading of septic systems.

Respondents to the 1995 Cape Cod Residents' Survey indicated that the features that most attracted them to living on the Cape (including air and water quality, safety from crime, and rural character) are seen to be in decline. Respondents identified traffic congestion, ground water pollution, population growth, pollution of coastal waters, loss of open space and tax increases as the most serious problems facing the Cape.



When asked what kinds of development projects they would support, survey respondents favored projects that are environmentally sound and moderate in scale. There was strong support for a clean light industry such as a software development firm (82%), a cultural facility such as a concert hall, art gallery or museum (79%), utilizing existing structures for affordable housing (74%), a small manufacturing firm (70%), neighborhood business such as a small food or general store (69%), and affordable housing in single family homes (65%). The majority of respondents opposed environmentally unfriendly, large-scale development projects such as a gravel mining operation (76% opposed), a large regional shopping mall (69% opposed), a new 50 room motel or hotel (64% opposed) or a large discount wholesale or retail store (56% opposed). These results indicate that Cape Codders support some residential, commercial and recreational development, but only in forms that do not compromise the historic and environmental integrity of the Cape.

Responses to the 1995 Survey reflect residents' concerns about the Cape's growth capacity. There was strong support for reusing existing buildings for both residential and commercial development. Ninety-two percent (92%) of the respondents thought the Commission should encourage the redevelopment of existing vacant commercial and industrial sites and buildings, and 74% supported using existing structures for affordable housing. Residents also indicated that they would rather lessen traffic congestion by reducing the amount of traffic instead of increasing the Cape's capacity to accommodate it. A majority (53%) opposed widening roads to accommodate more traffic, but (72%) favored limiting the number of building permits issued each year and 63% said that the Commission should encourage each town to set a cap on the ultimate number of residential dwellings that will be built.

The Cape Cod Commission reviews only a small fraction of the overall develop-



ment activity on Cape Cod (approximately 20% of new commercial development and less than 3% of residential subdivisions). For this reason, it is extremely important that the towns adopt and implement local plans that are consistent with the Regional Policy Plan. Effective growth and land use management can only be accomplished through cooperative partnership of town and regional efforts.

Goals and Policies

1.1 Goal: To encourage sustainable growth and development consistent with the carrying capacity of Cape Cod's natural environment in order to maintain the Cape's economic health and quality of life, and to encourage the preservation and creation of village centers and downtown areas that provide a pleasant environment for living, working and shopping for residents and visitors.

Minimum Performance Standards

1.1.1 Compact forms of development such as cluster development, redevelopment within certified growth/activity centers, and, where appropriate, mixed-use residential/commercial development shall be encouraged in order to minimize further land consumption and protect open space.

1.1.2 All residential subdivisions of five or more lots shall submit a cluster development preliminary plan for consideration by towns or the Commission as appropriate during the development review process.

1.1.3 Extension or creation of new roadside "strip" commercial development outside of certified growth/activity centers shall be prohibited.

1.1.4 Development and redevelopment shall be directed away from Significant Natural Resource Areas as illustrated on the Cape Cod Significant Natural Resource Area Map dated September 5, 1996, as amended.

Other Development Review Policies

1.1.5 Adequate infrastructure, including water and sewer, should be provided by public and private means in certified growth/activity centers to support appropriate levels of density as determined by towns in their local comprehensive plans.

1.1.6 Where strip commercial developments exist, efforts should be made to improve their appearance through sign control, infill, relocation of parking, landscaping, undergrounding of utilities, design review and redevelopment, consistent with the recommendations of Designing the Future to Honor the Past, Design Guidelines for Cape Cod, Technical Bulletin 96-001.

1.1.7 Appropriate redevelopment of existing residential and commercial areas and construction within existing subdivisions should be encouraged in areas that have the capacity to sustain the impacts of this additional development in order to accommodate growth while minimizing additional subdivision and development of land.

1.1.8 Commercial and industrial subdivisions are encouraged to consider the use of cluster development wherever appropriate.

1.1.9 Where appropriate, use of transfer of development rights should be encouraged in order to concentrate development in certified growth/activity centers with adequate infrastructure and preserve open space in outlying areas.

1.2 Goal: To preserve and enhance agricultural uses that are environmentally compatible with the Cape's natural resources in order to maintain opportunities to enjoy the traditional occupations, economic diversity, and scenic resources associated with agricultural lands.



Minimum Performance Standards

1.2.1 New development adjacent to lands in active agricultural production shall maintain or provide a thickly vegetated buffer of sufficient width to prevent conflicts between the development and existing agricultural uses. New agricultural operations in developed residential areas shall also provide a buffer to minimize impacts on these adjoining areas.

Other Development Review Policies

1.2.2 Management practices such as those developed by Cooperative Extension and Soil Conservation Service should be encouraged to maintain the productivity of agricultural lands and minimize use of chemical fertilizers and pesticides that could adversely impact the environment.

1.2.3 Development unrelated to agricultural operations should be designed so as to avoid or minimize development on lands capable of sustained agricultural production as evidenced by soils, recent agricultural use, and/or surrounding agricultural use.

Implementation

Joint Commission/Town Action:

A. The Commission used its Geographic Information System (GIS) to map natural and cultural resource constraints, existing development and infrastructure, and undeveloped land in order to identify appropriate areas for designation as village, regional and industrial growth/activity centers. Towns should review this information and establish their growth/activity center boundaries through local comprehensive plans or designation of Districts of Critical Planning Concern.

Commission Actions:

A. The Commission will develop model cluster and mixed use bylaws that require submission of a compact development preliminary plan to towns for consideration during the development review process and set minimum standards for design of such plans.

B. The Commission will continue to seek amendment of state zoning and subdivision statutes to allow cluster development to occur without a special permit at the option of the municipality and to modify current provisions that encourage "approval not required" subdivisions.

C. Through the Outer Cape and Monomoy Capacity Studies, the Commission will develop a methodology for analyzing capacity constraints and assist the towns in evaluating how much future growth can be sustained. The methodology may be fine-tuned to recognize the specific needs and characteristics of different regions of the Cape.

D. The Commission will develop a model transfer of development rights program that can be adopted by Cape Cod communities.

E. The Commission will provide technical assistance in identifying appropriate



revisions to zoning bylaws and ordinances that promote village style development and maintain public safety.

F. The Commission will continue to aid communities with development of build-out maps and calculations to be included in local comprehensive plans.

G. County Cooperative Extension will work with the Cranberry Growers Association, Cape Cod Conservation District, the Commission and other organizations to encourage continued and expanded agricultural use of land on Cape Cod, where environmentally appropriate.

H. County Cooperative Extension and the Commission will encourage the use of preferential tax treatment for farms, forest land and open space through the use of existing preferential tax provisions.

I. The Commission will encourage inter-town management of resources of regional significance that cross town boundaries through coordination of local comprehensive plans and the development of Districts of Critical Planning Concern (DCPCs).

J. The Commission will investigate the effects of different types of development and land conservation on municipal costs and property taxes for Cape Cod towns.

Recommended Town Actions:

A. Towns should develop cluster bylaws or ordinances consistent with the Commission's model bylaw/ordinance that require the submission of preliminary cluster plans to towns for new residential subdivisions. Such bylaws may encourage or require cluster development at the town's option. Towns should also consider adopting cluster provisions for commercial and industrial subdivisions.

B. Local zoning and regulations, including but not limited to, lot sizes, parking requirements, undergrounding of utilities, setbacks, and road widths, should be revised to permit village style development to occur in appropriate locations.

C. Local bylaws and regulations, including mandatory cluster, increased lot sizes, overlay districts and other techniques are encouraged to foster preservation of the areas located in the Capewide Open Space/Greenbelt network.

D. Towns should consider making appropriate town-owned land available for agricultural use.

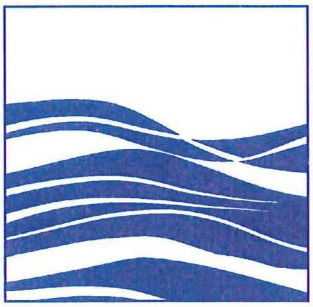
E. Towns should revise their zoning bylaws/ordinances to encourage mixed residential/commercial development in appropriate areas.

F. Towns should identify and designate areas where density bonuses may be appropriate and/or identify possible sending and receiving zones for a community transfer of development rights program.

G. Where building permit approvals indicate high levels of fluctuation in rate of development, towns should consider developing a phased growth bylaw/ordinance to stabilize growth rates consistent with the community's ability to provide infrastructure.

2. Natural Resources

2.1 Issue Area: Water Resources



Protection of natural resources on Cape Cod is one of the primary purposes of the Cape Cod Commission Act. No subject arouses more concern in this regard than water resources. The quality and quantity of the Cape's ground water is of critical importance as it is the only source of drinking water for most of Cape Cod. Of equal concern is the health and productivity of both marine and freshwater bodies of the Cape. These resource areas provide a wealth of economic and recreational opportunities and their aesthetic appeal serves as a defining characteristic of Cape Cod.

Ground water is Cape Cod's only source of drinking water, but it is also used for wastewater disposal. For this reason, wastewater impacts need to be carefully managed and the Commission has established a 5 parts per million (ppm) nitrogen loading standard to regulate these impacts. Of 135 of the Cape's public water supply wells, 47% are near background or unaltered water quality (below 0.5 ppm), 47% are moderately impacted (between 0.5 and 2.5 ppm), and 6% are between 2.5 and 5 ppm. Because nitrogen is a flag for other associated impacts from development, it is not unusual to find additional compounds in our ground water associated with disposal of household chemicals, hazardous waste spills, underground storage tanks and landfills. Three existing public water supplies are being treated for volatile organic compounds (VOC)s and 58% of the Cape's 145 public supply wells had detectable levels of synthetic VOCs. As the intensity of land use increases and less open space is available, the conflicts between preserving high quality drinking water and land use activities from a growing year round population are becoming more complex and difficult to solve.

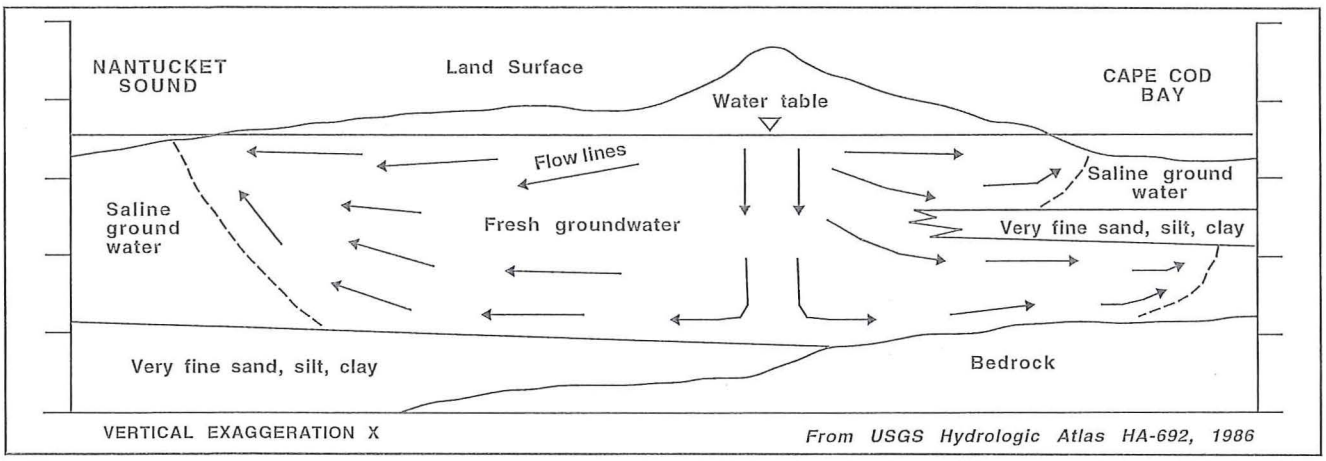
In the 1995 Cape Cod Residents Survey, 83% of the respondents thought that pollution of ground water will be a serious problem for Cape Cod in the next five years. Seventy-five percent (75%) indicated that pollution of coastal waters is also a serious concern. Respondents ranked protection of the Cape's water supply as the top priority for the Commission's work (89% consider it a high priority). Respondents indicated that they would be willing to support an increase in taxes to purchase open space for water supply protection (81% support). They also indicated that they would support more stringent land use regulations such as prohibiting activities that use or store hazardous materials or wastes from locating where they could pollute public supply wells (90% support) and requiring residential developments to use new, on-site septic systems that remove nitrogen to protect ground water quality (77% support).

Excessive withdrawals of drinking and irrigation water near lakes, ponds, wetlands or rivers threaten ground water dependent resources. The state Department of Environmental Management (DEM) estimates that by the year 2000, ground water withdrawals from the Cape Cod Aquifer will exceed 23 million gallons per day (MGD) during the off-season and over 45 MGD during the summer (DEM, 1994). Increased summer water needs have touched off a number of recent conflicts concerning decreased water levels, including ones about the Coastal Plains Pond complex in Hyannis and the Santuit River on the border of Barnstable and Mashpee. The Lower Cape Water Management Task Force has also found that it would not be possible to supply all areas of the Outer Cape with public water without detrimental

hydrologic impacts.

The Cape Cod Aquifer not only is the sole source of drinking water, but it feeds freshwater ponds and wetlands and ultimately discharges to the surrounding marine waters. Water quality concerns in marine and fresh surface water bodies are also increasing as the population increases. Ground water containing wastewater from septic systems and treatment plants carries nutrients that act as fertilizers in these waters. Excessive nutrients lead to losses in shellfish habitat, increased bacterial survival, decreases in water clarity, and less aesthetically pleasing waters. Other sources of pollution in these waters include stormwater and boat wastes. The impacts are clear: increase in shellfish bed closures, extensive losses of eelgrass beds (Costa, 1984; Costello and Stone, 1994), and decreasing dissolved oxygen concentrations and increasing nitrogen concentrations (Falmouth Pond Watchers, 1992).

Since all of the Cape's water resources are linked together by the ground water, a comprehensive strategy that addresses all the quantity and quality needs is required. A number of ground water protection strategies have been implemented on Cape Cod over the past two decades. They have primarily focused on drinking water quality, but they have evolved to address other needs. The former Cape Cod Planning and Economic Development Commission (CCPEDC) delineated the zones of contribution for all the public water supply wells on Cape Cod and developed model bylaws for regulating land uses within these zones. As part of the 208 Water Quality



Cross section of Cape groundwater lens.

Management Plan for Cape Cod, CCPEDC adopted the 5 ppm nitrogen planning guideline to ensure that nitrogen concentrations in drinking water wells would rarely exceed the federal US Environmental Protection Agency (EPA) 10 ppm nitrate-nitrogen (NO3-N) drinking water standard. This is roughly equivalent to 18 pounds of nitrogen per acre of land. In 1982, the EPA officially designated Cape Cod as a Sole Source Aquifer. The EPA and the Massachusetts Department of Environmental Quality Engineering, in cooperation with the U.S. Geological Survey (USGS), also initiated the Cape Cod Aquifer Management Project to improve the coordination of ground water management at the federal, state, regional, and local levels. These efforts spurred complimentary efforts within many of the towns to protect their drinking water supplies.

The Cape Cod Commission has built on the foundation established by these efforts to develop the ground water classification and protection strategy contained in the 1991 Regional Policy Plan. This strategy provides for the delineation of recharge areas to drinking water supplies, coastal embayments, ponds and lakes, the development of appropriate water quality standards, and implementation of protection and remediation efforts. The water quality standards identified in this RPP focused on nitrogen impacts of development and development of nitrogen capacity

limits for resources. The Commission developed a Nitrogen Loading Technical Bulletin (91-001) which explains the method that it uses to assess the water quality impact of single developments under regulatory review and provides the basis for assessment of water quality impacts from development within entire recharge areas or watersheds.

The water resource issues that confronted Cape Cod in 1991 are still of concern today. However, the Commission has made considerable progress during the past five years towards addressing these issues. The Commission worked with the U.S. Geological Survey to identify the land available for future public water supply wells (Harris and Steves, 1994). This study indicated that only approximately 5.6% of the Cape's land area is suitable for new well sites. The Commission initiated a Coastal Embayment Project which has defined the boundaries of the Cape's 52 embayment watersheds (i.e., the RPP's Marine Water Recharge Areas), defined the nitrogen loading capacity of ten embayments, and developed nitrogen management strategies for a number of different watersheds. The Commission has also worked with the towns to determine predicted nitrogen concentrations in well water; analyses have been completed for 31 of the 145 public water supplies.

The Commission has identified and evaluated small volume public supply wells throughout the Cape, and worked with the Lower Cape towns to plan for future water supply needs. The Lower Cape Water Management Task Force is using ground water models developed by USGS and DEM in a regional water supply optimization study for the towns of Eastham, Wellfleet, Truro, Provincetown, and the Cape Cod National Seashore.

Other significant developments in water resource management include the efforts of the federal and state governments to implement a major ground water clean-up program at the Massachusetts Military Reservation (MMR). Plumes of ground water contamination emanating from the MMR have contaminated four public water supply wells and threaten additional pristine ground water supplies, ponds, wetlands and nearshore marine waters. Barnstable County has established a Scientific Advisory Panel of local scientists, and Commission staff is involved in seeing that appropriate methods are developed for managing this significant problem. In addition, the Commission has provided support and direction to the MMR and four surrounding communities in developing a long range water supply plan to use undeveloped land on the MMR as a potential water supply.

Also, the Towns of Barnstable, Chatham, and Provincetown have been working with the state Department of Environmental Protection (DEP) to gather comprehensive information for their wastewater facility plans. Finally, in 1994 and 1995, the State of Massachusetts revised its Title 5 regulations (the state regulations for septic systems). The new regulations acknowledge the need to reduce nitrogen loading in wellhead protection areas and embayment watersheds and allow for the use of some new denitrifying technologies.

Several regulatory mechanisms exist to apply what we have learned about water quality protection: local board of health permits for on-site wastewater systems under Title 5, state Ground Water Discharge and Water Management Permits, federal and state environmental reviews (NEPA and MEPA) and Commission Development of Regional Impact (DRI) reviews. However, regulatory programs need to be better integrated to protect and maintain Cape Cod's water resources. Local Comprehensive Plans offer the opportunity to develop and coordinate local, regional, and state level objectives. The critical issues to be addressed are still the management of drinking water, wastewater and stormwater; the protection of marine and fresh water quality; and the recognition of the unique characteristics of Cape Cod's hydrogeology. The following standards and goals incorporate what has been learned in the past five years and seek to ensure that Cape Cod's water resources will meet the needs of all its users in this generation and in generations to come.

Goals and Policies

2.1.1 Goal: To maintain the overall quality and quantity of Cape Cod's ground water to ensure a sustainable supply of untreated high quality drinking water and to preserve and restore the ecological integrity of marine and fresh surface waters.

Minimum Performance Standards

Classification System: The Regional Policy Plan establishes a water resources classification system to manage and protect Cape Cod's water resources. The water resources classification system recognizes four primary resource areas and their respective recharge areas: wellhead protection areas, fresh water recharge areas, marine water recharge areas and potential water supply areas. The classification system also recognizes areas where water quality may have been impaired from existing development. Where these impaired areas overlap with any of the resource areas above, improvement of water quality is a major goal.

2.1.1.1 Except as otherwise specified in the classification system below, all development and redevelopment shall not exceed a 5 ppm nitrogen loading standard for impact on ground water based on the methodology contained in Cape Cod Commission Nitrogen Loading Technical Bulletin 91-001.

2.1.1.2 All development and redevelopment shall comply with the minimum performance standards outlined in the following water resources classification system. If a property is located where two classifications overlap, the more stringent standards shall apply. The water resources classification system is illustrated on the Cape Cod Water Resources Classification Maps I and II, dated September 5, 1996, as amended, and described below:

A. Wellhead Protection Areas: Consist of areas that contribute ground water to existing public and community water supply wells. These areas shall be delineated by a consistent method and recognized by the Commission in conjunction with state standards for Zone IIs (as defined in 310 CMR 22.02).

A.1: The maximum loading standard for nitrogen impact on ground water shall be 5 ppm for development and redevelopment unless a cumulative impact analysis indicates a more stringent loading standard is necessary.

A.2: Commercial and industrial development and redevelopment that involves the use, treatment, generation, storage or disposal of hazardous wastes or hazardous materials, with the exception of household quantities, shall not be permitted.

A.3: Public and private sewage or septage treatment facilities shall not be permitted in these areas, except as provided in subsection E.2 below and subject to Sections 2.1.2.1 through 2.1.2.7.

A.4: All Developments of Regional Impact within Wellhead Protection Areas shall use DEP approved alternative systems with enhanced nitrogen removal, unless a cumulative nitrogen loading assessment of the recharge area indicates that nitrogen loading from Title 5 systems is acceptable.

A.5: Uses prohibited in Zone II by state regulations shall not be permitted in these areas.

B. Fresh Water Recharge Areas: Consist of recharge areas to fresh water ponds

as mapped by a method acceptable to the Commission.

B.1: In order to limit phosphorus inputs, no subsurface disposal systems shall be permitted within 300 feet of mean high water of fresh water ponds unless the applicant demonstrates by a ground water study that the site is not within the Fresh Water Recharge Area.

B.2: Developments of Regional Impact that generate over 2000 gpd of sewage effluent may be required to delineate the ground water recharge areas to potentially affected fresh water ponds and conduct a phosphorous loading assessment in order to identify and mitigate adverse impacts.

B.3: Public and private sewage treatment facilities may be used within Fresh Water Recharge Areas subject to subsection E.2 and Sections 2.1.2.1 through 2.1.2.7 below.

C. Marine Water Recharge Areas: Consist of recharge areas to marine embayments as mapped by the Commission, on Cape Cod Water Resources Classification Map II dated September 5, 1996, as amended:

C.1: Except as specified in subsection C.2 below, development and redevelopment shall not exceed identified critical nitrogen loading standards for impact on marine ecosystems. For watersheds where the critical nitrogen load has not been determined, Developments of Regional Impact shall be required to make a monetary contribution to determine the flushing rate of the embayment in order to calculate the critical nitrogen loading rate. In watersheds to embayments where the critical nitrogen loading rate has been identified, Developments of Regional Impact may be required to make a monetary contribution towards the development or implementation of appropriate nitrogen management strategies.

C.2: Where existing watershed development exceeds identified critical loading standards for a marine recharge area or where there are documented marine water quality problems in the associated embayment, development and redevelopment shall maintain or improve existing levels of nitrogen loading.

C.3: All Developments of Regional Impact within Marine Water Recharge Areas shall use DEP approved alternative systems with enhanced nitrogen removal, unless a Commission-approved cumulative nitrogen loading assessment of the embayment and recharge area indicates that nitrogen loading from a standard Title 5 system is acceptable.

C.4: Public and private sewage treatment facilities may be used within Marine Water Recharge Areas subject to subsection E.2 and Sections 2.1.2.1 through 2.1.2.7 below.

D. Impaired Areas: Consist of areas where ground water may have been degraded by point and nonpoint sources of pollution, including but not limited to areas with unsewered residential developments where lots, on average, are less than 20,000 sq ft; landfills, septage and wastewater treatment plant discharge sites; high density commercial and industrial areas and those downgradient areas where the ground water may have been degraded by these sources. For the purpose of these standards, all certified growth/activity centers shall be classified as Impaired Areas.

D.1: Development shall generally meet a 5 ppm nitrogen loading standard for impact on ground water, but may increase to a 10 ppm nitrogen loading standard where it can be demonstrated to the permitting authority that such increase will cause no significant adverse impact on ponds, wetlands, marine waters, public or private drinking water supply wells and potential water supply wells as identified in Section F below.

D.2: Where existing development exceeds the 10 ppm nitrogen loading standard, development and redevelopment of that property shall not increase existing levels of nitrogen loading.

D.3: Public and private sewage treatment facilities, as well as other remediation measures such as community systems and DEP approved alternative systems with enhanced nitrogen removal shall be encouraged in Impaired Areas. Public and private sewage treatment facilities shall be subject to Sections 2.1.2.1 through 2.1.2.7 below.

D.4: The development of public or community water supply systems shall be encouraged for areas serviced by private wells in Impaired Areas.

E. Water Quality Improvement Areas: Consist of Impaired Areas that are located within Wellhead Protection Areas, Fresh Water and Marine Water Recharge Areas. In such areas improvement of water quality is a major goal.

E.1: Development shall not exceed a 5 ppm nitrogen loading standard or an identified marine water quality standard as applicable. Where existing development exceeds the identified loading standard or where there are documented marine water quality problems, development and redevelopment shall improve existing levels of nitrate-nitrogen loading.

E.2: Use of public and private sewage treatment facilities shall be as follows: within Water Quality Improvement Areas that are in Wellhead Protection Areas, public and private sewage treatment facilities may be used only to remediate existing problems; within Water Quality Improvement areas that are in Fresh Water and/or Marine Water Recharge Areas, public and private sewage treatment facilities may be used in conjunction with any development or redevelopment. All such facilities shall be subject to Sections 2.1.2.1 through 2.1.2.7 below.

F. Potential Public Water Supply Areas: Consist of potential public water supply areas that have been identified by the Commission on the Cape Cod Water Resources Classification Map I dated September 5, 1996, as amended, and future well sites and their associated recharge areas that have been identified by towns, water districts or private water companies.

F.1: No development shall be permitted within 400 feet of an identified future well site.

F.2: Within an identified Potential Public Water Supply Area, the same standards apply as in Wellhead Protection Areas above.

2.1.1.3 Development and redevelopment shall identify their proposed wells and existing private wells on abutting properties within 400 feet and assess the impact of the development on the water quality of these wells. Septic systems and other sources of contamination shall be sited so as to avoid contamination of existing or proposed wells.

2.1.1.4 Conversion from seasonal to year-round uses in FEMA A flood zones or within 100 feet of wetlands shall not be permitted unless the proponent installs a DEP approved alternative system with enhanced nitrogen removal. The proponent must also demonstrate that the project will not have other adverse impacts on ground water or adjacent surface water areas and wetlands.

2.1.1.5 Developments of Regional Impact that withdraw over 30,000 gallons of water per day shall be required to evaluate impacts on the water table and surface water bodies.

2.1.1.6 New direct discharge of untreated stormwater, parking lot runoff and/

or wastewater into marine and fresh surface water and wetlands shall not be permitted. Stormwater shall be managed and disposed of on site. Development and redevelopment shall use best management practices such as vegetated swales, to minimize runoff and maximize water quality treatment. A maintenance schedule shall be developed for all drainage structures. Stormwater drainage should be based on projected 25 year-24 hour storm unless more conservative figures are required by town zoning bylaws.

Other Development Review Policies

2.1.1.7 Water withdrawals should be managed so that they do not adversely affect surface water resources, wetlands, private wells or the safe yield of the aquifer.

2.1.1.8 Development and redevelopment should make use of water conservation technologies.

2.1.1.9 Development and redevelopment should minimize the use of chemical fertilizers and pesticides.

2.1.1.10 Cleanup of chemical spill and contamination sites should be expedited.

2.1.2 Goal: To encourage the use of public and private sewage treatment facilities in appropriate areas where they will provide environmental or other public benefits and where they can be adequately managed and maintained.

Minimum Performance Standards

2.1.2.1 Private treatment facilities may be constructed only if there are no feasible public treatment facility options available or planned.

2.1.2.2 All public and private sewage treatment facilities shall be designed to achieve tertiary treatment with denitrification that meets a maximum 5 ppm total nitrogen discharge standard in the ground water at the downgradient property line.

2.1.2.3 The construction of private sewage treatment facilities (PSTFs) shall not allow development to occur at a higher density than would be allowed by local zoning.

2.1.2.4 The construction of PSTFs shall be consistent with municipal capital facilities plans where they exist. Municipalities shall have the opportunity to assume ownership and maintenance responsibilities for such facilities where desired by the municipality.

2.1.2.5 PSTFs shall not be constructed in FEMA V zones and floodways, Areas of Critical Environmental Concern (ACECs), wetlands and buffer areas, barrier beaches, coastal dunes or critical wildlife habitat. PSTFs may be constructed in FEMA A zones only to remediate water quality problems from existing development within such A zones and consistent with Section 2.2.2.2 and Section 2.2.2.6, except as provided in Section 2.2.2.11.

2.1.2.6 The long-term ownership, operation, maintenance and replacement of PSTFs shall be secured as a condition of approval in accordance with Commission, state and local guidelines.

2.1.2.7 Applications for approval of public and private sewage treatment facilities shall include a plan for sludge disposal.

Other Development Review Policies

2.1.2.8 Towns may provide bonus provisions to allow increased development density through their local bylaws/ordinances provided that the development provides a substantial public benefit such as the provision of affordable housing substantially above the required 10% level, or treatment of substantial amounts of sewage from existing non-sewered development.

2.1.2.9 When allowing additional development in areas where existing high density development or large numbers of failing septic systems have led to public health or water quality problems, the Commission and/or towns may require PSTFs or DEP approved alternative systems with enhanced nitrogen removal to be installed as a remedial measure.

Implementation

Commission Actions:

A. The Commission shall identify and map special ground water protection areas including high quality water supply and potential water supply areas to maintain the highest possible water quality through land use controls and open space acquisition.

B. The Commission will continue to review literature on evaluating the impact of development on surface and ground water quality and develop updated standards as needed.

C. The Commission will provide ongoing technical assistance to communities on designation of Zone IIs to public water supply wells.

D. The Commission will continue to classify the region's marine surface waters, delineate recharge areas, determine flushing rates for marine embayments, and evaluate land use to provide suggested management solutions.

E. The Commission will continue to maintain the regional network of ground water observation wells from which estimates of ground water levels are derived.

F. The Commission will provide comments and technical assistance to towns conducting wastewater and septage facilities plans.

G. The Commission will aid communities with development of shared water supplies where appropriate.

H. The Commission will continue to coordinate water resource protection strategies with federal, state, county and local programs and officials including but not limited to the following projects:

1) The Commission will continue to staff and support the Barnstable County Scientific Advisory Panel on the Massachusetts Military Reservation Clean-up and participate in various advisory committees to expedite an appropriate and balanced clean-up of ground water contamination and to develop an appropriate water resources management strategy for the upper Cape communities.

2) The Commission will coordinate with the Department of Environmental Management and Department of Environmental Protection to develop criteria for permissible levels of maximum water withdrawal in ground water lenses based on projections of water table range and ground water quality and quantity in public supply wells and other large wells.

3) The Commission will undertake a regional study in cooperation with the U.S. Geological Survey to evaluate wastewater discharges to coastal waters.

4) The Commission will continue to cooperate with the County Health and Environmental Department to prioritize the region's fresh water ponds, delineate their recharge areas and develop protective strategies; to identify land uses that could

discharge hazardous materials in order to assist with review of projects in Wellhead Protection Areas; and maintain and publish an updated database of the region's public water quality and quantity of water pumped.

5) County Cooperative Extension will continue to provide educational programs about the need for periodic inspection and maintenance of septic systems and the hazards of commercial septic cleaning products.

6) The Commission will continue to work with the Department of Environmental Protection and the County Health and Environmental Department to develop an updated catalog and map of identified hazardous waste sites and assist towns in dealing effectively with multiple waste sites.

7) The Commission will continue to work with the County Health and Environmental Department to identify unregistered underground storage tanks and support the County's tracking program for monitoring underground storage tanks.

8) The Commission will continue to provide input to the state's Title 5 working group about the unique hydrogeologic conditions on Cape Cod and shall encourage the establishment of regionally appropriate standards for the design and installation of septic systems.

9) The Commission will cooperate with Soil Conservation Service, Department of Public Works, County Cooperative Extension and other appropriate agencies to encourage the use of alternatives to fertilizers, herbicides, pesticides, road salt and other materials that could adversely impact surface and ground water quality.

10) The Commission will work with the County Health and Environmental Department and the U.S. Geological Survey to develop standards to protect against bacterial and viral contamination of ground and surface waters.

11) The Commission will continue to work with all involved entities to develop and implement innovative on-site wastewater management districts to address watershed specific water quality problems.

Recommended Town Actions:

A. Towns should develop water conservation plans that encourage the installation and use of water saving devices.

B. Towns should identify locations of private wells and septic systems especially in densely developed areas and undertake inspection and improvement programs for upgrading pre-Title 5 and failing septic systems.

C. Towns and Water Districts should map, protect and acquire needed future water supply areas.

D. Towns should develop local bylaws or regulations to provide for regular maintenance and pump-out of individual septic systems.

E. Towns should establish local bylaws or regulations limiting nitrogen loading to protect ground and surface water quality.

F. Towns should work with the Commission to identify impaired and water quality improvement areas to prioritize areas for upgrades to nitrogen reducing septic systems.

G. Towns should establish or modify local water supply protection bylaws to prohibit hazardous land uses in Wellhead Protection Areas.

H. Towns should develop snow removal management strategies for roadways that minimize the total application of salt and other harmful deicing chemicals.

2.2 Issue Area: Coastal Resources



Cape Cod's coastal resources are varied and extend far beyond its 586 miles of tidal shoreline. Fishermen harvest a variety of fish and shellfish and use the Cape's natural harbors as a base of operations for fishing in the nearshore waters and as far offshore as Georges Bank.

The most economically valuable real estate on Cape Cod is its waterfront. Economic pressures have brought dramatic changes in the use of the shoreline. Intensive residential development has limited access to beaches and shellfishing areas. Water-dependent uses such as boatyards and marinas, which generally provide facilities for the fishing industry, are being displaced by non-water dependent uses such as restaurants, condominiums, and offices. As the traditional working waterfronts are replaced by such uses, the historic maritime character of these areas is lost, along with important economic opportunities.

With increased coastal development over the last several decades, it is clear that the coast and its valuable resources are not immune to damage from poor land use practices. Public access to and along the shore has been diminished by construction of private docks and piers and coastal revetments. Planning efforts have generally separated land based activities from coastal, waterside activities. Experience has shown that an integration of these components is necessary to ensure protection and balanced use of both land and water resources.

The Fisheries

The fishing industry has long been a significant part of the Cape's economy. While landings are less today than they were 10 years ago, National Marine Fisheries data indicates that the value of the reported catch has been around $1 million per month into the late 1980s. Since much of the catch taken by Cape Cod boats goes unreported in the landing statistics, the full contribution of the local fishing industry to the region's economy is much greater. Since 1990, landings from the traditional fishery have declined for most species. However, some fisheries, for example lobstering, have maintained high landings and landed value. In 1994, Barnstable County ranked third in state lobster landings. Sandwich has the highest lobster landings of any Cape port.

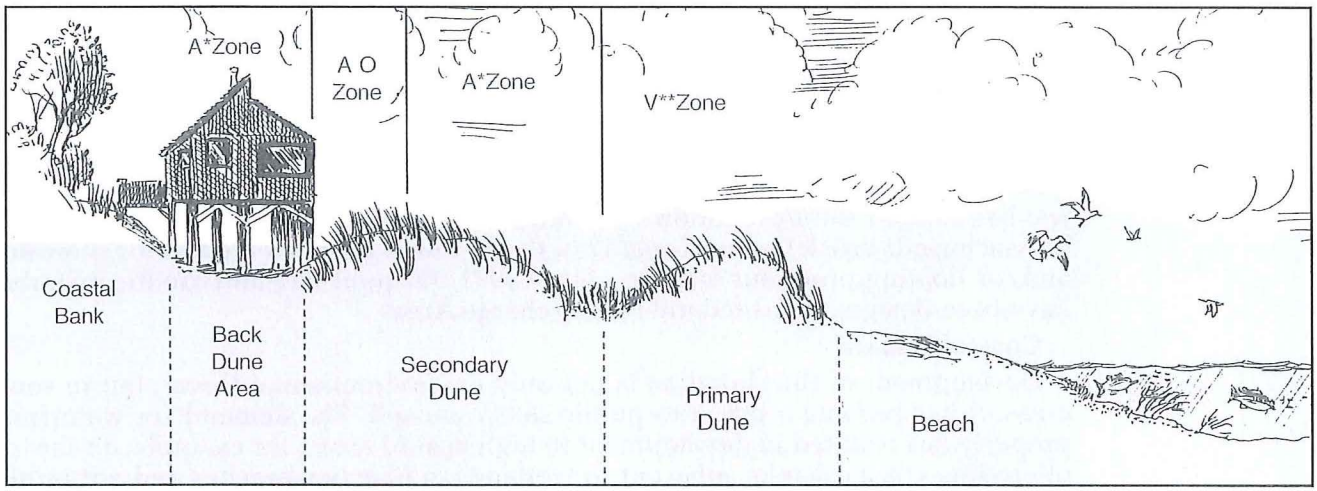
Shellfishing is also an important aspect of the Cape's economy. The Cape has the largest traditional and cultivated shellfish industry in Massachusetts. In 1991, the Massachusetts Division of Marine Fisheries (DMF) reported annual commercial landings of quahogs with a market worth close to $1 million and of soft shell clams, $1.5 million. Landings are down over those of the 1970s; however, the market demand is high. Towns such as Barnstable have begun projects in cooperation with commercial license holders to increase the productivity of the town's waters to improve the traditional harvest.

The value of cultured shellfish has also been increasing over the past ten years. Total aquaculture lease values reported to the DMF indicate increasing harvest values. In 1990 for example, all quahogs harvested from leases were valued, by the growers, at $750,335; in 1993 the value had increased to $996,954. Total value of all species cultured, as reported to DMF, increased from $1,083,455 in 1990 to $1,426,032 in 1993. The species that accounts for the most value is quahogs, followed by oysters. The Massachusetts Aquaculture Association estimated that the total value of the cultured shellfish harvest in Cape Cod waters in 1992 was worth more than $5 million to the grower. Since 1990, more tidal flats and subtidal areas are being used for shellfish aquaculture activities - the cultivation of quahogs, oyster, soft shell clams, and sea scallops. There has been interest expressed in finfish culture operations in

Cape waters, however no projects have yet been permitted.

Encouraging public and private shellfish aquaculture is being discussed more seriously in Cape towns, as a means of sustaining and increasing employment and revenue from the Cape's coastal waters. Since 1990 the number of acres under aquaculture leases has increased from 330 to 406, and the number of leases from 138 to 174. In the 1995 Cape Cod Residents Survey, 69% of the respondents said the Cape Cod Commission should work to preserve and enhance the fishing and shellfishing industries on Cape Cod.

Both natural and aquaculture shellfisheries face pressures from increased shoreline development and recreation activity. The proliferation of private docks and piers has encroached on the fishermen's access along the shoreline, and in some instances dredging activity has destroyed shellfish habitat. Degraded water quality has pro-



Cross section of coastal resource areas and flood zones. (Illustration by Dan Dailey, courtesy Mass. DEP.)

hibited harvesting, and increased boating activity in some locations has destroyed habitat and resulted in use conflicts. Although the public trust doctrine ensures the public's rights to fish, fowl, and navigate in the tidelands of the Commonwealth, access to these tidelands and waters for these purposes is being lost as a result of private development of the shoreline. In developing its coastal management plan, the Town of Barnstable estimated that of a total water surface area of 1,432 acres, over 42%, or 600 acres, was unavailable for use by the general public due to moorings and private docks and piers.

Coastal Pollution

As populations and nitrogen-rich wastewater discharges have increased, the amount of nitrogen in coastal waters from precipitation has been augmented with nitrogen from fertilizers, roads, and wastewater. Wastewater generally makes up between 50 and 70% of the nitrogen loading to coastal watersheds. These increases in nitrogen have exceeded the capacity of some coastal ecosystems to effectively process nitrogen. This nitrogen excess has caused extensive changes in coastal systems. There are growing signs that the quality of the Cape's coastal waters is deteriorating as a direct result of the cumulative impacts of upland development. In Waquoit Bay in Falmouth and Mashpee, excessive nitrogen has been identified as the major cause of decline in shellfish harvests to one tenth of the harvest in the 1970s, and in the virtual disappearance of eelgrass from the bottom of the Bay.

There had been a dramatic increase in the amount of shellfish acreage closed to harvest as a result of high coliform bacteria counts from the early 1980s to 1990. As a result of worsening water quality and more extensive testing, closures had risen from less than 1,000 acres in 1982 to over 5,500 acres in 1990. Since 1990, partly as a

result of water quality improvements and the efforts of the DMF to manage closed areas more efficiently, the acreage closed to shellfishing in the summer months has declined in twelve of the fifteen Cape Cod towns. Overall, areas closed to shellfishing have declined to 2,560 acres, from a high of 5,772 acres in 1990.

Water Quality Management

Stormwater can be a major source of coliform bacteria to coastal waters. Since the late 1980s, Cape Cod towns have invested more than $1.5 million in improving treatment or eliminating the discharge of stormwater into coastal waters. A few examples of significant town commitments are the Town of Orleans' effort to improve water quality in Town Cove and Meetinghouse Pond, at a cost of over $400,000. These improvements were funded with local tax revenues, and have resulted in the opening of shellfish beds in Meetinghouse Pond, closed since 1981. In Yarmouth and Dennis, stormwater improvements have been made along the Bass and Parkers Rivers and in Chatham along Oyster Pond River. These stormwater improvements have contributed to the reopening of shellfish beds in these towns. Statistics from the Division of Marine Fisheries indicate that in 1990, Yarmouth had 898 acres of shellfish beds closed due to high coliform counts in the months of June and July. In 1995 closures were reduced to 129.5 acres during those same months.

Coastal water quality improvements may also be attributable to better management of boat wastes. The Commonwealth of Massachusetts, with federal grant monies, has funded the installation of a number of boat pumpout facilities along the Massachusetts coast. On the Cape, 12 of the 15 towns received monies for shoreside and/or floating pumpout facilities. Since 1991, Waquoit Bay and Wellfleet Harbor have been designated as federal No-Discharge Areas.

Coastal Hazards

Development of the shoreline is not only an environmental threat, but in some areas, it has become a threat to public safety as well. The demand for waterfront property has resulted in development in high hazard areas, for example, on the top of eroding coastal banks, adjacent to wetlands, on barrier beaches and within the floodplain. It is estimated that there were almost 13,000 structures in the Cape's floodplain in 1991. Building in such sensitive areas can destabilize banks and dunes, accelerating problems with erosion and sedimentation. Moreover, these areas are very susceptible to damage from storms and hurricanes.

The Cape was hit by a hurricane and two northeasters in 1991 and 1992, which caused severe property damage. Falmouth alone estimated that it sustained $3.5 to $4 million worth of damage to public facilities, in addition to the more than two dozen homes and 300 boats that were severely damaged. Severe coastal erosion of beaches, dunes and bluffs occurred as a result of these three storms. While these three storms did result in improvements to the state's emergency regulations governing rebuilding storm damaged properties, more work needs to be done on hazard elimination - outright acquisition of vacant land in the floodplain and purchase of repeatedly storm damaged properties.

Although each town has an evacuation plan and local and state regulations limit some development in hazard areas, towns have not adopted formal reconstruction policies to prevent the same type of destruction from occurring in the future. One troubling aspect to the storm damage caused by the two northeasters is that both were estimated to be about a 20 year storm strength (greatly reduced intensity than the 100 year storm), and yet these storms were costly in terms of damaged property, public infrastructure, and federal disaster assistance.

Lands subject to coastal storm flowage are areas which are subject to hazardous flooding, wave impact, and, in some cases, significant rates of erosion as a result of storm wave impact and scour. FEMA mapped Velocity and AO-zones in coastal areas are generally subject to repeated storm damage. The topography and soil characteristics, vegetation, erodability, and permeability of the land surface within V-

and AO- zones are critical characteristics that determine how effective an area is in dissipating wave energy and in protecting areas within and landward of these zones from storm damage and flooding. Dredging or removal of materials within V- and AO-zones acts to increase the landward velocity and height of storm waves, thereby allowing storm waves to break further inland and to impact upland and wetland resource areas which might not otherwise be impacted. Filling and the placement of solid fill structures within V- and AO-zones may alter wave impacts, thereby forcing wave energy onto adjacent properties or natural resources. When struck with storm waves, solid structures within V- and AO-zones also may increase localized rates of erosion and scour.

Sea Level Rise

In addition to damage caused by storms and hurricanes, the coastline is also vulnerable to relative sea level rise, possibly accelerating due to global climate change. The potential impacts include increased erosion and flooding of low-lying areas due to shoreline retreat. At the present rate of rise (.01 ft/year or 0.45 feet by 2025) the Cape loses approximately 24 acres of upland per year, or 1080 acres by 2025. The total acreage lost by the year 2025 would increase to 3900 acres when projecting the EPA mid-range scenario of 1.57 feet relative rise (Giese et al, 1988). It is estimated that Falmouth will lose the most upland area, with an average loss of 3.8 acres annually. In FEMA designated A-zones, where stillwater flooding dominates during storm events, the increased flood elevations are proportional to that increase in the current relative sea level rise rate in Massachusetts. In FEMA designated V-zones, however, the increased flood elevations will exceed that of a proportional increase in sea level rise. There is increasing evidence that climate change could result in marine water temperature changes which may have even more dramatic effects, increasing the frequency and intensity of storms in coastal areas. Existing land use and building regulations do not consider the impact of these changing conditions. For example, current law requires structures to be elevated to the 100 year flood elevation, which does not take sea level rise into consideration.

Regulatory Framework

Because of the wide range of resources and activities within the coastal zone, there are several overlapping regulatory jurisdictions for various types of projects. Local conservation commissions administer the Massachusetts Wetlands Protection Act, whose interests include protection of ground water, shellfish areas and wildlife habitat, and prevention of storm damage and pollution. State agencies that have jurisdiction include the Department of Environmental Protection (DEP), the Massachusetts Coastal Zone Management Office (MCZM), the Department of Fisheries, Wildlife and Environmental Law Enforcement and the Massachusetts Environmental Policy Act Unit (MEPA). Particularly important are the Chapter 91 Regulations which govern activities within the intertidal zone. On the federal level, the Army Corps of Engineers, the Environmental Protection Agency and the Coast Guard have jurisdiction over various activities both on the land and within the waters of the Commonwealth. Coordination among these regulatory authorities is essential to ensure consistency and improve the efficacy of these programs.

Goals and Policies

2.2.1 Goal: To protect the public interests in the coast and rights for fishing, fowling, and navigation, to preserve and manage coastal areas so as to safeguard and perpetuate their biological, economic, historic, maritime, and aesthetic values, and to preserve, enhance and where appropriate, expand public access to the shoreline.

Minimum Performance Standards

2.2.1.1 Development and redevelopment along the coastline shall not interfere with existing public access and traditional public rights of way to, and environmentally appropriate use of, the shoreline.

2.2.1.2 Public access shall be provided at publicly-funded beach nourishment sites where such access will not impair natural resources.

Other Development Review Policies

2.2.1.3 Development and redevelopment should reflect the traditional maritime character and/or architecture typical of the area and should be designed to maintain and enhance views of the shoreline from public ways, access points and existing development.

2.2.1.4 The construction of walkways, where environmentally acceptable, should be encouraged to enhance shoreline access for the public, including people with disabilities.

2.2.1.5 If an existing water dependent facility is within 250 feet of the mean high water line or shoreward of the first public way, whichever is less, such use should not be changed to a non-water dependent facility unless an overriding public benefit is provided to accommodate for the loss of the water dependent use.

2.2.1.6 Development or redevelopment of water dependent facilities should provide coastal access benefits to the general public. Such access should minimize interference with the water dependent use.

2.2.1.7 Coastal engineering structures should be designed so as to allow the public to pass along the shore (either above or below the structure) in the exercise of its public trust rights to fishing, fowling and navigation.

2.2.2 Goal: To limit development in areas subject to coastal storm flowage, particularly high hazard areas, in order to minimize the loss of life and structures and the environmental damage resulting from storms, flooding, erosion and relative sea level rise.

Minimum Performance Standards

2.2.2.1 Except as specified in Section 2.2.2.5, no development or redevelopment shall be permitted within FEMA V-flood zones. Existing structures may be reconstructed or renovated provided there is no increase in floor area or intensity of use. As an exception, where there is no feasible alternative, water-dependent structures and uses may be permitted subject to the approval of all permitting authorities.

2.2.2.2 In order to accommodate possible relative sea level rise and possible increased storm intensity, ensure human health and safety, and protect the integrity of coastal landforms and natural resources, all new buildings, including replacements, or substantial improvements to existing structures within FEMA A-zones shall be designed to accommodate the documented relative sea level rise rate in Massachusetts of at least one foot per 100 years, except as provided in Section 2.2.2.11, and in V-zones shall be designed to accommodate a relative sea level rise rate of two feet per 100 years.

2.2.2.3 Except as specified in Section 2.2.2.5, no new development or redevelopment shall be permitted on barrier beaches and coastal dunes as defined by the Wetlands Protection Act and associated regulations and policies. Existing structures may be reconstructed or renovated, provided there is no increase in floor area or intensity of use, or conversion from seasonal to year round use.

A. If the reconstruction/renovation is greater than 50% of the market value of a structure, and is located within a V-zone, the lowest horizontal structural member shall be elevated at least two feet above the 100 year flood elevation. If the structure is located in the A-zone, the lowest floor shall be elevated at least one foot above the 100 year flood elevation, except as provided in Section 2.2.2.11. On a barrier beach or coastal dune and in either the V- or A-zone, the structure shall be on open pilings, to allow for storm flowage and beach and dune migration.

B. If the structure is on a barrier beach or dune and is outside the 100 year coastal floodplain, and is proposed to be reconstructed/renovated greater than 50% of its market value before reconstruction and renovation, it shall be elevated at least two feet above grade on open pilings to allow dune migration.

Water-dependent public recreational facilities in these locations may be developed providing that it can be demonstrated that the proposed development will not compromise the integrity of coastal resources, and is appropriately elevated on pilings or floodproofed.

2.2.2.4 Development and redevelopment on or within 100 feet landward of a coastal bank or dune shall be designed to have no adverse effect on the height, stability, or the use of the bank or dune as a natural sediment source. In areas where banks or dunes are eroding, the setback for all new buildings and septic systems to the top of the coastal bank or dune crest shall be at least 30 times the average annual erosion rate of the bank or dune. This rate shall be determined by averaging the erosion over the previous 30-year period at a minimum. In instances where shoreline erosion rates are indicative of bank/dune erosion rates, MCZM shoreline change maps may be used in determining the setback.

2.2.2.5 Where fire, storm, or similar disaster has caused damage to or loss of buildings in FEMA A- and V-zones, on barrier beaches, coastal banks or coastal dunes of greater than 50 percent of their market value, all reconstruction shall be in compliance with current applicable regulations and shall be designed in accordance with Sections 2.1.1.4, 2.2.2.2, 2.2.2.4, 2.2.3.1 and 2.2.3.2. Any reconstruction shall not enlarge or expand the use of an existing structure.

2.2.2.6 Except as provided in Section 2.2.2.11, no new public infrastructure or expansion of existing infrastructure shall be made in flood hazard zones (FEMA A- and V-zones) unless it is shown that there is an overriding public benefit provided, and provided that such infrastructure will not promote new growth and development in flood hazard areas.

2.2.2.7 Where land subject to coastal storm flowage is significant to the interests of flood control and storm damage prevention, no activity shall increase the elevation or velocity of flood waters or increase flows due to a change in drainage or flowage characteristics on the subject site, adjacent properties, or any public or private way.

2.2.2.8 Within the 10-year floodplain, no activity shall impede the landward migration of other resource areas within this area of the floodplain. Rela-



tive sea level rise and the landward migration of resource areas in response to relative sea level rise shall be incorporated into the design, construction, and location of structures and other activities proposed.

2.2.2.9 New structures, additions to existing structures, solid foundations, new or proposed expansions of roads, driveways, or parking lots, or impermeable paving of existing ways, new or proposed expansions of coastal engineering structures, and new septic systems shall be prohibited within the V-zone of a beach, dune, barrier beach, or coastal bank where they will result in alterations to vegetative cover, interruptions in the supply of sediment to other wetland resources, and/or changes to the form or volume of a dune or beach.

2.2.2.10 Notwithstanding Sections 2.2.2.6, 2.2.2.7, 2.2.2.8, and 2.2.2.9, the following activities may be permitted provided the applicant demonstrates that best available measures are utilized to minimize adverse impacts on all critical characteristics of land subject to coastal storm flowage, and provided that all other performance standards for underlying resource areas are met: beach, dune, and bank nourishment and restoration projects, including fencing and other devices to increase dune development and plantings compatible with natural vegetative cover; elevated pedestrian walkways and elevated decks with appropriate height and spacing between planks to allow sufficient sunlight penetration; boat launching facilities, navigational aids, piers, docks, wharves and moorings; improvements necessary to maintain the structural integrity/stability of existing coastal engineering structures; projects that will restore, rehabilitate or create a saltmarsh or freshwater wetlands; projects that are approved, in writing, or conducted by the Division of Marine Fisheries that are specifically intended to increase the productivity of land containing shellfish, including aquaculture, or to maintain or enhance marine fisheries, and projects that are approved, in writing, or conducted by the Division of Fisheries and Wildlife that are specifically intended to enhance or increase wildlife habitat.

2.2.2.11 In order to allow alternative means of reducing flood hazard risks in areas where there are serious concerns about protecting the character of historic villages, the following shall apply in certified Village Growth/Activity centers located in FEMA A-zones for which a Flood Hazard Mitigation Plan has been prepared and adopted by the town and has been found by the Cape Cod Commission to be consistent with state coastal policies and regulations. Notwithstanding Sections 2.1.2.5, 2.2.2.2, 2.2.2.3 A, and 2.2.2.6, the following standards shall apply to such certified Village Growth/Activity centers located within FEMA A-zones:

a. Development and redevelopment shall be subject to the requirements of the adopted Flood Hazard Mitigation Plan and any related policies and regulations.

b. Public infrastructure and private sewage treatment facilities (PSTFs) may be constructed in FEMA A-zones (but not within a V- or an AO- zone) provided that these facilities are consistent with the Flood Hazard Mitigation Plan and the certified Local Comprehensive Plan; further provided that the infrastructure is itself flood-resistent; and provided that such infrastructure will not promote new growth and development outside such certified Growth/Activity center.

c. All new buildings or substantial improvements to existing structures in the FEMA A-zone shall comply with FEMA and State Building Code regulations for elevation and flood-proofing.

Other Development Review Policies

2.2.2.12 Vehicle, boat, and pedestrian traffic in critical wildlife and plant habitat areas as identified in Section 2.4.1.1(A), wetlands, dunes, shallow estuarine areas, and shorebird breeding habitat areas should be minimized.

2.2.2.13 Wherever feasible, dredge material should be used for beach nourishment in areas subject to erosion. Such material should be clean and compatible with existing strata.

2.2.3 Goal: To maintain and improve coastal water quality to allow shellfishing and/or swimming in all coastal waters as appropriate, and to protect coastal ecosystems which support shellfish and finfish habitat.

Minimum Performance Standards

2.2.3.1 Within FEMA V-zones new mounded septic systems shall be prohibited except to upgrade existing substandard septic systems where such systems pose a demonstrated threat to public health, water quality or natural resources. Unless otherwise demonstrated, if feasible, solid components of the septic system shall be elevated above the 100 year flood level.

2.2.3.2 No new direct, untreated stormwater discharges shall be permitted into any coastal waters or wetlands, including discharges above or below the mean high water level.

2.2.3.3 The design and construction of stormwater management systems proposed in V-zones shall incorporate the historic rate of relative sea level rise in Massachusetts of two feet per 100 years. For systems proposed in Azones, the historic rate of relative sea level rise in Massachusetts of one foot per 100 years shall be incorporated into the project design and construction.

2.2.3.4 In order to avoid loss of shellfish habitat and minimize impacts on wetlands, construction of community docks and piers, rather than separate structures serving individual lots, shall be required wherever possible. In significant shellfish habitat areas, as identified and documented by the Division of Marine Fisheries and/or local shellfish officials, the construction or expansion of docks and piers shall not be permitted. Docks and piers more than 50% damaged or destroyed by storms may be replaced in accordance with federal, state and local regulations, except in areas identified and documented as significant shellfish habitat.

2.2.3.5 New marinas of 10 or more slips, moorings, or active landward storage berths, and expansions of existing marinas by 10 or more slips, moorings, or berths shall provide or contribute to the provision of adequate boat sewage pump-out facilities in each harbor and shall provide restrooms for their patrons. Such marinas shall also provide or contribute to provision of adequate collection facilities for solid waste and waste oil for their patrons.

2.2.3.6 New dredging projects or expansion of existing dredging projects shall not occur unless a substantial public benefit can be demonstrated including but not limited to enhancement of fish or shellfish habitat, improvements to the flushing capacity of nitrogen sensitive embayments, or necessary improvements to navigational safety.

2.2.3.7 Undisturbed buffer areas of at least 100' width surrounding coastal wetlands and/or landward of the mean high water mark of coastal waterbodies shall be protected as specified in Section 2.3.1.2.

Other Development Review Policies

2.2.3.8 Where appropriate, waterfront fueling facilities should be upgraded to ensure that best management practices are used to avoid adverse impacts to water quality.

Implementation

Commission Actions:

A. The Commission will continue to assist, as needed and appropriate, in determining the needs for dredging and beach nourishment within the county and investigate the means to best satisfy such needs.

B. In order to ensure that adequate controls are in place for future disasters, the Commission will work with the MCZM Program to distribute guidelines for pre-storm mitigation and post-storm construction activities, and update these guidelines as necessary.

C. The Commission will continue to work with Waquoit Bay National Estuarine Research Reserve and other organizations such as Woods Hole Oceanographic Institution to encourage cooperative research efforts on the impacts of recreational boating, and the boating activity associated with docks and piers, on coastal ponds and bays and shellfish habitat.

D. The Commission will continue to work with Massachusetts Coastal Zone Management (MCZM) to develop aggressive education campaigns concerning coastal hazards, sea level rise and construction practices.

E. The Commission, in cooperation with the County Extension Service and the Health and Environment Department, will continue to provide technical assistance to towns on alternate methods of stormwater management. The Commission will work with the Massachusetts Highway Department, the town highway departments, and the Natural Resources Conservation Service to ensure that stormwater is no longer diverted directly into a resource area or coastal waters when existing roads are repaved and/or upgraded.

F. Fish spawning and nursery areas, submerged aquatic vegetation and shellfish habitat will be mapped and included in the Commission's Geographic Information System (GIS). The Commission will work with the Division of Marine Fisheries and local agencies to develop this information for Cape Cod waters.

G. In order to protect the Cape's coastline and its resources from damage from spills of oil and other hazardous materials, the Commission will work with the MCZM Program and the U.S. Coast Guard to keep updated a regional Oil Spill Contingency Plan with assistance from all of the towns.

H. The Commission will continue to actively participate in the Massachusetts Bays, Buzzards Bay, Waquoit Bay Reserve and other regional coastal research programs, to ensure that technical and scientific issues of importance to Cape Cod are addressed, and will coordinate with the various agencies with jurisdiction in the coastal zone on matters related to these projects.

I. The Commission will continue to work with federal, state and other authorities to ensure the protection of offshore fishing grounds from adverse impacts from oil drilling and spillage; mining; septage, sewage and hazardous waste; dumping; dredge spoil disposal and other offshore development.

J. The Commission will coordinate with towns to provide disposal options for marine head waste.

K. With assistance from the Department of Environmental Management's (DEM) Coastal Access Program, the Commission will initiate a research project to docu-

ment the status of public access to and along the shoreline of Cape Cod, identify areas of concern and develop recommendations to improve public access.



L. The Commission will provide technical assistance to towns in addressing public access issues in their Local Comprehensive Plans.

Recommended Town Actions:

A. Towns should designate "working waterfront" overlay zones along their shoreline to ensure the preservation and expansion of traditional maritime uses. Within these zones, boatyard preservation programs should be implemented. All new buildings or accessory uses constructed within this zone should directly benefit maritime-related uses.

B. Towns should research and document public access areas to and along their shorelines, and where possible, reestablish and/or designate traditional rights-of-way to the shore through appropriate legal means.

C. Towns should identify sensitive coastal areas where public access and development should be restricted in order to maintain the integrity of coastal features, and should take measures to protect these areas.

D. Towns should develop harbor management plans in accordance with state guidelines and implement watersheet zoning to protect coastal resources and prevent use conflicts on the water.

E. Towns should identify and designate areas as federal No Discharge zones for boats in conjunction with state and federal guidelines.

F. Towns should strengthen local bylaws and regulations beyond minimum state and federal standards to reduce the potential impacts to health and safety and the economy resulting from coastal storms.

G. Towns should develop a list of projects that provide or enhance coastal access and use of their shoreline to be used in conditioning local Chapter 91 licenses, including maintenance and upgrading of town landings to enable legal public access to coastal waters.

H. Towns should evaluate long term dredging and dredge disposal needs and alternatives.

I. In their planning efforts, including the development of local comprehensive, harbor, and resource management plans, towns should evaluate areas appropriate for aquaculture. This evaluation should consider other uses, including mooring areas, recreational boating, existing and historic natural resource habitats, as well as tidelands ownership issues, in order to minimize conflicts with other users of coastal and marine waters.

J. Towns should encourage "soft" solutions to coastal erosion (e.g. beach nourishment, planting of beach grass and related activities) as an alternative to "hard" coastal engineering structures and amend local bylaws and regulations to address this issue.

2.3 Issue Area: Wetlands



Barnstable County contains extensive areas of both fresh water and coastal wetlands. These areas include red maple swamps, Atlantic white cedar swamps, bogs, fresh and salt marshes and wet meadows. One out of every four acres on Cape Cod is wetland. These wetland resources are important to the environment and economy of Cape Cod. They provide important natural functions including ground water recharge, attenuation of pollutants, and wildlife and fisheries habitat, and they are a significant destination for residents and visitors seeking outdoor recreation opportunities including beaches, birdwatching opportunities, fishing and other water sports. Wetland areas are also important for shellfishing, cranberry production and other resource-related industries on Cape Cod. In addition, wetlands and waterbodies and their buffer areas are often areas which have a high likelihood of possessing archeological significance.

The Massachusetts Wetlands Protection Act (Chapter 131, Section 40) regulates any work within a coastal or inland wetland resource area and any work within a 100' buffer zone that is likely to affect a wetland. This state law is administered by local Conservation Commissions through a permit process. In addition, most Cape communities have passed local wetlands bylaws that regulate activities within wetlands and/or zoning bylaws that establish construction setbacks to wetlands. These bylaws are generally more strict than the state Act.

Estimates of historic wetland acreage and loss on the Cape vary, with no consistent comparative studies. While it is unlikely that large-scale wetland alterations will occur in the future, the cumulative effects of hundreds of small projects individually deemed permissible by state law have never been addressed. As pressure grows to develop increasingly marginal land, adverse effects on wetlands and wildlife habitat and their associated natural functions are likely to increase.

The Wetlands Protection Act standards were developed for the state as a whole and have a number of limitations that leave the Cape vulnerable to loss of important wetland resources. For example:

- The state currently bans filling and alteration of salt marshes, but no similar protection is provided for inland wetlands. An unlimited amount of wetland may be filled to provide access to upland portions of a site. In addition, the Act permits alteration of up to 5000 square feet of wetlands if the wetlands are "replicated" elsewhere on the site. However numerous studies have suggested that wetland replication (conversion of upland to manmade wetland) does not adequately replace the complex natural functions and productivity provided by the altered natural wetlands. A 1989 study by the Army Corps of Engineers of six replication projects on Cape Cod found that only two were successful, based only on simple measures such as size and the presence of wetland vegetation. The study did not analyze the more complex functional criteria of wetlands. The preface to the Wetlands Protection Act Regulations also recognizes that the functions served by bordering vegetated wetlands cannot be replicated in their totality by engineering means. In response, the Regional Policy Plan prohibits the alteration of wetlands in most circumstances.
- The Wetlands Protection Act does not provide any protection for buffer areas surrounding wetlands that provide important functions, including mitigating stormwater impacts, sedimentation and erosion control, removing nutrients, and recharging ground water. Research has documented the increase in nitrogen and phosphorus loading to wetlands as adjacent watershed areas are cleared of vegetation. Buffer areas play an important role in minimizing impacts of adjacent land

uses and separating them from wetlands - such activities include dumping, mowing, and disturbance by domestic animals. Buffer areas also have wildlife habitat value. The transitional area where wetlands and uplands meet is particularly good habitat due to the presence of water, food and cover. This "edge effect" has long been recognized by wildlife biologists as an important factor in the preservation of species diversity. Many bird species such as herons nest in upland trees adjacent to wetlands, but feed in the wetlands. Without buffer area protection, these nesting areas could be destroyed. Studies indicate that buffers 100 to 300 feet wide are needed to protect surface water bodies from sedimentation and maintain wildlife habitat, and 300 to 1000-foot buffers are needed for 50 to 90 percent nutrient removal. A 200-foot buffer is recommended to protect the scenic value of a natural area. The Cape Cod Commission has worked for several years to develop a methodology for determining where buffer areas greater than 100' are needed to protect wetland values and functions on Cape Cod. The methodology uses sitespecific factors such as slope, soils and the type and location of wetlands to determine the needed buffer and also includes more information on buffer areas studies. This methodology as well as a more detailed discussion of this subject are contained in the Wetland Buffer Methodology, Technical Bulletin 96-004.

• Many of the Cape's wetlands occur as isolated kettle holes that do not meet the size thresholds for protection in the state Act. The Regional Policy Plan protects all wetlands greater than 500 sq. ft. whether they border on waterbodies or not.

• Many developments have been designed to discharge stormwater directly to waterbodies or to use wetlands for stormwater management and attenuation of pollutants, a practice that may result in degradation of the wetland and could adversely affect downstream waters. Existing stormwater discharges are difficult and expensive to remediate.



Quivett Marsh and Wing Island, Brewster.

• In the 1995 Residents' Survey, 85% of those surveyed supported restricting new development in or near wetlands, ponds, floodplains, dunes, and critical habitat areas. Wetlands protection programs at both the state and federal level are subject to modifications that are beyond the control of Cape residents. It is increasingly clear that if protection of the Cape's resources is desirable, it must be ensured through regional policies and local bylaws and regulations.

In some cases, town wetlands bylaws have partially compensated for these deficiencies by expanding the definition of wetlands resources, requiring building and septic setbacks to protect buffer zones, and prohibiting or limiting wetland replication. However, there is no regional consistency within these bylaws and variances are often granted. In addition, Conservation Commissions have expressed concern about the need for greater coordination among local boards, particularly with Boards of Health, on issues including the siting of wastewater disposal systems and redevelopment of areas with existing failing systems.



In an effort to enhance the quality and quantity of the Commonwealth's wetlands, a variety of state and federal agencies are currently working together on a statewide wetland restoration initiative. One such effort, the Cape Cod Wetland Evaluation Project, has involved the Army Corps of Engineers, Executive Office of Transportation and Construction, Executive Office of Environmental Affairs, Massachusetts Coastal Zone Management and the Cape Cod Commission. The project has evaluated six tidal wetland sites on Cape Cod that have been adversely affected by transportation-related projects (dikes, culverts, etc.) that reduce tidal flushing and salinity, promoting the growth of the common reed, phragmites. Two of these sites are being pursued as possible wetland restoration sites. In addition, the feasibility of a larger scale wetland restoration project at Sagamore Marsh in Bourne and Sandwich is currently being studied by the Army Corps of Engineers.

The state also completed a wetland mitigation banking study in 1995. Mitigation banking is the creation or restoration of wetland areas for their later use as mitigation for development projects that require wetland alteration. This study recommends pursuit of several pilot mitigation banks statewide to further explore this idea.

Goals and Policies

2.3.1 Goal: To preserve and restore the quality and quantity of inland and coastal wetlands on Cape Cod.

Minimum Performance Standards

2.3.1.1 Wetland alteration shall not be permitted except as provided herein and in Minimum Performance Standard 2.3.1.3. As an exception, where there is no feasible alternative, water-dependent projects involving wetland alteration with appropriate mitigation may be permitted subject to the approval of all permitting authorities. Such permission may be granted subject to a finding that there is no feasible alternative location for the project and that any necessary alteration is the minimum necessary to accomplish the goals of the project. Appropriate mitigation shall not include wetland creation or replication.

2.3.1.2 Vegetated, undisturbed buffer areas of at least 100' width shall be maintained and/or provided from the edge of coastal and inland wetlands including isolated wetlands, to protect their natural functions. This policy shall not be construed to preclude pedestrian access paths, vista pruning, or construction and maintenance of water-dependent structures within the buffer area, any of which may be permitted at the discretion of permitting authorities where there is no feasible alternative to their location. The Commission and local Conservation Commissions shall require a larger buffer area where necessary to protect sensitive areas or where site conditions such as slopes or soils suggest that a larger buffer area is necessary to prevent any adverse impact to wetlands and associated wildlife habitat. In making this determination, the Commission shall use the Wetland Buffer Methodology, Technical Bulletin 96-004 as guidance. Where a buffer area is already altered such that the required buffer cannot be provided without removal of structures and/or pavement, this requirement may be modified by the permitting authority, provided it makes the following findings: 1) that the proposed alteration will not increase adverse impacts on that specific portion of the buffer area or associated wetland and, 2) that there is no techni-



cally demonstrated feasible construction alternative.

2.3.1.3 Disturbance of wetlands and buffer areas for operation and maintenance of underground and overhead utility lines (electrical, communication, sewer, water, and gas lines) may occur. Installation of new utility lines through these areas may occur where the permitting authority finds that the proposed route is the best environmental alternative for locating such facilities. In all instances, disturbance of wetland and buffer areas shall be minimized and surface vegetation, topography and water flow shall be restored substantially to the original condition.

2.3.1.4 Stormwater management plans for new development shall preclude direct discharge of untreated stormwater into natural wetlands and waterbodies. New stormwater discharges shall be located a minimum of 100' from wetlands and waterbodies.

Other Development Review Policies

2.3.1.5 Measures to restore altered or degraded inland and coastal wetlands, including nonstructural bank stabilization, revegetation, and restoration of tidal flushing should be encouraged. However such areas should not be used as mitigation for wetland alteration projects (mitigation banking).

2.3.1.6 Construction of artificial wetlands for stormwater and wastewater management may be permitted in appropriate areas where there will be no adverse impact on natural wetlands, waterways and ground water.

2.3.1.7 For agricultural areas in wetlands and buffer areas, management practices that would improve water quality and conserve water as recommended by the Soil Conservation Service should be encouraged.

Implementation

Commission Actions:

A. The Commission will provide technical assistance to Conservation Commissions, Boards of Health and Planning Boards in developing and modifying their local bylaws and ordinances to protect the Cape's unique resources and will develop a technical assistance program to assist Conservation Commissions with permit review.

B. The Commission will continue to provide leadership in development and implementation of a site-specific buffer area methodology to assess additional buffer area requirements for sensitive wetlands and water bodies.

C. The Commission will support passage of state legislation to allow local Conservation Commissions to use revolving funds to pay consultants engaged in project review.

D. The Commission will continue to work with local, state, and federal agencies to encourage wetland restoration projects which further the goals of the Regional Policy Plan.

Recommended Town Actions:

A. Wetlands should be mapped by communities at a scale appropriate to local regulatory programs and should be identified and protected so as to maintain their ability to provide natural functions.

B. Towns should adopt local wetlands bylaws or ordinances that provide for the following: protection of vernal pools outside other resource areas as well as isolated wetlands, a policy of no alteration/replication of wetlands for both public and pri-



vate applicants, expansion of jurisdiction beyond 100 feet where appropriate, improved enforcement authority, and the ability to hire consultants to review applications at the applicant's expense.

C. Conservation Commissions should work closely with Boards of Health and other relevant town boards to develop mutually acceptable policies for wetland boundary delineation and the siting of new subsurface disposal systems in relation to these areas, as well as improving and retrofitting areas with failing systems.

D. Towns should develop and implement plans to address existing stormwater management problems where runoff and drainage systems are adversely affecting water quality in wetlands and water bodies.

2.4 Issue Area: Wildlife and Plant Habitat



Cape Cod contains an unusually diverse mix of wildlife and plant communities, including many species that are rare or declining in number. Fifty-seven species of plants and wildlife on Cape Cod are listed by the State Natural Heritage and Endangered Species Program as endangered or threatened, and another 48 are "special concern" species that are declining or could easily become threatened. Additional species are on a "watch list" and could become listed in the future based on further review. Threatened and Endangered Species that are also on the U.S. Fish and Wildlife Service list of federal Threatened and Endangered Species include the sandplain gerardia, northern right whale, piping plover and roseate tern.

In 1990 the Association for the Preservation of Cape Cod published a Critical Habitats Atlas that identifies important habitat areas on Cape Cod, including state listed rare species, eight Areas of Critical Environmental Concern, and other unusual habitats such as sandplain grasslands, pine barrens, coastal plain pondshores, and quaking bogs.

Also in 1990, the Massachusetts Endangered Species Act was passed. The Act protects designated "significant habitat" areas for endangered and threatened species — both plant and animal. Once areas are designated, any alteration of significant habitat requires a permit from the Division of Fisheries and Wildlife based on a finding that the proposed alteration will not reduce the viability of the significant habitat to support the species for which the area was designated. Although this Act is a significant step forward for protection of endangered and threatened species on Cape Cod, after five years no significant habitat has yet to be designated under the Act.

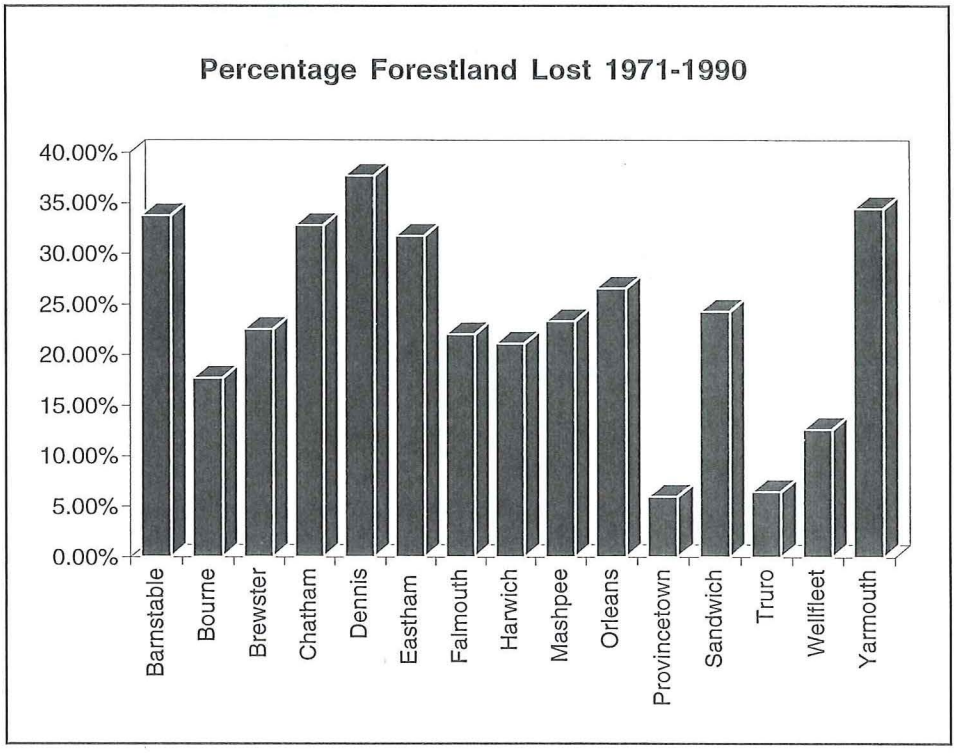
The Wetlands Protection Act currently provides protection for rare, state-listed wetland wildlife species whose habitat has been identified and mapped by the Massachusetts Division of Fisheries and Wildlife's Natural Heritage and Endangered Species Program. In these areas no short or long term adverse impact from new development on the wetland habitat of the rare species population is permitted, nor is replication of habitat permitted. There are a number of such areas mapped on Cape Cod.

Some wetland wildlife habitat protection is also provided through other provisions of the Wetlands Protection Act. The Act sets performance standards for important wildlife habitat for banks, lands under water, and some floodplain areas, and identifies wildlife habitat as an interest to be protected by the Act. However, the wildlife habitat value of the 100-foot buffer area around wetlands is not recognized by the Wetlands Protection Act, although many wildlife species require a combination of wetland and adjacent upland habitat for foraging, breeding and nesting. For

example, the shores of coastal plain ponds are particularly important plant and animal habitat and receive no direct protection. Maintaining a natural vegetated buffer in these areas is essential to providing habitat for these species.

The Wetlands Protection Act also does not provide adequate protection for vernal pools which may serve important natural functions, particularly as wildlife habitat. For example, there is virtually no protection for the vast numbers of vernal pools located outside the boundaries of wetland resource areas. In addition, vernal pools that are not certified by the Massachusetts Natural Heritage and Endangered Species program do not receive protection.

In addition to protecting the habitat of critical species and wetlands wildlife, it is important to provide a certain degree of general wildlife habitat protection so that additional species do not become threatened due to loss of habitat, the single greatest threat to the biodiversity of Cape Cod. Between 1971 and 1990, 24% of the Cape's forestland was lost reducing the total by approximately 35,458 acres. The Cape's woodlands, comprised primarily of a pitch pine/oak community, provide important upland wildlife and plant habitat. Careful management of these forests can increase wildlife and plant diversity. It is important to maintain unfragmented tracts of forest of sufficient size to support the Cape's overall diversity of wildlife species. Too often development projects contain inadequate wildlife corridors that provide little functional wildlife habitat, or contain isolated fragments of "open space" of little benefit to wildlife that require interior forest habitat. While this may result in local increases in numbers of common species as "edge" species are attracted, the Cape's overall biodiversity may be reduced. Fencing, such as chain link fences along highways, also acts as a barrier to wildlife movement.



The Cape's lakes and ponds provide habitat for fish, fresh water shellfish, invertebrates and plants. The many coastal plain ponds on Cape Cod provide habitat for a wide variety of rare plants and are particularly sensitive to changes in water levels, nutrients and human use. Activities in woodland areas can adversely impact habitat for fresh water fish, including changes in water temperature due to clearing and decreased water quality from runoff and sedimentation.

With careful site design, the most critical portions of a habitat area can be protected. The Regional Policy Plan includes a Capewide Significant Natural Resource Area Map dated September 5, 1996 based on natural resources and existing protected open space that provides a continuous open space corridor across the Cape. This corridor is a first step toward providing protection for large unfragmented areas of wildlife habitat. In addition, the Commission has mapped contiguous for-



ested areas of 125 acres or more which are designated as areas that should be a high priority for protection in order to maintain healthy interior forest communities.

Goals and Policies

2.4.1 Goal: To prevent loss or degradation of critical wildlife and plant habitat, to minimize the impact of new development on wildlife and plant habitat, and to maintain existing populations and species diversity.

Minimum Performance Standards

2.4.1.1 Applications for Developments of Regional Impact that propose to alter undeveloped areas shall contain a natural resources inventory. Such inventory shall identify the presence and location of wildlife and plant habitat, including vernal pools, and serve as a guide for the layout of the development. Developments shall be planned to minimize impacts to wildlife and plant habitat. Natural resources inventories shall be prepared in accordance with the Plant and Wildlife Habitat Assessment Guidelines, Technical Bulletin 92-002.

2.4.1.2 Clearing of vegetation and alteration of natural topography shall be minimized, with native vegetation planted as needed to enhance or restore wildlife habitat. Standing specimen trees shall be protected. The permitting authority may require designation of building envelopes (for structures, driveways, lawns, etc.), where appropriate, to limit removal of vegetation.

2.4.1.3 Fragmentation of wildlife and plant habitat shall be minimized by the establishment of greenways and wildlife corridors of sufficient width to protect not only edge species, but species that inhabit the interior forest, as well as by the protection of large unfragmented areas and the use of open space or cluster development. Wildlife shall be provided with opportunities for passage under or across roads and through developments where such opportunities will maintain the integrity of wildlife corridors. Fencing shall not be constructed so as to interfere with identified wildlife migration corridors.

2.4.1.4 The Natural Heritage program has agreed to review Developments of Regional Impact proposed within Critical Wildlife and Plant Habitat Areas. These areas consist of habitat areas of rare (threatened or endangered) plant and wildlife species and species of special concern as generally identified and mapped by the Natural Heritage and Endangered Species Program, and other critical habitat areas as identified and mapped by the Association for the Preservation of Cape Cod's "Cape Cod Critical Habitats Atlas," or local authorities. Developments of Regional Impact that would adversely affect habitat of local populations of rare wildlife and plants shall not be permitted. Development may be permitted where the proponent can demonstrate that such development will not adversely affect such habitat. A wildlife and plant habitat management plan may be required as a condition of approval when development or redevelopment is permitted in critical wildlife and plant habitat areas.

2.4.1.5 Development shall be prohibited in vernal pools (as defined herein) and within a minimum 100' buffer around these areas. This buffer area may be increased to up to 350' based on the guidelines contained in the Wetland

Buffer Methodology, Technical Bulletin 96-004. These areas shall not be used for stormwater management.



Other Development Review Policies

2.4.1.6 Measures to restore altered or degraded upland habitat areas should be encouraged where ecologically appropriate (e.g. sandplain grasslands, pine barrens etc.).

Implementation

Commission Actions:

A. The Commission will work with communities to identify and protect a continuous Cape-wide network of wildlife habitat areas and corridors of sufficient width and dimensions to be of value as wildlife habitat.

B. The Commission will develop species-specific guidelines for determining specimen trees to be protected in accordance with Minimum Performance Standard 2.4.1.2. Specimen trees are particularly impressive or unusual examples of a species due to size, age, rarity of occurrence, habitat value or characteristic traits.

C. The Commission will develop a model wildlife habitat protection bylaw/ordinance for use by towns on Cape Cod.

D. The Commission will encourage the Division of Fisheries and Wildlife to expedite identification and designation of significant habitat areas on Cape Cod for protection as defined by the Massachusetts Endangered Species Act.

E. The Commission will coordinate with the Massachusetts Natural Heritage and Endangered Species Program on review of projects affecting critical habitat areas.

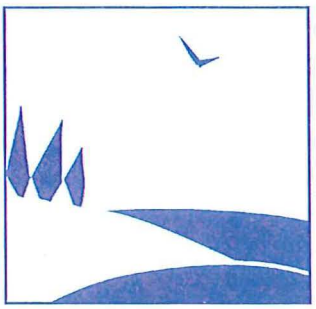
Recommended Town Actions:

A. Vernal pools should be identified by local communities for certification by the state Natural Heritage and Endangered Species Program. Local schools should be encouraged to participate in this effort.

B. Critical plant and wildlife habitat areas should be identified in Local Comprehensive Plans, and towns should develop a review and regulatory process for activities that could adversely impact such habitat and/or seek their designation as significant habitat areas under the Massachusetts Endangered Species Act.

C. Towns should adopt bylaws/ordinances limiting land clearing and alteration of natural topography prior to development review.

2.5 Issue Area: Open Space Protection and Recreation



Rural character is one of Cape Cod's strongest assets. Beaches, farms and woodlands contribute directly to key industries on Cape Cod, attracting tourists, providing areas for farming, cranberry growing, hunting, fishing and swimming. However, the region is at great risk of losing the very attributes that draw millions of tourists to its resort communities. Open space, in particular, is disappearing at an alarming rate. Over 35,500 acres were developed on the Cape between 1971 and 1990. Of the five towns in Massachusetts which lost the most land to development in the 1980s, four are on Cape Cod.

In the 1995 Cape Cod Residents' Survey, 92% of the respondents indicated that the rural character of the Cape was an important factor in their deciding to live here, and 87% cited the amount of open space. Eighty percent (80%) identified loss of open space as one of the most serious problems facing the Cape, and 67% said that the Cape Cod Commission should place a high priority on protecting open space and scenic landscapes. In addition, 66% said they would support regulations requiring developers of large projects to donate land to the local community for use as open space. Important open space-related resources that presently have little or no protection include archaeological sites, significant landforms, scenic roads and views. The preservation of scenic roads and views, in particular, is critical to the tourist industry on Cape Cod. Tourists and summer residents make up about half of the Cape's economic base. Once visitors perceive that Cape Cod's natural character has vanished, so too will their tourist dollars.

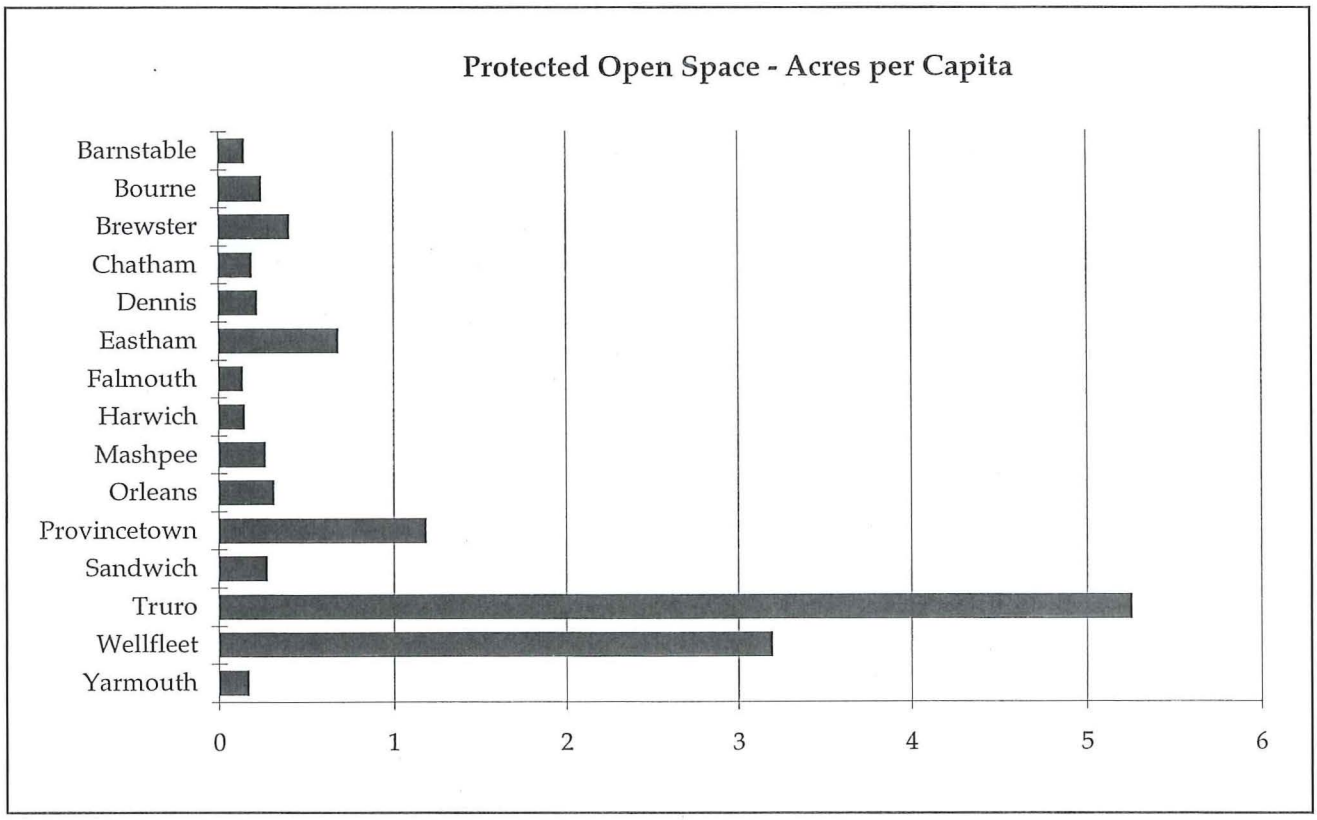
Cape Cod possesses a rich heritage of open space resources. With the creation of Cape Cod National Seashore in 1961, more than 27,000 acres of land in six lower Cape towns were set aside for the purposes of protection and enjoyment of outstanding natural, scenic and recreational resources. The federal government has some other large holdings on Cape Cod as well, including more than 2000 acres in the Monomoy National Wildlife Refuge, and the Cape Cod Canal. The Mashpee National Wildlife Refuge in Mashpee and Falmouth was authorized in 1995. This 5,800-acre area is made up of a variety of federal, state, local and nonprofit land ownerships, as well as extensive private land holdings which are still in need of protection. The Commonwealth of Massachusetts also owns significant open space areas on Cape Cod, including Nickerson State Park in Brewster, Crane Wildlife Management Area in Falmouth, the Hyannis Ponds in Barnstable and numerous other smaller parks and preserves.

In 1993, Barnstable County and the Cape Cod Commission began an initiative called Cape Cod Pathways, designed to create a Capewide network of walking trails linking all 15 towns on Cape Cod. This effort will provide a year-round recreational opportunity for both residents and visitors and a focal point for regional land acquisition and trails planning. The project has received widespread support and endorsement from all 15 towns.

Through the development of local open space plans, many Cape communities have sought to protect significant natural and fragile areas such as outstanding water resources, including lakes, rivers, aquifers, shorelands and wetlands. Including federal, state and local holdings, approximately 62,235 acres can be considered reserved open space on Cape Cod, or 24.5% of the land mass. The percentage of reserved open space per town varies widely from 12% of the total land mass in Harwich to 71% of the total land mass in Provincetown. Even in the towns with large areas of Cape Cod National Seashore, preservation of open space is a concern for the reasons discussed below.

In the 1980s many towns embarked on ambitious land acquisition programs for

conservation, recreation and wellfield protection. Based on information from the Compact of Cape Cod Conservation Trusts, over 4700 acres were bought by towns between 1983 and 1987 at a total cost of $89.7 million. During that time, the state spent almost $10 million to buy 500 additional acres. In 1988, 686 acres were purchased for $18 million. While these figures represent a significant public commitment of funds, the economic slowdown in the late 1980s strained both state and town financial resources leaving many towns unable to continue their acquisition programs. Between 1989 and 1996, only approximately 350 acres were purchased by towns for $10 million. By 1988, land trusts were established in all 15 towns. In 1989, they preserved more acreage than town and state governments combined. And by 1995, these trusts, most working with only volunteer resources, had protected 1% of the Cape's land mass.



The 1995 Resident's Survey demonstrated overwhelming support for acquisition of open space for water supply protection (81%), walking/bicycling trails (66%), passive recreation (64%) and to reduce local development potential (53%). There was also majority (55%) support for creation of a land bank for protection of open space through a one percent real estate transfer tax, and 61% of respondents supported creation of a Capewide walking path network through a fund comprised of locallygenerated deeds excise tax receipts.

Many Cape communities have attempted to protect open space areas by requiring that new development set aside a certain percentage of open space within the developed parcel. Few towns, however, specify the exact nature of these reserved areas in their bylaws or have developed adequate design standards or layout requirements for the open space portion of the development. Consequently, the land which is most frequently set aside is of limited use for recreation purposes or as a wildlife corridor, and efforts to connect protected open space have had little success.

Opportunities for active and passive recreation in the natural environment are a unique asset of Cape Cod. Historically, the most common outdoor activities have included boating, fishing, swimming, walking, hiking and bicycling. All of these activities are generally compatible with the natural environment and the protection of wildlife habitat. The 1989 Statewide Comprehensive Outdoor Recreation Plan identified an increased need on the Cape for recreation facilities including: beaches and water-based recreational opportunities, protection of wildlife habitat, expansion of trail corridors, protection of scenic roadways, and the provision of access for the disabled to recreational facilities.

Goals and Policies

2.5.1 Goal: In order to preserve and enhance the availability of open space on Cape Cod and provide wildlife habitat, recreation opportunities, and protect the natural resources, scenery, ground water quality, air quality and character of Cape Cod, Barnstable County shall strive to protect at least 50% of its remaining developable land as open space.

Minimum Performance Standards

2.5.1.1 Development or redevelopment within Significant Natural Resource Areas, as illustrated on the Cape Cod Significant Natural Resource Area Map dated September 5, 1996, as amended, shall be clustered away from sensitive resources and maintain a continuous corridor to preserve interior wildlife habitat. Where a property straddles the boundary of an area shown on this map, development shall be clustered outside the boundary. The primary function of these areas is the provision of ground water recharge, wildlife habitat, open space, scenic roadways, appropriate recreational opportunities, and protection of the Cape's natural character.

2.5.1.2 Preserved open space within proposed developments shall be designed to be contiguous and interconnecting with adjacent open space, and shall be subject to permanent conservation restrictions. Towns may develop bonus provisions through their local bylaws to allow increased density for preservation of additional high quality open space. Additional guidance on dedication of open space for Developments of Regional Impact can be found in the Guidelines for Calculation and Provision of Open Space in Developments of Regional Impact, Technical Bulletin 94-001.

2.5.1.3 Residential, commercial and industrial development which qualifies as a Development of Regional Impact shall provide permanently-restricted upland open space in accordance with one of the following methods described below (Method A or Method B). Where appropriate, credit may be obtained for set aside of off-site open space or a contribution of funds may be made to the town, state or a land trust for open space acquisition at a per point rate to be specified in the Guidelines for Calculation and Provision of Open Space in Developments of Regional Impact, Technical Bulletin 94-001.

Open space shall be designed to protect those portions of the site with the highest natural resource values as identified by a natural resources inventory. Within open space areas the maximum amount of natural vegetation shall be maintained. No credit may be obtained for land that is dedicated on a residential lot on which a dwelling exists or may be built, unless the lot is at least 3 acres in size. Where development consists of more

than one type or is located in more than one area, open space totals shall be determined for each area and added together. No credit may be obtained for areas that have been dedicated as open space prior to the date of application. Where new development is proposed within Significant Natural Resources Areas, open space shall be provided within these Areas. The requirements for Significant Natural Resource Areas shall apply to any certified growth centers that are located within a Significant Natural Resource Area.

Method A: Percentage Calculation of Site Area (for New Development)

Location of Development	**Percentage Required**
Development in Certified Growth Centers	40% of the upland area
Development in Significant Natural Resource Areas	65% of the upland area
Development in all other areas	50% of the upland area

Method B: Point Calculation (for New Development)

Step 1: Determine Point Requirement

Location of Development	**Points Required**
Development in Certified Growth Centers	# upland acres x 6
Development in Significant Natural Resource Areas	# upland acres x 16
Development in all other areas	# upland acres x 12

Step 2: Determine Credits Obtained

The following table highlights the number of credits calculated for one acre of developable upland (except where otherwise specified) dedicated as open space of the following types and locations:

25 points	Any of the following as shown on Cape Cod Significant Natural Resource Areas Map: • Unfragmented forest habitat • Wellhead Protection Areas • Rare species habitat and priority natural communities identified by Massachusetts Natural Heritage and Endangered Species Program/Other critical upland areas identified by APCC Critical Habitats Atlas • Designated potential public water supply areas • Lands within 350′ of vernal pools or 300′ of ponds
20 points	• Wooded upland in all other locations
15 points	• Land intensively managed for recreation or agricultural "open space" purposes such as golf courses, upland agricultural areas or ballfields • Open areas on which restoration of natural vegetation will occur in conjunction with the project • Maintained landscaped areas

5 bonus points for each acre of land that is open for passive or active public recreational use or donated for conservation purposes to a municipality, land trust or the Commonwealth of Massachusetts.

2.5.1.4 Residential, commercial and industrial redevelopment which qualifies as a Development of Regional Impact shall maintain the existing percentage of open space on the lot (up to an amount that would otherwise be required by the point system above) or shall provide off-site open space or make a cash contribution toward open space which offsets, by an equal amount, any reduction in open space resulting from redevelopment. In addition, redevelopment in Significant Natural Resource Areas shall provide a minimum of 30% of the upland area of the lot as open space or an equivalent cash or off-site contribution.



2.5.1.5 In the design of developments, significant natural and fragile areas including critical wildlife and plant habitat, water resources such as lakes, rivers, aquifers, shorelands and wetlands, historic, cultural and archaeological areas, significant scenic roads and views, unfragmented forest (as mapped by the Cape Cod Commission) and significant landforms shall be protected.

2.5.1.6 Where development is proposed adjacent to land held for conservation and preservation purposes, the development shall be configured so as to prevent adverse impacts to these lands and in a manner that maximizes contiguous open space.

Other Development Review Policies

2.5.1.7 Wherever possible, off-site open space provided through Section 2.5.1.3 or 2.5.1.4 should be located within or contiguous to Cape Cod Significant Natural Resource Areas or in the areas identified in Section 2.5.1.5.

2.5.2 Goal: To preserve and enhance opportunities for passive and active recreation in the natural environment to meet the needs of both residents and visitors.

Development Review Policies

2.5.2.1 Recreational needs as identified in the 1989 Statewide Comprehensive Outdoor Recreation Plan should be addressed in the development of projects on Cape Cod. Such needs include opportunities for wildlife study, expansion of trail corridors, protection of scenic roadways, development and expansion of access for the disabled, additional public beaches and water-based recreational opportunities with associated parking facilities to the extent these minimize alteration of natural shorelines and do not harm wildlife habitat.

2.5.2.2 New development should provide suitable recreation and play areas to meet the needs of the residents of that development such as ballfields, playgrounds, basketball courts or bicycle and walking paths.

Implementation

Commission Actions:

A. The Commission will continue to work cooperatively with towns, local land trusts and state and federal agencies to protect significant natural and fragile areas and to develop a regional open space plan to protect high priority areas. High priority shall be given to the following areas:

1) Zones of contribution to public water supply wells

2) Zones of contribution to nitrogen–sensitive marine embayments

3) Future water supply areas

4) Rare species habitat and other critical habitats

5) Unfragmented forest habitat

6) Missing links between open space areas identified on the Capewide Open Space/Greenbelt map and Cape Cod Pathways/Bikeways maps.

B. The Commission will continue to provide leadership on the Cape Cod Path-

ways and Cape Cod Bikeways initiatives and will work cooperatively with towns to map and designate routes for these two projects.

C. The Commission will work with communities to develop techniques for assessing the fiscal impacts of open space acquisition versus development and educate community leaders on the implications of such analyses.

D. The Commission will continue to advocate establishment of a regional land bank to provide funds for acquisition of critical habitat areas, water supply protection areas, and linkages for walking and bicycling trails, and other important open space areas and affordable housing throughout the Cape.

E. The Commission will update and revise Guidelines for Calculation and Provision of Open Space in Developments of Regional Impact, Technical Bulletin 94-001.

F. The Commission will investigate the feasibility of developing common signage for recreation facilities such as boat ramps, beaches, foot and bike paths.

Recommended Town Actions:

A. Towns should actively seek to protect high priority areas which have been identified by the Commission and town boards as Significant Natural Resource Areas. Local bylaws and regulations including mandatory cluster, increased lot sizes and overlay districts are encouraged to preserve the sensitive resources within the greenbelt.

B. Towns should work with local land conservation organizations to identify, acquire and manage open space to meet projected community needs. Priority should be given to the protection of significant natural and fragile areas as described in Section 2.5.1.5.

C. Towns should maintain and protect public access for recreation to both freshwater and saltwater bodies.

D. Towns should identify lands suitable for active recreation where activities such as ballfields, playgrounds and public swimming areas would not adversely affect sensitive resources, as well as lands for passive or restricted access conservation uses.

E. Towns should aggressively seek to acquire tax title lands and hold them for community purposes such as open space, affordable housing or municipal services. Properties of environmental significance such as wetlands and rare species habitat should be placed under the jurisdiction of the Conservation Commission or other appropriate board or nonprofit organization.

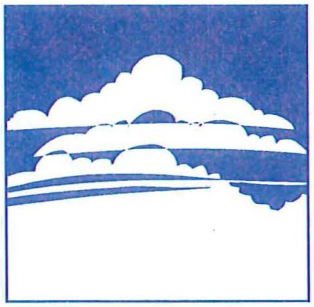
F. Where appropriate, towns should encourage land owners to restore blighted or abandoned areas to open space, whether it be to landscaped parks or natural areas.

G. Towns should create local Pathways committees to work with the Commission to identify and designate suitable locations for walking paths that comprise the Cape Cod Pathways network.

H. Towns should establish procedures for approval and assessment of conservation restrictions.

I. Towns should continue to work with the Commission to identify and designate suitable locations for bicycling facilities to further the Cape Cod Bikeways program.

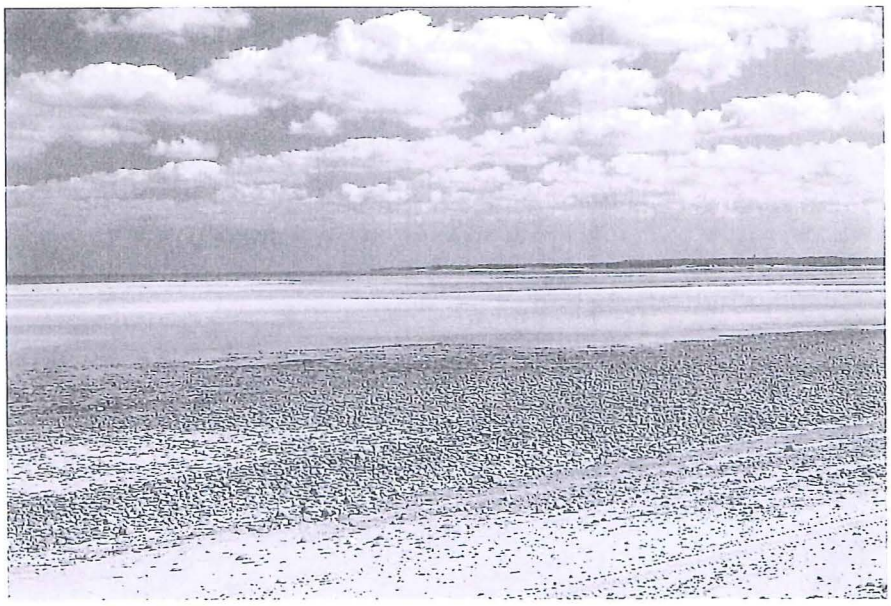
2.6 Issue Area: Air Quality



Cape Cod generally enjoys good air quality. However, at several points during the last ten years, the Cape has experienced problems with ozone levels that exceed health-based standards during the summer months. Ground-level ozone or smog is formed when volatile organic compounds (VOC) and oxides of nitrogen (NOx) - primarily from motor vehicle fueling and tailpipe emissions, but also from the smokestacks of factories and power plants - combine in the presence of sunlight. Ozone occurs most frequently in the summer. It can affect people's health in a variety of ways: irritating the eyes, causing lung disfunction, making existing respiratory ailments worse.

The federal Clean Air Act established national ambient air quality standards for five priority air pollutants: sulfur dioxide, carbon monoxide, particulate matter of ten microns or less, nitrogen dioxide and ozone. Massachusetts is classified as being in serious non-attainment for ozone and is required under the Clean Air Act to achieve the national ambient air quality standards for ozone by 1999. This will entail, at a minimum, a 15% reduction of volatile organic compounds (VOC) between 1990 and 1996, and an additional 3% reduction per year of ozone precursor emissions (VOC and NOx) between 1996 and 1999. In addition, any emissions resulting from growth must be reduced.

In Massachusetts, the Department of Environmental Protection (DEP) is responsible for implementing the requirements of the Clean Air Act. DEP has developed a State Implementation Plan to attain the national standards. The State Implementation Plan (SIP) includes a variety of measures designed to reduce emissions from stationary, mobile and area sources. Examples include: cutting back on VOC emissions from industrial sources; reducing the VOC content of certain products; requiring annual inspection and maintenance of cars and trucks and reducing excessive idling of engines; reducing vehicle miles traveled by encouraging employee ridesharing, improving mass transit systems and adding more high-occupancy vehicle lanes to highways; and monitoring ambient air, estimating emissions and testing the sources of those emissions.



Sandy Neck, Barnstable.

DEP estimates that stationary point sources (such as industries and utilities) are not the major contributor of VOC emissions. Only 6% of VOC emissions come from these sources. Stationary area sources (such as residential heating systems, gasoline stations, auto body shops and dry cleaners) contribute 45% of VOC emissions. On-road mobile sources (such as cars, trucks and buses) contribute 26% and off-road mobile sources (such as boats, trains, recreational vehicles, construction and lawn/garden equipment) contribute 22% of

the VOC emission inventory.

While Cape Cod has very few stationary point sources of emissions, both stationary area sources and mobile sources are significant. Although new automobiles are getting cleaner, with increasing growth and development, the Cape can expect to experience worsening air quality. Each new home that is built on the Cape adds significantly to vehicle miles traveled on the roads and thus, to air emissions. Each new home brings more population which in turn means more lawn mowers, more boats, and more recreational vehicles (such as all-terrain vehicles, snowmobiles, jetskis). All of these things contribute to air pollution emissions.

The land use patterns of future development can make an important difference in air quality. Compact forms of development with mixed uses reduce the need for private automobile trips and make the use of alternate transportation modes such as transit, walking and bicycling more viable. The Regional Policy Plan's policies of concentrating growth in designated growth centers, protecting open space, encouraging alternatives to private automobile travel all will help to reduce air emissions.

The Massachusetts Department of Environmental Protection is responsible for regulating emissions from stationary point sources. DEP also manages a number of other programs to reduce air emissions such as enhanced inspection and maintenance of motor vehicles, reformulated gasoline, vapor recovery at gasoline stations, architectural coating controls, auto body refinishing controls and the low emission vehicle (LEV) program. The Cape Cod Commission's role in managing air quality should be focused on managing future land use and transportation so as to minimize air emissions.

Goals and Policies

2.6.1 Goal: To maintain and improve Cape Cod's air quality so as to ensure a safe, healthful, and attractive environment for present and future residents and visitors.

Minimum Performance Standard

2.6.1.1 Developments of Regional Impact shall be in compliance with the Massachusetts State Implementation Plan (SIP) and DEP's Air Pollution Control Regulations, 310 CMR 7.00.

Other Development Review Policies

2.6.1.2 Mixed use development which results in a net decrease in automobile mileage and air emissions should be encouraged.

2.6.1.3 Development and redevelopment should use energy-efficient means of construction, operation, and maintenance in order to reduce air emissions from stationary area sources.

2.6.1.4 Drive-through facilities should be discouraged in order to decrease emissions from engine idling.

Implementation

Commission Actions:

A. The Commission will continue to work with transportation agencies to pro-



mote alternative modes of travel on Cape Cod such as bicycling and pedestrian facilities, transit systems, air and water transportation, and ride-sharing programs in order to reduce air emissions.

B. The Commission will work with DEP to further understanding of air quality problems that affect Cape Cod and provide public education about ways that residents and businesses can improve air quality, such as proper vehicle maintenance, reducing the number of short automobile trips and engine idling, use of efficient heating systems, reducing the use of gasoline-powered lawn and garden equipment, limiting wood and brush burning and related actions.

Recommended Town Actions:

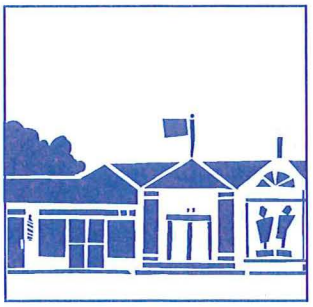
A. Towns should examine existing land use patterns and through their Local Comprehensive Plans identify suitable locations for mixed use development to reduce automobile travel and air emissions.

B. Towns should work with the Commission and DEP to provide public education about ways that residents and businesses can improve air quality, as outlined above.

3. Economic Development



3. Issue Area: Economic Development



The Cape Cod Commission Regional Policy Plan (RPP) of 1991 laid out an economic development strategy that focused on the main sectors of Cape Cod's economic base, seeking to build on its fundamental strengths. The RPP included promoting off-season tourism, especially activities related to the region's environment and history, and retirees and balancing these resort-oriented sectors with attraction of "clean-light industry." The RPP also included supporting fishing, shell-fishing, and agriculture, which are connected to the Cape's natural resource base.

Changes Since 1991

Since 1991, various changes have taken place in the economy and in the institutional framework for addressing economic development on Cape Cod. The region's economy has emerged from the recession, but intensified global competition and down-sizing has increased concerns about the creation of good jobs.

Cape Cod's economy continues to have different attributes from the rest of New England. Its population and job pool have continued to grow more rapidly than the rest of the state. Between 1980 and 1995, Cape Cod jobs grew by 49% (the state rate of job growth was13%), while population grew 35%. During the 1987-1991 recession Cape Cod suffered a job loss of 11%, but since then, jobs have grown by 8.13%, twice as fast as the rate of Massachusetts. In 1995 the Cape set a job record of 75,773, surpassing the previous record year of 1988.

Cape Cod's economy is based on small businesses, with 92% of the region's companies employing fewer than 20 people. In addition, 9,766 or 12% of Cape residents are self-employed, twice as high as the state average.

The Cape's resort economy still produces seasonal swings in unemployment. For instance, in 1995, the winter unemployment peak was 11.8%, and the summer rate was 4.3%, for a 7.1% annual average. The seasonal swings are most pronounced in the Lower Cape, with Provincetown being the most drastic. Provincetown's 1995 January unemployment rate was 49.6% and its July rate was 7.7%. In 1995, the year-round Cape Cod labor force was approximately 91,000, with an added 26,000 summer workers joining it.

On the institutional side, Barnstable County established the Cape Cod Economic Development Council in 1991. Several of the responsibilities mentioned in the original Regional Policy Plan have been assumed by the Economic Development Council, including taking a leadership role in business retention, small business counseling and entrepreneurship, marketing the region to businesses, assistance to the fishing industry, and business advocacy.

The Economic Development Council spearheaded efforts to obtain state designation of all Barnstable County as an Economic Target Area, eligible for various state and local property tax incentives for new and expanding businesses.

The Cape Cod Commission's Economic Development Program has helped develop the heritage tourism initiative, which has included Heritage Week, Maritime Week, and the establishment of the non-profit coordinating organization Heritage Cape Cod. The Commission has developed an Industrial Land Survey which inventories 38 industrially-zoned areas in 13 towns with over 1,400 developable acres. The Cape Cod Commission has implemented a development agreement with the Falmouth Technology Park, which permits development there without Commission Develop-

ment of Regional Impact (DRI) review. The Commission also has pre-screened industrial areas in Bourne, Mashpee, Barnstable, Dennis, Harwich, and Orleans to determine prior to development how much space could be built and what sorts of infrastructure improvements would be required.

Several new organizations have been established to deal with economic issues on Cape Cod. The Lower Cape Cod Community Development Corporation (CDC) has developed a small business loan pool, a seafood marketing campaign, a Cape Cod products catalogue, and has been active in housing projects. The Cape Cod, Martha's Vineyard, and Nantucket regional Employment Board has been split off from the New Bedford area to focus exclusively on this region. The Cape Cod Center for the Environment & a Sustainable Economy has encouraged programs demonstrating how environmental protection can harmonize with and stimulate economic development in such areas as eco-tourism, environmental technology, and sustainable food production. Many Cape Cod towns have established economic development committees and undertaken specific projects. Mashpee, Harwich, Truro, and Provincetown have prepared economic development plans under the state's Local Partnership Program.



Fishing boats at Hyannis Harbor.

Several studies concerning Cape Cod's economy have enhanced understanding of the region's economy. Economist Dr. Edward Moscovitch updated his study of the "Cape Cod Economic Base" (1994) from the 1987 original, determining some changes in the composition of the economic base. The Commission completed its Residents Survey (1995), which elicited the views of Cape Codders on environmental protection and economic development. The Barnstable County Department of Human Services has published "The Human Condition: A Study of the Human Environment on Cape Cod" (1995), which discussed the social issues connected to the economy.

New Economic Issues

In updating the RPP, it has become apparent that there are several economic development issues confronting Cape Cod that were not apparent in 1991.

1. Changing Economic Base—Dr. Moscovitch's updated study of the "Cape Cod Economic Base" ascertained some changes in the regional economic base:

- Tourists & Seasonal (43.9%)—half of this is tourists; the other half represents seasonal residents, about one-half of which is retirees who own primary residences elsewhere;
- Retirees (15.3%)—includes the health, service, and home maintenance industries that service this sector (Note: If seasonal retirees are added to year-round retirees, this sector constitutes approximately 25% of the Cape's economic base);
- Business Services (11.1%)—includes legal, accounting, software, research (eg. Woods Hole), and management consulting;
- Commuters (7.3%)—wealth brought in by people who live on-Cape and work

off-Cape;

- Other (7.3%);
- Manufacturing (5.7%)—includes marine electronics and manufacturing;
- Defense (5%)—includes Massachusetts Military Reservation, U.S. Coast Guard, and U.S. Army Corps of Engineers;
- Marine (4.5%)—includes fishing, marinas, boat-building, and related businesses.

2. Fishing Decline—The fishing industry in the North Atlantic is in a crisis because of depletion of fishing stocks. Federal regulations are projected to reduce the amount of annual fish landings by more than 50%, thereby making the business unviable for scores of fishermen. The fishermen are confronting the issue of what new economic activities they can adopt.

3. Global Competition and Downsizing—According to UMass-Amherst Professor Craig Moore, co-author with Dr. Edward Moscovitch of "The New Economic Reality: Massachusetts Prospects for Long-Term Growth" (1994), global competition and restructuring are the shaping economic forces. Branch manufacturing plants on Cape Cod are proving susceptible to downsizing, but the region is not as threatened as metropolitan areas more reliant on industry. Nevertheless, the Cape still has to compete with other resort regions to maintain its tourism/retirement base. Economic downsizing also affects the Cape by layoffs and suppressing wages, benefits, and opportunities for general advancement.

Concerns about the Cape Cod economy include the number of jobs that do not pay enough to support a household. The need for "good jobs at good wages" is consistently voiced. In the Cape Cod Commission's 1995 Residents Survey, 42% responded that limited job opportunities was a "somewhat" to "big" problem during the past year, while 46% said that their salary did not match their job skills. The Barnstable County Department of Human Services' "The Human Condition: A Study of the Human Environment on Cape Cod" found that approximately 34% of those surveyed on the Cape consider themselves to be often in financial difficulties.

4. Human and Health Services—It is economically important for Cape Cod to maintain a strong human and health services support system. Not only do these sectors provide significant employment opportunities, especially in health care, they provide critical services that allow Cape workers to participate effectively in the economy. For instance, respondents to the 1995 Residents Survey said that insufficient health care (41%) and inadequate day care (21%) were "somewhat" to "big" problems for them during the past year. The Barnstable County Department of Human Services' "The Human Condition: A Study of the Human Environment on Cape Cod" reports that 10,000 Cape Codders are not covered by health insurance. This survey learned that 55% perceive that their household had "a lot of anxiety, stress, or depression" over the prior twelve months.

The profile of the 25% of respondents indicating they have "serious" economic problems shows that, in this group: 75% make less than $32,000 per year; 65% work full-time year-round and 20% work part-time yearround; 56% of these households have children; 79% receive no governmental financial assistance. This profile indicates that, despite working full-time, many households are not making enough money to make ends meet. Another issue is lack of child care, which handicaps these workers in obtaining employment and causes a significant amount of emotional stress.

5. Tax Base—The constrained municipal tax base is an economic issue. Municipal costs and tax rates are rising, while federal and state assistance is not keeping pace. Thirty-one percent of respondents to the Commission's Survey considered tax increases among the top three problems facing their town. Municipalities are anxious about future population growth, especially among families, that would raise municipal expenditures further. Economic development is seen as a possible way of increasing the tax base.

6. Retailing—There has been considerable discussion about the impact of retail



expansion on Cape Cod, especially by megastores, which some argue are inappropriately-scaled for the Cape while others argue that such developments should be encouraged. Some residents are concerned about adverse effects on existing local businesses, as well as the store's impacts on the environment, traffic congestion, and character of the region. The Resident's Survey showed that 56% opposed a "large discount wholesale or retail store," while 31% supported it; 65% opposed a "nationally advertised fast food chain," while 18% supported it.

Retail sprawl in general is inefficient and unsustainable. The standardized architecture and corporate signage tend to detract from Cape Cod's unique regional character. The surplus of retail operations both locally and nationally indicates that over-retailing does not add to the region's economic pie. It ends up hurting smaller, locally-owned businesses and creating blight when existing retail buildings are vacated. Some argue that locally-owned businesses should be regarded as more of a benefit to the regional economy than national chains when development projects are being reviewed.

Yet others counter that as long as a business does no environmental harm and mitigates its impacts, it should be able to develop on Cape Cod. Some believe that any company should be able to open up on the Cape regardless of its impact on other local businesses.

7. Gambling Casinos—Gambling casinos, which are being debated by state government, are another form of activity which could damage the regional economy—by taking away significant business from existing retail, service, and entertainment establishments. The Barnstable County Assembly of Delegates approved a resolution in 1994 opposing the "initiation or expansion of legalized gambling in Massachusetts and most particularly in Barnstable County." Casino gambling in other communities has reduced the capacity of those communities to attract and retain non-gambling businesses. Gambling activities also take a disproportionately high percentage of income from lower-income people and incur social and governmental costs through crime and domestic neglect as well as producing stresses on the fragile environment and the limited transportation infrastructure.

Economic Development Strategies for Cape Cod

The Cape Cod Economic Development Council has pointed out that economic development strategies have changed significantly in the last five years:

"The factors affecting the locational decisions of businesses have shifted as international competition has increased. It is not clear that communities can compete for business solely by attempting to lower business costs. Increasingly the major concerns of business are the skills and adaptability of the work force, the quality of life in the community, access to institutions of higher education, the availability of appropriate sources of financing, the availability and affordability of housing and the quality of the physical infrastructure."

"More importantly there is a growing recognition among communities that new enterprises and small businesses are important sources of new jobs and that aiding the expansion of existing businesses may be more effective than recruiting new companies."

"This new economic development paradigm requires cooperative relationships. Whether between town governments, businesses and Cape Cod Community College, or the public and private sectors, these partnerships can increase the effectiveness of any economic development strategy. The private sector, in particular, is a key partner with government in economic development initiatives."

Cape Cod's prime economic asset is its world-renowned geographical setting. In part because of its location, Cape Cod has witnessed the fastest growth in population and jobs in New England in recent decades. The Cape's seaside setting attracts tourists, retirees, and second-home owners and is the critical element in attracting new entrepreneurs to Cape Cod. The economic opportunities and constraints of Cape

Cod are inextricably tied to its location.



With this in mind, strategies are proposed below for each sector of the region's economic base. The economic base is critical because it is made up of those industries that sell their goods and services to buyers bringing money from outside the region. On Cape Cod, this means tourists or retirees, who earned their income outside the region. In the long run, a regional economy will not grow unless it increases what it sells to outside markets.

• Tourism & Seasonal Residents— Cape Cod must continue to maintain its attractiveness and enhance its special regional character. The region also should focus on expanding the shoulder seasons, while maintaining a strong competitive position during the peak summer months. Much has happened to develop historic, cultural, environmental, and recreational (including golf) tourism in the shoulder seasons, including such events as Heritage Week, Maritime Week, Festival Cape Cod, First Night, Walking Weekend, and a host of town-specific events. Such activities should be supported and expanded. Targeted marketing to international visitors and profitable niche markets from around the country also would expand the tourist economy. Arts facilities can improve the Cape's cultural offerings. A performing arts/conference center could provide year-round cultural programming to significantly enhance the shoulder seasons. Of those responding to the 1995 Residents Survey, 79% supported such a facility.

• Retirement—Retirement, which remains a strong economic sector for Cape Cod, relies primarily on the high quality of life that the Cape offers. The Cape has long-term potential with retirement, as the baby boom generation seeks to buy second and retirement homes. To maintain Cape Cod's attraction, environmental protection, cultural and social offerings, and health care are critical. It is also important to market Cape Cod as a specific retirement location to prospective relocatees.

• Clean, light industry—The Residents Survey, with 82% support, ranked a "clean, light industry such as a software development firm employing 100 people" as the most desirable development project for Cape Cod. Such a development would optimize economic gains while avoiding environmental harm. Such clean, light industry minimizes adverse environmental impacts while optimizing economic gains.

Until recently, communities tried to recruit businesses seeking to expand or relocate. With global restructuring, "smokestack chasing" has become a less viable strategy. According to the Economic Development Council, communities are focusing on a new paradigm that "supports small business development, retaining quality jobs through strengthening existing businesses, promoting new enterprise formation through entrepreneurial development, and building the community's human capital infrastructure, namely the skills of the workforce and quality of the educational system."

The Economic Development Council, Lower Cape Community Development Corporation, Cape Cod Community College, and Service Corps of Retired Executives (SCORE) are expanding efforts to provide technical and financing assistance to existing and prospective businesses. The Economic Development Council and local legislators are pursuing an environmental business incubator connected to the Massachusetts Military Reservation clean-up project. Business incubators could be used to help promote entrepreneurship in other parts of the Cape.

The Economic Development Council is responsible for marketing the industrial areas and vacant commercial space, estimated at two million square feet, to prospective businesses. The Commission will continue to work with towns and developers to pre-screen industrial areas to facilitate the development process.

• Telecommunications is critical to economic development on Cape Cod. With the advent of computer modems and faxes, Cape Codders can overcome many of the region's traditional geographical barriers to doing business in a national and international marketplace. Two critical issues for telecommunications on Cape Cod are: 1) a competitive telecommunications infrastructure and 2) adequate computer edu-



cation and services. In the rapidly changing telecommunications field, Cape Cod needs to make sure that it has state-of-the-art network services that will allow local businesses and individuals to optimize the use of telecommunications. Although the market is likely to deliver many services, Cape Cod may have to take an aggressive approach to obtaining them due to its relatively remote location. Education, support services, and widespread availability of the Internet at reasonable rates also are critical to providing Cape Cod a competitive economic edge.

- Fishing — The fishing industry in the North Atlantic is in a crisis because of depletion of fishing stocks. Federal regulations are projected to reduce the amount of annual fish landings by more than 50%, thereby making the business unviable for scores of fishermen. It is hoped that stocks will be replenished over the next decade, reinvigorating the fishing industry. Nevertheless, displaced fishermen must find new livelihoods in the interim. Various programs are being offered to ease the transition.

Aquaculture has promise as a replacement activity, but regulations and policies have constrained this activity. Barnstable County is promoting aquaculture through education and regulatory streamlining. The county, state, and private sector are looking into cooperative efforts to expand from shellfish aquaculture to fin-fish aquaculture, including the use of deep-sea and on-land aquaculture processes.

Sustainable Economic Development

To support the development of these economic sectors, Cape Cod needs to create an economic context that, according to the Cape Cod Economic Development Council, builds "a community's capacity for shared and sustainable improvement in its economic well-being." The starting point for a sustainable economy is protection of natural resources. The Cape Cod Commission Regulatory Task Force Report (1994) explained the concept in plain terms: "In these days of accelerating knowledge about water pollution, air pollution, ground pollution, traffic pollution, and every other type of pollution we must be cautious about our treatment of the environment, or what makes Cape Cod special will be gone. No one worried about our fishing until the fish were gone."

Cape Cod residents responding to the 1995 Residents Survey supported policies that would promote sustainable development. For instance, 92% supported reusing existing sites for development, 91% favored keeping hazardous materials out of zones of contribution to the water supply, and 83% were for limiting the size of development.

These environmental goals can be achieved by siting development in appropriate places which have adequate infrastructure. The concept of growth/activity centers, discussed elsewhere in the Regional Policy Plan and in Local Comprehensive Plans (LCPs), encourages areas of intensive development through adequate transportation and water/wastewater infrastructure and appropriate regulatory standards. The adoption of the LCPs by the towns will provide guidelines for future land use and infrastructure development and help to create a more efficient and predictable permitting process for development.

The growth/activity center concept can be used in tandem with the state's Economic Target (ETA) and Opportunity (EOA) Areas. This incentive program offers a 5% state investment tax credit and 10% abandoned building credit and either a five-year property tax abatement or 20-year tax increment financing on local real estate taxes. All of Barnstable County received the ETA designation in 1994, and several towns have obtained EOA designation for specific areas in their community. It is also expected that LCPs and EOAs will encourage the redevelopment of existing business districts, which is taking place across the Cape.

Besides implementing sound land use policies, the notion of sustainability also relates to economic and social policies. The regional economy should provide, as the Economic Development Council points out, "the public goods for all that represent a decent quality of life, including freedom from fear of crime and a sense of

being part of a community. Advances in economic wellbeing are not very valuable unless they are sustainable over time."



Better education and job training, according to many economic strategists, is essential to economic development. High-quality work skills can enable a worker to take advantage of new occupational opportunities as they arise in the rapidly changing global economy. Cape Cod Community College, Massachusetts Maritime Academy, the Cape's various college extension programs, Job Training & Employment Corporation (JTEC), and the local school systems need to focus on teaching the skills that are needed in the work world. It has also been argued that Cape Cod needs expanded higher education, specifically a four-year college/graduate school.

One of the fundamental objectives of a Cape Cod economic development strategy is to increase the income and work opportunities of Cape Cod workers. The Barnstable County Department of Human Services "Human Condition" study and workshops have confirmed this. Year-round employment and higher wages and benefits are critical. A higher minimum wage, widespread health care benefits, portable retirement benefits, and readily available child care could allow more workers to support a family adequately. Affordable housing, which is constrained in a resort area like Cape Cod, is critical for workers on the Cape. The region also needs intensified attention to social needs and strengthening the traditional social service support network to allow lower-income households to support themselves.

Goals and Policies

3.1 Goal: To promote businesses that are compatible with Cape Cod's environmental, cultural, and economic strengths in order to ensure balanced economic development.

Development Review Policies

3.1.1 The Commission recognizes the important role of private enterprise in maintaining and enhancing sound local and regional economies, and in providing needed services to the Cape's population. Market forces should determine the nature of new businesses or business expansion on Cape Cod, provided that the environmental and planning standards of the Regional Policy Plan are adequately addressed.

3.1.2 The Commission should evaluate the economic impacts of proposed developments, taking into account net job creation and services and/or products provided. The Commission should take into account any negative impacts that a project would have on the Cape Cod economy and should encourage businesses that are locally-owned and that employ Cape Cod residents.

3.1.3 The Commission should identify and encourage enterprises with the greatest economic potential for Cape Cod and work with various organizations to promote those activities. Potential opportunities include but are not limited to tourism, marine science, "clean" manufacturing, business services, environmentally-oriented business, computer software, telecommunications, shellfishing, aquaculture, fin-fishing, agriculture, health and elder care, cultural activities and education, and enterprises that provide transportation solutions.

3.1.4 The Commission should encourage tourist activities that enhance the natural and cultural qualities of Cape Cod and that promote year-round activity. Such activities include but are not limited to museums, art, theater, music, and natural recreation areas.

3.1.5 The Commission should encourage the development of local businesses which



can be integrated into the community without adverse impacts on Cape Cod resources. Such activities include but are not limited to consulting, direct-mail business, home-based business, arts and crafts.

3.1.6 The Commission should encourage the reuse and rehabilitation of existing buildings for residential, industrial, and commercial growth, consistent with preserving the Cape's natural environment and historic character.

3.1.7 The Commission should encourage development that will enhance the availability and quality of health and community services in Barnstable County.

3.1.8 The Commission should discourage the development of any gambling casino on Cape Cod because casinos produce stresses on the region's environment, the limited transportation infrastructure, and economy.

3.2 Goal: To locate development so as to preserve the Cape's environment and cultural heritage, minimize adverse impacts, and enhance the quality of life.

Minimum Performance Standards

3.2.1 As specified in other sections of the Regional Policy Plan, the following incentives shall be provided to encourage development and redevelopment to locate in certified growth/activity centers:

- **The nitrogen standard for ground water may be increased to 10 ppm where such increase will cause no significant adverse impact on specific identified resources.**
- **Developments of Regional Impact (DRIs) are required to mitigate all year-round and seasonal transportation impacts created by such development where the project traffic is expected to add 25 new vehicle trips or more during the project's typical peak hour. For road links and intersections within certified growth/activity centers, this threshold is increased to 50 trips or more during the project's typical peak hour.**
- **Public and private sewage treatment facilities may be used.**
- **New development within certified growth/activity centers is required to provide fewer points for open space than development located in other areas. In addition, unless the project is located in a Significant Natural Resource Area, redevelopment need only maintain the existing amount of open space on the site.**

Other Development Review Policies

3.2.2 Development and redevelopment should be concentrated in certified growth/activity centers in order to use land more efficiently, create places more oriented to pedestrians, bicyclists and public transit, to preserve open space and maintain the Cape's attractiveness.

3.2.3 Village growth/activity centers should be maintained and restored by concentrating small-scale retail, office, home-based industry and community activities in these areas.

3.2.4 Large-scale commercial activities should be concentrated in regional growth/activity centers where adequate infrastructure is available.

3.2.5 Manufacturing and warehousing business activities should be concentrated in industrial growth/activity centers.

3.2.6 The Commission should work with towns and local industrial park authorities

to resolve environmental and planning issues in order to expedite the development and marketing of these parks. This could include industrial pre-screening, development agreements or District of Critical Planning Concern designations to streamline the development review process.



3.2.7 Redesign, revitalization, and infill of existing strip commercial developments should be encouraged, where adequate infrastructure is available.

3.2.8 Resource-based economically productive areas including agricultural land, harbors, fishing grounds, and recreational areas should be maintained specifically for those uses.

3.3 Goal: To encourage the creation and diversification of year-round employment opportunities.

Development Review Policies

3.3.1 Developments of Regional Impact should be evaluated for net new jobs created, salary and benefit levels, occupational advancement opportunities for local workers, and the impact on existing businesses, traffic, natural resources, and decent affordable housing for employees.

It should be considered a regional benefit if a development provides yearround employment, provides basic health and retirement benefits, employs local workers, and pays higher than minimum levels. Any financial support for job training/education and/or affordable housing for workers should be considered a benefit. Section 5.1.18 of the Regional Policy Plan recommends that nonresidential developments should be evaluated as to the need for affordable housing created by the project.

3.3.2 The Commission should encourage projects which provide permanent, well-paying, year-round jobs and employment training opportunities for Cape Cod residents.

3.3.3 The Commission should encourage projects reviewed as Developments of Regional Impact to employ Cape Cod contractors and use local suppliers and workers.

3.3.4 The Commission should encourage projects reviewed as Developments of Regional Impact to use minority and women contractors listed with the State Office of Minority and Women's Business Assistance (SOMWBA), and encourage the employment of minorities, disabled, elderly, unemployed and underemployed persons in permanent positions.

Implementation

Regional/County Actions:

Coordination:

A. Since the first Regional Policy Plan was adopted, Barnstable County established the Cape Cod Economic Development Council. Several of the implementation actions mentioned in the original Regional Policy Plan have since been taken on by the Economic Development Council. The Economic Development Council has been given a leadership role in business retention, small business counseling and entrepreneurial training, marketing the region to businesses, assistance to the fishing industry, and business advocacy. The Economic Development Council has established the private non-profit Cape & Islands Economic Development Corporation, with a separate board, to undertake specific economic development projects and administer a



loan program for Cape Cod businesses.

The Cape Cod Commission's Economic Development Program focuses on land use, infrastructure, and economic planning with towns and local economic development organizations; economic research and information dissemination; heritage tourism; and energy planning.

Many other organizations play important roles in economic development, including the Cape Cod Chamber of Commerce, town chambers of commerce, Lower Cape Cod Community Development Corporation, town planning and economic development commissions, Cape Cod, Martha's Vineyard & Nantucket Regional Employment Board, Cape Cod Community College, various economic organizations, and human service and health organizations. For effective economic development, it is important for these organizations to coordinate in identifying and implementing solutions to the economic needs of Cape Cod. The Economic Development Council has been charged by county ordinance with coordinating the efforts of these groups.

B. The Commission and the Economic Development Council will work with local permitting agencies to coordinate and streamline the development review process to minimize delays.

Targeted Industries:

C. The Commission and Economic Development Council will work with local governments and business organizations to create strategies for developing the following economic sectors which have potential to expand Cape markets and create more year-round jobs: marine science, environmental research and technology, biotechnology, software, telecommunications, "clean" manufacturing, financial services, tourism, retirement and health care and elder services. Potential development strategies may include the creation of industry "incubators" and research parks, such as the Envirotech Incubator Center at the Massachusetts Military Reservation, which the Economic Development Council is working on.

Planning, Marketing, and Information Dissemination:

D. The Economic Development Council will work with local governments and business groups on a business retention program to assist existing businesses to grow in all regions of the Cape. In order to support existing small businesses and encourage the establishment of new ones, the Economic Development Council will provide business counseling. The Economic Development Council will also encourage job creation by marketing available business property and providing outreach to businesses interested in locating on Cape Cod.

E. The Commission will maintain information concerning available developable property in industrial parks and other industrially-zoned areas. The Economic Development Council will maintain information on vacancies in commercial real estate.

F. The Commission and Economic Development Council will work with the Cape Cod Chamber of Commerce, Cape Cod Hospitality Marketing Association, other business organizations, businesses, and attractions to develop and implement a tourism strategy that increases business in the shoulder season. County tourism functions will include the Visitor Information Network System (VINS), overseen by the Economic Development Council, and the Heritage Discovery Network, overseen by the Cape Cod Commission.

G. The Commission will continue to work with local chambers of commerce, tourist attractions, historians, environmentalists, public relations experts, and other knowledgeable individuals to continue developing the Heritage Tourism initiative, marketing the environmental, historical, and cultural attractions of Cape Cod. This effort will coordinate with the strategic tourism marketing plan being developed for Cape Cod.

H. The Economic Development Council will promote a performing arts center/conference center by undertaking appropriate feasibility studies.

I. The Economic Development Council and the Commission will work with the Cape Cod Chamber of Commerce and the private sector to promote Cape Cod as a retirement community.

J. The Economic Development Council and the Commission will research and disseminate information concerning the telecommunications infrastructure and policy needs in order to make Cape Cod a competitive place for businesses and individuals.

K. The Commission will research and disseminate information concerning the economy and demographics of Cape Cod. These research activities will include interpreting data from the U.S. Census, state and local agencies, private organizations and businesses. Data relating to Barnstable County and its 15 towns may include: population trends; construction; housing; home sales; income; labor force; employment by industry; unemployment rates; retail and service sales; hotel/motel tax revenues; municipal property valuation; tax rates; and commercial fish landings.

Such materials will be made available to towns, businesspersons, the media and interested individuals through periodic publications, such as "CapeTrends," and responses to individual inquiries.

Financing & Tax Incentives:

L. The Economic Development Council will work with the Lower Cape Cod Community Development Corporation (CDC), financial institutions, federal and state programs, and town governments to develop innovative financing programs for small business, and shall encourage reinvestment in the Cape Cod economy by local institutions. This effort will include identifying public and private financing resources. The Economic Development Council will work with towns to nominate Economic Opportunity Areas (EOA), which can offer tax abatements or tax increment financing.

Education and Technical Assistance:

M. The Commission will work with towns, county government, businesses, and nonprofit organizations as a technical resource for economic development planning, including the Local Comprehensive Plans (LCP). The Economic Development Council will work with businesses and local government on economic development projects and grants funding for them.

N. The Commission and Economic Development Council will sponsor conferences and workshops on the Cape Cod economy and strategies for improving it.

O. The Economic Development Council will support the efforts of the business sector and educational and training institutions to prepare local workers for and refer them to new job opportunities with special attention to disabled, elderly, minorities, and unemployed and underemployed persons. The Economic Development Council will provide technical assistance and training services for businesses and entrepreneurs.

P. The Commission and Economic Development Council will support the development of expanded higher educational, specifically a four-year college/graduate school, and vocational programs on Cape Cod in order to enhance opportunities and upgrade job skills.

Q. The Economic Development Council will assist towns in identifying local economic development needs and in coordinating local private sector initiatives.

Recommended Town Actions:

A. Town governments, in preparing Local Comprehensive Plans (LCP), should meet with businesses and business organizations, to ascertain economic development needs in the community.

B. Local Comprehensive Plans should identify areas for economic growth in town, as well as appropriate infrastructure needs. Towns should review and/or streamline zoning and permitting processes to encourage diverse and desirable economic



development.

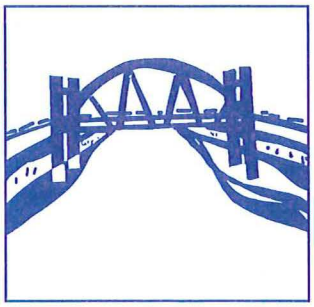
C. Town governments should work with the private sector on initiatives to market the town for business and tourist development. This could include town financial support for marketing.

D. Town governments should consider offering incentives to promote desired economic development in their communities, including Economic Opportunity Areas and similar strategies.

E. Town governments should consider adopting impact fees for new development in relation to job training/education and affordable housing.

4. Community Facilities and Services

4.1 Issue Area: Transportation



Transportation continues to be one of the most challenging issues facing Cape Cod. The present development patterns and the limited nature of transportation alternatives result in a continued dependence on the automobile for mobility. Traffic congestion is an increasing problem: the road system is generally adequate to serve the Cape's "off-season" needs but becomes seriously overloaded during the summer. Traffic congestion causes driver frustration and air pollution, increases accidents and wastes valuable time and fuel. It is probably the most visible negative consequence of development without appropriate supporting infrastructure.

A comparison of 1972 and 1995 traffic volumes for the Bourne and Sagamore bridges, as counted by the Massachusetts Highway Department, reveals several disturbing trends:

- average annual traffic volumes in 1995 are higher than summer traffic volumes in 1972,
- 1972 summer traffic volumes were exceeded for eight months of 1995,
- traffic volumes in the summer are double winter traffic volumes,
- both summer and winter volumes continue to increase.

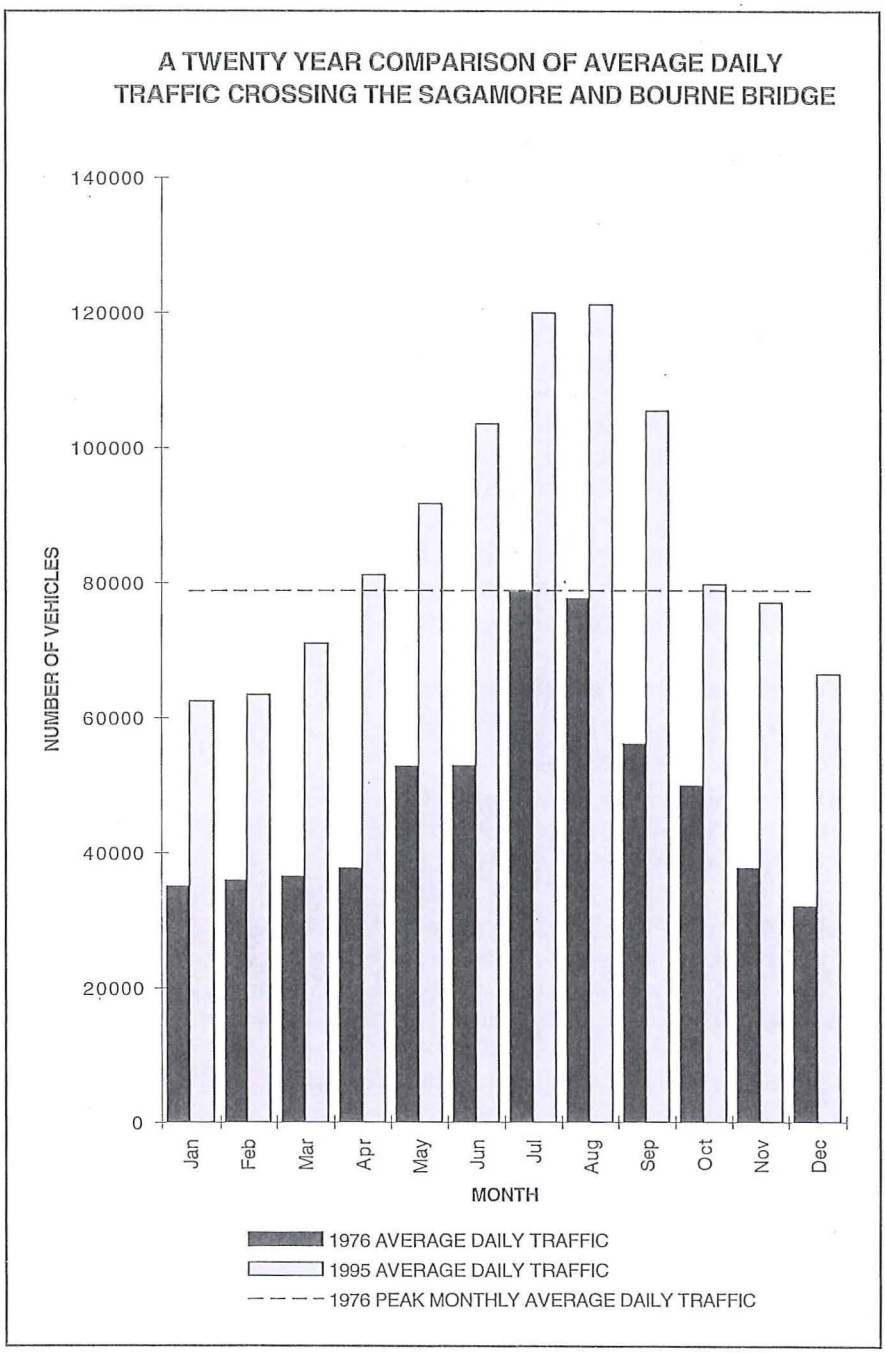
In fact, should these trends continue, every month of the year will exceed summer 1972 volumes by the year 2001. These trends are not isolated to the bridges; data from other traffic count locations on Cape Cod show increases consistent with that of the bridges.

Some progress has been made in developing alternatives to automobile transportation on Cape Cod. In 1996, publicly subsidized summer trolley service operated in seven Cape Cod towns compared to none five years ago. In addition, year round shuttle service is available in Barnstable and Mashpee. Plymouth & Brockton Street Railway Company (P&B) provides year-round bus service between Hyannis and Provincetown via Route 6A and Route 6. With the completion of a 75-car park and ride lot near Route 6 in Harwich, P&B is pursuing funds to expand service to the Outer Cape. In addition, the Cape Cod Rail Trail bicycle path has been extended six miles in Eastham and Wellfleet, providing a safe and appealing way to travel that section of the Outer Cape without an automobile. Cape Cod now has over 50 miles of bicycle paths, providing a viable alternative to automobile travel, particularly during the summer months.

Bus, rail, ferry and air service is available to and from Cape Cod. Year-round express buses, operated by P&B, link Hyannis to downtown Boston and Logan Airport via the park & ride commuter lots on Route 6 in Barnstable and near the Sagamore Rotary. With the opening of the high occupancy vehicle (HOV) lane on the Southeast Expressway and the completion of the Ted Williams Tunnel this service has become more reliable and less subject to delay. Additional intercity express buses are operated via the Bourne Bridge by Bonanza Bus Lines from Falmouth to Boston and from Hyannis to Providence and New York. AmTrak operates weekend

seasonal rail service to and from Cape Cod. Year-round ferry service connects Hyannis and Falmouth with Nantucket and Martha's Vineyard. Seasonal ferry service connects Provincetown with Boston and Plymouth. The Provincetown and Barnstable airports provide scheduled air service between Boston and the Islands.

What do Cape Codders want? Respondents to the 1995 Cape Cod Residents Survey prefer to deal with congestion problems by limiting population growth, acquiring developable land and using more stringent land use regulation, including restrictions on construction of new buildings and residential dwellings. No less than 85% of respondents wanted to encourage the provision of alternative modes of transportation. The majority of respondents to the survey were opposed to widening of roads and intersections. In essence, residents prefer to lessen traffic congestion by reducing the amount of new traffic rather than increasing the Cape's ability to accommodate it. Reducing our dependence on the automobile is a significant challenge and an ambitious goal. This approach seems to be right on target, however, since each household drives approximately 12,500 miles on Cape Cod each year. Over the last five years, an average of 1,385 homes have been built annually in Barnstable County; this means an increase of 17 million vehicle miles of travel on Cape Cod per year.



Clearly, dealing with our traffic problems by expanding roads and intersections is not desirable on Cape Cod. Not only have such strategies failed to keep up with travel demands caused by new development, they have done so at the expense of the environment and natural beauty of the Cape. Furthermore, expanding roads does little to improve transportation for young people, for the elderly that may prefer not to drive, for those people who cannot afford a car or for others who do not drive. What is needed is a balanced approach to transportation that follows a sensible land use and growth management policy and includes the following elements:



- Provide a source of funding for desirable transportation improvements,
- Require new development to mitigate impacts in a manner consistent with Cape Cod's natural, scenic and historic resources,
- Promote safe access to roadways and property through controlled driveway and intersection spacing,
- Promote land, air and marine based alternatives to automobile travel.

The need for a suitable land use and growth management policy at the regional and local levels cannot be over-emphasized. Without such controls, travel demands will outpace transportation improvements, resulting in a continued deterioration in many of the values that make Cape Cod unique.

Goals and Policies

4.1.1 Goal: To establish and maintain a multimodal transportation system on Cape Cod for present and future year-round and seasonal needs which is safe, convenient, accessible, effective, economical and consistent with the Cape's historic, scenic and natural resources, and land use development and growth management policy.

Minimum Performance Standards

4.1.1.1 Developments of Regional Impact (DRIs) shall mitigate all year-round and summer transportation impacts created by such development at all regional intersections and on all regional road links where the project traffic is expected to add 25 new vehicle trips or more during the project's typical peak hour. For road links and intersections within certified growth/activity centers, this threshold is increased to 50 trips or more during the project's typical peak hour. Traffic operations at all locations meeting or exceeding these thresholds shall be made no worse as a result of the development, based on the performance indicators stated in Minimum Performance Standard 4.1.1.4.

4.1.1.2 The regional road system for Cape Cod shall include all roads with a functional classification higher than local roads, as adopted by the Cape Cod Metropolitan Planning Organization. Increases in traffic volumes on the regional road system, above the thresholds established in Minimum Performance Standard 4.1.1.1, shall be considered to have significant regional impacts. The functional classification of highways may be amended from time to time by the Cape Cod Metropolitan Planning Organization. The functional classification of highways, as adopted by the Cape Cod Metropolitan Planning Organization, is adopted as an official part of the Regional Policy Plan. The map entitled "Functional Classification of Cape Cod Highways" dated September 5, 1996, shows the classification of Cape Cod roads as of that date.

4.1.1.3 For the purposes of determining impacted locations and measuring traffic impacts, a 20% reduction in project traffic shall be included in such determination when Minimum Performance Standard 4.1.2.1 is met.

4.1.1.4 Transportation impacts shall be identified and the adequacy of mitigation shall be evaluated using performance indicators such as level-ofservice, intersection delay, volume to capacity ratio and other measures as defined in the Highway Capacity Manual. The Cape Cod Commission Guidelines for Traffic Impact Assessment, Technical Bulletin 96-003 shall be followed.

4.1.1.5 Regardless of project size or traffic generation, measured sight distances at access/egress locations with public ways for all Developments of Regional Impact shall, at a minimum, meet Massachusetts Highway Department (MHD) and American Association of State Highway Transportation Officials (AASHTO) standards for safe stopping sight distance.

4.1.1.6 Regardless of project size or traffic generation, access/egress onto public ways shall follow accepted access management practices, guidelines and policies. All new driveways on the regional road system for Developments of Regional Impact shall operate at Level-of-Service C (or Level-of-Service D in certified growth/activity centers) or better as defined in the Highway Capacity Manual, based on the appropriate design hour traffic volume as described in Minimum Performance Standard 4.1.1.9.

4.1.1.7 Regardless of project size or traffic generation, there shall be no degradation in public safety as a result of a Development of Regional Impact.

4.1.1.8 Transportation mitigation measures required by Developments of Regional Impact to meet Minimum Performance Standards shall be consistent with community character and shall not degrade historic, scenic or natural resources.

4.1.1.9 In recognition of the seasonal change in Cape Cod traffic, road widening, intersection widening and signalization is warranted as mitigation for a Development of Regional Impact only if the improvement will have substantial benefit to the transportation system throughout most of the year. The Cape Cod Commission shall determine the appropriate design hour traffic volume. Peak summer traffic impacts shall be mitigated through strategies in Minimum Performance Standard 4.1.1.10, sections a through c.

4.1.1.10 Permissible mitigation strategies for Developments of Regional Impact shall be as follows, and must also be consistent with Minimum Performance Standards 4.1.1.8 and 4.1.1.9 as well as local and regional transportation plans:

a. Travel Demand Management strategies including the development and use of transit, park & ride lots, bicycle facilities, pedestrian facilities, car/van pooling, and employee incentive programs that reduce automobile trips.

b. Transportation Systems Management strategies that preserve the capacity of existing facilities and increase the efficiency of existing facilities. These strategies include shift change schedules to reduce impacts of peak hour site traffic, the application of real-time information-based technologies, signage, changes to pavement markings, signal timing optimization and coordination of existing traffic signals, turn restrictions, changes in traffic patterns, and limited removal of obstructions to provide safe sight distances.

c. Access Management strategies such as curb cut consolidation, joint access, connections between adjacent parcels, and conflict point reduction.

d. Road widening, intersection widening and new traffic signalization, as stipulated in Minimum Performance Standard 4.1.1.11.

4.1.1.11 The widening of public ways or intersections or new traffic signalization shall be allowed as mitigation for a Development of Regional Impact only if all of the following conditions are met:

- The road widening, intersection widening or new signalization is necessary to mitigate year-round increases in travel demand resulting from the Development of Regional Impact. Solely peak season travel demands shall not be mitigated by road widening, intersection widening or new traffic signalization, and

- The road widening, intersection widening or new traffic signalization is not within local or regional historic districts, on any road designated by a government agency as a Scenic Road or Scenic/Historic Byway because of the historic, scenic or natural resources of the area, and
- Alternatives to road widening, intersection widening and traffic signalization, as described in Minimum Performance Standard 4.1.1.10, sections a through c, have been considered and are determined to be inadequate to mitigate impacts, and
- The road widening, intersection widening or new traffic signalization is consistent with community character and will not have an adverse impact on historic, scenic or natural resources.

4.1.1.12 Necessary transportation improvements shall occur concurrently with the project development. A payment of funds commensurate with project impacts may be allowed if the Commission, the Town in which the project is proposed or the appropriate state transportation agency agrees to accept responsibility for the advancement of the project. Such payment shall be determined based on the Cape Cod Commission's fair-share guidelines and an appropriate escrow agreement shall be required.

4.1.1.13 Existing transportation rights-of-way shall be preserved for transportation uses.

4.1.1.14 Developments of Regional Impact shall provide adequate parking. Where compatible uses are within close proximity, the Commission shall encourage shared parking to minimize pavement coverage.

4.1.1.15 To support successful travel demand strategies and to reduce the environmental and aesthetic impacts of large paved areas, parking facilities created for Developments of Regional Impact shall be limited to the needs identified in a Commission approved traffic study or the requirements of local communities, whichever is greater.

4.1.1.16 Adjacent commercial uses shall share access points and provide connections between parcels so as to minimize curb cuts, driveways, and vehicular turning maneuvers, where appropriate. A credit for reduced travel demand on the adjacent road system shall be granted for shared driveways or connections between parcels, as described in the Traffic Impact Assessment guidelines.

4.1.1.17 Internal site circulation and access/egress shall be designed to minimize impacts on the adjacent road system.

Other Development Review Policies

4.1.1.18 New development and redevelopment should minimize adverse traffic impacts on residential neighborhoods.

4.1.1.19 New development and redevelopment should not increase traffic on roads links or through intersections with existing safety deficiencies such as inadequate sight distance or adverse grades.

4.1.1.20 At locations where the thresholds of Minimum Performance Standard 4.1.1.1 are reached or exceeded but the increase is less than 50 peak hour trips, Developments of Regional Impact may make a payment of $100 per peak hour trip per intersection and per road link to comply with Minimum Performance Standard 4.1.1.1.

4.1.1.21 Roadway access for new development and redevelopment should be consistent with the functional classification of the road. Where possible, driveways

should gain access to collector and arterial streets via the local street system.

4.1.1.22 Transportation improvements and proposed transportation mitigation should be consistent with the Americans with Disabilities Act, the Clean Air Act Amendments of 1990, the Intermodal Surface Transportation Efficiency Act of 1991, and the Cape Cod Metropolitan Planning Organization's most recent Long Range Transportation Plan.

4.1.1.23 The capacity of Route 6 should not be increased by constructing additional travel lanes. On sections of Route 6 with full controlled access, ramp improvements and systems management techniques may be appropriate to improve traffic flow and safety. On sections of Route 6 providing local access, access management and systems management techniques should be utilized to improve traffic flow and safety.

4.1.1.24 Road and intersection widening should include the undergrounding of overhead utilities and the removal of utility poles and associated structures, where appropriate.

4.1.2 Goal: To decrease dependence on private automobiles, address demonstrated public needs for convenient, accessible, economical alternatives to private automobiles, and promote energy efficiency and reduced pollution by developing and integrating alternate modes (e.g., rail, bus, ferry, air, bicycle and pedestrian) into the transportation system and by promoting substitutes for transportation such as telecommunications.

Minimum Performance Standards

4.1.2.1 All Developments of Regional Impact shall implement strategies to reduce daily automobile trips to and from the development on a year-round basis. Average daily automobile trips to and from Developments of Regional Impact shall be reduced by 20% from average traffic generation for that land use. Methods may include water and land-based transit, carpooling and bicycle/pedestrian accessibility improvements and appropriate telecommunications strategies.

4.1.2.2 To partially or entirely satisfy the requirements of Minimum Performance Standard 4.1.2.1, a development may make a monetary commitment to public transportation and/or alternatives to automobile transportation. The amount of such commitment shall be based upon (i) the development's proportional share of the cost of a strategy identified to meet Minimum Performance Standard 4.1.2.1 or (ii) the cost of providing year-round public transportation, the expected vehicle miles travelled by automobiles (or passenger car equivalents) travelling to and from the site and the expected term of the project, a minimum of 20 years. Credit shall be allowed for any in-kind strategies that partially reduce automobile traffic to and from the site. The monetary commitment shall be placed in a satisfactory escrow agreement and used to support alternatives to automobile travel on Cape Cod.

4.1.2.3 Road or intersection widening shall provide for safe bicycle and pedestrian travel and accessibility, where appropriate.

4.1.2.4 Developments of Regional Impact shall provide bus turn-outs, park and ride facilities, and related facilities that link different modes of travel in the transportation system, where appropriate.

4.1.2.5 Bicycling and walking shall be encouraged as an alternative to auto-

mobile trips. Where appropriate, historic footpaths shall be maintained and safe bicycle and walking links shall be created to establish an interconnected regional transportation system. Where appropriate, bikeways and footpath connections between commercial, residential neighborhoods and between compatible uses shall be provided to create a safe alternative to travel on major roads.

Other Development Review Policies

4.1.2.6 Bus, ferry, water taxi, air and rail modes of public transportation should be encouraged not only as alternatives to automobile trips but also to improve mobility for non-drivers, those preferring not to drive, and those without access to a car. To serve both residents and visitors better, transit service frequency should be increased and the routes expanded.

4.1.2.7 The Cape's current airport capacity should be maintained as a vital economic and transportation resource. A buffer area should be maintained around regional and local airports to ensure future development in the buffer is consistent with the airport operations, and development outside the buffer is protected from noise, fumes and loss of life or property. An Eastern New England Regional Airport, however, should not be permitted on Cape Cod due to environmental sensitivity of the area and the very limited transportation infrastructure.

4.1.2.8 Developments of Regional Impact should make provisions for or contribute to the development of information based technologies in the region that encourage travelers to use the most environmentally sound and efficient means and times of travel.

4.1.2.9 To relieve canal area traffic in particular, and Cape Cod traffic in general, visitors to the Cape and Islands should be encouraged to travel to the Cape by public transportation rather than by car whenever possible.

4.1.2.10 Rail and marine freight shipment to and from the Cape should be encouraged as an alternative to freight transport by truck across the Bourne and Sagamore Bridges.

4.1.3 Goal: To support transportation solutions which preserve and enhance Cape Cod's character by considering the interrelationship between land use and transportation.

Minimum Performance Standards

4.1.3.1 Mixed use development that minimizes dependence on the automobile shall be encouraged.

Other Development Review Policies

4.1.3.2 Developments of Regional Impact may increase allowed traffic generation under Minimum Performance Standard 4.1.1.1 by the dedication of vacant developable land within the project's study area in excess of open space requirements under the RPP, and the placement of that land in a permanent conservation trust. The allowed increase in traffic shall be determined based on expected potential traffic generation from that parcel.

Implementation

Commission Actions:

A. The Commission will promote cooperation and service coordination among the various transportation agencies which have responsibility for the Cape's transportation system.

B. The Commission will work with the CCRTA, other government agencies and transportation providers to encourage and expand the development of effective public transportation alternatives such as bus, rail and marine transportation services.

C. The Commission will work to expand the viability of bicycling and walking as modes of transportation.

D. The Commission will support efforts to expand carpooling and flexible scheduling opportunities in the region.

E. The Commission will work with appropriate state and regional agencies to maintain and better publicize the availability of a coordinated transportation system to provide safe and efficient movement of people and goods.

F. The Commission will work with the Towns and the State to improve access management along all regional roadways on Cape Cod.

G. The Commission will work to identify and expand sources of funding for transportation improvements that are consistent with the Regional Policy Plan.

H. The Commission will continue to work as a member of Cape Cod's Metropolitan Planning Organization to develop short and long range transportation plans and utilize the Transportation Improvement Program process to access state and federal funding for transportation projects.

I. The Commission will seek to enhance existing park & ride lots and to develop new ones in order to encourage the use of express buses for travel to off-Cape locations.

J. The Commission will seek to encourage visitors to travel to Cape Cod using bus, rail, air or ferry services.

K. The Commission will seek to provide a central location accessible by telephone, fax, Internet or mail for information on transit routes, schedules, fares, commuter lots, connections and other relevant details.

L. The Commission will work with the appropriate agencies and organizations to develop real-time information systems to provide current and prospective travelers with information on current highway conditions, including congestion, accidents, weather and travel delays.

Recommended Town Actions:

A. Towns should establish a traffic impact assessment and mitigation program to identify and mitigate the impacts of new developments and redevelopment on the transportation system.

B. Towns should develop thresholds for review of traffic impacts of proposed projects within their zoning or site plan review bylaws.

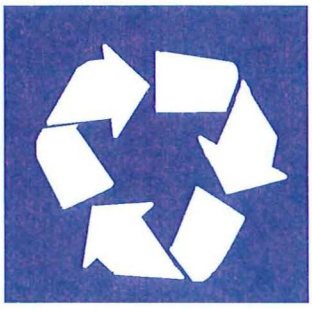
C. Towns should adopt access management guidelines.

D. Towns should evaluate parking requirements.

E. Towns should develop impact fees for transportation improvements that are consistent with the Regional Policy Plan and the Local Comprehensive Plan.

F. Towns should adopt zoning by-laws and land use plans to ensure that the future transportation needs of the town are consistent with the future capacity of the transportation system.

4.2 Issue Area: Solid and Hazardous Waste Management



Like other regions of New England, Cape Cod faces the challenge of managing its solid and hazardous waste in an environmentally sound manner at the same time that other priorities compete for attention and scarce funding.

Environmental regulations and their enforcement are bringing about increasingly sophisticated waste management facilities, as well as more complicated administrative arrangements, to assure compliance and environmental integrity. In addition, the public on Cape Cod supports efforts to protect the environment from impacts of waste disposal. As a result, communities are seeking economical and innovative ways to properly manage municipal solid waste. On Cape Cod, these trends are clearly demonstrated by:

1. Increased emphasis on recycling and markets for recyclables;
2. A trend toward regionalization;
3. Waste-to-energy facilities with advanced air pollution controls;
4. Closure of unlined and potentially polluting landfills;
5. Programs for recycling and safe disposal of automotive wastes, paint wastes, batteries and other household hazardous wastes.

The 1995 Cape Residents Survey shows an overwhelming majority of respondents (93%) support the Commission's goal of expanding recycling, 91% support prohibiting the storage or use of hazardous materials in public water supply areas and 77% consider the regulation of waste disposal a high priority for the Commission.

Many other regions of the United States have adopted full-cost accounting to enable accurate cost comparisons of alternative waste management methods, and variable rate fees to distribute the costs of solid waste management programs more equitably.

Municipal solid waste includes garbage and refuse generated in homes, offices and industries (231,600 tons on Cape Cod in 1994), leaf and yard wastes, and construction and demolition wastes. Cost-effective and environmentally responsible management of solid waste involves:

1. reduction as much as possible of the amount of solid waste created;
2. composting of organic wastes for which there is an end-use;
3. collection and marketing of recyclables for which there are markets;
4. incineration of waste that would otherwise be landfilled; and
5. landfilling of wastes that cannot be composted, recycled or incinerated.

This approach is called "integrated solid waste management."

Waste Reduction

Waste reduction includes any effort which lessens the production of waste. Less waste means less hauling, less air and ground water pollution, less generation of hazardous waste, less use of fuel, less use of scarce landfill space, and less use of natural resources such as metals, minerals, timber and oil. Actions that can result in less waste being generated include changing buying habits, improving manufacturing processes, redesigning packaging (one-third of all waste), redesigning products to be recyclable and more durable, and adopting variable rate fees thus providing generators with a direct economic incentive to conserve resources.

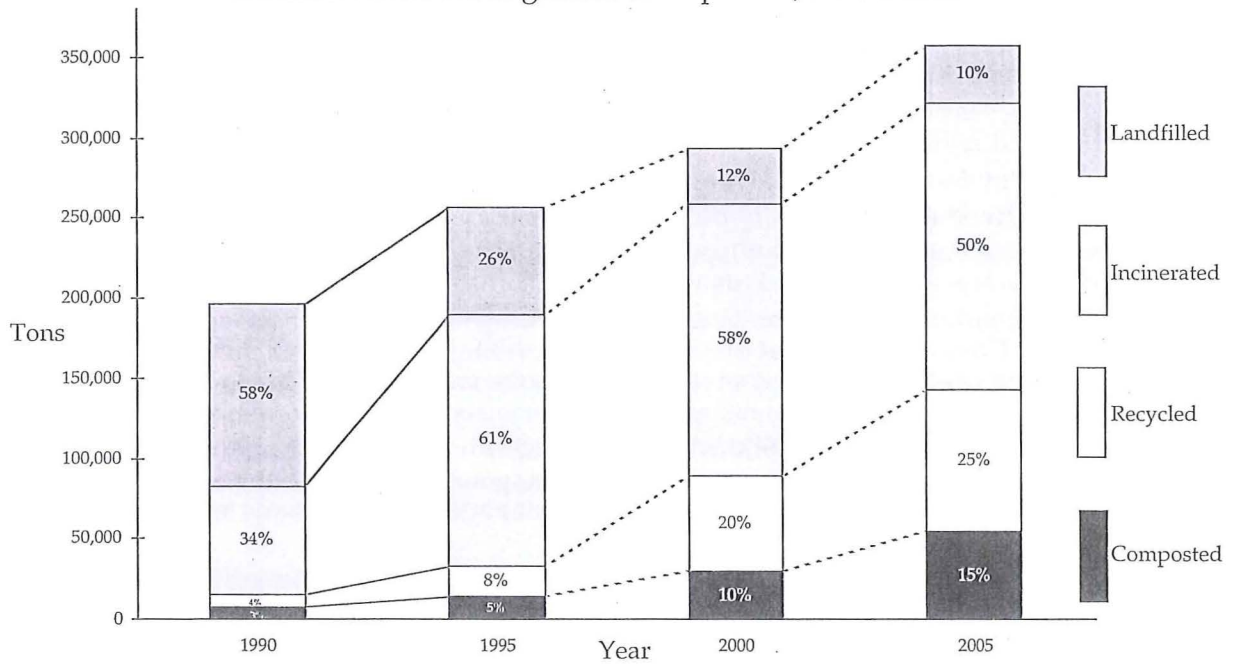
Composting

Every Cape Cod town composts leaves and yard wastes, handling about 5% of Cape Cod's solid waste by weight. Several private facilities compost, or chip and

recycle, an undetermined quantity of organic material delivered to them by developers, landscapers and property owners. Organic yard wastes represent 18% of municipal solid wastes generated nationally. Composting is a safe, efficient and relatively inexpensive way, using low technology, to convert organic yard wastes into a useful, saleable product. Increased public education about home composting and town composting programs could expand participation.

The composting of materials other than yard wastes, such as bio-solids (sludge) from sewage and septage treatment plants and food wastes from grocery stores and restaurants, requires a more capital-intensive, and thus regional, approach but represents a viable method for returning such wastes to productive use.

Trends in Waste Management on Cape Cod, 1990 to 2005



Source: Town and SEMASS Data (1990 and 1995); Projections by Cape Cod Commission (2000 and 2005)

Recycling

Cape Cod residents strongly support recycling efforts. Every town on Cape Cod has a recycling program. While six towns have mandatory recycling bylaws, each one is different. Municipal recycling rates on Cape Cod, which include composting, usually reflect only residential recycling. In 1994, municipal rates ranged from 5% to 28% by weight, with the Cape-wide average being 13%.

The statewide rate includes composting and recycling by business and industry, in addition to residential, and was 31% in 1994. The statewide rate also includes a factor for each community that represents the tons of containers recovered through the state bottle deposit law. Therefore, state and local recycling rates are not comparable.

To increase recycling, the state banned the incineration and landfilling of most paper; glass, metal and plastic containers, lead-acid batteries, tires and yard wastes. However, the regulation (310 CMR 19.017) is not enforced due to its designation for many communities as an unfunded state mandate by the State Auditor.

A major impediment to increased recycling on Cape Cod is the inability or lack of

opportunity for many tourists and vacationers to participate in local recycling programs. The Cape's population swells from 200,000 to 500,000 during July and August. Whether a family stays one day or one month, they generate trash. Vacationers may not have access to the transfer station of the town they are staying in; they may not even know where the transfer station is located. If a motel, cottage colony or rental unit owner does not collect recyclables, it is unlikely materials will be recycled. The shorter their visit, the less likely it is that vacationers will gain access to and use a recycling program. Also, businesses that are open only several months per year may be less likely to have a recycling program.



This challenge to increased recycling can be addressed by working with real estate and chamber of commerce officials and by looking at recycling programs in other resort areas. Ideally, rules and regulations should be simple and uniform across the Cape to minimize confusion for non-residents (as well as new and long-time residents).

Other impediments to increased recycling include the distance to markets (all off-Cape), congested roads, and the continued marketing of relatively small quantities of recyclables by each of the 15 towns. The Commission conducts a survey twice a year of markets used by Cape towns, prices paid and the nature of any regional hauling arrangements; but markets are still negotiated by each town.

With concerted regional action to address these issues, it is felt that Cape Cod could achieve a recycling rate of 30% by 2000. This would involve the collection and aggregation of newsprint, glass, cans, scrap metal, plastic containers and leaves from residents; and corrugated cardboard and office paper from businesses. To achieve 30% recycling, eighty percent of yearround households would have to participate as well as significantly more seasonal residents.

Incineration

In 1985, fourteen Cape Cod towns signed 20 year contracts with the SEMASS waste-to-energy facility in Rochester, Massachusetts. Ten town transfer stations and two regional rail stations have been built to get the waste to the facility. In 1994, 68% of Cape Cod's municipal solid waste was incinerated at SEMASS.

Participation in SEMASS does not "solve" any town's solid waste disposal problem. A town that sends all its waste to any one facility could be at risk if the facility should be required to shut down, even temporarily. Town contracts with SEMASS expire in 2008, or, at the option of each town, 2015. At such time, re-negotiation of contracts could result in higher tip fees. If fees do increase, towns with aggressive composting and recycling programs, supported by strong public education campaigns and stable market arrangements, will be less impacted than towns without such programs.

Landfill

Nine towns on Cape Cod have closed their landfills. Most of the other six towns are expected to close their landfills within the next two years as indicated below.

Bourne - Permitted to build a new, lined landfill

Brewster - 1998

Dennis - 1997; may build a new, lined landfill

Falmouth - 1998

Harwich - 1998

Mashpee - 1998

With increasing quantities of waste projected to be composted, recycled and incinerated, the percentage of residential and commercial solid waste going to landfills will decrease to an estimated 12% Capewide by 2000, drastically reducing the need to operate and maintain numerous landfills on the Cape. New landfills will be difficult to site and financially unaffordable for any one town by itself. The types of waste being landfilled today are mostly construction and demolition material, mat-



tresses, carpeting, furniture, street sweepings, dead animals, and grit and screenings from treatment plants.

Bio-solids

Facilities that generate bio-solids (also known as sludge) on Cape Cod include municipal sewage and septage treatment facilities. Such facilities are located in Barnstable, Chatham, Falmouth, Orleans, Yarmouth and at Otis Air National Guard Base. The Orleans and Yarmouth facilities were designed as regional septage treatment plants; they currently treat the septage from ten towns. Both facilities have considerable excess capacity. Towns considering future options for septage treatment should question the development of new capacity when existing plants have excess capacity. Towns cannot legally require septage haulers to use a designated facility. This could have serious financial implications for both existing and new facilities. As of 1993, there were at least fourteen small, on-site sewage treatment facilities on Cape Cod, twelve of them private. Treatment plants also generate wastes known as grit and screenings which must be landfilled.

Options for bio-solids management include composting, incineration, landfilling or long-distance hauling to a permitted facility. Until 1995, most bio-solids generated on Cape Cod were composted at the Yarmouth facility. Since that facility was temporarily closed in mid-1995 due to equipment problems, all bio-solids (sludge) generated on Cape Cod are being hauled offCape. Mashpee, Sandwich and Otis Air National Guard Base are planning a regional sludge composting operation at the base.

Hazardous Wastes

On Cape Cod, thousands of households and businesses dispose of small quantities of hazardous waste in town landfills, at SEMASS and down the drain to septic systems and sewage treatment plants. However, this adds up to tons of hazardous waste each year being disposed of in ways which contaminate air, land and drinking water supplies.

Cost-effective management of hazardous waste begins with education aimed at minimizing generation. Much hazardous waste continues to be generated unnecessarily due to carelessness, lack of information about alternatives and inadequate employee training. Barnstable County offers education and technical assistance to businesses and residents about how to manage hazardous waste through the Cooperative Extension office, the County Health and Environmental Department and the Commission. Environmentally safe and cost-effective disposal methods exist, including paint swaps, paint collection facilities at town landfills, municipal used oil collection programs, and one-day collection events for pesticides, solvents and other hazardous wastes.

Regionalization

Solid waste planning on Cape Cod has been coordinated regionally by Barnstable County since 1969; however, solid waste management is a town activity. Decision-making authority for the development and daily operation of waste handling facilities remains with the 15 towns. Solid waste management activities that may be more appropriately performed regionally (two or more towns), by special district or by private enterprise, are: the marketing of recyclables from Cape Cod towns, the hauling of recyclables to markets, the hauling of solid waste to SEMASS, the composting of biosolids, and the collection and hauling of hazardous wastes generated by Cape Cod's 53 elementary, middle and high schools.

Goals and Policies

4.2.1 Goal: To manage solid waste using an integrated solid waste management system that includes waste reduction, recycling, composting, incineration and

landfilling, and to divert 30% of municipal solid waste from incinerator and landfill facilities through recycling and composting programs by 2000, and 40% by 2005.



Minimum Performance Standards

4.2.1.1 Developments of Regional Impact shall address how the quantities and types of solid waste to be generated will be handled using the following integrated solid waste management system: The highest priority, and thus the most preferred method of waste management, is to reduce as much as possible the amount of solid waste created. The second priority is to recycle or compost waste which cannot be avoided. The third priority is to incinerate waste that cannot be recycled or composted, and finally, to landfill only those wastes that cannot be recycled, composted or burned.

4.2.1.2 Development and redevelopment shall allocate adequate storage space for interim storage of materials to be recycled.

4.2.1.3 Construction and demolition debris from development and redevelopment shall be removed from construction sites and disposed of in accordance with the integrated solid waste management system in Section 4.2.1.1.

4.2.2 Goal: Hazardous wastes generated by Cape Cod households and businesses shall be disposed of in an environmentally sound manner.

Minimum Performance Standards

4.2.2.1 Development and redevelopment shall make reasonable efforts to minimize their hazardous waste generation through source reduction, reuse, material substitution, employee education and recycling.

4.2.2.2 Development and redevelopment shall be in compliance with Massachusetts Hazardous Waste Regulations, 310 CMR 30.00.

4.2.2.3 Commercial and industrial development and redevelopment that involves the use, treatment, generation, storage or disposal of hazardous wastes or hazardous materials, with the exception of household quantities, shall not be allowed within Wellhead Protection Districts.

Other Development Review Policies

4.2.2.4 Development and redevelopment using or storing hazardous materials or wastes should prepare and maintain an emergency response plan which identifies potential environmental and health risks and recommends ways to reduce those risks. Such plans should be provided to local officials responsible for hazardous waste coordination.

Implementation

Commission Actions:

A. The Commission will assist towns to adopt full-cost accounting methods in solid waste management.



B. The Commission will promote the development of regional recycling efforts including inter-municipal processing and hauling arrangements.

C. The Commission will publish a bi-annual report on recycling markets used by Cape Cod towns to assist them in locating the best markets.

D. The Commission will seek to educate and assist residents, businesses, institutions and governments on source reduction of solid and hazardous wastes and the identification of products posing fewer disposal difficulties.

E. The Commission will encourage government, businesses, institutions and individuals to purchase goods made from recycled materials in order to increase the marketability of the recyclable materials they generate.

F. The Commission will publish an annual report of the quantities of solid waste that are recycled, composted, incinerated and landfilled by each town.

G. The Commission will work with realtors, the chambers of commerce and tourism-related businesses to encourage recycling by vacationers and seasonal residents.

H. The Commission will work with towns to explore regional alternatives for the recycling or disposal of non-recyclable and non-combustible wastes such as construction and demolition material.

I. The Commission will monitor SEMASS contractual issues that may impact Cape Cod.

J. The Commission will continue to assist in the development of state policies and regulations through participation in various Department of Environmental Protection (DEP) advisory committees.

K. The Commission will promote composting of yard wastes and household food wastes by homeowners, and will help disseminate information on composting in conjunction with the County Extension and DEP.

L. The Commission will research potential problems and possible improvements to the methods currently used for disposing of commercial food wastes and bio-solids.

M. The Commission will assist towns with bidding, coordination, data collection and development of educational materials for household hazardous waste collection events.

N. The Commission will publish an annual report summarizing household hazardous waste collection events held by Cape Cod towns and recognize outstanding municipal performance in this area.

Recommended Town Actions:

A. Towns should adopt accounting methods which reflect all capital costs and operational expenses of municipal recycling and waste disposal services, and make it known to taxpayers what they are paying for these services.

B. Towns should develop an integrated system of waste management that involves recycling, composting, incineration, and landfilling for dealing with municipal solid waste, bio-solids, and construction and demolition materials.

C. Towns should adopt a toxic and hazardous materials bylaw or regulation, utilizing the County's model or similar regulations.

D. Towns should continue to hold household hazardous waste collection events for solvents, pesticides and other hazardous wastes and establish other programs at transfer stations for paint wastes and oil.

E. Towns should develop and maintain an emergency response plan for spills of hazardous materials during transit.

4.3 Issue Area: Capital Facilities and Infrastructure



The availability of capital improvements and infrastructure plays a major role in determining the rate and location of development on Cape Cod. In turn, new residents and businesses place increased demands on community infrastructure and services. Therefore, planning for capital improvements must be an integral part of the planning efforts of the Cape Cod Commission and of towns through the Capital Facilities Element of Local Comprehensive Plans.

Infrastructure includes facilities and services needed to sustain residential, commercial, and industrial development such as water supply and distribution facilities, sewage collection and treatment facilities, streets and roads, communication facilities, utilities, and public facilities such as schools and fire stations. Depending upon the facility or service, infrastructure can be provided by a variety of entities including towns, special districts, private utility companies, regional agencies, as well as state and federal agencies.

In many areas of the Cape infrastructure and public services are inadequate to handle existing development and projected development is likely to further increase the demand on these facilities and services. Many roads are at an unacceptable level of service even during the off season. Infrastructure limitations in village and town centers can lead to land-consumptive, sprawling development outside of these areas. Communities are increasingly unable to expand facilities and services to meet existing needs due to diminishing state and federal assistance and fiscal constraints.

Few communities have Capital Improvements Plans which provide for planned expansion of such infrastructure, or if they do, they have been unable to fund them. In addition, public investment in infrastructure and services is sometimes inconsistent with existing community plans. For example, placement of infrastructure such as sewers in low-lying coastal areas is often necessary to remediate existing water quality problems, but their installation may lead to further development in inappropriate areas and worsening of water quality problems.

Regional Facilities

With a limited fiscal capacity, Barnstable County government cannot be a primary provider of needed infrastructure and services. However, the County has a key role to play in planning for regional needs. Due to local opposition it has proven difficult in the past to develop regionally needed but locally unwanted facilities such as waste disposal facilities (sewage, septage, solid waste), special needs housing, and hospitals. The County can help to coordinate the siting of such facilities. Because of fiscal constraints within towns, the development of cost-effective regional infrastructure should be strongly encouraged.

Barnstable County owns and maintains numerous regional facilities, including the court and office complexes in Barnstable and Orleans, and the County farm in Cummaquid. The County recently closed its hospital and is considering other potential uses for the hospital site in Bourne. The County is also investigating construction of a new county jail, possibly to be located on the Massachusetts Military Reservation (MMR). The MMR is also being considered as a site for other regional facilities including public water supplies and sewage treatment facilities. It currently hosts the solid waste transfer station for four Upper Cape towns.

Town Facilities

At the town level, the Capital Facilities Element of the Local Comprehensive Plan establishes the policies which act as a long-term guide in providing needed services. The purpose of the Capital Facilities Element is to establish where and when

new infrastructure or capital facilities will be provided and how they will be financed. It is actually the Capital Improvements Plan that provides the most specific details about the provision of infrastructure and associated costs. A detailed survey of existing facilities, how they were financed, and current levels of service (LOS), must also be well-established by the town in order to provide a firm basis for the analysis of impacts of future development. For a complete list of information to be included in a Capital Facilities Element and a Capital Improvements Plan, see Local Comprehensive Plan Guidelines, Technical Bulletin 93-001.

Towns should be particularly aware of the link between zoning and land use regulations and the resulting implications for growth and the necessity to provide infrastructure and services. As part of the local comprehensive planning process, towns must review, and revise when necessary, zoning and land use regulations to reflect the town's vision, as well as goals, objectives and policies regarding growth management and development.



Bay Colony Railroad moves 68 percent of the trash going from Cape Cod to the SEMASS waste to energy facility in Rochester, MA.

The Cape Cod Commission Act authorizes towns to charge impact fees once their Local Comprehensive Plans have been approved by town meeting (or in the case of Barnstable, by the Town Council) and certified by the Cape Cod Commission. Impact fees are one-time assessments which may be assessed by the Commission and municipalities to new residential and commercial development to help fund the construction or expansion of municipal facilities and infrastructure, the need for which is created by the new development, and which benefit the development, including but not limited to, transportation, sewage treatment, water supplies, parks, schools, police and fire facilities, affordable housing, libraries, and open space.

Impact fees are one of the tools for regulating and managing growth and are most useful for municipalities that are experiencing or are anticipating growth. In order for impact fees to be effective, a town should have strong underlying zoning, land use regulations and environmental regulations which reflect the goals and policies in the town's Local Comprehensive Plan; otherwise, the use of impact fees may lead to undesirable growth and sprawl by providing infrastructure capacity to outlying locations.

Impact fees help shift the burden of paying for new capital facilities and infrastructure from municipalities and tax payers to new development and offer a pay-as-you-grow system for accommodating new development. Impact fees help to coordinate, within a reasonable period of time, the construction of new or expanded facilities which are needed to serve new development. The use of impact fees represents a major opportunity to ensure that existing infrastructure is not further strained by new development. However, impact fees generally pay for only a portion of the expense of providing new or expanded infrastructure. Public investment in infrastructure will also be needed to address existing deficiencies and to ensure that a reasonable amount of growth can be accommodated without negative impacts. See the Commission's Impact Fees Guidance Document, regulations, and model bylaw/

ordinance for more detailed information.



In addition to planning, design, and construction costs, towns must also be aware of ongoing operational and maintenance costs which are not paid for through impact fees. It is important to note that impact fees may not be used to remedy existing deficiencies, nor may they be used to pay for facility maintenance, staffing or replacement of out-dated equipment. It is essential that towns clearly understand the costs of development in order to establish goals and policies regarding the desirability and feasibility of growth for their community. Costs for planning, design, and construction, as well as the on-going costs for maintenance of facilities and provision of services, must be weighed against revenues from taxes and impact fees to determine if the town can, in fact, afford anticipated growth. Additionally, the costs of growth should be compared to the costs for innovative programs which limit growth, such as reducing the potential for development through the public purchase of land for open space. Local Capital Improvements Plans will be key to effective growth management and fiscal analysis.

Telecommunications

Cape Cod's telecommunications infrastructure includes the traditional telephone services provided by NYNEX, cellular services, and the television delivered by four cable franchisees. In the last couple of years, Cape Cod has experienced an explosion of Internet users and World Wide Web home pages and the emergence of companies providing Internet services.

In the rapidly changing telecommunications field, Cape Cod needs to make sure that it has up-to-date network services that will allow local businesses and individuals to optimize the use of telecommunications. Although the market is likely to deliver many services, especially the Internet, Cape Cod may have to take an aggressive approach to obtaining them due to its relatively remote location and the lag in obtaining new services.

The Telecommunications Act of 1996 restructured the entire communications industry, including telephone companies, cable television companies, online providers, broadcasters, and equipment manufacturers. In particular, telephone and cable companies will be able to compete with each other in providing the transmission of audio, video, and data. Such developments will be important for the development of the Internet and its role in making Cape Cod's economy more competitive.

One of the most important short-term issues is the availability of enhanced speeds for transmitting voice, data, and images over the Internet. Right now, the standard modem using twisted copper telephone lines operates at 28,800 bits per second (BPS). The telephone companies' ISDN (Integrated Services Digital Network) allows both voice and data to be transmitted simultaneously over existing phone lines more than four times faster than the standard modem. ISDN service is spotty across the country, including Cape Cod. The cost of ISDN service for businesses and consumers is fairly high and the waiting time for hookup can be long.

The entire situation will change as telephone and cable companies merge and new technologies emerge. For instance, Continental Cablevision, in Boston, is offering high-speed cable Internet access at 50 times the current modem standard speed of 28,800 BPS. This development may have long-term significance, since Continental Cablevision has emerged the leader cable provider on Cape Cod. Noteworthy as well, Cape Cod has one of the highest levels of cable television penetration in homes in the country.

In the future, fiber, with hundreds of times the capacity of traditional twisted copper wire, will permit uses unimagined today. NYNEX's sixteen central offices on Cape Cod are already linked by fiber, which will realize its potential bandwidth once connecting wires and switching equipment are upgraded.

Cellular telephone facilities are also growing rapidly. It is anticipated that several different companies will be competing to provide wireless phone service to Cape



Cod over the next few years. These companies use different technologies and there is no requirement for them to coordinate the location and siting of their facilities. Without a concerted regional planning effort to control these facilities, there could be hundreds of new cellular antenna towers constructed on Cape Cod, creating a very detrimental impact on the visual character of the Cape.

Goals and Policies

4.3.1 Goal: To provide adequate community and regional facilities to meet community and regional needs consistent with the goals and policies established in Local Comprehensive Plans and the Regional Policy Plan.

Minimum Performance Standards

4.3.1.1 Approval of development and redevelopment which increases the intensity of use shall be based on existing infrastructure and system capability or on a development's ability to provide for or contribute to the infrastructure and services necessary to support it. The provision of infrastructure and services should be consistent with the minimum performance standards in the Regional Policy Plan and consistent with the town's Local Comprehensive Plan and Capital Improvements Plan. Installation of necessary infrastructure shall be timed to meet the need generated by the development or a contribution of funds toward the necessary improvements shall be provided.

4.3.1.2 Development of new infrastructure shall occur only after an analysis of the impacts of this infrastructure with regard to land use, traffic, water quality, natural resources, historic preservation and community character as well as other applicable issue areas noted in the Regional Policy Plan and shall be consistent with the town's Local Comprehensive Plan and Capital Improvements Plan.

4.3.1.3 Privately provided infrastructure to service development and redevelopment shall be consistent with the Local Comprehensive Plans and, when constructed off-site, shall receive formal approval from the town prior to construction.

Other Development Review Policies

4.3.1.4 Public investments, including construction or expansion of infrastructure and facilities, including but not limited to municipal buildings, water supply and distribution, sewage collection and treatment, roads, telecommunications and related facilities should reinforce the traditional character and village development patterns of Cape Cod.

4.3.2 Goal: To encourage the provision of adequate and appropriately-sited telecommunications facilities so as to promote economic development and preserve the quality of life and visual character of the Cape.

Minimum Performance Standards



4.3.2.1 Wherever feasible, new telecommunications facilities shall be required to co-locate with existing facilities in order to minimize their visual impacts.

Implementation

Commission Actions:

A. The Commission will identify needed regional facilities, including but not limited to: water supplies, septage disposal facilities, water and wastewater treatment plants, recycling facilities, hazardous waste collection facilities, landfills, waste transfer stations, a sludge treatment facility, mass transit facilities, health care facilities, and special needs housing. The Commission will identify possible sites, coordinate with appropriate agencies, and solicit host communities to accommodate these facilities.

B. The Commission will research the possibility of developing an Impact Fee System for selected regional, system-wide facilities and/or infrastructure. Such facilities may include but are not limited to: transportation projects, public transit, and land acquisition for Cape Cod Pathways.

C. The Commission will aid in the development of interlocal agreements to facilitate siting of needed regional facilities.

D. The Commission will help communities with preparation of the Capital Facilities Element as part of their Local Comprehensive Plans.

E. The Commission will provide information to the public about the use of impact fees and assist towns with the development of individual Impact Fee Systems upon request from a town once its Local Comprehensive Plan has been certified by the Commission.

F. The Commission will develop and maintain a profile of Cape Cod's telecommunications infrastructure and services, particularly services which move data on and off Cape Cod.

G. The Commission will monitor the impacts of new telecommunications technologies on the economy and planning issues, land use, and transportation infrastructure and make recommendations for utilizing telecommunications to deal with issues in these areas, particularly traffic management.

H. The Commission will work with the towns to prepare a Cape-wide inventory of potential sites for cellular and other wireless communication facilities, including existing buildings and structures.

I. The Commission will develop model siting criteria and a model bylaw for Cape towns to regulate the location and siting of these communication facilities, based on industry needs, environmental constraints and community character concerns. (See Heritage Preservation Commission Action D)

Recommended Town Actions:

A. Towns should review their zoning regulations and maps in order to plan for sufficient quantities of land in appropriate locations to serve community needs, including economic development, housing, water supply, police, fire, libraries, health and social services, waste disposal, education, community centers, and recreation, as well as a fair share of necessary regional facilities. Specific sites for such purposes should be identified in local plans.

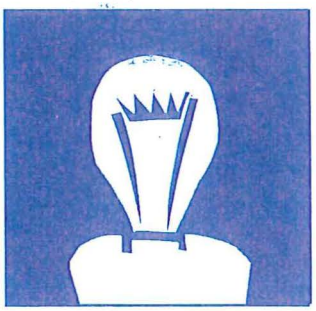
B. Towns should identify and plan for the provision of appropriate infrastructure improvements where needed, such as public water supply and wastewater treatment facilities, in growth centers and business areas to support concentrated devel-

opment and should limit infrastructure improvements in areas where development is not encouraged as established in their Local Comprehensive Plans.

C. Towns should inventory existing and potential sites for locating cellular and other wireless communication facilities.

D. Towns should adopt local bylaws and siting criteria to regulate communications facilities, consistent with the Regional Policy Plan and the Local Comprehensive Plan. (See Heritage Preservation Town Action H)

4.4 Issue Area: Energy



In 1993-94, the Barnstable County Energy Task Force developed The Barnstable County Energy Management Plan, a step that had been recommended in the original Regional Policy Plan. The Energy Plan, which included over 200 pages of analysis of the county's energy use and potential policies and projects, made twelve final recommendations, including establishment of a Barnstable County Energy Committee to carry out the other eleven recommendations.

The Barnstable County Energy Committee, established by the Barnstable County Commissioners with representatives from each town, has focused on such issues as electric utility deregulation and the competitive municipal franchise; energy conservation and the Community Energy Loan Program (CELP), which would maintain a loan program through local banks; renewable energy potential on Cape Cod, mainly, solar and wind; and alternative transportation programs. The Cape Cod Commission has provided staff support to the Energy Committee and has sought to incorporate the Energy Committee's findings into the Commission's work on economic development, housing, and transportation.

According to The Barnstable County Energy Management Plan, the average consumer on Cape Cod spends $475 more on energy annually than the average off-Cape Massachusetts consumer, even though usage is 11% less. The Cape's electric costs are the fifth highest in the nation, while its winter gas costs are third highest.

Such high energy costs harm both the overall economy of Cape Cod and individual consumers, especially lower-income families and retirees on a fixed income. In 1990, for instance, Barnstable County spent $434 million on energy—of this, $370 million (85% of energy expenditures) left the Cape Cod economy, most of it to regions or countries that produce fossil fuels. The Federal Department of Energy (DOE) has estimated that existing conservation methods could reduce energy consumption by 33% to 50%. The Barnstable County Energy Management Plan found that saving as little as 10% of dollars spent on energy would amount to $43 million kept in the local economy.

Cape Cod can address its energy issues in two ways: 1) reduce the consumption of energy/or utilize more efficient fuels; and 2) seek to reduce the cost of energy from the provider. The Barnstable County Energy Committee is pursuing both objectives.

Energy Conservation and Renewable Energy

According to the Barnstable County Energy Management Plan, about 60% of the total Cape housing stock (81,000 units) does not meet current state and national energy code standards. About 26,000 units are owned or rented by low or moderate income residents, with many of the units being heated by high-cost electricity. Low- and moderate-income households are disproportionately affected by high energy costs in that they have to spend higher proportions of their income on energy. Over

$189 million (44% of Cape energy use) were spent on residential energy use in 1990. Social and environmental damages, assessed at over $38 million, were attributed to pollution from fossil fuels burned by the residential sector. Commercial/industrial/municipal buildings consume approximately 24% of the Cape's energy total or $105 million worth. The Federal DOE estimates that significant conservation can take place in such buildings without reducing services.

Even though government home weatherization and fuel assistance have been effective in conserving energy and making fuel costs affordable to lowincome families, these programs have been cut drastically in recent years. Cape Cod needs to seek ways to promote energy conservation that utilize existing institutions and do not require elaborate new initiatives. For instance, the proposed Community Energy Loan Program (CELP) would use local banks to make energy conservation loans. Energy audits for residential and commercial buildings offered through existing utility and private programs need to be maintained. The Cape Cod Commission can, with its Development of Regional Impact (DRI) review process, encourage commercial and institutional projects to adopt advanced energy-saving measures by considering them a benefit when projects are evaluated.

Using local renewable energy sources would enable Cape Cod to reduce the outflow of energy expenditures. Windpower has significant potential, since the Outer Cape has some of the highest and steadiest winds in the country. Windpower generation, at three-to-seven cents per kilowatt hour, also has become cost-competitive with more conventional forms of power generation. Nevertheless, uncertainties raised by utility deregulation, concerns for aesthetics, and the potentially high cost of land for siting wind turbines could provide obstacles to the significant development of windpower on Cape Cod over the short term. The Massachusetts Military Reservation, because, it poses fewer aesthetic concerns than sites on the Outer Cape, might be a more feasible site for windpower development.



Jonathan Young Windmill, Orleans

Solar power is especially cost-efficient for water-heating and passive space heating. Photovoltaics, though not economical in many situations today, are expected to be significantly less expensive in the near future and will allow decentralized, small-scale electric generation at sites off the power grid. Another emerging technology for electrical generation is the fuel cell. Fuel cells, using a chemical process with natural gas, produce little or no pollution and are versatile enough to power a building, neighborhood, or town. It will be important for Cape towns to take advantage of these technologies as they come to market.

Transportation on Cape Cod accounts for $140 million a year or 32% of regional energy consumption. Since Cape Cod is so highly-reliant upon the automobile, which creates traffic congestion as well as consuming much energy, the Cape Cod Commission and local communities encourage alternative modes of transportation, in-



cluding public transit, carpooling, bikes, and walking paths. A specific measure public and private fleet users can take is to switch to propane gas, now available through Colonial Gas. The use of propane Consolidated Natural Gas (CNG) can save fleet users up to 40% of fuel costs and reduce air pollution at the same time.

Electric Utility Deregulation and the Potential for Lower Rates

Besides cutting costs and reducing pollution through energy conservation and renewable energy, Cape Cod needs to focus on the opportunities for lowering electric costs to consumers and businesses through utility deregulation. The State Department of Public Utilities (DPU) has initiated proceedings to deregulate the electric utility industry in Massachusetts. The Barnstable County Commissioners, as part of a national partnership, have obtained a grant from the Federal Department of Energy to study a competitive municipal franchise model, which the DPU has recognized as an option for deregulation.

The competitive franchise would provide options for local government and give residential and commercial consumers market leverage in a competitive environment. The competitive franchise would enable municipalities or groups of municipalities to negotiate and award an electric power franchise through a bidding process. This approach would allow municipalities to aggregate a large number of customers to obtain the lowest possible price for the best level of service from the range of providers who might be offering electric power. Initial indications are that this option could reduce electric rates by at least 25% on Cape Cod. It is important that Cape Cod and all Massachusetts towns preserve home rule powers to be able to choose the competitive franchise or other options.

The state may make some decisions concerning competitive rates in 1996, but the entire deregulation process will take several years. The biggest issue will be who—the consumer or the utility and its bond/shareholders—will pay the cost of the "stranded investments" if utilities are deregulated. The "stranded investments" are the uneconomical, high-cost sources of power that some utilities have built or contracted for and which would make them uncompetitive in the deregulated environment.

In the search for lower rates, however, Cape Cod must not allow safety, environmental, and customer service standards to be reduced. The bidding process for competitive franchises should lay down specific standards on these points. At the same time, this competitive process should also be used to obtain concessions from the winning bidder on selective underground installation of specified existing overhead utility lines within a defined time frame.

Goals and Policies

4.4.1 Goal: To encourage energy conservation and improved energy efficiency, to encourage and stimulate investment in energy conservation and renewable energy resources and to manage land uses to maximize energy efficiency.

Development Review Policies

4.4.1.1 Development and redevelopment should be designed to promote the efficient use of energy including orienting structures to take advantage of solar gain and to maintain solar access for adjacent sites. Site design should protect and optimize the potential for the use of solar energy.

4.4.1.2 The Cape Cod Commission should consider it a benefit, when reviewing Developments of Regional Impact (DRI), if projects incorporate energy efficiency measures that exceed state standards. Energy efficient construction techniques

and materials to be encouraged would include but not be limited to:

- above-minimum R-values for insulation of walls, attics and foundations;
- use of thermal pane windows with low emissivity coating with high Rvalues;
- annual fuel usage efficiency ratings of at least 80% for all new heating systems;
- use of indirect type water heaters and minimum efficiency requirements for stand-alone water heaters.

4.4.1.3 New development should be required to lay new utility lines underground for aesthetic and security purposes and to facilitate the development of walkways and bikeways.

4.4.1.4 Energy saving transportation activities including carpooling, mass transit programs, bicycling and walking should be encouraged. Bikeways and walkways should be linked together to create a network that ties together the entire Cape.

Implementation

Commission Actions:

A. The Commission will work with the Barnstable County Energy Committee on its projects related to energy conservation, renewable energy, and the deregulation of electric utilities. Commission staff, in particular, will provide assistance in researching various energy conservation and renewable energy issues, developing guidelines for increased energy efficiency for existing buildings, and achieving economic savings for Cape towns.

B. The Commission will promote the development of energy efficient transportation alternatives. Especially during the summer, the use of alternative modes will be emphasized.

C. The Commission will work with the Barnstable County Energy Committee, town governments, and other concerned organizations to promote energy conservation measures in existing buildings. Commission staff will work with towns to understand their options in obtaining lower electric rates through the utility deregulation process.

D. The Commission will work with towns, utility companies, and private parties to develop long-term plans for relocating existing utility lines underground, prioritizing locations where such undergound installation will improve safety, enhance heritage preservation and community character, or restore scenic views.

Barnstable County Energy Committee Actions:

A. The Barnstable County Energy Committee will work with the Barnstable County Commissioners and the towns on seeking lower electric rates for consumers, businesses, and local government through the utility deregulation process. This entails developing the competitive municipal franchise model, which would allow municipalities or groups of municipalities to aggregate their power demand to achieve the lowest possible rates. The Energy Committee will work to insure that energy conservation/demand side management and low-income assistance programs currently offered by utilities are maintained through deregulation.

B. The Barnstable County Energy Committee will encourage Cape Cod lenders to offer mortgages which promote energy efficiency.

C. The Barnstable County Energy Committee will encourage the use of financially feasible alternative energy sources, particularly windpower.

D. The Barnstable County Energy Committee will develop an Energy Investment Fund to finance conservation and renewable improvements for public, residential, and commercial buildings. Electric- and oil-heated homes occupied by low- and moderate income households will be specifically targeted for these improvements.

E. The Barnstable County Energy Committee will research construction guide-



lines and incentives that improve on existing levels of conservation and renewable energy. The Energy Committee will petition the State Bureau of Standards and Codes to upgrade the state building code to reflect national energy standards.

Recommended Town Actions:

A. Towns should incorporate energy conservation and renewable energy policies in their Local Comprehensive Plans.

B. Towns should enforce energy conservation standards for development and redevelopment.

C. Towns should consider providing incentives for the use of energy conserving building improvements and renewable energy devices in all existing and new buildings, if cost effectiveness over the improvements' expected lifetime can be demonstrated.

D. Towns should make municipal buildings, facilities, and street lighting more energy efficient. A percentage of the net monetary savings from conservation at municipal buildings should be invested in further energy improvements.

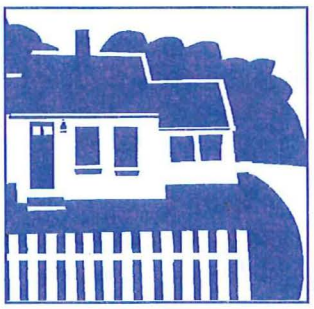
E. Towns should consider utilizing clean alternative fuels, like propane gas Consolidated Natural Gas (CNG) and electricity, for all new fleet vehicles and shuttle busses.

F. Towns should take steps to avail themselves of options and savings provided in a competitive electric utility market. Towns should take steps to take advantage of new energy technologies as they are market-proven.

G. Towns should establish a priority list of overhead utility lines and associated structures that should be installed underground for reasons of safety, enhancement of community character, heritage preservation, or restoration of scenic views.

5. Affordable Housing

5. Issue Area: Affordable Housing



In 1990, the Cape Cod Commission launched an ambitious program to address the Cape's affordable housing needs. Much has happened since that time. When the program was started, there was a great deal of uncertainty about the Commission's role and its ability to address the Cape's housing needs. This concern demanded that the Commission respond in a manner that would dispel doubts and address local needs in a genuine and effective manner.

Today the Commission can confidently say that it has met that challenge and in the process has made a significant contribution to addressing the Cape's affordable housing needs. The following is a brief description of past accomplishments:

Barnstable County HOME Consortium: The Commission led the effort that resulted in the creation of the HOME Consortium. The HOME Consortium consists of the Cape's fifteen towns and Barnstable County. The latter, through the Commission, serves as the HOME Consortium's lead entity. The formation of the HOME Consortium represents a significant milestone in the Cape's response to its housing needs. Since its formation, the HOME Consortium has brought in nearly $2.3 million in HOME funds. This figure does not include the $615,000 in HOME funds the County received from the state prior to the formation of the Consortium. These funds have been used to create affordable rental housing, special needs housing, first-time homeownership, homeowner repairs and rental assistance. Over 180 households have received assistance through the HOME Program.

HOME Consortium Advisory Council: The Council was formed to provide input and advice regarding the overall administration of the HOME program. The Council is comprised of a representative from each town, two at-large members and the Commission's affordable housing specialist as an ex-officio member. In addition to its HOME responsibilities, the Council has become a focal point for initiating a variety of affordable housing activities.

Technical Assistance Program (TAP): In 1995 the Commission created the TAP as a means of enhancing the capacity of local housing authorities, nonprofits, and towns to address local affordable housing needs. A local person was hired as the project consultant and in its first year of operation the TAP has provided assistance to 4 towns and 12 organizations throughout the Cape. Assistance has been provided in helping to create housing non-profits, development of housing plans and housing development.

Soft Second Loan Program: The Commission was responsible for establishing this innovative and highly effective homeownership program for low and moderate-income first-time homebuyers. Since its inception, local lenders have committed $12 million in mortgage funds and the Commission has been awarded $870,000 from the state for this program. Since its start, 160 first-time homebuyers have received assistance through this program.

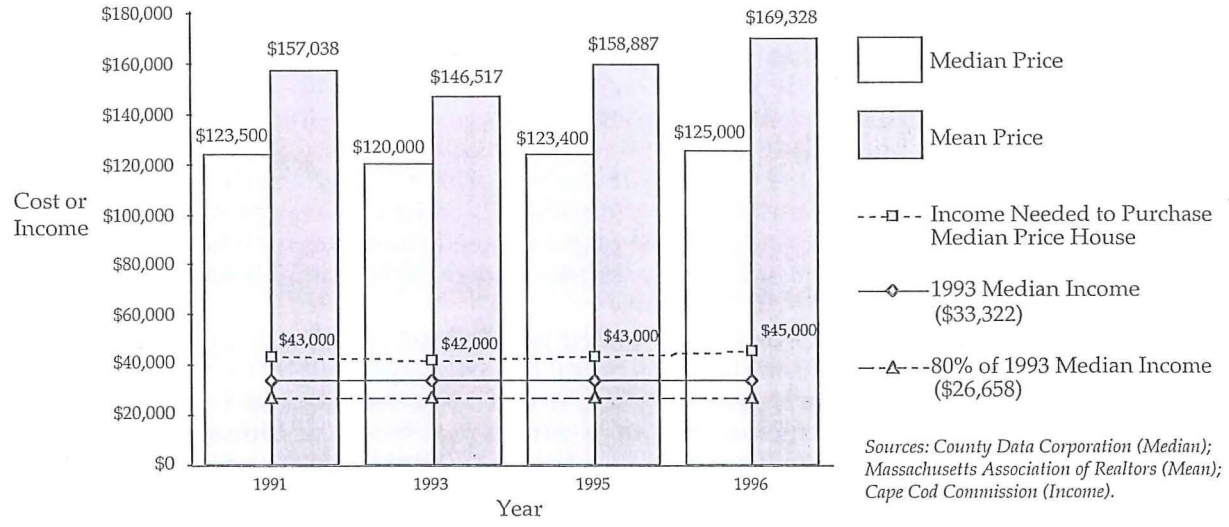
Cape Affordable Housing Loan Consortium: The Commission aided the effort that led to the formation of the Loan Consortium. The Loan Consortium was created to provide construction financing for affordable housing. Its steering committee includes lenders and community representatives. Over the past four years it has provided funding for several important projects.

Commission Activities: In the first RPP the affordable housing section contained 17 commission actions to be undertaken. Since that time all but one has been achieved.

In spite of these accomplishments, much work remains to be done. In the 1995 Cape Cod Residents Survey, 69% of the respondents indicated that lack of affordable housing is a serious problem for the Cape, and nearly half of all the respondents (47%) indicated that housing costs had been a problem for them within the past year. When asked about the characteristics of their town, 46% of the respondents answered that the availability of affordable housing had gotten worse over the past five years.

In 1995, the HOME Consortium prepared a five year housing plan illustrating the continuing seriousness and depth of the Cape's affordable housing needs. (The complete text of this plan, called the Consolidated Plan, can be reviewed at the Cape Cod Commission office). Some of the key findings of this plan were:

Housing Costs and Required Income in Barnstable County, 1991 to 1996



Sources: County Data Corporation (Median); Massachusetts Association of Realtors (Mean); Cape Cod Commission (Income).

- The very low-income (50% or less of the median-income) comprise 21% (16,293) of all year-round occupied households living on Cape Cod.
- Nearly three-quarters (71%) of those households at 30% of the medianincome are paying more than 30% of their income for shelter costs.
- Households with an income between 51% and 80% (low-income) of the median-income make up for over 17% of the Cape's total year-round occupied household population. The Plan estimates that 58% of these households are paying more than 30% of their income for shelter costs.
- Over one-third of all year-round households on the Cape are paying more than 30% of their income for shelter costs. Renter households are disproportionately affected by this cost burden: nearly 46% pay more than 30% of their income for shelter costs. By comparison, only 28% of owner households pay more than 30%.



• According to the 1990 Census, 25% of all year-round households are paying more than 35% of their income for shelter costs. Again renters are disproportionately affected by this cost burden: over 37% are paying more than 35% of their income for shelter costs. By comparison, 20% of owner households pay more than 35%.

• The large number of households paying more than 30% or 35% of their income for shelter costs represents a very serious housing problem. These cost burdens, when coupled with the Cape's high energy costs, significantly increase the threat of homelessness for many of these households. Tenants, particularly very low-income tenants, are faced with the most severe hardships with respect to cost burden.

• A significant gap exists between the cost of housing and what the incomes of the very low and low-income households can afford. In 1994, the median cost of housing was $120,000. In order to purchase the median priced home, a household would need an income of $40,000. For households at or below 80% of the median income ($32,000 in 1995), there is a considerable gap between income and housing costs.

• There is a demonstrated need to provide low-income existing homeowners, particularly elderly homeowners, with assistance to address needed repairs.

• Certain "at risk" groups are particularly impacted by the lack of affordable housing and cost burdens such as: the very low-income, single parents and people with disabilities.

• The Cape's fragile environment and limited developable land requires that primary attention be given to developing strategies that create affordable housing through use of existing structures.

In addition, there are other challenges confronting the Commission, as well as the community at-large. For example, Congress has cut federal housing programs by 25%. These cuts will place severe constraints on the Cape's overall ability to address its affordable housing needs. We are just beginning to see the effects of these cutbacks at the local level.

Another challenge is understanding the relationship between creating affordable housing and protecting the Cape's environment. The Commission is committed to the belief that the two concerns are not mutually exclusive. However, without a conscious effort to develop proactive, complimentary strategies, the danger of addressing one issue at the expense of the other remains a risk. For this reason it is important to consider the practical and economic feasibility of using alternative septic technologies, the potential benefits and limitations of analyzing nitrogen limits through cumulative loading analyses, the relationship between affordable housing and capacity analyses, and the use of existing structures to create affordable housing.

In the 1995 Cape Cod Residents Survey, there was strong support for using existing buildings to create affordable housing: 74% supported using existing unoccupied structures for affordable housing and 65% supported affordable housing in single family homes. In addition, 70% of the respondents favored the use of alternative sewage treatment technologies to allow development of affordable housing.

We have learned some important lessons during the past five years. First, regionalism has played a major role in the success of our housing program. Getting the towns to cooperate in addressing their housing needs has made for a much more effective program. Second, focusing on use of existing structures produces results. It is worth noting that all of the units created through the HOME and Soft Second Loan programs came about in this manner.

Third, establishing goals, such as the 10% affordable housing goal, can serve as an important indicator of a community's progress toward meeting its affordable housing needs. It isn't enough, however, to simply establish goals and adopt plans; a concerted effort must be made to provide financial resources and technical expertise if there is to be meaningful progress. Finally, the provision of affordable hous-



ing produces economic benefits and contributes to the overall economic health of a community. These are all important lessons and they will play a prominent role in how we respond to the affordable housing needs of Cape Cod.

The Commission has a critical role to play in addressing the Cape's housing needs. During the next five years the Commission's affordable housing program will continue to focus on those activities and strategies that have proven effective. These will include:

- Seeking to maintain existing funding programs and continuing to search out and solicit additional housing funds for Barnstable County;
- Developing policies, plans and strategies that address affordable housing on a regional and town basis;
- Continuing to seek ways to address the technical needs of towns and local housing organizations;
- Monitoring towns' progress in addressing local housing needs;
- Pursuing strategies that create affordable housing and protect the environment;
- Developing updated housing information; and
- Through the DRI process, addressing the impacts of market residential development on affordable housing.

Goals and Policies

5.1 Goal: To promote the provision of fair, decent, safe, affordable housing for rental or purchase that meets the needs of present and future Cape Cod residents. At a minimum each town shall seek to raise its affordable housing stock to 10% of all year-round units by the year 2015.

Minimum Performance Standards

5.1.1 Affordable housing shall be encouraged in all areas that are appropriate for residential and mixed use residential and commercial development. Particular attention shall be given to locating affordable housing in or near designated growth centers and convenient to transportation corridors.

5.1.2 Residential construction and redevelopment projects of 10 units or more shall provide at least 10% of the proposed units as affordable units. In lieu of providing such units on site, the applicant may satisfy these requirements by providing equivalent housing units off site through the purchase of existing units, redevelopment, new construction, or a contribution of land.

5.1.3 Residential subdivision plans of 10 lots or more shall provide at least 10% of the proposed lots as affordable housing sites. Unless developed by the applicant, such sites shall be contributed to an eligible local entity. An applicant may also satisfy these requirements through one of the options specified in Section 5.1.2.

5.1.4 In lieu of providing such lots on site, an applicant may develop, sell, or contribute equivalent off-site lot(s) that possess the capability of supporting the designated number of affordable units.

5.1.5 In lieu of providing units or lots, an applicant may provide a cash contribution of equivalent value to a local fund for affordable housing. Equivalent value will be determined by the Commission. The method of payment shall be defined by the Commission and shall be secured as a condition of

development approval.

5.1.6 Prior to final review by the authorized board or commission, an applicant must demonstrate that off-site lots are buildable and/or units habitable. In the event that the off site lots or units prove to be unsuitable for any reason, an acceptable alternate contribution will be required.

5.1.7 All affordable housing contributions shall be initiated upon the conveyance of any of the subdivision lots or the issuance of a building permit for any of the lots, whichever occurs first. The applicant shall notify the Commission prior to conveyance of any of the lots and/or application for a building permit for any of the lots.

5.1.8 Development of on-site affordable housing shall take place at a rate and time frame to be defined by the Commission and shall be secured as a condition of approval. Every effort will be made to phase in the affordable units in a manner compatible with the project's overall development schedule. A similar plan, if necessary, will be employed in regards to off-site mitigation. This condition does not prohibit an applicant from satisfying the affordable housing component sooner.

5.1.9 The Commission shall follow guidelines contained in certified Local Comprehensive Plans in determining the local entity or organization that will receive the affordable housing contribution. In the absence of such a plan the Commission shall make this determination.

5.1.10 Affordable housing units created by this section shall remain affordable year-round through the use of deed restrictions that require the units to remain affordable for 40 years. Such restrictions shall be made known to the homebuyer or renter prior to the purchase/occupancy of the unit.

5.1.11 Affordable housing units within market rate developments shall be integrated with the rest of the development and shall be compatible in design, appearance, construction and quality of materials with other units. Location of the affordable units and construction specifications are to be approved by the Commission prior to the start of construction.

5.1.12 The applicant shall submit a marketing plan, or other method approved by the town through its local comprehensive plan, to the Commission for its approval which describes how the affordable units will be marketed to potential home buyers. This plan shall include a description of the lottery process utilized for selecting the home buyers.

5.1.13 Prior to the purchase of the affordable units the applicant shall demonstrate that the home buyers are income-eligible as defined by the Commission (See Definition of Affordable Housing). The applicant shall be required to use the Commission's application package and format in determining income eligibility.

5.1.14 For the purposes of calculating the 10% affordable housing contribution, all numbers shall be rounded to the nearest whole figure.

5.1.15 Residential construction, redevelopment, or subdivision development projects which are entirely comprised of housing units that are affordable for households at or below the median income may qualify for a waiver of the 10% affordable housing requirement.

Other Development Review Policies

5.1.16 The Commission's preference regarding off-site compliance with the affordable housing requirement should be in the following order: use of existing struc-



tures, cash contribution, or land contribution.

5.1.17 Incentives to maximize the number of affordable units should be considered. These should include, but not be limited to, waivers of certain fees, expedited permitting processes and town-approved density bonuses.

5.1.18 Nonresidential development projects should be evaluated as to the need for affordable housing created by such development and should provide such housing or should contribute to its development by one of the methods cited above.

5.2 Goal: To promote equal opportunity in housing and give special consideration to meeting the housing needs of the most vulnerable segments of the Cape's population including, but not limited to: very low income (50% of median income), low income (51% - 80% of median income), single female heads of household, racial minorities, people with AIDS, elderly, the homeless, disabled, and others with special needs.

Minimum Performance Standards

5.2.1 In all of its actions the Commission shall work to prevent discrimination in housing because of race, color, creed, religion, sex, national origin, primary language, age, political affiliation, disability, sexual orientation or any other consideration prohibited by law, and shall not knowingly approve any development that so discriminates.

5.3 Goal: To seek out, provide support and encourage the development of innovative strategies designed to address the housing needs of Cape Cod residents, with particular attention to the needs of low and moderate income renters.

Minimum Performance Standards

5.3.1 Reuse of existing structures as a means for creating affordable housing shall be supported and encouraged.

5.3.2 Use of HOME and Soft Second Loan funds shall be encouraged consistent with the stated purpose of Goal 5.3.

5.3.3 New seasonal developments shall make provision for employee housing or assist in placing summer employees in housing designed specifically for summer use.

Other Development Review Policies

5.3.4 The development of congregate, single-room occupancy and other similar affordable housing types should be encouraged.

5.3.5 The adoption of zoning by-laws allowing for mixed use in commercial buildings and the creation of affordable accessory apartments should be encouraged.

5.3.6 Nonprofit housing developers should be given preference in developing parcels of town owned or leased land for affordable housing.

Goal 5.4: Integrate the development of affordable housing with protection of the Cape's environment.

Development Review Policies



5.4.1 Use of alternative septic technologies in conjunction with the development of affordable housing should be encouraged and expanded.

5.4.2 Use of cumulative loading analyses to identify and set aside areas where there is adequate nitrogen capacity for development of affordable housing should be encouraged.

Implementation

Commission Actions:

A. The Commission will address the relationship between the process of conducting capacity analyses and the provision of affordable housing.

B. The Commission will pursue the development of a model inclusionary zoning by-law that will be made available for use by the Cape's fifteen towns.

C. The Commission will provide technical assistance to communities in developing their housing plans. The Commission will also monitor each town's compliance with their comprehensive housing plan on an ongoing basis.

D. The Commission will be responsible for overseeing the administration of the Barnstable County HOME Consortium. This shall include administration of the HOME Program, submission of annual Action Plans, and update of the Consolidated Plan.

E. The Commission will coordinate with the Executive Office of Communities and Development to encourage participation by communities in their Local Initiatives Housing Program.

F. The Commission will continue its support and active role in the activities of the Cape Affordable Housing Loan Consortium.

G. The Commission will continue to seek funds for and administer the Soft Second Loan Program.

H. The Commission will work with local towns, for- profit and non-profit developers, human service agencies, and others, in developing strategies that address the housing needs of the most vulnerable population groups as identified in Goal 5.2.

I. MGL Chapter 40B projects are not subject to review as Developments of Regional Impact. Pursuant to Section 13 (j) of the Cape Cod Commission Act, the Commission is considered a local board in reviewing 40B projects and will provide objective and constructive comments to the towns on such projects.

J. The Commission will work to foster greater cooperation and collaboration between housing and environmental concerns.

K. The Commission will support appropriate legislation calling for the establishment of a regional land bank derived from a land transfer tax or other source to provide funds for affordable housing and land acquisition throughout the Cape.

L. The Commission will promote and provide technical assistance to the non-profit housing development sector.

M. The Commission will explore, in conjunction with the HOME Advisory Council, the feasibility of converting the Barnstable County Hospital into an assisted living facility for low and moderate income elders.

N. The Commission's Housing Specialist will serve as the Commission's liaison to national, state, county-wide and local organizations that directly deal with the issue of affordable housing.

6. Heritage Preservation/ Community Character

6. Heritage Preservation/Community Character



Cape Cod is treasured for the distinctive historic and small town character of its communities and its open landscapes. Due to continuing development pressures, erosion of this special character is of great concern to residents.

In the 1995 Cape Cod Residents Survey, 58% of the respondents felt that the rural character in their community had worsened since 1990. In addition, 67% named protection of scenic landscapes and 60% named protection of historic areas as a high priority for the Commission. Redevelopment or reuse of existing vacant commercial and industrial sites and buildings was supported by 92% of respondents.

Every community on Cape Cod is struggling to manage growth, preserve historic resources and maintain town character, often without adequate growth controls and zoning standards. Use of historic districts and design review has increased on Cape Cod in the past five years, but a variety of other methods should be pursued to protect the region's distinctive character. These include demolition delay bylaws, preservation and conservation restrictions, scenic roadway regulations, innovative design review districts, and incentives for redevelopment and new development which are consistent with traditional patterns.

Identification of the Cape's important historic resources and characterdefining elements is essential to their preservation, both in terms of raising awareness of their significance and providing for their protection. Substantial new historic survey work has been completed in five Cape towns since 1990. Over seven thousand historic resources have been inventoried and filed with the Massachusetts Historical Commission (MHC). However, while recent inventories have recognized the diverse nature of our heritage, many resources such as historic landscapes, burial grounds, maritime sites and early tourism structures have not been inventoried.

Historic districts play an important role in protecting existing historic structures. Forty-one such districts, some with overlapping borders, presently exist on Cape Cod. Their level of effectiveness and the amount of protection they afford varies widely. While local historic districts typically provide the highest level of protection, several districts operate with inadequate and sometimes nonexistent design guidelines. Additionally, a large number of historic properties have no protection at all because they do not fall within the boundaries of an historic district. Consequently, many alterations have been made to historic buildings which greatly detract from their architectural integrity. To confront this problem, five towns have adopted demolition delay bylaws, providing time to consider alternatives to demolition of all significant historic structures in the town.

Archaeological resources (except for burial grounds) currently have limited protection. Recognizing that areas surrounding wetlands are likely to contain archaeological resources, wetland protection bylaws in two towns require MHC review to determine if a proposed development site is archaeologically sensitive. The MHC can presently require that important artifacts be carefully removed from an exca-

vated site, but has no ability to require that these areas remain intact. A balanced program of land acquisition, preservation and conservation restrictions, coordination with conservation organizations, and outreach should be pursued for protection of these resources.

Distinctive landscapes, vistas, and scenic roads are abundant on Cape Cod and contribute greatly to its seaside charm and rural atmosphere. State and local regulations provide few protections for these resources. A two year study of the Route 6A scenic byway by the Cape Cod Commission has recommended protective mechanisms such as scenic road regulations and special overlay districts, and has reinforced the need to coordinate transportation, land use and preservation planning to protect community character along distinctive transportation corridors.

Preservation of Cape Cod's heritage and efforts to guide new development reach beyond a focus on individual sites and structures. To protect the Cape's traditional landscape and development patterns, these issues need to be addressed within the broader context of land use controls. "Designing the Future to Honor the Past, Design Guidelines for Cape Cod" (Technical Bulletin 96-001) is a step toward addressing this need. This manual, completed in 1994, includes development guidelines which cover the spectrum from site selection to specific issue areas such as signage and lighting. The guidelines also discuss implementation and incentive programs which provide a balance of preservation tools. Partnerships with conservation organizations, business and economic development interests and housing assistance groups can identify common preservation goals, whether they relate to landscapes, commercial district redevelopment or individual structures.



Jenkins Farm, West Barnstable.

The most significant problem relative to town character is the land consumptive pattern of development on the Cape. Sprawling subdivisions and strip development along major roadways have significantly altered the early village settlement pattern which consisted primarily of small villages separated by farm land and rural areas. Existing zoning and subdivision regulations which require wide roadways, large lot sizes and setbacks, and excessive amounts of parking have encouraged a suburban development pattern for Cape Cod. Such a pattern so strongly promotes and favors the use of the automobile that, in many cases, pedestrians can no longer comfortably walk to village centers from their homes. Zoning also determines what form of development is possible in each community and whether it follows traditional forms or allows for strip development and large scale structures which erode community character. Efforts to revise zoning to reinforce traditional development patterns in the towns are still in the early stages. While several towns now encourage cluster development, few incentives have been adopted to limit sprawl, promote redevelopment and preserve existing cultural resources.

Under Chapter 40A of Massachusetts General Laws, local boards have no explicit

authority to require mandatory site plan review. They have limited ability, when approving development projects, to influence building and site design. Numerous structures, both residential and commercial, have been built which are not compatible with historic Cape styles. The absence of local control on this issue has in effect encouraged a dramatic departure from the beach cottage and small village character that is such an important part of the Cape's heritage.

Finally, the Cape's communities, like many others around the nation, have visually suffered from the construction of above-ground utility lines and radio towers. The recent proliferation of cellular and other communications towers has also had a significant visual impact on the Cape's landscape, and pressure to construct additional towers is great. Utility companies have historically sought approval on placement and height from the towns where these utilities were to be located. There has never been a regional approach to reviewing the impact of these structures on the landscape as seen from other neighboring towns or from important regional viewing points. Additionally, excessively bright lighting on both public and private properties has created a growing problem with light pollution. Lighting guidelines were adopted by the Commission in 1995 ("Technical Bulletin 95-001") and should serve as a basis for addressing this problem at the local level.

Goals and Policies

6.1. Goal: To protect and preserve the important historic and cultural features of the Cape landscape and built environment that are critical components of Cape Cod's heritage and economy.

Minimum Performance Standards

6.1.1 Additions or alterations to historic structures shall be consistent with the building's architectural style and shall not diminish its historic and architectural significance. The Massachusetts Historical Commission (MHC) shall review any projects which require a state or federal license, permit or funding, as defined by the National Historic Preservation Act, for their conformance to the Secretary of the Interior's rehabilitation guidelines and for their effects on the historic significance of the property and district. The MHC will also assist the Commission in reviewing projects which will affect buildings listed on the State or National Registers of Historic Places.

6.1.2 The distinguishing, original qualities of an historic building, structure, landscape or site and its setting shall be preserved. The needless destruction, removal or alteration of historic material or architectural features shall be avoided unless the applicable local authority (historical commission or historic district commission) determines that such removal will not substantially alter or damage the integrity of the building or the site (see Guidelines for Referral of Historic Structures, Technical Bulletin 96002).

6.1.3 Where development is proposed on or adjacent to prehistoric or historic archaeological sites or sites with high archaeological sensitivity as identified by the Massachusetts Historical Commission or local historic commissions during the review process, it shall be configured so as to maintain and/or enhance such resources where possible. A pre-development investigation of such sites shall be required before a final design proposal is submitted. This will minimize difficulties and expense should the site be of archaeological or historic importance.

Other Development Review Policies



6.1.4 Historic buildings that may be slated for demolition or relocation should be preserved on site and reused or incorporated into the overall design of the project unless reuse has definitely been shown to be infeasible. Distinguishing original stylistic features or examples of skilled craftsmanship of historic or aesthetic significance should be maintained or replaced with similar elements unless the local historical commission determines another alternative to be historically appropriate.

6.1.5 The reuse of historic structures in village centers is encouraged so as to promote revitalization of these areas. Where reuse has definitely been shown to be infeasible, these buildings should be replaced with structures of similar character, mass, proportion and scale.

6.2 Goal: To encourage redevelopment of existing structures as an alternative to new construction, and to ensure that future development and redevelopment respects the traditions and character of historic village centers and outlying rural areas so as to protect and improve, where necessary, the visual character of Cape Cod consistent with Designing the Future to Honor the Past, Design Guidelines for Cape Cod, Technical Bulletin 96-001.

Minimum Performance Standards

6.2.1 The height and scale of a new building or structure and any addition to an existing building shall be compatible and harmonious with its site and existing surrounding buildings. No new development shall include a single structure which has a footprint greater than 50,000 square feet unless it can be demonstrated through the design of the building and vegetative or other screening methods that the project will not have adverse visual impacts on the surrounding community.

6.2.2 Where proposed development and redevelopment is surrounded by buildings with distinctive architectural styles, building height and exterior materials shall be harmonious with the character of the surrounding area and new construction shall not obscure views of existing historic structures from public ways. In all cases, where new buildings and additions are proposed, the mass and scale of the building, roof shape, roof pitch, and proportions and relationships between doors and windows shall be harmonious among themselves and consistent with traditional Cape Cod architectural styles.

6.2.3 All new development shall provide adequate landscaped buffers in order to limit adverse visual impacts on the surrounding community. When new development is proposed adjacent to significant vistas, open landscapes, scenic roadways, historic districts or individual historic structures, landscaped buffers shall be provided in order to limit visual impacts on these resources from the new development. Preservation of existing natural vegetation in these buffer areas is preferred.

6.2.4 Expansion or creation of strip development shall not be permitted. Redevelopment of existing strip development shall provide adequate buffers between parking areas and the street, and significant improvement to interior parking lot landscaping, as well as facade improvements and frontage buildings, as necessary, to improve the visual character of the site.

6.2.5 Landscaping that integrates buildings with their environment, enhances



architectural features and provides amenities for pedestrians shall be provided on site by all new development.

6.2.6 All development shall implement a landscape plan which addresses the functional aspects of landscaping, such as drainage, erosion prevention, wildlife enhancement, screening and buffering, wind barriers, provision for shade, energy conservation, sound absorption, dust abatement and reduction of glare.

6.2.7 Exterior lighting in new development or redevelopment shall comply with standards including design, light source, total light cutoff and footcandle levels defined in the Exterior Lighting Design Standards, Technical Bulletin 95-001.

6.2.8 The installation of billboards, offsite advertising (excepting approved directional signs) and internally lit or flashing signs shall not be permitted.

6.2.9 All utilities for development including cable shall be placed underground except where the presence of natural features such as wetlands or archaeological resources prevent such placement.

6.2.10 Parking shall be located to the rear or the side of a building or commercial complex in order to promote traditional village design in commercial areas unless such location would have an adverse or detrimental impact on environmental or visual features on the site, or is completely infeasible.

6.2.11 Open storage areas, exposed machinery, refuse and waste removal areas, service yards and exterior work areas and parking lots shall be visually screened from roads and adjacent residential areas through fencing, stone walls or landscaping. Where landscaping is used as screening, it should be equally effective in summer and winter. Landscape screening should be installed at a height, density and depth that provides for the full desired effect within three years growing time. If plantings are not an alternative due to site limitations, the facilities shall be screened from public view with materials harmonious with the building.

Other Development Review Policies

6.2.12 The integrity of natural landforms and broad, open views of the landscape as seen from any local, county or state-designated scenic roads and Route 6 should be maintained.

6.2.13 Existing views to the shore from surrounding areas should be maintained wherever possible.

6.2.14 The planting of shade trees along roadways to improve the visual quality of the area is encouraged. Such trees should be tolerant of roadside conditions and a minimum of 3" caliper/diameter at breast height at time of planting.

6.2.15 Parking lots should be designed to accommodate average usage, (rather than peak day usage), where appropriate have pervious surfaces, and be planted with shade trees in the interior portions of the lot.

6.2.16 Landscape materials which are suitable to the climate and location of the site should be used.

6.2.17 Distinguishing original features of a site such as trees of greater than 6" diameter, existing plantings and topography should be preserved where possible. Plantings on the street-facing side of buildings, window boxes and planters are encouraged. Benches or other seating arrangements and walkways within the development and linking to other buildings should be provided where appropriate.

6.2.18 Traditional building materials such as wood shingles, clapboards and brick should be used for new construction and rehabilitation of existing structures.

6.2.19 In general, the size and color of all signs should be in scale and compatible with the surrounding buildings and street. When more than one sign is used, the graphics should be coordinated to present a unified image. Wooden signs, either painted or carved, are usually most appropriate.

6.2.20 All exterior lighting should be part of the architectural and landscape design concept. Fixtures, standards and exposed accessories should be concealed or harmonious with other project design materials.

Implementation

Commission Actions:

A. The Commission will research and evaluate creation of regional preservation programs such as a preservation trust, revolving fund, conservation district or District of Critical Planning Concern to support preservation of key cultural properties in the region and will establish a model for development of such programs.

B. The Commission will work with federal, state and local agencies to increase education, communication and publicity regarding cultural preservation opportunities, funding mechanisms, and historical significance, and to create increased public awareness of the fragility of the region's heritage.

C. The Commission will work with towns to pursue incentive programs that promote village style development, limit strip development, guide redevelopment consistent with traditional patterns, and encourage preservation and reuse of historic properties through revisions to zoning bylaws and ordinances, tax credits and other means.

D. The Commission will develop model siting criteria for the location of communications towers and pursue other means to limit their visual and environmental impacts. (See Capital Facilities Commission Action I)

E. The Commission will work in consultation with the Massachusetts Historical Commission and Local Historical Commissions to identify important archaeological sites and other historic resources as part of a coordinated preservation planning process. The Commission will pursue preservation of significant resources through a variety of means such as preservation or conservation restrictions, site acquisition, and educational outreach.

F. The Commission will work with towns to identify and protect scenic roadways and scenic landscapes of exceptional quality. The Commission will work with state and town officials and tree wardens to develop model scenic road, vista and viewshed protection bylaws, as well as other regional strategies to protect these areas.

G. The Commission will work with utility companies to encourage placement of existing utility lines and associated structures underground in locations where these elements are deemed to detract from historic and cultural features, community character and scenic views. The Commission will work with towns and utility companies to identify priority areas for undergrounding utilities and will identify and pursue potential financing alternatives.

H. The Commission will work with the towns to develop appropriate vegetated buffer standards for new development.

Recommended Town Actions:

A. Towns should develop local design guidelines and a design review process through zoning bylaws, overlay districts or site plan review bylaws. As towns develop their own local review guidelines and procedures through their local comprehensive plan, the Commission will defer to local standards in reviewing



Developments of Regional Impact.

B. Towns should continue to inventory their historic resources and, where appropriate, structures, landscapes or sites of historic significance should be nominated by towns or property owners for listing on the State or National Historic Registers. Towns should consider making discretionary referrals (per Section12(e) of the Cape Cod Commission Act) to the Commission for DRI review of projects affecting these structures or sites regardless of their Register status.

C. Towns should identify scenic roadways and establish local bylaws or guidelines that serve to preserve the character of these areas including:

- guides on clearing or planting;
- rules for signs and utilities;
- plan review procedures for key locations;
- measures to preserve scenic views;
- restrictions on height of buildings;
- controlling the removal or alterations of stone walls;
- discouraging the cutting of large trees (greater than 6" in diameter); and
- the institution of tree planting programs to replace trees in areas where older specimens have died.

D. Towns should strive to reduce and be more flexible regarding parking requirements such as allowing shared parking lots, reducing the number of spaces presently required per development, requiring secure bicycle parking in shopping and business districts, allowing reserve parking strategies and where safety permits, encouraging curbside parking in village centers in order to slow traffic and buffer pedestrians.

E. Towns should consider developing awards programs to recognize preservation and redevelopment projects which are consistent with traditional character and design goals in order to increase awareness and appreciation for these developments.

F. Towns should establish tree planting programs for important roadways within the community. Town tree wardens should be involved in this effort.

G. Towns should develop a bylaw which limits land clearing and alteration of natural topography prior to development review and a local landscape ordinance which protects existing trees and requires screening and landscaping of new development from major roads.

H. Towns should adopt bylaws which regulate the placement of utility structures such as radio towers, high voltage lines, water towers and other transmission structures.

I. Towns should pursue development of local historic districts or design review districts in areas of distinctive development, especially those which face redevelopment and growth pressures. Demolition delay bylaws should be considered to protect historic structures throughout the town. Local Historic Districts should consider the recommendations made in "Designing the Future to Honor the Past" regarding tools for influencing aesthetics.

J. Where feasible, towns should require the placement of new utility lines underground and actively encourage the undergrounding of existing lines and structures in locations where they detract from historic and cultural features, community character and scenic views.

III. Resources of Regional Importance

Background

Section 7(b)(1) of the Cape Cod Commission Act requires that the Regional Policy Plan identify Barnstable County's critical resources and management needs including its "natural, scientific, coastal, historical, recreational, cultural, architectural, aesthetic, and economic resources, ground water and surface water supplies, available open space, and available regions for agricultural, aquacultural and development activity." Regional resources for the purpose of the Plan are considered to be those resources which are significant to more than one town or cross jurisdictional boundaries. They include both natural and manmade resources; they are areas that have public value and that may be vulnerable to damage from uncontrolled or inappropriate development.

Key regional resources on Cape Cod include but are not limited to those listed below. Most of these areas have been mapped by the Commission on its computerized geographic information system.

Natural Resources

Recharge areas to existing and future public water supply wells

Recharge areas to coastal embayments

Inland and coastal wetlands and their recharge areas

Inland and coastal ponds

Floodplains, beaches, banks and dunes

Shellfish and finfish habitat areas

Rare plant and animal habitat and unusual biological habitats (e.g. sand plain grasslands, cedar swamps, etc.)

Designated Areas of Critical Environmental Concern

Federal, state and regional parks and nature reserves (e.g. Cape Cod National Seashore, Nickerson State Park, Audubon Sanctuaries)

Town conservation lands

Private open space

Economic, Historic, and Cultural Resources

Historic village centers

Working waterfronts and harbor areas

Active aquacultural and agricultural areas including cranberry bogs

Regional business districts

Properties listed or eligible for listing on the National or State Register of Historic Places

Scenic landscapes

Archaeological resource areas

Key Regional Facilities

Regional transportation corridors (roads, rail lines, bikeways)

Major airports and ferry ports

Landfills, transfer stations, recycling centers

Public water supply and distribution systems

Public wastewater and septage collection and treatment systems
Regional health care facilities

Districts of Critical Planning Concern

Sections 10 and 11 of the Act authorize the Commission to designate certain resources of regional importance to Barnstable County as Districts of Critical Planning Concern. These resources should be of critical value to the area and in need of protection from inappropriate development. According to the Act, a proposed district must possess "significant natural, coastal, scientific, cultural, architectural, archeological, historic, economic or recreational resources or values of regional, state-wide or national significance." A proposed district may also include areas where sensitive ecological conditions preclude development or where a major capital public facility or area of public investment is proposed.

The District of Critical Planning Concern (DCPC) designation allows communities to protect or promote a resource which has been identified in the Commission's Regional Plan and/or a town's Local Comprehensive Plan as being critical to the character and viability of the region. The designation process encourages towns to work together to address problems or concerns that are crucial to the well being of all Cape residents such as the protection of clean drinking water.

Most importantly, the DCPC designation is a powerful regulatory tool that can augment existing local bylaws and regulations in areas where existing laws may be unable to prevent environmental degradation or may discourage sound economic development or construction of affordable housing. A designation allows for the creation and adoption of special rules and regulations to govern development within the district. Therefore, a nominated area should require a special regulatory or planning effort which cannot be addressed adequately through existing local or state regulations.



Cape Cod Canal Bike Trail, Bourne.

Once an area has been designated as a District of Critical Planning Concern and implementing regulations adopted, projects within its boundaries would be regulated under the new rules established to protect the resources within that district. Grandfathering protections afforded by MGL Chapter 40A would not apply. For example, Implementing Regulations for a district which is designated to promote village center revitalization may provide incentives for development more dense than is otherwise permitted. Alternately, regulations designed to protect a critical environmental resource may provide safeguards to prevent inappropriate development. Once a district has been designated and Implementing Regulations adopted, town agencies will oversee development and grant permits within the district.

Management of Critical Resources through Districts Of Critical Planning Concern

The Commission has identified various types of districts that might be proposed as districts of critical planning concern. They include, but are not limited to, those listed below. The accompanying descriptions are intended to provide guidance for district nominations and should in no way limit their scope. In some situations, a significant resource area may qualify for designation as more than one type of district.

Water Resource District: This designation is appropriate for the protection of an aquifer, watershed, aquifer recharge zone or surface water body which could be endangered by continued development. Studies or expert advice should indicate how special regulations could improve the quality or quantity of water.

Through the designation of a Water Resource District, a town might seek to limit nitrogen loading within the recharge area of an existing or proposed public well to ensure a sustainable supply of high quality drinking water or to limit nitrogen and phosphorus loading to a freshwater pond to avoid eutrophication. Other potential regulations could include restrictions on toxic or hazardous materials discharge, limitations on lot coverage or the number of bedrooms allowed and/or controls on conversion of seasonal residences to year-round occupancy. Additionally, remediation of existing stormwater discharges into surface water bodies could be required.

Shellfish Resource District: This designation may be used to protect a water body that is particularly suited for production of shellfish or finfish and is either productive now but in danger of contamination, or can be made productive through good management. Shellfish may occur either naturally or through aquacultural production.

As in a Water Resource District, the primary intention would be to limit the discharge of contaminants into those waters which provide good shellfish and finfish habitat. Potential regulations could include prohibitions on the discharge of untreated stormwater into coastal waters or wetlands and the prohibition of construction or expansion of docks and piers within significant habitat areas. Additionally, new dredging projects might be prohibited unless it could be proven that they would enhance the habitat. If a marina falls within the boundaries of the district, it could be required to provide boat sewage pump-out facilities and collection facilities for waste oil.

Agricultural Resource District: This designation should include areas particularly suited now or in the future for agricultural production. If the district is not being farmed at the time of designation, it should be practical to convert it to agricultural uses due to soil and topography conditions and adequate available acreage.

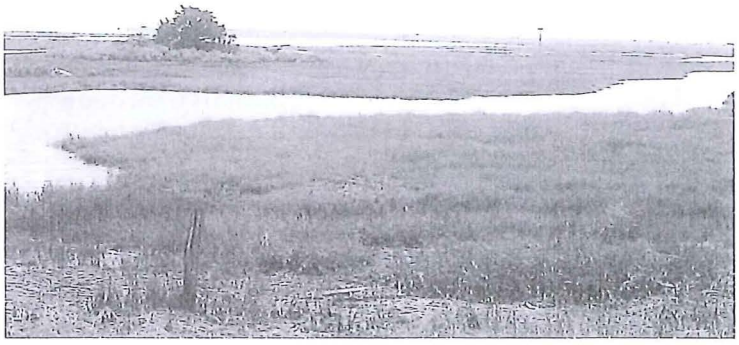
Through the designation of an Agricultural Resource District, several adjoining towns might seek to provide incentives to farmers to produce locally grown fruits and vegetables or to support the increased production of cranberries. Potential regulations could include the requirement of management practices that would improve water quality and conserve water. A buffer area might be required to separate agricultural and residential uses and to allow farmers proper management of their growing areas. Permanent title restrictions that would reduce property taxes might be placed on land within the district to promote agricultural use in perpetuity.

Wildlife, Natural, Scientific or Ecological Resource District: This designation should include important and identifiable wildlife, natural, scientific or ecological resource. This might include rare plant and animal habitats, unusual biological habitats such as sandplain grasslands or quaking bogs, and unusual geological features.

The primary intention of this type of designation is to keep significant habitat areas intact. Potential regulations could include the prohibition of certain types of

new development that would adversely affect threatened species and a requirement that a wildlife management plan be prepared for the district. In many cases, developments can be planned to minimize impacts on wildlife by sensitively locating structures away from migrating or nesting areas and by minimizing the clearing of vegetation and alteration of natural topography. Construction could also be prohibited in vernal pools and within a minimum 100' buffer around these areas.

Cultural, Historic, Architectural or Archaeological Resource District: This designation is appropriate for the protection of a place, landscape, way or view which is in some special way expressive of the character of Cape Cod or the traditions of its residents. Designations should symbolize and support traditional activities and ways of life on Cape Cod, and should be considered for those areas which are of great aesthetic value to the region or are important historically such as a Native American settlement or quaint fishing village. This district may also be appropriate for the protection of regionally significant recreational areas including those used for hunting, fishing and wildlife observation. Any area designated as this type of district should be irreplaceable, or replaceable only with extraordinary effort or expense.



Great Sippewisset Marsh DCPC, Falmouth.

Potential regulations could require that new construction within an historic village be consistent with historic architectural styles and that archaeological sites not be adversely impacted. Signage might be restricted and parking may be required to be located to minimize its visibility. The alteration of ancient ways or cartpaths might be prohibited and regulations might require that significant scenic views from roadways or other publicly accessible places be maintained or protected. The removal of old stone walls or large trees might also be limited.

Economic Development Resource District: This designation is appropriate for the setting aside of areas which have special potential for providing employment or housing for Cape Cod residents, or for accepting necessary development which might be detrimental in other locations. The area should be better suited or more readily available for development than other areas of Cape Cod, considering topography, utilities, costs and environmental and social impact. These areas should promote activities with the greatest economic potential for Cape Cod such as shell or finfishing, aquaculture, marine science, cranberry farming, health services, tourism, clean manufacturing, computer software, education, environmentallyoriented industry and cultural facilities.

An appropriate area for this designation should require special regulations to create, preserve or enhance its economic potential. Potential regulations could encourage large scale commercial activities to be concentrated in areas where infrastructure is available or to encourage the redesign, reutilization and infill of existing strip commercial developments. Local zoning requirements might be altered to allow increased densities and to permit variations of building heights and dimensional requirements. A detailed plan for the area could be undertaken jointly by the town and the Commission. Such a plan could establish the locations of uses and all devel-

opment requirements. The development review process could then be streamlined to allow a developer to receive all permits expeditiously, assuming he meets the requirements. District regulations might also require that certain design standards be upheld to ensure an attractive commercial zone which has pedestrian amenities and suitable landscaping.

Major Public Investment District: This designation should include areas which may now or in the future, have a significant impact on major public investments such as airports, roads and ways, schools, parks, beaches, preserves, public utilities and medical facilities owned or operated by a federal, state, county or municipal agency. It should be clear that inappropriate development in the district would interfere with the use of the public investment or would impair the health, safety and welfare of the public.

Potential regulations could require a buffer zone between airport landing areas and all types of development to protect surrounding residents from excessive noise, fumes and possible airplane accidents. Alternately, a buffer might be required surrounding public parklands. Potential regulations could limit development visibility or densities in the interest of preserving sensitive resources and the attractiveness of the park. Such regulations would protect the park's crucial contribution to the local economy as the key destination for thousands of tourists each year. Additionally, a group of communities could determine that an existing roadway is becoming unsafe due to development built along it, and might decide to change local zoning along the roadway corridor to better control access and traffic generation.

Hazard District: This designation should include areas that possess hazards due to natural or man-made conditions which render them unsuitable for intense development. Hazards may include such things as marginal soil or steep slopes, known potential for flooding, erosion or salt water intrusion, areas which are extremely polluted and any area where construction problems may arise due to existing natural conditions. The primary intention of designating such a district should be to protect the public health, safety and welfare.

In areas susceptible to flooding or wave action, new construction and the expansion of existing structures might be prohibited or new public investment of existing infrastructure limited. To reduce the risk of salt water intrusion, limitations could be placed on new private wells within a specified distance of the shoreline. Additionally, construction could be prohibited along dunes or steep embankments where the threat of erosion is great.

Waterfront Management/Watersheet Zoning District: This designation should identify appropriate uses of harbor and waterfront resources, including maritime, fishing and recreational uses of the shoreline and adjacent waters, and should promote conservation.

Potential regulations might restrict non-water-dependent uses within this area. In order to protect shellfish habitat, moorings might be allowed only in specific areas and dredging be allowed only to maintain an existing channel. Boat sewage pumpout facilities and waste oil collection areas could be required. Furthermore, maintenance of existing public access points to the shore for fishing or boat launching could be required as a condition of development approval.

Downtown Commercial Revitalization District: This designation promotes development in downtown areas with a goal of maintaining their economic vitality and reducing sprawl. These areas might be older commercial "Main Streets" which have seen some decline in recent years.

Regulations in this district could encourage rehabilitation of the area by offering density bonuses and perhaps providing a streamlined approval process as in the Economic Development Resource District. However, regulations might also require that new development be sensitive to historic architectural styles and patterns of development. New buildings could be encouraged to locate on the property line along the sidewalk and to provide pedestrian amenities such as benches, landscap-

ing and street tree plantings. Parking could be encouraged on the street and to the rear of the buildings.

Transportation Management District: This designation would regulate development in order to facilitate public transportation and/or traffic flow and safety. Any measures taken within this district should be consistent with the Cape's historic, scenic and natural resources.

Potential regulations could require all new development along an existing roadway to contribute funds towards traffic improvements in order to maintain a desired Level Of Service within the district. New developments might be required to provide bus stops at frequent intervals in order to accommodate public transit or to make provisions for bike lanes and paths. Along scenic and environmentally sensitive roadways, major widening or the removal of significant trees, vegetation or scenic features might be prohibited. In order to minimize curb cuts and pavement coverage, adjacent commercial uses might be required to share parking and access points.

Affordable Housing Resource District: This designation could include areas well suited for the provision of decent, affordable housing of all types for low and moderate income Cape Cod residents. A variety of issues should be considered, such as proximity to social services and commercial centers, availability of utilities and town infrastructure, topography and environmental impact.

Potential regulations might encourage mixed use of existing or new structures and allow the creation of accessory apartments. Town-owned land might exist within the district which could be donated for the development of affordable units. Local zoning might be amended to allow higher density, and affordable projects could be eligible for waivers or reduced permitting fees. When market rate and affordable housing are developed within the same project, integration of landscape and architectural details might be required. Deed restrictions that require units to remain affordable and procedures governing their operation and management might also be required.

IV. Regional Coordination with Other Planning Efforts

Section 7(b)(4) of the Cape Cod Commission Act states that the Regional Policy Plan shall include a section that contains "a policy for coordinating regional and local planning efforts, including coordinating planning activities of private parties and local, state or federal governmental authorities." A review of the goals and policies and implementation actions contained in the Regional Policy Plan makes it clear that a variety of coordinating efforts will need to be undertaken both formally and informally to carry out the purposes of the Plan. Many of these activities are already planned or underway through public and private sector programs. The Cape Cod Commission should not duplicate existing efforts but should supplement these efforts and provide technical assistance where appropriate.

The contents of this Coordination section have evolved as various drafts of the Commission's Regional Policy Plan were reviewed by local, county, state and federal agencies. During this period the Commission has attempted to incorporate into the Plan a discussion of coordinating efforts that would be undertaken to further the goals and policies of the Regional Policy Plan. The Regional Policy Plan is not a static document, and cooperation among all levels of government will be a significant factor in the Commission's planning and regulatory program and in future refinement and implementation of the Regional Policy Plan.

Local Authorities

The Cape Cod Commission Act provides for establishment of Local Planning Committees to develop Local Comprehensive Plans for each town in consultation with the Cape Cod Commission. Each community on the Cape has established such a Committee and these committees have been meeting regularly. In some towns the Planning Board was appointed as the Local Planning Committee; in others a separate committee was created comprised of representatives of various town boards within the community, including Conservation Commissions, Boards of Health, and Historic Commissions. Regardless of the formal composition of the Local Planning Committees, it is clear that preparation of Local Comprehensive Plans requires the participation of all relevant town boards. The Commission encourages Local Planning Committees to seek the broadest possible input from within their communities in developing local plans. The Commission has provided substantial financial and technical assistance to towns to help them develop Local Comprehensive Plans. In addition, the Commission intends to work directly with town boards and staff to implement portions of the Regional Policy Plan and assist local planning efforts by providing data on regional trends and other technical information. Such boards and staff include, but are not limited to: Boards of Selectmen and Town Administrators, Planning Boards and Town Planners, Conservation Commissions and Conservation Administrators, Boards of Health and Health Agents, Housing Partnerships and Housing Committees, Historic Commissions and Historic District Commissions (including the Old Kings Highway Regional Historic District Commission), Recreation Commissions, Water and Sewer Commissions, Natural Resource Departments and Shellfish Officers, Public Works Directors and Town Engineers, Solid Waste Advisory Committees, Harbormasters and Building Inspectors.

In addition to the planning efforts of Local Planning Committees, the Commission will coordinate with local boards on review of Developments of Regional Impact. Commission decisions shall be consistent with local bylaws and regulations as required by the Cape Cod Commission Act. However, the Commission may impose more stringent

conditions on development than would be required by local review. In certain cases, the Commission may recommend during its review of a project that a town consider waiving one or more of its local standards in the interest of attaining the intent of the Cape Cod Commission Act. Such waivers are not mandatory, but they can be considered by the town during its local review process.

County Authorities

In 1988 Barnstable County adopted a home rule charter that established an executive branch of county government, the County Commissioners, and a legislative branch, the Assembly of Delegates. The Cape Cod Commission Act specifies the formal roles that the County Commissioners and Assembly of Delegates play in reviewing and approving certain Commission decisions and regulations.

The Act specifies that a member of the County Commissioners must serve as a member of the Commission. In addition, the County Commissioners appoint two additional members of the Commission: a Native American representative and one minority member. The County Commissioners also appoint the Commission's staff. The Assembly of Delegates approves some of the Commission's regulations by ordinance, including regulations on designation of Districts of Critical Planning Concern, review of Developments of Regional Impacts, and imposition of impact fees. The Act also requires that the Assembly of Delegates adopt the Commission's Regional Policy Plan by ordinance and establish a procedure for review and amendment of the Regional Policy Plan at intervals not to exceed five years. The Assembly must also review and designate by ordinance all Districts of Critical Planning Concern.

In addition to the roles specified by the Act, the Commission will work with the County Commissioners and the Assembly of Delegates on projects of regional interest to further the goals and policies in the Regional Policy Plan. The Commission also plans to work with the other departments within Barnstable County government including the Health and Environmental Department, Cooperative Extension, and the Economic Development Council on a number of activities.

The Barnstable County Health and Environmental Department, like the Commission's Water Resources Office has been actively involved with the protection of Cape Cod's water resources. The Department assists local health departments throughout the County and conducts laboratory analysis, monitoring and research projects on a number of subjects including septic systems, landfills, safe use of hazardous materials, underground storage tanks, and shellfish contamination. The County Cooperative Extension Department plays a vital role in educational programs for residents of Barnstable County in areas such as agriculture, septic system maintenance, recycling, natural resources, and the safe use of fertilizers and pesticides. Where Commission research or planning activities are proposed in these subject areas they will be coordinated with the applicable county department so as to use their expertise and not duplicate efforts already underway. Educational efforts should be sponsored by Cooperative Extension in cooperation with other appropriate departments and agencies.

There are a number of proposed areas of coordination between the Commission, Health and Environmental Department and Cooperative Extension. For example:

- the Commission will work with the Health and Environmental Department to help it identify unregistered underground storage tanks and will support the County's ongoing tracking program for underground storage tanks;
- the Commission will work with the Health and Environmental Department to encourage town adoption of a model toxic and hazardous materials bylaw/health regulation developed by the Department and the Cape Cod Commission;
- the Commission will work with County Cooperative Extension to encourage the

use of alternatives and best management practices for fertilizers, pesticides, road salt, hazardous household chemicals and other materials that could adversely affect surface and ground water quality; and

- the Commission will work with both County Cooperative Extension and the Health and Environmental Department to provide technical assistance to towns on alternate methods of stormwater management.

In addition, the Cape Cod Economic Development Council (CCEDC) has an important role to play in promoting development initiatives that are compatible with the Cape's environment and character. The Actions described in the Economic Development section of the Regional Policy Plan outline the respective roles of the Commission and the CCEDC in economic development.

Other Regional Authorities

The Cape Cod Commission has several advisory committees that were established to provide specialized expertise in a variety of policy areas. These include the Joint Transportation Committee, Solid Waste Advisory Committee, and Coastal Resources Committee. The Commission will continue to work closely with these advisory committees to carry out the policies and implementation actions in the Regional Policy Plan.

The Coastal Resources Committee (CRC) is advisory to both the County Commissioners and the Cape Cod Commission. The CRC provides a forum for the public and government agencies to discuss coastal and marine issues of local and regional concern. Where appropriate, the CRC makes recommendations for actions to the County. In addition, the CRC serves as an advisory committee to the Massachusetts Coastal Zone Management Program and the Massachusetts Bays Program, providing advice on local and regional issues of concern to both for program implementation.

The Commission has established two issue-specific advisory committees which it will continue to work with. The Barnstable County Science Advisory Panel, comprised of six interdisciplinary scientists, assists the County in its review and evaluation of the Massachusetts Water Resource Authority's Deer Island Wastewater Treatment Facilities.



Sesuit Harbor, Dennis.

The Barnstable County Scientific Advisory Panel on the Massachusetts Military Reservation, established in response to an Assembly of Delegates Ordinance, is comprised of 11 interdisciplinary scientists appointed by the County Commissioners, in addition to eight scientists from the Environmental Protection Agency. This Panel was established to assist the County in evaluating the information to date regarding the cleanup of the Massachusetts Military Reservation, and to provide advice on the relative environmental risk of the plumes and the remediation plan, to the Upper Cape's fresh and salt water ecosystems.

The Cape Cod Regional Transit Authority provides regional coordination for the Cape's public transportation systems. The Commission will work with the Regional Transit Authority to encourage the development of public transportation alternatives such as bus routes, rail and shuttle van services. In addition, the Commission will work with the RTA and other appropriate state agencies and private parties to identify locations for future park and ride lots, and to encourage the provision of bicycle storage facilities at such locations.

The Commission will coordinate with the Woods Hole, Martha's Vineyard & Nantucket Steamship Authority to encourage joint solutions on issues of mutual concern relating to ferry transportation between the Cape and Islands.

While the Cape Cod Commission Act does not specifically enumerate health and human services as an interest to be furthered by the Act, the Commission recognizes the importance of health and human services to the Cape's economy and to the well-being of the Cape's residents. The Commission will work with the Barnstable County Health and Human Services Advisory Council and the County's Human Service Coordinator to incorporate information on health and human service needs and resources into the Commission's library of economic and demographic data. The Commission will also consult with the Council regarding the impact of proposed policies and development on the health and human service needs of Barnstable County residents.

State Authorities

Governor's Committee

The Cape Cod Commission Act created a Governor's Committee composed of the Secretaries of the Executive Office of Environmental Affairs, Transportation and Construction, Economic Affairs, Labor, and Communities and Development, and any other state official designated as a member by the Governor. Through the Governor's Committee a vehicle is also created for coordination with the various state agencies that are situated within these Executive Offices, such as the Department of Environmental Management, Department of Environmental Protection, Department of Fish, Wildlife and Environmental Law Enforcement, Department of Food and Agriculture, Massachusetts Highway Department, Water Resources Commission and others. The purpose of the Governor's Committee is to coordinate state agency planning with the duties, responsibilities, plans and policies of the Cape Cod Commission. The Act required that the Commission meet quarterly with the Governor's Committee during its first two years and annually thereafter. The Act also authorizes joint planning programs between the Commission and state agencies. The Commission will work with the Governor's Committee to incorporate new state initiatives and policies into the Commission's policies and programs as well as to discuss modifications to existing state policy that would further the goals of the Regional Policy Plan.

State Agencies

The Commission recognizes that there are a host of existing state regulations and programs that relate to Commission efforts, particularly review of Developments of Regional Impact. These include Chapter 91 regulations on waterways and waterfront development, the Wetlands Protection Act, Massachusetts Environmental Protection Act, Ocean Sanctuaries Act, Title 5, Highway Access Permits, Ground Water Discharge Permits and Chapter 40B. It is not the intent of the Commission to undertake the review required by these laws and regulations. Such review is best undertaken by the appropriate state and local agency. The Commission will make decisions that are consistent with the requirements of these programs and will seek to include conditions on projects that further their regulatory goals. However, in keeping with the intent of the Cape Cod Commission Act, the Commission's decisions and project conditions may be more stringent than would be required by the state.

The Commission will also actively work to streamline existing permitting processes

where such reviews overlap with the Commission's review. For example, during the Commission's first year of operation it established a Joint Review Process with the Executive Office of Environmental Affairs for projects subject to review under the Massachusetts Environmental Policy Act and the Cape Cod Commission Act. This process helps to coordinate review of such projects among local, regional and state authorities. The Commission has also prepared memoranda of understanding with numerous towns to help coordinate regional and local reviews of proposed developments.

In addition to state regulatory programs, existing state agency policies exert a significant influence on Cape Cod. As far as possible, it would be desirable if future state agency policies and actions reflect the character and sensitive nature of Cape Cod. The Cape Cod Commission has undertaken and will continue planning activities in conjunction with a number of state agencies in a wide variety of subject areas. Many of these activities are discussed in the implementation section of the Regional Policy Plan. For example:

- the Commission works with the Massachusetts Historical Commission and local historic commissions to identify important archaeological sites in order to protect their integrity;
- the Commission coordinates with the Executive Office of Communities and Development to encourage participation by communities in their local initiative housing program;
- the Commission works with the Department of Environmental Protection and local communities to implement programs for composting, recycling, landfill assessment, and hazardous waste reduction and disposal;
- the Commission works with the Division of Marine Fisheries and local authorities to map coastal habitats, including fish runs, fish spawning and nursery areas, submerged aquatic vegetation and shellfish habitat; and
- the Commission coordinates with the Department of Environmental Management on issues relating to management planning at state parks on Cape Cod.

State Legislature

During the process of developing and using the Regional Policy Plan, the Commission identified several areas where modifications to existing state law or new legislation may be desirable to further the goals of the Regional Policy Plan. For example:

- the Commission has and will support changes in the Title 5 regulations to permit the use of alternative on-site wastewater treatment technologies that reduce nitrogen loading;
- the Commission has encouraged amendment of the state zoning act to allow cluster development to occur without a special permit at the option of the municipality and will support modification of current zoning and subdivision laws to address problems associated with "approval not required" subdivisions and grandfathering;
- the Commission has helped to develop and will support legislation establishing a regional land bank derived from a land transfer tax to provide funds for land acquisition and affordable housing throughout the Cape.

Coastal Zone Management Program

The Massachusetts Coastal Zone Management Office (MCZM) coordinates development of state policies regarding protection, development and revitalization of Massachusetts coastal zone resources and works with appropriate state agencies to implement these policies. MCZM also provides technical assistance to towns on management of coastal resources including the development of harbor plans. Since the "coastal zone" encompasses all of Cape Cod, MCZM staff played an integral role in shaping the portions of the Regional Policy Plan that address coastal issues to ensure that its goals and policies are consistent with the state's program.

The Coastal Zone Management Office has no direct regulatory role and does not

administer state regulatory programs. However, the Coastal Zone Management Office conducts a federal consistency review on all direct federal actions that affect the Massachusetts coastal zone, require a federal permit, or are federally funded, and determines whether such activities are consistent with the state's coastal policies. The Cape Cod Commission Act requires that the Coastal Zone Management Office refer such consistency certifications for proposed federal activities in Barnstable County to the Commission for review of consistency with the Regional Policy Plan and local comprehensive plans. The Commission must notify MCZM of any objections to a consistency certification where it finds proposed activities are inconsistent with these plans. Conflicts between MCZM and the Commission are to be resolved by the Secretary of the Executive Office of Environmental Affairs.

The Coastal Zone Management Office may adopt appropriate portions of the Regional Policy Plan, including specific goals and policies, into the state's Coastal Zone Management Program. If this occurs, these policies would also apply to MCZM's federal consistency review discussed above thus requiring federal activities in Barnstable County to be consistent with the Regional Policy Plan.

In addition to this formal consistency review process, the Commission will continue to work closely with the Coastal Zone Management Office on planning issues that affect coastal resources, including development of local harbor management plans. For example, the Commission will work with MCZM to develop educational campaigns concerning coastal hazards, sea level rise and coastal construction practices. Since regional MCZM staff work out of the Commission's office, numerous opportunities exist for direct coordination between the two agencies.

Federal Authorities

National Park Service (Cape Cod National Seashore)

Located in six towns on the Outer Cape, Cape Cod National Seashore (CCNS) is a patchwork of public and private lands with numerous public and private inholdings, including town-owned land. The purposes of the Seashore are to protect outstanding natural, cultural, scientific, scenic and recreational resources; to ensure current and future generations opportunities to enjoy these resources; and to advance an understanding of and appreciation for the interrelationship between humankind and the environment.

Many of these communities that include the Seashore have traffic and other problems that are created, at least in part, by the presence of the National Seashore. Although the towns in which the Seashore lies have zoning districts designed to promote compatible uses on lands within the Seashore, the level of protection provided by these zoning districts may be inadequate. The Park Service's Statement for Management, prepared in 1990, lists a number of major issues facing the park. In the area of land use, many of these issues are related to the six towns and include:

- future use of undeveloped town-owned lands within the Seashore boundaries;
- need for boundary revisions or adjustments;
- lack of joint Seashore-municipal agreements for septage, solid and hazardous waste disposal; and
- the need for planning coordination between the Seashore and the local towns.

The need for joint planning between the National Park Service and communities is clearly pointed out by a number of major issues including the transfer of the North Truro Air Force Base to the Seashore, the Truro Radar Dome replacement, the Provincetown Airport improvements, Hatches Harbor restoration, and water supply management on the Outer Cape. The National Park Service's "1988 Management Policies" explicitly direct the Service to engage in "Cooperative regional planning...to integrate

parks into their regional environments and to address adjacent land use issues that influence park resources. "In addition, the Service is directed to "encourage compatible land uses and to mitigate potential adverse effects on park values by actively participating in planning and regulatory processes of neighboring jurisdictions, other federal, state, and local agencies, and native American authorities."

The National Park Service has cooperated with the Commission on several important projects in recent years, including: development of the Seashore's General Management Plan, the work of the Lower Cape Water Management Task Force (an effort of the four outermost towns, the Commission and the Seashore to investigate future water supply options), the Outer Cape Capacity Study, Cape Cod Pathways and related trail planning efforts, relocation of Nauset Light, extension of the Cape Cod Rail Trail, and the negotiation of rules for off-road vehicles within the Seashore. The Cape Cod Commission should continue to play a coordinating role in addressing the mutual concerns of the National Park Service and the towns. The Commission would welcome the participation of CCNS as an ex-officio member of the Commission.

Other opportunities to improve and coordinate management under the Cape Cod Commission Act could include stricter DRI review standards for projects on lands in and around the Seashore or designation of critical lands within or adjacent to the park as a District of Critical Planning Concern. In addition, towns should re-examine their zoning bylaws and regulations for their consistency in protecting Seashore resources. A final opportunity for coordination would be the adoption of the Regional Policy Plan by the Coastal Zone Management Program, thereby requiring the Service's actions to be consistent with the Plan. This would encompass activities undertaken by the National Park Service wherever such consistency can be achieved without compromising the Park Service's mission.



Nauset Light, Cape Cod National Seashore, Eastham.

Department of Defense - Massachusetts Military Reservation

The Massachusetts Military Reservation (MMR) is located within the towns of Sandwich, Bourne, Falmouth and Mashpee and has a significant economic impact on Cape Cod. The Cape Cod Commission has worked for many years on the cleanup and restoration of contaminated ground water on the base. The County also appointed a Scientific Advisory Committee to provide additional expertise on the review of clean-up options. The Cape Cod Commission will continue to play a significant role in facilitating appropriate remediation. Any ground water remediation plan is likely to have significant regional impacts and will be of interest to the Commission. The Commission will also continue to monitor other regional issues related to the MMR including air quality, noise generation and siting and use of regional facilities, including those for water supply purposes.

Other Federal Agencies

A number of federal agencies administer land on Cape Cod or have programs and policies that affect the Cape. In general, either through voluntary efforts or required consistency through the Coastal Zone Management program, federal actions taken on Cape Cod should be consistent with the Regional Policy Plan unless specific statutory mandates make such consistency impossible. These include actions taken by federal agencies such as the Fish and Wildlife Service, Federal Emergency Management Authority, Federal Aviation Administration, the Department of Housing and Urban Development, Army Corps of Engineers, Department of Commerce, Small Business Administration, Environmental Protection Agency, Census Bureau, Federal Highway Administration and Urban Mass Transit Administration.

The Commission will continue to coordinate with these and other federal agencies on cooperative planning and research efforts and will undertake new initiatives as necessary. Many of these activities are discussed in more detail in the Implementation sections of the Regional Policy Plan.

Private Parties

The Commission will coordinate with the various educational and research institutions and organizations on Cape Cod to develop information and educational opportunities to further the policies and programs in the Regional Policy Plan. These include the Cape Cod Community College, Woods Hole Oceanographic Institution, the Marine Biological Laboratory, Cape Cod Museum of Natural History, Center for Coastal Studies, the Cape Cod Center for the Environment and a Sustainable Economy, and the Thornton Burgess Society. The Commission will work with the Cape Cod Environmental Education Resource Center to encourage incorporation of waste minimization and recycling in primary and secondary educational curricula in Cape Cod schools.

The Commission will work with nonprofit, civic, and professional organizations on Cape Cod including the League of Women Voters, Association for the Preservation of Cape Cod, Cape Cod Homebuilders Association, Cape and Islands Board of Realtors, Barnstable County Bar Association, Cape and Islands Recreation Association, surveyors, and others to inform them about the Regional Policy Plan and respond to their comments and concerns about implementation of the policies in the Plan.

The Commission will continue to coordinate with various conservation organizations and agencies on identification and designation of a Capewide open space/greenbelt network including the Massachusetts Audubon Society, The Nature Conservancy, Trust for Public Land, Trustees of Reservations, Compact of Cape Cod Conservation Trusts, the Conservation Fund, National Park Service, and state environmental agencies. In particular, the Commission will support the Cape Cod Pathways project.

The Commission will work with various minority groups on Cape Cod including those of Asian, Pacific Island, Black, Cape Verdean, Hispanic and Native American ancestry and their community associations to address their comments and concerns about implementation of the Regional Policy Plan.

The Commission will work with the Cape Cod Economic Development Council, Cape Cod Chamber of Commerce, town chambers of commerce, the Business Roundtable, and others to identify and implement programs to improve the Cape Cod economy.

The Commission will work cooperatively with local land trusts and the Compact of Cape Cod Conservation Trusts to protect significant natural and fragile areas on the Cape. The Commission will also work with the HOME Consortium and private, nonprofit housing trusts to support their efforts to develop affordable housing on Cape Cod.

Regional Policy Plan Maps

produced by the Cape Cod Commission Geographic Information System

- Cape Cod Water Resources Classification Map I
- Cape Cod Water Resources Classification Map II
- Cape Cod Significant Natural Resource Areas
- Functional Classification of Cape Cod Highways

CAPE COD COMMISSION



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