

CAPE COD
REGIONAL
POLICY PLAN

FRAMING THE FUTURE

CAPE COD COMMISSION | 2018

CAPE COD REGIONAL POLICY PLAN
December 2018; amended effective March 30, 2021

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Executive Summary

Cape Cod's intrinsic wealth stems from its natural beauty, historic community character, and healthy coastal and freshwater environments. The features that make Cape Cod attractive are also the cause of the forces that threaten to overwhelm the environment and erode its character. The challenge Cape Cod continues to face is balancing the protection of the environment while supporting the residents, workers, and visitors with the necessary services and infrastructure to thrive over the long term. The 2018 Regional Policy Plan helps provide a framework for guiding how and where the region will grow while protecting those unique Cape assets that cannot be replaced.

As described in Section 1, the Cape Cod Commission is Barnstable County's regional planning and regulatory agency. Through the Cape Cod Commission Act, the Commission is responsible for balancing the protection of the region's resources with appropriate development and economic

progress, and one of the ways the Commission does this is preparing and overseeing the implementation of a regional land use policy plan for the region.

The 2018 Regional Policy Plan is the fifth Regional Policy Plan prepared by the Cape Cod Commission. The first was adopted on September 6, 1991, with updated plans in 1996, 2002, and 2009. The 2018 Regional Policy Plan is an evolution of these previous plans, building on the goals and policies set forth and integrating stakeholder input to better define and characterize current challenges and solutions, as described in Section 2. Stakeholder engagement and two surveys helped identify key areas of concern, such as climate change, affordable housing, preserving the area's natural resources, and protecting regional character, and has helped to shape the regional vision, growth policy, and goals.

A GROWTH POLICY FOR CAPE COD

The Cape Cod Regional Policy Plan provides a growth policy (Section 3) that supports the vision for the future of Cape Cod as a place of vibrant, sustainable, and healthy communities and a protected natural environment.

Growth should be focused in centers of activity and areas supported by adequate infrastructure and guided away from areas that must be protected for ecological, historical or other reasons. Development should be responsive to context allowing for the restoration, preservation and protection of the Cape's unique resources while promoting economic and community resilience.



CAPE COD SYSTEMS

This plan is focused around a suite of interrelated systems that comprise Cape Cod: natural, built, and community (Section 4). High quality natural systems, including groundwater, marine water, freshwater, wetlands, open space, and habitat areas, are part of Cape Cod’s attraction for residents and visitors. The quality of the environment is intimately linked with the quality of life on Cape Cod, the vibrancy of the regional economy, and the health of the Cape’s community systems.

Protecting and enhancing the built environment, including providing infrastructure that supports the region and vibrant activity centers and protects the natural environment, is vital to supporting the Cape’s population. The needs of the built environment must be balanced with maintaining the integrity of the region’s natural environment.

Cape Cod’s community systems, which include the culture, people, and economic activity of the area, are critical for fostering and maintaining vibrant communities and social networks that serve and support the people who live, work, and play in the region.

KEY CHALLENGES FACING THE REGION

In many cases the natural, built, and community systems augment one another and contribute to what makes the Cape a special place, but they also have conflicting needs or functions that must be balanced. The following briefly characterizes the key challenges (Section 5) that help to form the basis for the policies in this Plan:

- Between 2001 and 2011, the Cape lost more than 2,300 acres of forest cover, with 70% of the loss replaced by development (buildings, driveways, parking lots, etc.). This broad loss of forest cover, and related forest fragmentation,

negatively affects regional character, as well as the natural functions of cooling, habitat, and carbon storage that tree cover provides, and results in additional stormwater runoff.

- Surface water quality in Cape Cod ponds has been significantly impacted by surrounding development.
- Nearly all development on Cape Cod continues to utilize on-site septic systems that release nitrogen to groundwater, which eventually travels to coastal embayments and results in degraded water quality.
- Cape Cod faces threats due to climate change. The region’s 586 miles of vulnerable, tidal shoreline is already at risk due to flooding and erosion. Sea level rise and climate change will further exacerbate these challenges, as well as impact how Cape Cod’s ecosystems function.
- More than 40% of the region’s inventoried historic buildings over 100 years old have no protection from demolition or alteration of their character-defining features. Archaeological sites and historically open landscapes are similarly unprotected.



- The Cape Cod housing market does not meet the region’s diverse needs. Lower than average wages, higher than average costs, a lack of choice, limited supply, and the demand for seasonal and retiree housing makes housing for the current and future year-round population a high priority. Rental housing is even more limited.
- Existing infrastructure fundamentally limits the region’s ability to grow in a way that balances economic and social wellbeing with the protection of natural and cultural resources. The region’s rural and suburban development patterns increase the cost of providing infrastructure to these areas and increase the amount of disturbance to the natural environment.

The long-term challenge is to maintain and improve the quality of the environment in the face of ongoing development pressure and environmental and social change to ensure a stable and robust economy into the future.

GOALS AND OBJECTIVES

To meet these challenges, this Regional Policy Plan adopts goals (Section 6) to guide and plan for the future of the region in a manner consistent with the vision and growth policy. The goals and objectives derive from the values and purposes of the Cape Cod Commission Act, preserving and enhancing the region’s assets.

Organized around the region’s natural, built, and community systems, these goals and objectives form the structure upon which the region’s planning work relies, serve as touchstones to guide implementation actions, and set the measures by which the regulatory review process takes place.

COORDINATED REGIONAL AND LOCAL PLANNING

While the Regional Policy Plan is comprehensive in its vision and growth policy and serves as an overarching policy framework, there are certain resources or issues facing the region that require more focused planning efforts. As discussed in Section 7, these more specialized regional plans and programs work in conjunction with the Regional Policy Plan to accomplish local and regional goals. Examples of existing regional plans include the Cape Cod Section 208 Area Wide Water Quality Management Plan, the Comprehensive Economic Development Strategy, the Regional Economic Strategy Executive Team Program, the Regional Transportation Plan, and the Cape Cod Ocean Management Plan.

In addition to coordinating issue-specific plans across the region, the Commission works to coordinate local comprehensive plans with the Regional Policy Plan. The 2018



Regional Policy Plan, along with subsequent revisions to the local comprehensive plan regulations, seeks to encourage adoption of local comprehensive plans consistent with the Cape Cod Commission Act, streamline, accelerate and coordinate the planning and approval process, stimulate the production of more diverse housing types, coordinate public infrastructure investment in centers of activity, and ensure local bylaws are consistent with the Regional Policy Plan.

The Commission is charged under the Cape Cod Commission Act with anticipating, guiding and coordinating the rate and location of development with the capital facilities necessary to support development. To carry out this charge, the Commission proposes to develop a regional framework to characterize, quantify, plan, and advocate for regional infrastructure and facilities. The Regional Capital Plan will focus on the planning, forecasting, decision making and financial tools to help communities take advantage of opportunities for local and regional coordination and collaboration on

capital infrastructure and facilities. Typically, a local capital infrastructure plan is a short-range plan (five to seven years) that lists specific capital projects and purchases needed by the town. At the regional scale, a Regional Capital Plan’s objective is to have towns include a broader, more policy-oriented capital infrastructure plan within their local comprehensive plan that is consistent with the Regional Policy Plan and the goals of the Regional Capital Plan. Regional capital planning must be consistent with protecting the region’s natural and historic resources, and advancing a balanced economy, housing mix, and social diversity.

There are a number of tools and resources available through the Cape Cod Commission Act that can assist in local and regional planning. Districts of Critical Planning Concern, Development Agreements, Chapter H, and Growth Incentive Zones are all powerful planning tools that provide a community or communities with focused opportunities to address specific planning goals.

CAPE COD PLACETYPES

In addition to different systems, Cape Cod is comprised of many different and unique places. To recognize and support these unique areas, this Regional Policy Plan identifies areas with similar natural and built characteristics as distinct “Placetypes,” which serve as a conceptual framework for regional planning and regulation. Eight Placetypes have been identified in Section 8, each with a vision consistent with the region’s growth policy, as well as strategies for creating and enhancing their unique characteristics. Following are brief descriptions of the Placetypes.

Natural Areas are generally the region’s least developed and most sensitive areas. The vision for these areas is to minimize adverse development impacts to sensitive resource areas, to preserve lands that define Cape Cod’s natural landscape and contribute to its scenic character, and to improve the Cape’s resilience to severe storms and the effects of climate change.



Rural Development Areas are defined by a high percentage of open lands and sparse building development patterns that contribute to the unique rural and scenic character of the region. The vision for these areas is to ensure that development is located, sited, and scaled appropriately to avoid impacts on scenic and/or cultural resources, and to help maintain the economic diversity that agriculture can provide for the region including opportunities for the continuation of traditional agricultural occupations, and for the availability of locally-grown food.

Suburban Development Areas include residential neighborhoods built primarily between the 1950s and 1990s as well as automobile-oriented commercial and light industrial development established during the same time period. The vision for these areas is to redevelop commercial and industrial Suburban Development Areas consistent with the community's vision to create more concentrated nodes of development,

and to improve their design and function so that they are better integrated into surrounding neighborhoods. The vision for residential Suburban Development Areas is to cluster residential development to reduce the development footprint and provide high-quality open space.

Historic Areas consist of concentrations of historic structures, including local and/or National Register districts located in a small-scale village setting. The vision for these areas is to protect historic resources and to support infill development that respects the form, scale, and character of existing historic areas.

Maritime Areas are clusters of commercial and mixed-use development that contribute to Cape Cod's working waterfronts and harbors. The vision for these areas is to support the fin- and shell-fishing industry as well as other commercial, recreational, educational, and research activities associated with the marine environment, and to protect water dependent trades.

Community Activity Centers are areas with a concentration of business activity, community activity, and a compact built environment. The vision for these areas is to accommodate mixed-use and multifamily residential development in a walkable, vibrant area, to preserve historic buildings, and to provide diverse services, shopping, recreation, civic spaces, housing, and job opportunities at a scale of growth and development desired by the community, with adequate infrastructure and pedestrian amenities to support development.

Industrial Activity Centers are lands containing industrial uses that are suitable for future industrial activity as well as emerging industries. Industrial Activity Centers are lands without significant resource constraints, areas with access to major highway corridors, and areas with adequate size to



support industrial uses. The vision for these areas is to support their development as significant employment centers with adequate infrastructure.

Military and Transportation Areas consist of large land areas developed with and devoted to infrastructure such as airports, transfer stations, waste disposal facilities, and Joint Base Cape Cod. The vision for these areas is to support comprehensive master planning with community input, encourage growth of industries appropriate to the diversification of the regional economy, and encourage partnerships for use of shared infrastructure.

REGIONAL REGULATORY REVIEW

The Cape Cod Commission Act charges the Cape Cod Commission with reviewing certain proposed developments which, because of their size or other characteristics, are presumed to have development effects beyond their local communities. These

proposed developments are called Developments of Regional Impact. As Section 9 details, this Regional Policy Plan focuses on the review of developments in relation to their surroundings and the goals and objectives. The Placetype for a given project is established at the outset of regulatory review and provides the lens through which the Commission will review the project. The applicability of goals and objectives may vary based on how projects are classified by Placetype.

The Commission has developed Technical Guidance that contains Placetype Maps, resource areas and Technical Bulletins. There is a Technical Bulletin for each of the goals. These Bulletins set forth the methods by which the goals and objectives may be met. The Cape Cod Commission will use these Technical Bulletins, Placetype Maps and resource areas to determine if a Development of Regional Impact is consistent with the Regional Policy Plan.

REGIONAL PERFORMANCE MEASURES

This Regional Policy Plan identifies nine performance measures in Section 10 to be tracked over time to help illustrate whether the region is moving toward the regional vision articulated in this plan. Though ideally these measures will show positive progress over time, tracking them can also identify areas where additional resources are needed to make progress.

The performance measures that will be tracked include:

- Number of acres of protected BioMap2 Core habitat
- Nitrogen concentration in public drinking water wells
- Parcels connected to the sidewalk network
- Nitrogen concentrations in embayments
- Number of additional or updated historic structure inventory forms



- Activity center evolution
- Share of employment within high-wage industries
- Housing diversity
- Changes in floodplain development
- Greenhouse gas emissions

RECOMMENDED ACTIONS

Section 11 of the Plan includes recommended actions that the Commission commits to undertake over the next five years, including both planning and regulatory efforts to address the region’s major challenges. These actions are organized around the natural systems, built systems, and community systems identified in this Plan.

Recommended planning actions for natural systems include identifying and prioritizing land for water supply and supporting local water quality planning. Actions

recommended for built systems include development of a Regional Capital Plan, updating the Cape Cod Regional Transportation Plan, and continuing to support and engage communities around coastal hazard mitigation and climate change adaptation planning, including developing an inventory of greenhouse gas emissions. Actions recommended for community systems include development of a regional housing plan, updating the Comprehensive Economic Development Strategy, updating the local comprehensive plan regulations, improving and updating historic inventories, and continuing to support communities through development of land use decision support tools. The Commission also commits to continuing to coordinate and facilitate information sharing, education and collaboration by hosting the annual One Cape Summit.

Additionally, recommended priority regulatory actions include potential threshold revisions and other amendments to the Commission’s Code of Regulations, revisions to regional design guidelines, and updates to Technical Guidance to address climate change.

The 2018 Regional Policy Plan for Cape Cod provides a path forward for sustainable growth and development and streamlined regulation. Implementing this plan will require collaboration and partnerships at various levels of government and with non-governmental organizations, participation by committees and stakeholders, and communication and coordination with private sector industries and businesses. Together, as One Cape, the region can build environmental and economic resilience, strengthen community relationships, and design regional policies and implementation plans to address its greatest challenges.



Plan
Structure

 <p>1</p>	The Cape Cod Region	 <p>2</p>	Evolution of the Regional Policy Plan	 <p>3</p>	A Regional Vision for Cape Cod	 <p>4</p>	Cape Cod Systems
 <p>5</p>	Key Challenges Facing the Region	 <p>6</p>	Goals and Objectives	 <p>7</p>	Coordinated Regional and Local Planning	 <p>8</p>	Cape Cod Placetypes
 <p>9</p>	Regional Regulatory Review	 <p>10</p>	Regional Performance Measures	 <p>11</p>	Recommended Actions		



Table of Contents

INTRODUCTION	4	Climate Change	52	9. REGIONAL REGULATORY REVIEW	93
1. THE CAPE COD REGION	7	Preserving Historic Resources	54	The Role of the Goals and Objectives of the RPP	94
Upper Cape	9	Expensive Housing, Limited Options	55	The Role of Technical Guidance in Regulatory Review	95
Mid Cape	10	Provision of Adequate Infrastructure	56	The Role of the Cape Cod Placetypes in Regulatory Review	95
Lower Cape	11	Long-term Economic Stability	57	The Role of Resource Areas in Regulatory Review	95
Outer Cape	12	6. GOALS AND OBJECTIVES	59	RPP Consistency and Probable Benefit/Detriment	
Cape Cod Commission Responsibilities	13	Natural Systems	61	Determinations	95
2. EVOLUTION OF THE REGIONAL POLICY PLAN	15	Built Systems	62	Waiver and Flexibility	96
Previous Versions of the RPP	16	Community Systems	63	Review Goals and Objectives	97
RPP Update Process	17	7. COORDINATED REGIONAL AND LOCAL	65	10. REGIONAL PERFORMANCE MEASURES	99
Public Comment and Feedback on Draft	21	PLANNING		11. RECOMMENDED ACTIONS	103
3. A REGIONAL VISION FOR CAPE COD	23	Targeted Regional and Local Planning Efforts	66	Regional Planning Actions	104
Growth Policy for Barnstable County	24	Frameworks for Enhanced Coordination of Regional and		Regional Regulatory Actions	108
4. CAPE COD SYSTEMS	25	Local Planning	75		
Natural Systems	27	Planning Tools Available Through the Act	77		
Built Systems	33	8. CAPE COD PLACETYPES	81		
Community Systems	42	Natural Areas	83		
5. KEY CHALLENGES FACING THE REGION	49	Rural Development Areas	84		
More Development, Fewer Natural Areas	50	Suburban Development Areas	85		
Development Impacts on Water Quality	51	Historic Areas	86		
Excess Nitrogen in Coastal Waters	51	Maritime Areas	87		
		Community Activity Centers	88		
		Industrial Activity Centers	89		
		Military and Transportation Areas	90		

Introduction

How and where we grow in the next decade will impact the communities of Cape Cod for the next century. With 86% of the region's land already developed or protected, our ability to adapt to an ever-changing environmental and economic landscape is imperative. Cape Cod must face its challenges — including the need for diverse and affordable housing, wastewater infrastructure that requires billions of dollars to construct, traffic that continues to increase, canal

bridges that are functionally obsolete, potential threats to drinking water quality, and a coastline that is rapidly eroding and significantly diminishing during every coastal storm — if the region is to continue to thrive.

Cape Cod is an intricate web of natural, built, and community systems and our seasonal economy presents both significant challenges and opportunities. With comprehensive regional planning Cape Cod will

solidify its place as a leader in community resilience. By focusing new growth and redevelopment into existing centers of activity with thoughtful design through regional regulatory relief and incentives, we can realize increased density where it makes sense. We can create different sized housing units to accommodate more varied lifestyle needs and the Cape's wide-ranging demographic, as well as provide more access to affordable housing. With a smart approach to growth

we can create more walkable communities, decrease infrastructure costs and generate more year-round and seasonal jobs. We can adapt to the ever-changing nature of retail and the need for higher paying wages and workforce housing to keep our younger professionals and families invested in calling Cape Cod home. We can attract public and private infrastructure investment that adds value to both the seasonal and year-round economies. Cape Cod has the ability to address its

challenges and capitalize on opportunities to improve its future.

Using data and information to measure progress in meeting regional goals will provide Cape Cod communities with the ability to adapt. Meeting regional housing needs and promoting growth and development in locations with adequate transportation and wastewater infrastructure are priorities critical to the Cape economy. Making the Cape less vulnerable through

policies and strategies that address our evolving shoreline and impacts from climate change and coastal storms is a priority. We must continue to seek and secure additional resources to lessen the financial burden of necessary infrastructure on our 15 Cape communities.

Together, as One Cape, we can build environmental and economic resilience, strengthen community relationships, and design regional policies and

implementation plans to address our greatest challenges. The 2018 Regional Policy Plan for Cape Cod provides a path forward for sustainable growth and development and streamlined regulation, it addresses critical housing needs and eases the local comprehensive planning process, and it provides a framework for coordinated regional capital planning. We must collaborate as a region to keep Cape Cod a special place for decades to come.



What’s New in this Plan?

The following are brief descriptions of several new components of the 2018 Regional Policy Plan (RPP) update. Each of these components will play a key role in the Commission’s regional planning and regulatory review over the next five years.

- Cape Cod Placetypes
- Identification of Activity Centers and Natural Areas
- Goal-Based Context-Sensitive Regulatory Review
- Emphasis on Coordinated Regional and Local Planning
 - Climate Change Planning

- Regional Housing Strategy
- Regional Capital Planning
- Streamlined Local Comprehensive Planning
- Regional Performance Measures

CAPE COD PLACETYPES

This RPP identifies eight Placetypes found and desired on Cape Cod: Natural Areas, Rural Development Areas, Suburban Development Areas, Historic Areas, Maritime Areas, Community Activity Centers, Industrial Activity

Centers, and Military and Transportation Areas. The framework of these Placetypes allows regional land use policies and regulations to better respond to and enhance local form and context and support development that complements its surroundings.

IDENTIFICATION OF ACTIVITY CENTERS AND NATURAL AREAS

This RPP identifies two types of regional activity centers: Community Activity Centers

and Industrial Activity Centers. Community Activity Centers are areas with a concentration of business activity, community activity, and a compact built environment. Community Activity Centers may be suitable for additional multi-family housing and a mix of uses at a scale of growth and development desired by the community.

Industrial Activity Centers are areas containing industrial uses that are suitable for future industrial growth including but not limited to light manufacturing,

warehousing and construction services, and emerging industry clusters, such as marine technology.

Both types of activity centers, provided sufficient infrastructure and local regulations exist, may be suitable for certain types of growth and economic development for Barnstable County.

While the 2018 RPP identifies these centers of activity at the regional scale based on existing characteristics, centers of activity also exist

or could be envisioned at a neighborhood or local scale. For more information on the geodesign process used to identify activity centers, go to ccc-plans.org/acs.

This RPP also identifies Natural Areas, which contain the region’s most important sensitive and vulnerable resources. This RPP encourages minimizing development and its impacts in these areas to protect the region’s significant resources and to balance the anticipated redevelopment and growth in activity centers.

GOAL-BASED CONTEXT-SENSITIVE REGULATORY REVIEW

The identification of Cape Cod Placetypes creates a common understanding of the different character areas that are important to defining the Cape and allows for greater understanding of a potential development’s context. The regulatory component of this RPP update includes goals and objectives that are applied to a project through the lens



and vision of the Cape Cod
Placetype in which a project
is located.

**EMPHASIS ON
COORDINATED
REGIONAL
AND LOCAL
PLANNING**

**CLIMATE CHANGE
PLANNING**

Climate change resiliency
concepts are found
throughout the RPP,
incorporated into the growth
policy, design, and resource
protection policies, as well
as in the related regional

and local plans that help
put these policies into
action and support state
and federal planning and
resiliency goals. Specifically,
this RPP will help reduce
Cape Cod’s vulnerability
and improve resiliency in
the face of climate change
by promoting development
outside of flood zones and
vulnerable habitat areas and
focusing development in
activity centers with adequate
wastewater, drinking water,
and stormwater infrastructure;
fostering walkable
neighborhoods, bike-friendly
roads, and transit systems;
planning for resilient energy

systems, reducing reliance on
fossil fuels, and encouraging
green building elements and
renewable energy generation
and storage.

**REGIONAL HOUSING
STRATEGY**

The June 30, 2017 “Regional
Housing Market Analysis and
10-Year Forecast for Housing
Supply and Demand” study for
Barnstable County prepared
by Crane Associates, Inc. and
Economic & Policy Resources
highlighted the need for
a comprehensive regional
housing strategy that supports
development of affordable
and varied housing options

for Cape residents of all
income levels and ages. Based
on the results of this study,
this RPP promotes housing
production where it is most
efficient in terms of land use
and infrastructure and will not
negatively impact the region’s
crucial natural and cultural
resources.

**REGIONAL CAPITAL
PLANNING**

This RPP includes a framework
for development of a Regional
Capital Plan intended to
characterize, quantify, plan,
and advocate for regional
infrastructure and facilities
and the planning, forecasting,

decision making and financial
tools to support the region’s
communities.

**STREAMLINED LOCAL
COMPREHENSIVE
PLANNING**

Towns are encouraged to
incorporate the regional
goals and objectives of the
RPP into local planning
efforts. To encourage more
towns to adopt or update
their local comprehensive
plans, the Commission will
develop a template for what
should be included in local
comprehensive plans and
technical guidance on the
components of a local capital

improvement plan. In addition,
the Commission will continue
developing web-based tools to
help towns identify and better
understand their community
assets and opportunities.
Commission staff will also
assist towns in developing
their local comprehensive
plans to preserve or promote
such assets and capitalize
on their communities’
opportunities.

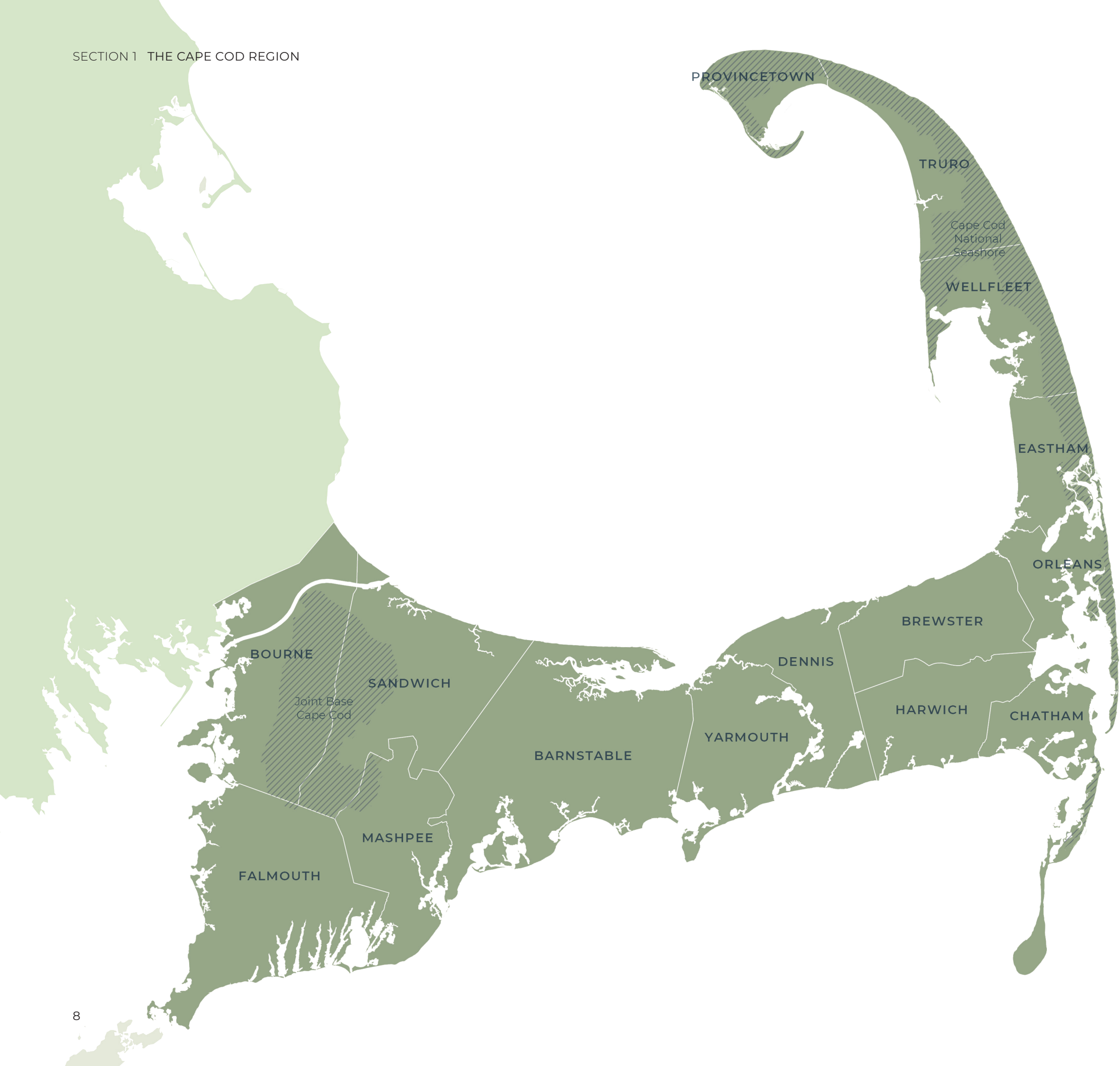
**REGIONAL
PERFORMANCE
MEASURES**

This RPP identifies regional
performance measures
intended to track the
implementation and effects
of the regional goals and
objectives established by and
through the RPP. The changes
in these regional performance
measures over time will help
identify areas where progress
has been made as well as areas
in need of more work, which
should be the focus for future
Commission efforts.





The Cape Cod Region

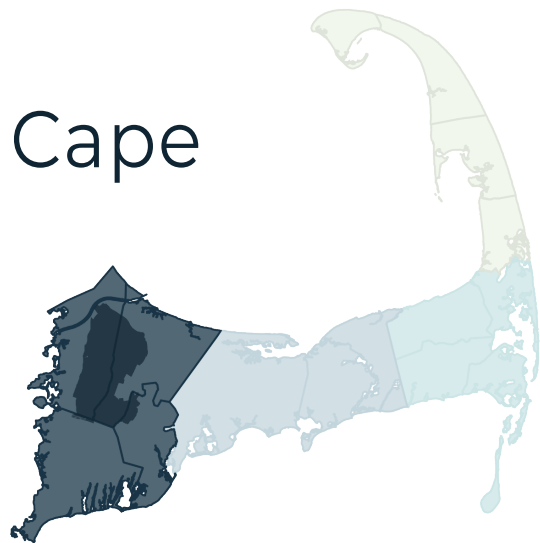


Cape Cod is an iconic peninsula of 15 towns extending 60 miles into the Atlantic Ocean, and currently home to approximately 214,000 year-round residents. With over 500 miles of coastline and beaches, almost 1,000 freshwater ponds covering more than 17 square miles of the region, and more than 100,000 acres of habitat, wetlands, and protected open

space, the natural beauty, environmental resources, and historic character of the region have made Cape Cod a globally-recognized visitor destination. Though each Cape town is unique, the Cape is often described as four sub-regions of towns with more similar characteristics—Upper, Mid, Lower, and Outer—further detailed in the following pages.

Two unique areas on Cape Cod are Joint Base Cape Cod and the Cape Cod National Seashore (both shown in hatching on the map to the left). Joint Base Cape Cod, a military installation of approximately 22,000 acres in the Upper Cape region, currently hosts five military commands and the Massachusetts National Cemetery. Approximately 15,000 acres of Joint Base Cape Cod have been designated as the Upper Cape Water Supply Reserve. This area is permanently protected open space for future water supply and wildlife habitat while allowing compatible military training. The Cape Cod National Seashore, comprised of about 27,000 acres in the Outer and Lower Cape, was established in 1961 and contains outstanding and critical natural, scenic, and recreational resources. Limited development exists within the Cape Cod National Seashore.

Upper Cape



The Upper Cape sub-region consists of four towns: Bourne, Sandwich, Falmouth, and Mashpee. This sub-region of the Cape is closest to Boston and the rest of Massachusetts and contains the Cape Cod Canal and the Bourne and Sagamore bridges. Although seasonality permeates the entire Cape region, the Upper Cape communities tend to be less seasonal than the Lower and Outer Cape towns, with Bourne and Sandwich having the lowest proportions of seasonal housing in the region and the youngest populations. The Upper Cape tends to have higher median incomes than the other Cape towns, lower median home prices than the Lower and Outer Cape towns, and economies that are somewhat less focused

on tourism. Woods Hole Oceanographic Institute, Marine Biological Laboratory, the National Oceanic and Atmospheric Administration, and associated spin-off businesses in Falmouth and Bourne make the Upper Cape a key area for oceanographic research and related industries. Also unique to this sub-region is Joint Base Cape Cod (shown in dark blue in the above graphic), which is approximately 22,000 acres in size, and includes land in parts of Bourne, Mashpee, and Sandwich and abuts the Town of Falmouth. The Upper Cape is relatively densely developed outside of Joint Base Cape Cod but does contain significant natural resources and open spaces.

BOURNE



41 mi²

Population 19,749
Total Housing Units 11,510
Seasonal Housing Units 2,626 (23%)
Top 3 Employment Sectors
EDUCATION & HEALTH SERVICES (23%)
LEISURE & HOSPITALITY (16%)
RETAIL TRADE (15%)

Median Age 47.7
Median Household Income \$69,157
Town Area in Flood Zone 11%
Building Square Footage 3,512,038 COMMERCIAL
 16,234,795 RESIDENTIAL
Town Area Protected Open Space 46%

SANDWICH



44 mi²

Population 20,605
Total Housing Units 9,518
Seasonal Housing Units 1,753 (18%)
Top 3 Employment Sectors
EDUCATION & HEALTH SERVICES (32%)
LEISURE & HOSPITALITY (22%)
RETAIL TRADE (11%)

Median Age 45.3
Median Household Income \$83,305
Town Area in Flood Zone 11%
Building Square Footage 1,593,623 COMMERCIAL
 15,703,796 RESIDENTIAL
Town Area Protected Open Space 36%

FALMOUTH



46 mi²

Population 31,576
Total Housing Units 21,976
Seasonal Housing Units 7,731 (35%)
Top 3 Employment Sectors
EDUCATION & HEALTH SERVICES (28%)
LEISURE & HOSPITALITY (18%)
PROFESSIONAL & BUSINESS SERVICES (16%)

Median Age 51.6
Median Household Income \$66,670
Town Area in Flood Zone 15%
Building Square Footage 4,928,455 COMMERCIAL
 37,352,068 RESIDENTIAL
Town Area Protected Open Space 24%

MASHPEE



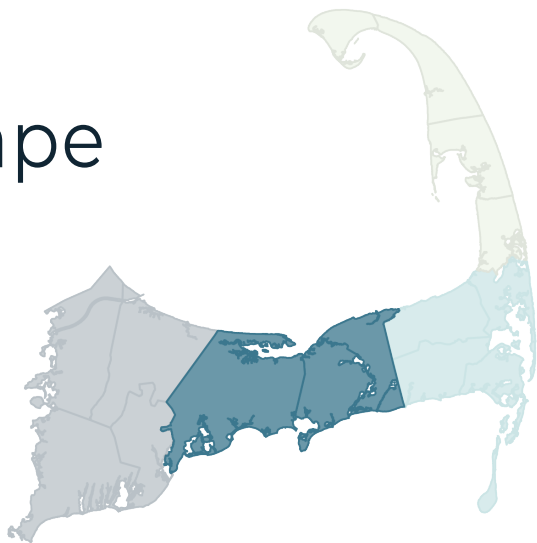
26 mi²

Population 13,988
Total Housing Units 10,048
Seasonal Housing Units 3,570 (36%)
Top 3 Employment Sectors
EDUCATION & HEALTH SERVICES (23%)
LEISURE & HOSPITALITY (22%)
RETAIL TRADE (21%)

Median Age 50.5
Median Household Income \$70,313
Town Area in Flood Zone 10%
Building Square Footage 2,001,872 COMMERCIAL
 14,299,876 RESIDENTIAL
Town Area Protected Open Space 27%

Data Sources: US Census Bureau, 2012-2016 American Community Survey and 2011-2015 American Community Survey; 2017 Housing Market Analysis, Crane Associates and EPR; MA Department of Unemployment Assistance 2017 Employment and Wages Report (ES-202); Flood Zone refers to FEMA SFHA, 2014 FEMA FIRM Maps; Cape Cod Commission Parcel Data Set (2014), which uses individual town assessing data; MassGIS

Mid Cape





































Though the Mid Cape sub-region is comprised of only three towns—Barnstable, Yarmouth, and Dennis—it is home to almost 40% of the region’s year-round population. In addition to the historic Cape villages and downtowns, the Mid Cape also has large areas of suburban development, particularly in Barnstable and along Route 28 in Yarmouth. Barnstable has one-third of all commercial building square footage in the region and Route 132 in Barnstable is the Cape’s

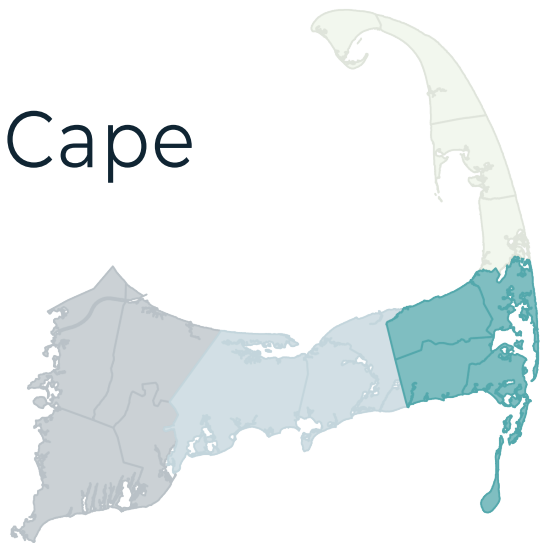
regional retail and commercial center, with a regional mall as well as several other larger, national retailers. The Town of Barnstable is the largest town on the Cape and has the largest population. Education and Health Services make up nearly one-third of all employment in Barnstable, but moving west to east within the Mid Cape, the towns generally become more seasonal and tourism-oriented both in terms of housing units and employment opportunities.

BARNSTABLE



Population	                                 
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Lower Cape



The Lower Cape, consisting of the towns of Brewster, Harwich, Orleans, and Chatham, is where the typical development patterns of the region start to transition from denser suburban to somewhat more rural and include large tracts of open space such as Nickerson State Park and Punkhorn Parklands. Year-round populations and the number of housing units in this region are a fraction of the Upper and Mid Cape towns, though still higher than

the Outer Cape towns. The Lower Cape communities tend to have older populations and higher median incomes than the Mid Cape towns. This sub-region is much more seasonal than the Upper and Mid Cape, though not as seasonal as the Outer Cape. Though this region tends to have higher median incomes than the Mid Cape, housing is also more expensive, with Chatham and Orleans having the highest median house prices in the region.

BREWSTER



Population 9,858
Total Housing Units 7,708
Seasonal Housing Units 3,252 (42%)
Top 3 Employment Sectors EDUCATION & HEALTH SERVICES (39%)
LEISURE & HOSPITALITY (22%)
CONSTRUCTION (9%)

Median Age 54.7
Median Household Income \$66,220
Town Area in Flood Zone 5%
Building Square Footage 864,462 COMMERCIAL
 12,335,257 RESIDENTIAL
Town Area Protected Open Space 33%

HARWICH



Population 12,205
Total Housing Units 10,118
Seasonal Housing Units 4,215 (42%)
Top 3 Employment Sectors LEISURE & HOSPITALITY (23%)
RETAIL TRADE (18%)
CONSTRUCTION (16%)

Median Age 50.9
Median Household Income \$68,267
Town Area in Flood Zone 14%
Building Square Footage 1,876,715 COMMERCIAL
 17,514,908 RESIDENTIAL
Town Area Protected Open Space 16%

ORLEANS



Population 5,874
Total Housing Units 5,367
Seasonal Housing Units 2,199 (41%)
Top 3 Employment Sectors RETAIL TRADE (27%)
LEISURE & HOSPITALITY (20%)
EDUCATION & HEALTH SERVICES (18%)

Median Age 62.0
Median Household Income \$64,861
Town Area in Flood Zone 28%
Building Square Footage 2,226,562 COMMERCIAL
 13,640,554 RESIDENTIAL
Town Area Protected Open Space 30%

CHATHAM

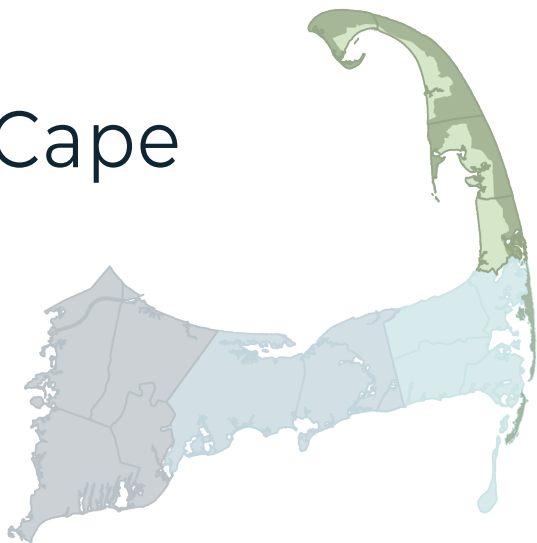


Population 6,129
Total Housing Units 7,065
Seasonal Housing Units 3,991 (56%)
Top 3 Employment Sectors LEISURE & HOSPITALITY (33%)
EDUCATION & HEALTH SERVICES (23%)
RETAIL TRADE (13%)

Median Age 57.4
Median Household Income \$67,587
Town Area in Flood Zone 44%
Building Square Footage 1,353,428 COMMERCIAL
 12,256,749 RESIDENTIAL
Town Area Protected Open Space 27%

Data Sources: US Census Bureau, 2012-2016 American Community Survey and 2011-2015 American Community Survey; 2017 Housing Market Analysis, Crane Associates and EPR; MA Department of Unemployment Assistance 2017 Employment and Wages Report (ES-202); Flood Zone refers to FEMA SFHA, 2014 FEMA FIRM Maps; Cape Cod Commission Parcel Data Set (2014), which uses individual town assessing data; MassGIS

Outer Cape



The four towns of Eastham, Wellfleet, Truro, and Provincetown make up the Outer Cape. These towns have significantly smaller year-round populations than the rest of the region—Truro’s year-round population is only 1,738 people. These towns are much more rural in nature than the rest of the region. Part of what makes this sub-region unique and contributes to the rural and natural development patterns that typify these towns is the presence of the Cape Cod National Seashore (shown in dark green in the above graphic). This National Park contains more than 27,000 acres in the Outer Cape (as well as portions of Orleans and Chatham) and provides critical and stunning wildlife habitat, open space, and recreational opportunities, with limited development within its borders. In all towns within this region, housing units outnumber the year-round population because more than half of the housing stock is seasonal. This sub-region of the Cape experiences the most significant seasonal changes in population, housing, and the economy, and is very heavily focused on the tourism industry.

PROVINCETOWN



10 mi²

Population 2,959
Total Housing Units 4,507
Seasonal Housing Units 2,469 (55%)
Top 3 Employment Sectors
LEISURE & HOSPITALITY (44%)
RETAIL TRADE (21%)
EDUCATION & HEALTH SERVICES (12%)

Median Age 54.3
Median Household Income \$36,958
Town Area in Flood Zone 45%
Building Square Footage 1,468,091 COMMERCIAL
3,637,015 RESIDENTIAL
Town Area Protected Open Space 78%

TRURO



22 mi²

Population 1,738
Total Housing Units 3,279
Seasonal Housing Units 2,404 (73%)
Top 3 Employment Sectors
LEISURE & HOSPITALITY (28%)
CONSTRUCTION (14%)
EDUCATION & HEALTH SERVICES (11%)

Median Age 57.6
Median Household Income \$60,432
Town Area in Flood Zone 21%
Building Square Footage 702,274 COMMERCIAL
4,494,800 RESIDENTIAL
Town Area Protected Open Space 68%

WELLFLEET



21 mi²

Population 3,011
Total Housing Units 4,497
Seasonal Housing Units 2,753 (61%)
Top 3 Employment Sectors
LEISURE & HOSPITALITY (42%)
RETAIL TRADE (11%)
PROFESSIONAL & BUSINESS SERVICES (9%)

Median Age 62.2
Median Household Income \$45,735
Town Area in Flood Zone 26%
Building Square Footage 602,825 COMMERCIAL
5,772,930 RESIDENTIAL
Town Area Protected Open Space 54%

EASTHAM



14 mi²

Population 4,932
Total Housing Units 6,024
Seasonal Housing Units 3,509 (58%)
Top 3 Employment Sectors
LEISURE & HOSPITALITY (25%)
CONSTRUCTION (21%)
EDUCATION & HEALTH SERVICES (12%)

Median Age 56.6
Median Household Income \$60,760
Town Area in Flood Zone 25%
Building Square Footage 708,218 COMMERCIAL
9,177,448 RESIDENTIAL
Town Area Protected Open Space 33%

Data Sources: US Census Bureau, 2012-2016 American Community Survey and 2011-2015 American Community Survey; 2017 Housing Market Analysis, Crane Associates and EPR; MA Department of Unemployment Assistance 2017 Employment and Wages Report (ES-202); Flood Zone refers to FEMA SFHA, 2014 FEMA FIRM Maps; Cape Cod Commission Parcel Data Set (2014), which uses individual town assessing data; MassGIS



CAPE COD COMMISSION RESPONSIBILITIES

Unprecedented growth on Cape Cod in the 1980s prompted the Massachusetts General Court (the state legislature) to pass the Cape Cod Commission Act (Act) in 1989. The Act was signed into law by the Governor in January 1990 and ratified by a majority of Barnstable County voters in March 1990.

The Act established the Cape Cod Commission (Commission) as Barnstable

County’s regional planning and regulatory agency. Through the Act, the Commission is responsible for balancing the protection of the region’s resources with appropriate development and economic progress. Simply put, the mission of the Cape Cod Commission is to keep a special place special.

Section 1 of the Act identifies the values, purposes, and goals of the Commission as follows:

Section 1(a): The region commonly known as Cape Cod, comprised of

Barnstable County, including all geographic areas to the jurisdictional limit of the commonwealth, possesses unique natural, coastal, scientific, historical, cultural, architectural, archaeological, recreational, and other values; there is a regional, state and national interest in protecting, preserving and enhancing these values; and these values are being threatened and may be irreparably damaged by uncoordinated or inappropriate uses of the region’s land and other resources.

Section 1(c) of the Act identifies the purposes of the Cape Cod Commission, which are 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 groundwater, surface water and ocean water quality, as well as the other natural resources of Cape Cod;

- Balanced economic growth;
- 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.
- Section 1(d) of the Act states that the Commission shall:
- Anticipate, guide and coordinate the rate and location of development with the capital facilities necessary to support such development;
 - Review developments which will have impacts beyond their local community and determine

the comparative benefits and detriments of those projects and their consistency with the regional policy plan and local comprehensive plans and goals;

- Identify and protect areas whose characteristics make them particularly vulnerable to adverse effects of development;
- Preserve the social diversity of Cape Cod by promoting fair affordable housing for low-income and moderate-income persons;



- Promote the expansion of employment opportunities; and,
- Implement a balanced and sustainable economic development strategy for Cape Cod capable of absorbing the effects of seasonal fluctuations in economic activity.

To carry out these broad purposes and goals, promote the public health, safety and general welfare, to maintain and enhance sound local and regional economies, and to ensure balanced economic development, Section 1(b) of the Act gives the Commission the authority to:

- Review and regulate Developments of Regional Impact (i.e., developments that will have impacts beyond their local community)
- Recommend for designation specific areas of Cape Cod as Districts of Critical Planning Concern

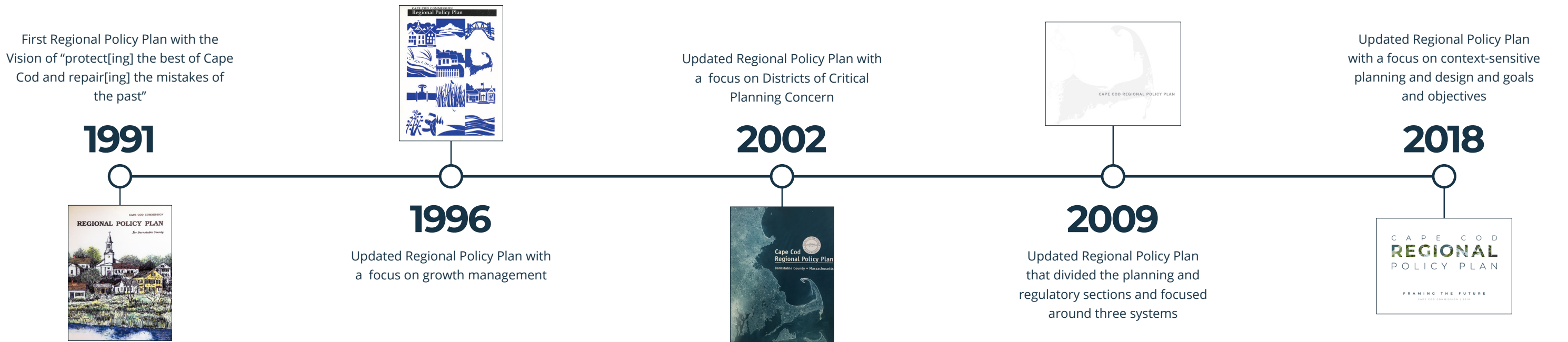
- Prepare and oversee the implementation of a regional land-use policy plan for all of Cape Cod.
- Under the Act, the Regional Policy Plan is required to:
- Propose a growth policy for the region, contained in Section 3 of the plan

- Identify Barnstable County's critical resources and management needs, covered in Sections 4 and 5
- Develop regional goals for the next five years and beyond, covered in Section 6 of this plan

- Develop a policy for coordinating regional and local planning efforts, contained in Section 7 of this plan.



Evolution of the Regional Policy Plan



PREVIOUS VERSIONS OF THE RPP

The region’s first Regional Policy Plan was adopted on September 6, 1991, just over one year after adoption of the Cape Cod Commission Act. The 1991 RPP adopted a Vision Statement that supported “protect[ing] the best of Cape Cod and repair[ing] the mistakes of the past.” The plan contained goals, policies, and implementation strategies. These strategies consisted of Commission actions and recommended town actions and regulatory standards for

13 different issue areas. The 1991 RPP also included mapped and identified resources of regional importance, such as the Water Resources Classification Maps, and a strategy for coordination with other state, federal, and local partners. The 1991 plan proposed to map areas for designation as village, regional, and industrial growth centers for adoption through local comprehensive plans (LCPs). The 1991 RPP also mapped regulated and planning areas and adopted goals, minimum performance standards, and other development review policies for each issue area.

The 1996 and 2002 RPP updates followed a similar format to the 1991 plan. The 1996 update placed considerable emphasis on growth management tools and recommended analyzing the carrying capacity of Cape Cod’s resources. Designation of growth centers remained in the plan for adoption in LCPs. The Outer Cape and Monomoy Capacity Studies, which analyzed transportation, water supply, and wastewater capacity in these two regions were a direct result of the 1996 plan and were prepared within the next few years. The 2002 plan also placed more

emphasis on designation of Districts of Critical Planning Concern (DCPCs) for growth management purposes and to protect regional resources, resulting in several DCPC designations for those purposes.

In Spring 2006, the Barnstable County Commissioners appointed the 21st Century Task Force (Task Force) to evaluate the Commission’s operations and make recommendations to improve the agency’s effectiveness and relationships with towns. The 21st Century Task Force report included

over 35 recommendations for improvements to the Commission’s regulations. This effort resulted in a restructuring of the RPP to develop a more focused map-based approach to planning and regulation and included the adoption of the first Regional Land Use Vision Map (RLUVM). The RLUVM included five general categories of land use: Economic Centers, Industrial/Service Trade Areas, Villages, Resource Protection Areas, and Other. The Task Force also recommended the Commission place more emphasis on planning and

technical services for towns and to make the regulatory process more clear, predictable, flexible, and effective.

As a direct result of the Task Force recommendations, the Commission engaged in a collaborative process with Cape towns to adopt local Land Use Vision Maps (LUVMs) to incorporate into the RLUVM. As a result of this process, eight of 15 towns adopted LUVMs that were incorporated into the 2009 RPP.

The 2009 RPP divided the plan into separate planning and regulatory sections and grouped issue areas into three categories: Growth Management Systems, Natural Systems, and Human/Built Systems. The 2009 RPP also expanded the practice of applying different standards in different geographic locations to issue areas in addition to water resources and reduced Development of Regional Impact (DRI) mitigation requirements in mapped Economic Centers for transportation, open space, and affordable housing

KEY ISSUES

The RPP update process included stakeholder meetings, surveys, and feedback on a draft plan. During this process, stakeholders helped to identify six key issues addressed in this plan.



CLIMATE CHANGE



PROTECT NATURAL RESOURCES



ADDRESS HOUSING NEEDS



PRESERVE CHARACTER



PROMOTE REGIONAL CAPITAL PLANNING



EASE LOCAL COMPREHENSIVE PLANNING

to create incentives for development to locate in these areas.

RPP UPDATE PROCESS

In December 2014, the Commission held three sub-regional hearings to begin the RPP update process. These initial meetings provided an overview of the Cape’s development history and its effects on the region’s economy, culture, and environment. In addition, these meetings served as a

forum for gathering public feedback on themes or lessons learned for incorporation and consideration in the updated RPP. These meetings were also used to recruit stakeholders to participate in several additional meetings to inform the RPP update, discussed in the following text.

EARLY STAKEHOLDER INPUT

Recruited stakeholders, who represented a wide range of backgrounds, constituencies, and their interests and

concerns, were grouped by sub-regional geographic area. Representatives were self-selected volunteers residing or working within the applicable sub-regional areas who were generally able to represent broader constituent and interest groups, for example, citizens, planners, municipal officials, environmental advocates, builders, attorneys, engineers, historic preservationists, or housing authorities. The Commission convened each of the three stakeholder working groups

(Upper Cape, Mid Cape, and Lower/Outer Cape) six times over the course of nine months, from March through November 2015.

Each stakeholder group helped to inform a suite of online decision-support tools that employed the principles of geodesign, a framework that fosters collaborative decision-making and greater understanding of the impacts of those decisions on natural systems. Geodesign emphasizes the significance of geographic context in design

and utilizes science- and value-based information to help designers, planners, and stakeholders make better-informed decisions. Two of the tools describe the past and present of development on Cape Cod and how it came to look the way it does. Another allows users to plan and analyze future development scenarios, and how those might impact the region. The Commission developed and tested the tools containing Cape Cod-specific data and information

with the stakeholder groups. With the tools, users could visualize and evaluate the effects of different land use decisions on the built and natural environment, including past, present, and potential future development scenarios. The information and results from these tools allowed the stakeholders to provide better-informed feedback for the direction of the policies of the updated RPP.

The feedback from these meetings highlighted some central issues and needs

for the region that are key components of this plan: improving affordable housing, coordinated regional capital planning, and better guidance on developing local comprehensive plans. In addition to the in-person stakeholder process, the Commission also conducted two surveys to gain a better understanding of the priorities of the people of Cape Cod to ensure the updated RPP reflects and meets their interests.

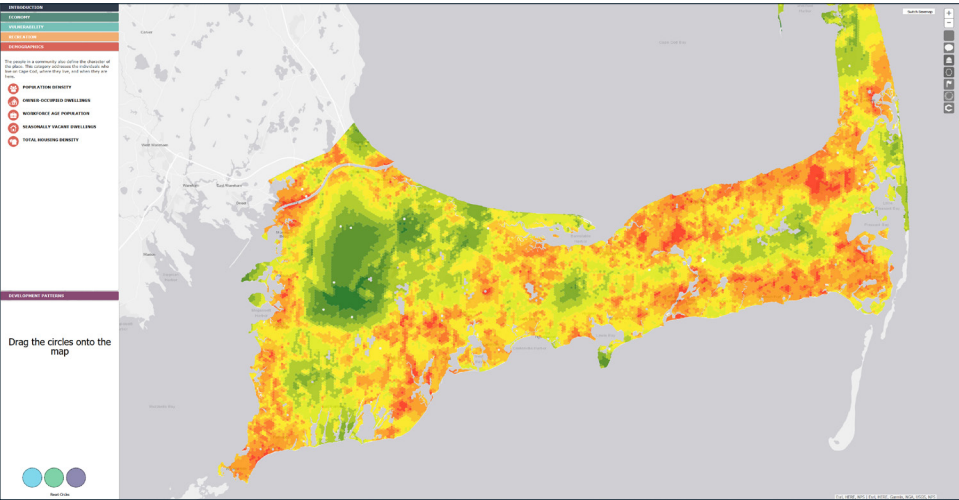


Past

CHRONOLOGIES VIEWER

Link: ccc-plans.org/chronology

The Chronologies Viewer is a web-based reference tool that displays historical data, aerial mapping, and other data sets in a geo-referenced viewer. It includes annual historic data on parcels, population, tax rate, and assessed value dating as far back as 1625 through present day. Annual data on built parcels, as well as historic aerial imagery dating back to 1930, allow the user to track emerging development patterns Cape-wide. The Chronologies Viewer highlights the impacts of past land use and development decisions and illustrates changes over time, which can help inform future planning, design, and regulation on Cape Cod.

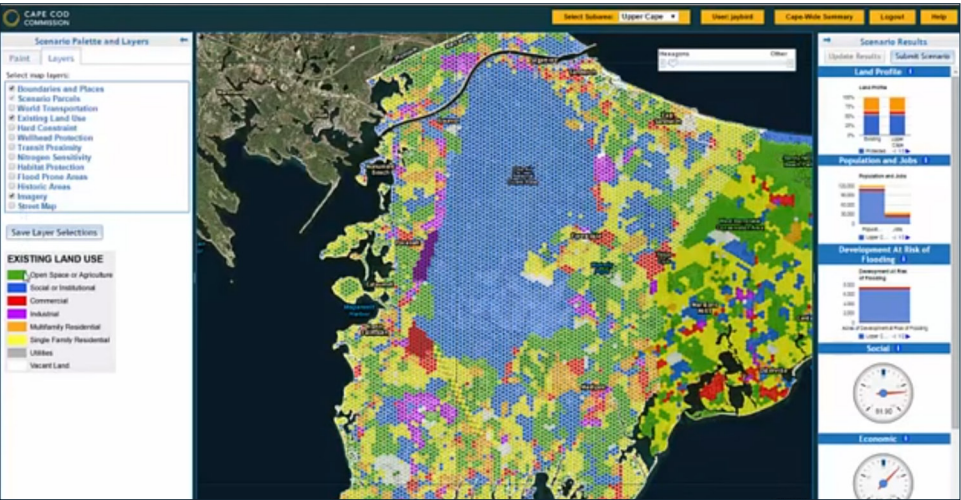


Present

COMMUNITY CHARACTERISTICS APPLICATION

Link: ccc-plans.org/characteristics

The Community Characteristics application was developed using the most important metrics that define a community on Cape Cod based on stakeholder feedback. This application contains data about Cape Cod's people and places, revealing regional patterns that tell a story about where and how Cape Codders live, work, and play. Although the RPP serves the region as a whole, differences between towns must be recognized. The Community Characteristics application allows for this classification and comparison.



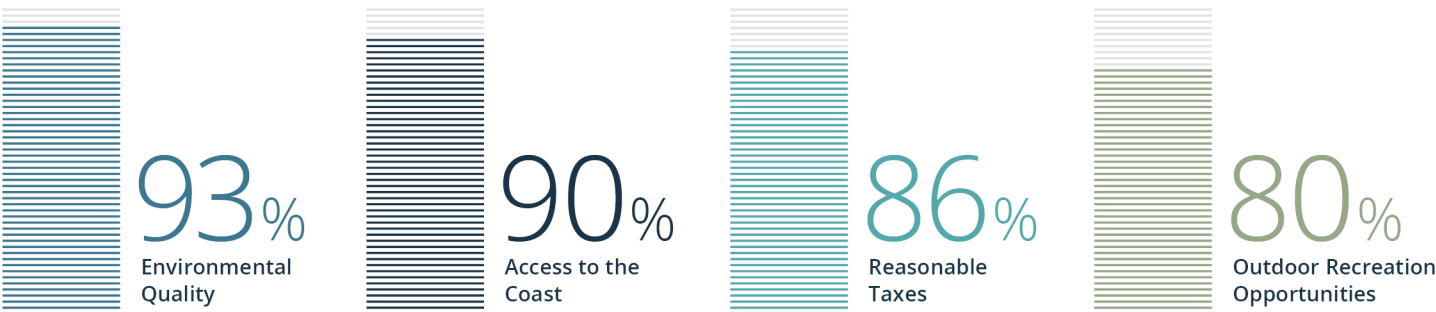
Future

ENVISION TOMORROW

Link: ccc-plans.org/et

Envision Tomorrow allows users to make assumptions about land use and development in the future and explore the effects of different scenarios on economic, environmental, and social factors. The tool shows the impacts of decisions on the major challenges facing Cape Cod, including lack of affordable housing, loss of habitat, lack of year-round jobs, auto-dependency, and flood risk, to inform policies and decisions that will be most effective in facing these challenges.

WHAT DRAWS HOMEOWNERS TO CAPE COD?



Since the initial homeowner survey, conducted in 1995, the factors of environmental quality, access to the coast, and reasonable taxes have consistently been among the most frequently cited reasons for the initial decision to live or maintain a home on the Cape.

WHAT DO HOMEOWNERS THINK ARE THE TOP PROBLEMS CAPE COD IS FACING?



WHAT KINDS OF NEW DEVELOPMENTS DO HOMEOWNERS WANT?



HOMEOWNER SURVEY

In the fall of 2014, the University of Massachusetts Donahue Institute (UMDI) surveyed 1,637 Cape Cod homeowners for the Cape Cod Commission to better understand homeowners’ perspectives and opinions related to planning and development issues on Cape Cod. The survey had a 24% response rate, with 389 respondents completing the survey.

Of all survey respondents, slightly more than half were year-round residents. Most respondents had owned their homes for more than

15 years. Environmental quality (clean air and water), access to the coast, reasonable taxes, recreational opportunities, and the affordability of housing (at the time of purchase) were the top reasons respondents wanted to own a home on Cape Cod. These factors have consistently been among the most frequently cited reasons for the initial decision to live or maintain a home on the Cape.

Respondents consistently identified the region’s current problems as traffic congestion, coastal erosion, the availability of jobs and

economic opportunities, and the pollution of ponds and coastal waters. Not only did respondents view these issues as key current problems facing the region, but as potential serious problems in the near future. Also of key concern for homeowners, and particularly year-round residents, was the costs associated with wastewater treatment and solid waste disposal.

In terms of future development, respondents generally expressed limited support for new residential or commercial development on Cape Cod, with the exception of a technology firm, light

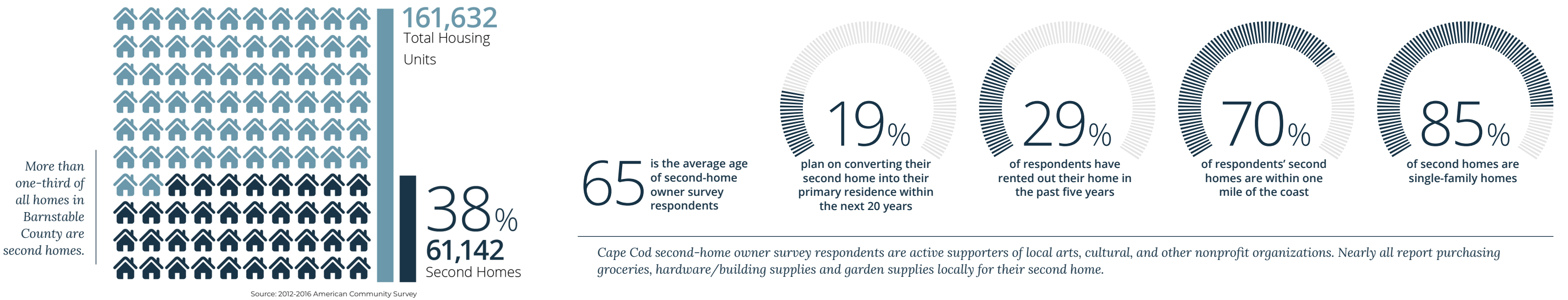
industrial use development, a cultural facility, and small neighborhood businesses. The majority of respondents supported making development easier in already-developed commercial areas and more difficult in less developed areas. The identification of Community and Industrial Activity Centers and Natural Areas in this RPP serves these interests by encouraging the development of small neighborhood businesses and civic amenities in Community Activity Centers, as well as appropriate light industrial uses in Industrial Activity Centers, while minimizing sprawl.

Respondent support for the development of infrastructure was greatest for bike paths and sewer treatment and collection systems, while there was mixed support for possible ways to alleviate traffic congestion such as widening of Route 6 east of exit 9 or widening of state-numbered roads. Most respondents noted they enjoy the water views and opportunities for swimming afforded by living on the Cape and have not changed their engagement in water related activities even though about half of respondents had

noticed a change in coastal or pond water quality over the past decade.

This was the third iteration of this survey, with previous surveys conducted in 1995 and 2005. Having asked the same questions over time provides insight into trends among regional homeowners and their interests. Comparing responses to the 2014 survey to the 1995 and 2005 surveys shows that environmental quality, access to the coast, and reasonable taxes have always been, and remain, important factors in people deciding to own a home on the Cape. Reasonable taxes

were more important to respondents in 2014 than in 1995, while consideration of the region as a good place to raise a family was less important in 2014 than in 1995. Additionally, between 2005 and 2014, the importance of job or economic opportunities decreased and the importance of the nearness of friends and relatives increased from 1995 to 2014. Traffic congestion, pollution of ponds or coastal waters, availability of job or economic opportunities, and coastal erosion were identified as key problems facing the region both in 2005 and 2014, with concern about coastal erosion increasing significantly



from 2005 to 2014. This information underscores the unwavering importance of the region’s natural environment.

SECOND-HOME OWNER SURVEY

More than one-third of all seasonal homes in Massachusetts are located in Barnstable County, and more than one-third of all homes in Barnstable County are seasonal. Collectively, the owners of these seasonal or secondary homes (second-home owners) have a significant stake in the regional policies established in this RPP. To help the

Commission gain a better understanding of second-home owners’ interests, the Commission worked with the University of Massachusetts Donahue Institute (UMDI) to survey second-home owners on Cape Cod in the spring of 2017. UMDI distributed nearly 6,500 surveys; 1,293 survey recipients responded (20% response rate). This survey follows up and expands on a 2008 survey by including questions related to the potential impacts of environmental factors on second-home ownership.

Cape Cod second-home owners average 65 years in age, up from 61 years in age from the 2008 survey, are highly educated (80% have a bachelor’s degree or higher), and 70% earn \$100,000 or more annually. The survey found that nearly 90% of respondents own only one home other than their primary residence and nearly 85% of respondents either purchased their second home or purchased the land and built a home. The vast majority—85%—of second homes are single family

homes with 2 to 4 bedrooms, with an average lot size of ¾ of an acre.

Not surprisingly, second homes are used most in the summer and least in the winter, and primarily by the homeowners, with less than 30% of respondents ever renting their homes out over the past five years. Based on survey responses, this trend is unlikely to change in the near future, as nearly 80% of respondents said they anticipated the rental usage of their house to remain the same or is not applicable (i.e., it is not rented out).

Nearly 20% of respondents anticipate converting their second home into their primary residence within the next 20 years, with 40% of those respondents stating they plan to work part- or full-time on the Cape after relocating here.

Despite the location of 70% of respondents’ second homes being within one-mile of the coast, less than 10% of respondents reported experiencing coastal erosion or flooding in the past five years, only 7% expect impacts in the next five years, and only 26% expect impacts from erosion or flooding in

the next 25 years. Of those expecting future coastal erosion or flooding impacts, only 20% plan to protect their home through construction of hard structures. Lastly, only 12% of respondents report deterioration of water quality in the ponds or coastal areas near their home during their ownership tenure.

The data show that Cape Cod second-home owners actively support the Cape Cod community and economy. About 75% of respondents support arts, cultural, and other nonprofit organizations on the Cape through donations and purchases

and about 70% reported attending or visiting museums, concerts, galleries, or theater productions. In addition to contributions to community organizations, second-home owners contribute to the local economy as nearly all report purchasing groceries, hardware/building supplies, and garden supplies on Cape Cod for their second home. However, few respondents use on-Cape financial or medical services and specialists because they are unnecessary while on the Cape and have established providers off-Cape.



PUBLIC COMMENT AND FEEDBACK ON DRAFT

A draft of this plan was released for a 60-day public comment period on September 21, 2018. During this comment period, three public hearings were held—one in Sandwich, one in Truro,

and one in Yarmouth—and Commission staff attended nine Select Board and/or Planning Board meetings. Additionally, Commission staff met with staff from five towns, presented the draft plan to the Assembly of Delegates and the Cape Cod Selectmen and Councilors Association, and met with the Town Planners from across the Cape, in

addition to 12 meetings with other stakeholders. During this time, stakeholders were encouraged to provide feedback on the draft plan at these meetings, as well as provide written comments. The public comment period ended on November 19, 2018 and more than 135 comments were received.

Comments generally fell into the following broad categories: balancing the economy and environment; the new framework for regulatory review; Placetypes; climate change mitigation; regional, sub-regional, and local characterizations; and plan process and general support. Additionally, there were issue-specific comments on capital

facilities and infrastructure, community design, economy, energy, housing, ocean resources, solid waste, local comprehensive plans and capital plans, transportation, and water resources. The input from the initial stakeholder process and surveys helped identify key areas of concern such as affordable housing, preserving

the area’s natural resources, and protecting the regional character, and helped to shape a regional vision for the future of Cape Cod that balances protecting the critical regional resources with allowing for efficient growth in appropriate areas. Building upon the initial stakeholder process and surveys from 2014-2017, the feedback from the public

comment process on the draft plan highlighted that climate change mitigation is one of the key issues facing the region, while also underscoring the need for affordable housing and the importance of balancing and linking the region’s environment and economy to support vibrant communities into the future.





A Regional Vision for Cape Cod



The region’s intrinsic wealth stems from its natural beauty, historic community character, and healthy coastal and freshwater environments. The features that make Cape Cod attractive are also the cause of the forces that threaten to overwhelm the environment and erode its character. The challenge Cape Cod continues to face is balancing the protection of the environment with supporting the residents, workers, and visitors with

the necessary services and infrastructure to thrive over the long term. Where that balancing point lies may be a point of discussion, but the choices made must consider the threat of losing those unique Cape assets that cannot be replaced.

The vision for the future of Cape Cod is a region of vibrant, sustainable, and healthy communities, and protected natural and cultural

resources. To advance this regional vision, the 2018 RPP includes a description of eight Placetypes, including identified Community Activity Centers, Industrial Activity Centers, and Natural Areas. The Commission will focus efforts to support vibrant downtowns and village centers by helping to plan for housing and economic opportunities to meet regional needs in the Community Activity Centers, and the Industrial Activity

Centers will be targeted areas for future growth in existing and emerging industries. The Natural Areas will be the focus of the Commission’s efforts to protect vulnerable resources and improve the Cape’s resilience to severe storms and the effects of climate change.

Growth Policy for Barnstable County

Growth should be focused in centers of activity and areas supported by adequate infrastructure and guided away from areas that must be protected for ecological, historical or other reasons. Development should be responsive to context allowing for the restoration, preservation and protection of the Cape’s unique resources while promoting economic and community resilience.

Cape Cod Systems





The Cape Cod Commission Act requires that the Regional Policy Plan identify Barnstable County's critical resources and management needs. Cape Cod is comprised of a suite of interrelated and interdependent systems: natural, built, and community. Natural systems are an integral part of life on Cape Cod, providing drinking water and supporting the habitats and landscapes that draw people to the region, guiding

development patterns, and driving the region's economy. Built systems—the human-made physical elements of the region—allow for people to live, visit, and work on the Cape. Community systems are the social activities and qualities of the region, including the economy and cost of living, which depend on the health of both the natural and built systems. While maintaining a healthy balance among these systems

has been an ongoing effort, climate change is anticipated to impact how each system functions, creating new challenges. The Growth Policy recognizes the importance and interdependence of these systems and the need to balance the impacts and functions of each to sustain the Cape over the long term. These natural, built, and community systems are described in this section.

NATURAL SYSTEMS

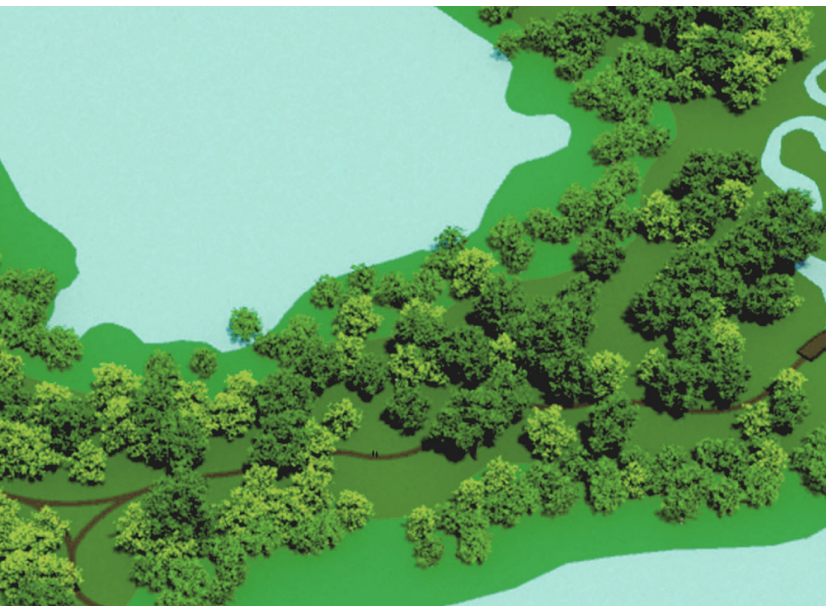


BUILT SYSTEMS



COMMUNITY SYSTEMS





NATURAL SYSTEMS

The region’s natural systems are vital to the economy and way of life. The natural environment of Cape Cod includes the water and ecosystems upon which life depends and is prioritized by this plan for protection and restoration. The natural systems of the Cape center around water, water-dependent resources, and habitat. High quality natural systems are part of Cape Cod’s attraction for residents and visitors, but they are also all susceptible to contamination

from various land uses and activities and are increasingly vulnerable to changes in climate. In the future, it is anticipated the natural functions of these systems will be affected by increases in storm severity, intensity, and rainfall, as well as changes in temperature and periods of drought. Protection and restoration is a critical need.

GROUNDWATER

Cape Cod groundwater is derived solely from precipitation and is stored in sandy glacial deposits that comprise Cape Cod’s aquifer as the groundwater flows

to the coast. The aquifer deposits are generally very permeable, making them ideal for development of high-yielding water supplies, but simultaneously vulnerable to contamination from land uses in their watersheds. Cape Cod’s aquifer is bound by the water table, by a transition zone between fresh and salt water, and by bedrock beneath portions of the upper Cape. The water table fluctuates in response to the seasonal loss of recharge due to evaporation and transpiration. About 10% of the total recharge to the aquifer is pumped for water supply. The amount

of groundwater available for drinking water is limited to maintain the hydraulic balance of the aquifer’s saltwater boundaries and sustain flow to the region’s fresh waters and estuaries.

The Cape Cod Aquifer is comprised of six lenses of groundwater. The four Outer Cape lenses are buoyed above saline groundwater due to differences in fresh and salt water density. Each lens is separated by interlens discharge areas (e.g., estuaries). A lens is further divided into watersheds expressed by the water table



Source: Cape Cod Commission, USGS



(rather than topography) that are defined by their respective receiving surface waters or wells. These watershed areas contribute to municipal water wells, estuaries and embayments, fresh-water ponds and lakes, or open ocean.

The Cape Cod Aquifer is one of the most productive groundwater systems in New England and provides 100% of the Cape’s drinking water. The aquifer is designated a Sole Source Aquifer under the Safe Drinking Water Act by the Environmental Protection Agency (EPA), a designation

that requires Federally-funded projects to assess project impacts to the aquifer.

MARINE WATER

Ocean waters support rich marine life and complex ecosystems. Marine systems include open ocean, smaller segments such as Nantucket and Vineyard Sound, and estuaries and coastal embayments. Marine waters support important ecosystems such as primary shellfish habitat and spawning grounds for fish, as well as primary recreational areas for Cape Cod residents and visitors.

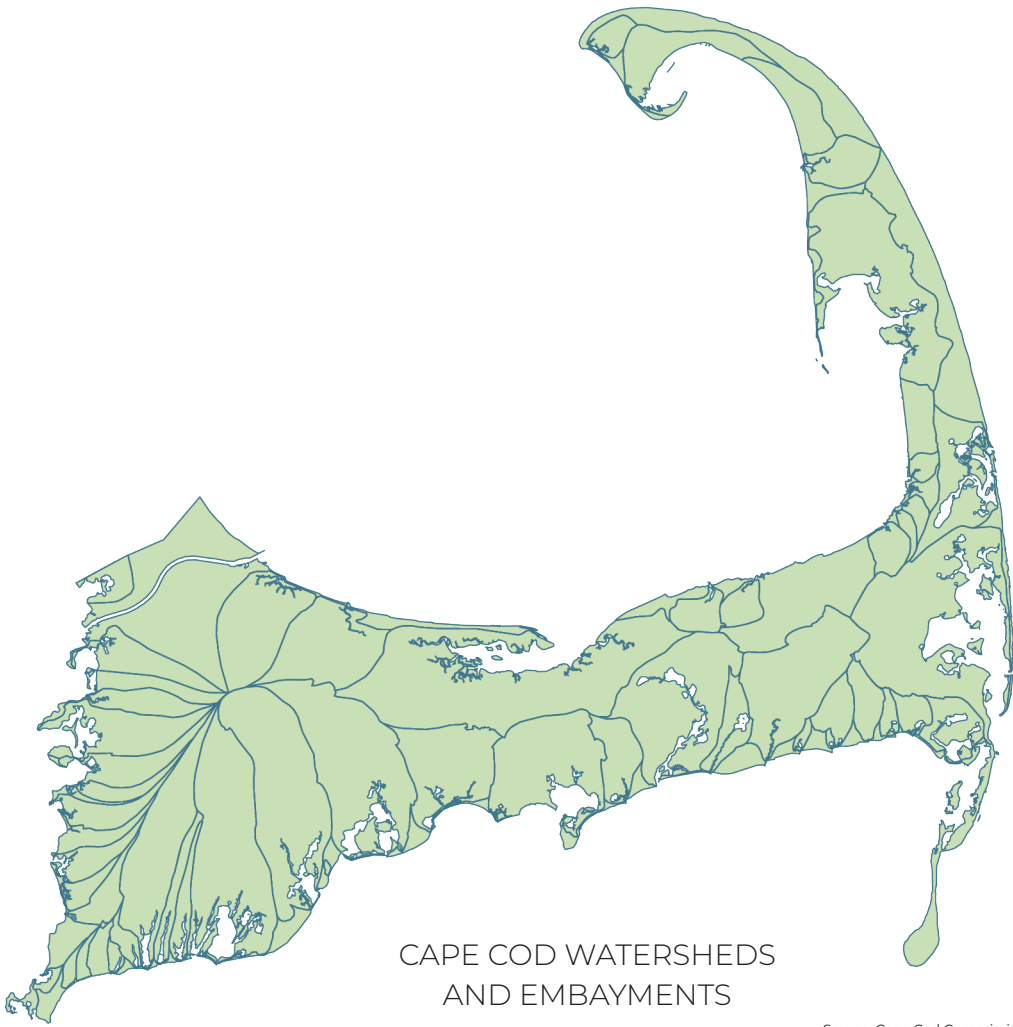
Coastal Waters

Nearly 80% of the region’s land area drains to coastal embayments and estuaries. The remaining land discharges directly to open water such as the Cape Cod Canal, Nantucket Sound, Cape Cod Bay, and the Atlantic Ocean. Of the Cape’s 101 watersheds, 53 watersheds drain to nutrient-sensitive coastal embayment and estuaries. Development contributes nitrogen to groundwater, either through wastewater or other sources such as fertilizer and stormwater runoff, and ultimately the nitrogen reaches the embayments.

The increased availability of this nutrient results in excess algae and degradation of water quality, posing a primary threat to coastal habitat. The ability of most Cape Cod coastal embayments and estuaries to assimilate nitrogen has already been exceeded. These impacts are further discussed in the next section of the plan.

Offshore Marine Waters

The oceanographic conditions around Cape Cod are varied. Vast quantities of sediments deposited during the late Pleistocene glaciation form the underpinnings of Cape



CAPE COD WATERSHEDS AND EMBAYMENTS

Source: Cape Cod Commission, SMAST, MEP



Cod and the seafloor beneath its surrounding waters. Currents from the Gulf of Maine and the Gulf Stream affect sea temperature, with resulting biological differences around the region. The unique ocean environments support a host of species, including many rare or threatened fish, birds, reptiles, and marine mammals. Much of the marine waters around Cape Cod support the last population of the federally endangered North Atlantic Right whale. Cape Cod ocean waters continue to support fisheries

that support recreational and commercial shellfishing and finfishing.

In addition to development on dry land, land under the ocean, seawater, and the space above the ocean surface are increasingly in demand for new marine uses. Changes to the Massachusetts Ocean Sanctuary Act in 2008 made renewable energy development, sand mining, and cable and pipeline installations possible in offshore locations, and other changes in state policies have created incentives for these development activities.

The federal government’s creation of offshore wind leasing areas in federal waters south of Martha’s Vineyard and Nantucket means interconnection cables may cross through state and regional jurisdictional areas, making landfall on Cape Cod. To date, Massachusetts has permitted very limited ocean-based sand mining; with erosion rates and sea level rise increasing, demand for offshore sediments to nourish area beaches may also increase. While these water-dependent uses are important economically and for the region’s energy and

climate future, it is important to balance these interests with preservation of the critical marine ecosystems in these areas.

FRESHWATER PONDS AND LAKES

The Cape’s nearly 1,000 freshwater ponds are essentially “Windows on the Aquifer,” manifestations of the water table where topographically low-lying areas extend below water level. Covering nearly 11,000 acres, Cape Cod’s ponds are highly variable in size, ranging from less than an acre to 735 acres. The 21 largest ponds

make up nearly half of the total Cape-wide pond acreage. Approximately 40% of the ponds are less than an acre, while 166 are designated as great ponds of 10 acres or more. As part of the regional aquifer system, ponds are directly linked to drinking water and coastal estuaries.

Freshwater ponds are particularly sensitive to additions of phosphorous, which is associated with development and land uses close to a pond (such as wastewater, fertilizer, and stormwater sources). Since 2001, many of Cape

Cod’s freshwater ponds and lakes have been monitored through the Ponds and Lakes Stewardship Program. In 2003, the Cape Cod Pond and Lake Atlas was published, documenting the water quality for over 190 ponds. Many are impacted by development and land uses in their watersheds and accumulated organic matter at their bottom. Buffering pond shorelines from development is an effective strategy for protecting freshwater ponds and lakes by taking advantage of the soil’s ability to adsorb and store phosphorus,

thereby storing and delaying this nutrient from entering the pond.

WETLANDS

The Cape’s groundwater and stormwater runoff discharge to surface water in ponds, lakes, rivers and streams, coastal waters, and wetlands. These wetland resources support much of the plant and wildlife that makes the Cape such an environmentally rich and interesting place. In addition, wetlands play a vital role in regulating the environment by absorbing and filtering storm and flood waters, providing



natural removal of nitrogen, recharging the aquifer, storing carbon in wetland peat and vegetation, and providing vital habitat.

Critical to protecting the nearly 30,000 acres of wetlands and their natural functions are healthy, naturally vegetated buffers. Buffers provide important habitat as well as assist in the management of pollutants, trapping or arresting nutrients and sediment before they can flow into wetlands and clog or impair them. Increasingly, wetland buffers preserved from development will help to

store increased stormwater runoff as the climate changes and will allow wetlands to migrate as changes in groundwater height and increased precipitation events occur. Development pressures on wetlands are discussed in the next section of the plan.

OPEN SPACE

The open space of the Cape is critical to the health of the region’s natural systems, economy, and population. Open space provides habitat for the region’s diverse species and protection of the region’s drinking water supply. Wooded open space provides

a carbon sink for mitigating the impacts of climate change, both through the storage of carbon that would otherwise be lost to the atmosphere through development, and through the carbon-absorbing capacity of trees. Open space contributes significantly to the natural and rural character of the region and supports key industries. The beaches, farms, woodlands, and marshes of the Cape provide recreational outdoor activities that attract visitors and residents to the region and provide the necessary land and resources for the Cape’s agricultural activities.

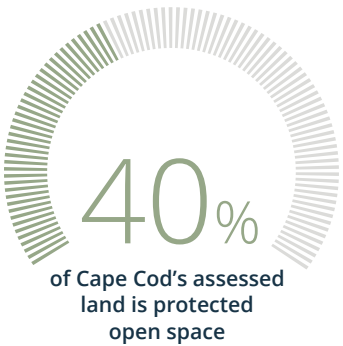
An analysis conducted using 2012 assessor’s data showed that protected open space comprises approximately 40% of the Cape’s more than 230,000 assessed acres. The protected land includes federal, state, and local holdings, which vary widely in their amounts by town. In total, Cape towns hold more than 30,000 acres of protected open space. In addition to government entities, private land trusts have been critical in protecting open space as well.

Nearly a third of the region’s protected open space lies within the Cape Cod National Seashore. This area, established through the visionary efforts of citizens and the federal government in 1961, contains more than 27,000 acres of outstanding natural, scenic, and recreational resources across six Lower and Outer Cape towns. Three federally designated national wildlife refuges (NWR) also grace the Cape: Monomoy NWR in Chatham, and the Mashpee NWR and Great Thicket NWR both of which identify

undeveloped lands in Falmouth and Mashpee for acquisition.

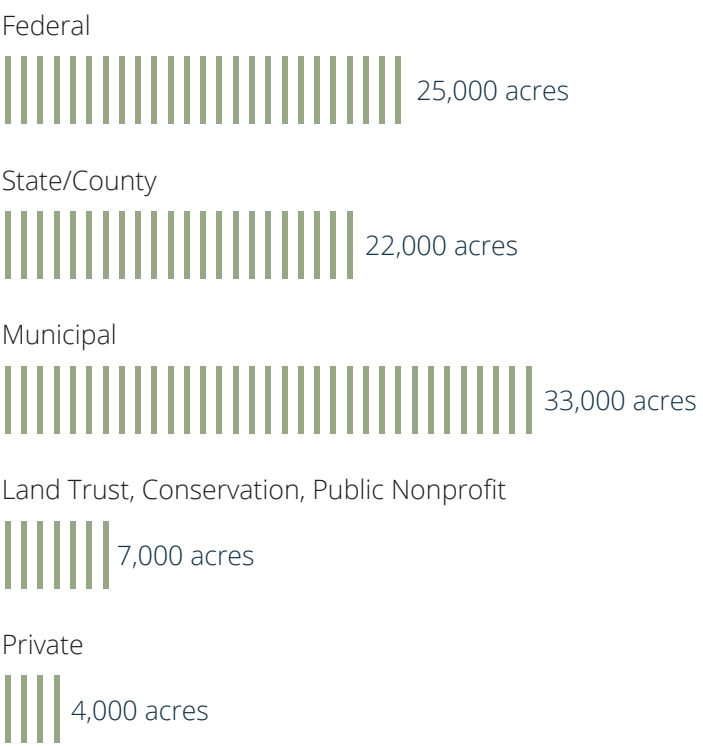
At approximately 22,000 acres, Joint Base Cape Cod (JBCC), formerly known as the Massachusetts Military Reservation (MMR), is one of the largest contiguous properties in state or federal ownership on Cape Cod. Camp Edwards is comprised of approximately 15,000 acres in the northern portion of the base. The cantonment area, which is substantially more developed with structures, roads and other infrastructure, is comprised of approximately

7,000 acres in the southern portion of the base. JBCC includes parts of the towns of Bourne, Mashpee, and Sandwich, and abuts the town of Falmouth. The northern 15,000 acres of Joint Base Cape Cod are protected by the Upper Cape Water Supply Reserve, established through a Memorandum of Agreement (MOA) and an Executive Order in 2001 and codification of the MOA into law in 2002 for the purposes of water supply protection, wildlife habitat, and open space consistent with compatible military training activities.



90,000+ ACRES
PROTECTED IN
PERPETUITY

PROTECTED OPEN SPACE BY OWNER



■ Open Space Protected in Perpetuity

Source: MassGIS (2018)



The Commonwealth of Massachusetts also holds large areas of protected open space on Cape Cod as well, including Nickerson State Park in Brewster, Hawksnest State Park in Harwich, Crane Wildlife Management Area in Falmouth, the Hyannis Ponds in Barnstable, and numerous other smaller parks and preserves.

HABITAT

The entire Cape Cod peninsula is located within the southeastern Massachusetts pine barrens eco-region. Pine barrens are a globally rare habitat type comprised of a unique assemblage of plants and animals that thrive on the nutrient-poor soils and variable climate found on Cape Cod. Within the pine barrens eco-region, there are many and varied habitat

types, including pitch pine-oak woodlands, transitional hardwood-pine forests, streams and rivers, ponds and lakes, vernal pools, shrub and forested swamps, estuaries, salt marshes, dunes, beaches, grasslands, and others. This rich mosaic of habitat types supports 132 state listed rare plant and animal species, including Important Bird Areas, as well as hundreds more species that rely on Cape

Cod habitats year-round or seasonally when migrating through or for breeding. When healthy naturally functioning habitats are protected from the impacts of development, humans benefit from the many ecosystem services that these habitats provide. Ecosystem services are functions that are intrinsic to a natural community, and which benefit humans through the services they provide,

such as recreational access, filtering of nutrients or air quality, provision of food and other needed resources, and mitigating the threats from natural hazards.

For many years habitat loss due to development has been the primary threat to the region’s habitats. While habitat fragmentation and loss through clearing or removal continues to be a significant

threat, new threats such as climate change, invasive species, and the reduction of natural disturbances increasingly challenge the continued long-term health of native natural communities. Natural disturbances, such as wildfire or severe storms, are necessary to maintain the diversity of vegetation groupings that define the region’s woodlands, heathlands, and coastal plain

pond shores. Fire suppression, invasive species, and changing climate threaten the integrity of these habitats. The region’s challenge is to find ways to protect remaining undeveloped lands, manage habitat to support diverse vegetation, and target invasive species incursions. Threats to habitat are discussed further in the next section of this plan.



BUILT SYSTEMS

The built environment—human-made infrastructure and resources—accommodates the people who choose to live and visit Cape Cod. Protecting and enhancing the built environment, including providing infrastructure that supports the region and vibrant activity centers, is vital to supporting the Cape’s population. In many cases, infrastructure, such as wastewater treatment, is needed to improve and maintain the integrity of the

region’s natural environment. Built systems rely heavily on fossil fuels. Changes in climate require the region evaluate past development and consider changes needed to mitigate and accommodate the potential effects. The built environment must complement the regional character and be protective of the natural systems.

DEVELOPMENT

Through most of the 1800s, development on Cape Cod concentrated around small

village centers with little or no residential or commercial development in outlying areas. During the mid-1800s, much of the development occurred close to harbors and waterways in support of the regional maritime industries, defining the historic character and development pattern for villages still seen today. From the late 1800s through the early 1900s the Cape underwent a slow transformation from a subsistence farming and fishing way of life to a

seaside resort destination attracting summer visitors and outside wealth.

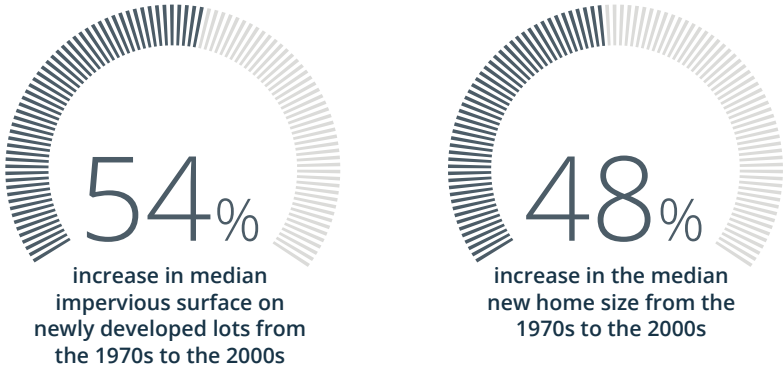
The advent of rail travel, automobiles, and the adoption of the interstate highway system added to the accessibility and the popularity of Cape Cod. For the first half of the 1900s, the inland areas of Cape Cod remained largely undeveloped with most residential development concentrated near the coastline. Starting in the 1950s, the population

began to rise more rapidly, and continued to grow even faster from the 1970s through the early 2000s, as Cape Cod became a desired location for retirees and second-home, “seasonal use” buyers. With this population increase, development increased and began to occupy much of the interior of the Cape as well.

Regulations, as well as market demand, influence the region’s past and present development patterns. Aspects of zoning regulation adopted

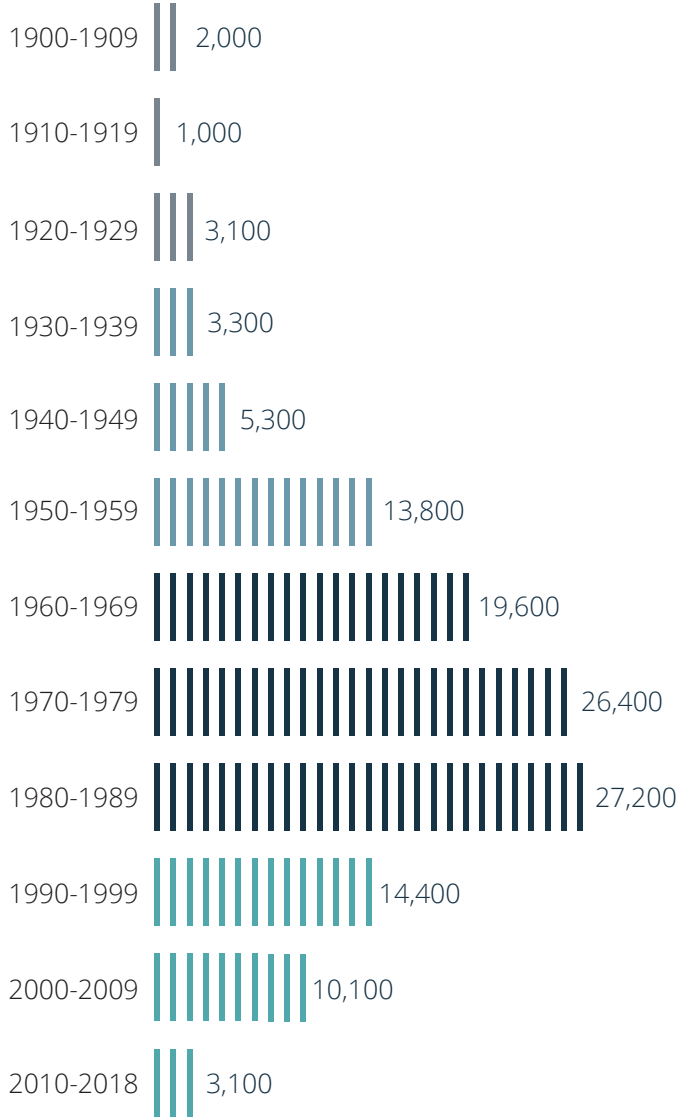
on Cape Cod—such as large required minimum lot sizes and yard setbacks, and the rigid separation of residential and commercial uses—have had the effect of prohibiting the type of compact, mixed-use, and frequently desirable development representative of villages developed prior to the adoption of zoning. Though such zoning regulation resulted in less overall density of development on Cape Cod, the intensity of development has increased throughout the region, consuming more

land on a per unit basis and replacing what was once undeveloped forest land. Though deforestation has happened on the Cape for centuries, early deforestation was for agrarian purposes that often left the land vacant with potential for forest regrowth. More recently, permanent structural development, such as houses and roads, is replacing forest land.



Starting in the 1950s, development rapidly increased across the region, peaking in the 1980s. Beginning in the 1970s and continuing through today, the intensity of development increased, with larger homes and more impervious surface per lot. Year developed data is based on current assessing records from the 15 individual towns. In some cases, the year developed date may not reflect the first year a parcel went into development, but subsequent significant redevelopment.

PARCEL DEVELOPMENT BY DECADE



Source: Cape Cod Commission analysis and town assessing data for impervious surface and homes size statistics, Cape Cod Commission Parcel Data Set (2019) which uses individual town assessing data for development by decade



**DRINKING WATER
SUPPLIES**

Clean and reliable drinking water is essential to support the population of Cape Cod. Throughout the Cape, this need is met through a combination of public and private water supply infrastructure. Approximately 85% of Cape Cod is serviced with public water. The remaining 15% rely on private or privately owned small volume wells that serve the public in portions of East Sandwich, West Barnstable, Eastham, Wellfleet, and Truro. There are 18 separate water districts, municipal divisions

and departments across Cape Cod (including the recently formed Eastham public water supply). All together there are 160 gravel pack municipal water supply wells (some capable of producing over 3 million gallons per day), one surface reservoir, and hundreds of private wells. The wells receive their water from recharge to distinct land areas referred to as wellhead protection areas and Zone IIs through the DEP Drinking Water Program. The wellhead protection areas have been adopted through local zoning and the Regional Policy Plan as groundwater protection

overlays. The total land area of the Zone IIs on Cape Cod is 106 square miles.

Since 2000, public drinking water suppliers have pumped, on average, about 10.7 billion gallons of groundwater per year from Cape Cod’s Sole Source Aquifer. Over the last decade, pumping has been fairly consistent, showing only slight variations. Temporal variations are more apparent at the local scale.

The quality of the Cape’s drinking water is generally good. A maximum contaminant limit of 10 parts per million

nitrogen is established for drinking water by the EPA and the Commonwealth of Massachusetts to protect public health. A 5 parts per million nitrogen loading goal was established as part of the 1978 Cape Cod Area Wide Water Quality Management Plan to ensure water supply wells on Cape Cod would not exceed the 10 parts per million public health standard. Cape Cod towns and the Massachusetts Department of Environmental Protection have adopted the regional goal of 5 parts per million as a planning and regulatory limit. While only a handful of

public water supply wells have tested near 5 parts per million, a slight upward trend in nitrogen concentrations in the region’s public water supplies is the result of development in wellhead protection areas.

Nitrogen can serve as an indicator of other contaminants, such as petroleum compounds, pharmaceuticals and personal care products and other contaminants of emerging concern (CECs). Emerging contaminants are not commonly monitored or regulated in the environment but may have negative impacts

on ecological or human health. The EPA required testing for a select subset of emerging contaminants in public water supplies with over 10,000 connections. Several Cape Cod water suppliers participate voluntarily. Contaminants of emerging concern are being found in public and private water supplies under both the EPA’s one-time Unregulated Contaminant Monitoring Rule program (UCMR) and sampling being conducted by the Silent Spring Institute. Septic systems are included as likely CEC sources. The UCMR Program reported occurrences of CECs in water

samples collected from at least one withdrawal point for all 12 participating water suppliers. Subsequent sampling has detected 1-4 dioxane and perfluoroalkyl substances above Massachusetts Drinking Water Guideline concentrations in four wellfields in the Hyannis and Mashpee supply districts.

The Silent Spring Institute tested for CECs in 20 private wells, 20 untreated public wells, and two public distribution systems. Of the 20 public wells, 15 wells and two distribution systems had detectable levels of at least



one measured CEC. Of the 20 private wells, 17 had detectable levels of at least one measured CEC. Other private wells impacted by CECs have been identified by other investigators. For example, perfluoroalkyl-substances have been detected in private wells down-gradient of the Joint Base Cape Cod fire-training facility and areas used to discharge treated groundwater; and 1,4-dioxane was detected in private wells down-gradient of Eastham’s capped landfill – an impetus for Eastham’s new public water supply system. Joint Base Cape Cod is presently

seeking funding to address contamination of private wells and a water supply in Mashpee attributed to use of firefighting foam at the base.

Where drinking water quality has been impaired by land uses, restoration is nearly impossible. Many public water supply wells are now treated for removal of natural elements, such as iron and manganese, or to neutralize bacteria in the special case of Long Pond in Falmouth, the Cape’s only surface-water supply. Several municipal drinking water supply wells on Cape Cod

are treated for a range of contaminants, including CECs and petroleum-based and other legacy contaminants from industrial uses. Several historic wells subject to contamination have been abandoned and replaced. Water supplies require continued vigilance and protection from upgradient development pressure to avoid the need for expensive treatment or replacement from a finite source.

The ongoing generation of hazardous wastes, and the transport, storage, and use of hazardous materials continues

to be a concern. In addition, there continues to be a need to identify and protect suitable undeveloped land with potential for future water supply development.

WASTEWATER MANAGEMENT

Ensuring that development does not significantly degrade water quality on the Cape requires effective wastewater management. The Massachusetts Estuaries Project (MEP) identified wastewater as the primary source of nitrogen to the Cape’s coastal embayments, with septic systems

contributing 94% of wastewater nitrogen with the remainder from municipal or smaller private wastewater treatment facilities (WWTF). Ensuring the continued health and enjoyment of the Cape’s water resources will require wastewater management to reduce nitrogen and restore water quality.

Several factors have led to the current distribution of wastewater infrastructure, where Title 5 septic systems are the predominant type of wastewater management on Cape Cod, and only 3% of the parcels or 15% of total

wastewater flows on Cape Cod are handled with shared or centralized public or private wastewater treatment facilities. The generally permeable soils throughout the Cape region make on-site Title 5 systems highly effective for wastewater disposal, and relatively low density of development can make the cost of collecting and conveying wastewater to centralized treatment facilities expensive. Consequently, less than 4% of the state’s population lives on Cape Cod yet the region is home to 20% of the standard Title 5 systems. Standard

Title 5 systems, even when functioning correctly, are not designed to remove nitrogen and provide minimal nitrogen removal. The wide distribution of septic systems discharging high nitrogen wastewater accounts for nearly 80% of the controllable nitrogen load on Cape Cod.

Higher levels of nitrogen removal can be achieved at different infrastructure scales, including nitrogen removing septic systems on individual properties, cluster or satellite systems at the neighborhood or village level, and centralized wastewater



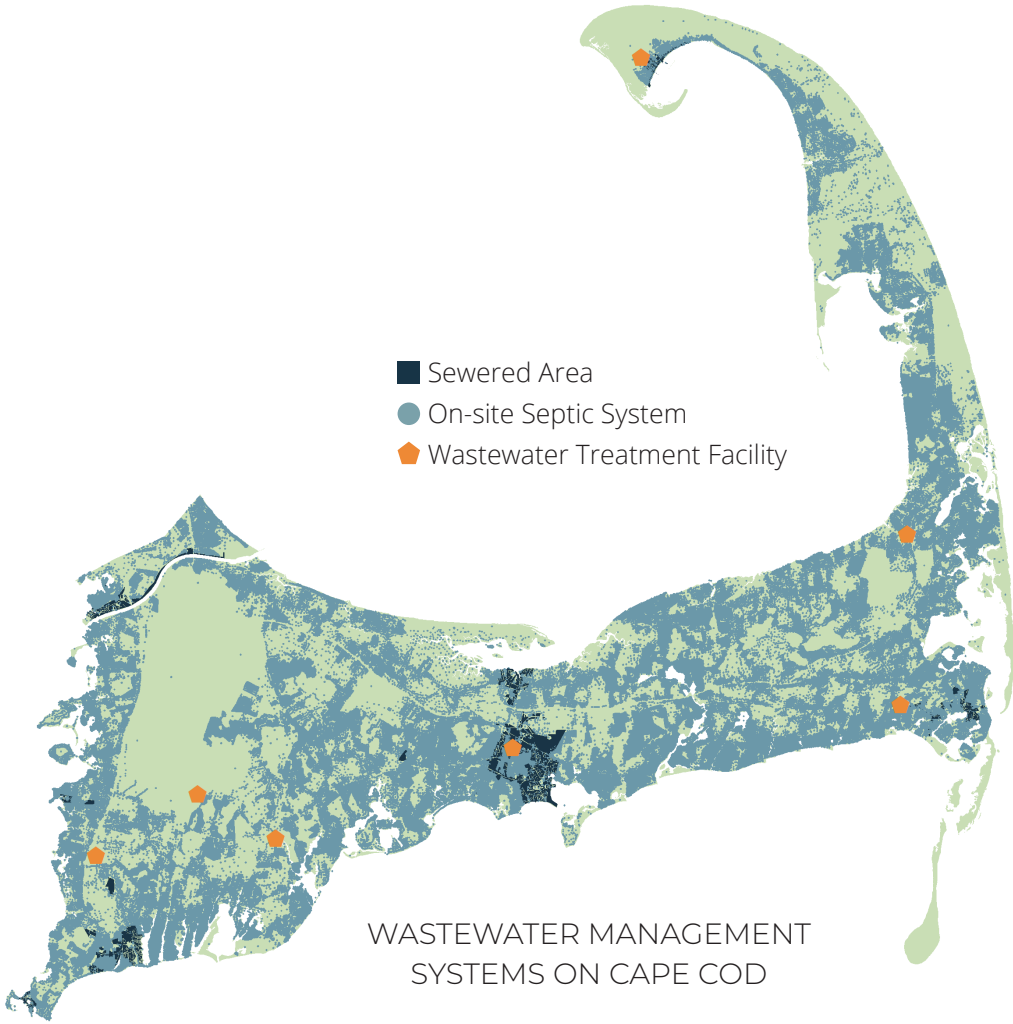
treatment facilities. There are more than 123,000 standard Title 5 septic systems and more than 1,700 denitrifying septic systems installed on Cape Cod. Barnstable, Chatham, Falmouth, and Provincetown are the four Cape Cod communities with municipally owned and operated centralized wastewater treatment facilities; across Cape Cod there are 60 smaller, typically privately owned, wastewater treatment facilities. Portions of the Buzzards Bay section of Bourne utilize the Wareham Wastewater Treatment Facility.

On Cape Cod, wastewater at WWTFs is generally treated to 10 parts per million nitrogen. Over the last three decades effluent discharges are encouraged to be located outside of Zone II wellhead protection areas. Discharges in Zone II areas can only be considered if significant treatment levels are attained and remediation of existing drinking water problems are included.

Centralized wastewater collection, treatment, and disposal systems can achieve high levels of nitrogen removal but require significant capital

investment. Their high cost, and the ability or willingness of property owners and government to bear such cost, has impeded planning and implementation of more widespread centralized wastewater management systems on Cape Cod. With anywhere from 30-60% of the housing stock being seasonal across the Cape, wastewater treatment facilities must be designed and sized for a peak flow which occurs only four weeks a year—the last two weeks of July and the first two weeks of August (just like water supply infrastructure). The need to

accommodate that short-term peak flow drives up the costs of a system that could otherwise handle typical wastewater flows throughout the rest of the year. However, accommodating peak flow allows flexibility to handle flow, especially for the initial phases of a planned collection system. Finally, towns need to stimulate their tax base to fund wastewater system improvements, which is usually in the form of taxing new growth. At the same time, new growth often depends on whether there is sufficient shared or centralized wastewater infrastructure



Source: Cape Cod Commission



in place to handle such new growth. Though these systems are expensive, there are also direct and indirect costs (often unrecognized) to property owners and the region at large associated with owning and maintaining or replacing individual Title 5 septic systems. Continued growth and development on Cape Cod will need to rely on more shared or centralized wastewater treatment. Therefore, new development should be used as a financial and political catalyst for wastewater planning efforts.

STORMWATER MANAGEMENT

Although much of the emphasis on controlling nitrogen loading to coastal embayments focuses on wastewater, stormwater runoff also contributes approximately 8% of the total controllable nitrogen load and impacts other water resources, including freshwater ponds. The same highly permeable soils that allow precipitation to recharge the Cape Cod aquifer also readily allow infiltration of runoff from roofs, parking lots, and roadways. These stormwater flows also recharge the aquifer but can

contain toxic substances (such as petroleum products, pesticides, and heavy metals) as well as nutrients (nitrogen and phosphorus from fertilizers and animal waste). Management of stormwater should include managing its quantity (storing or infiltrating runoff to prevent ponding or flooding) and its quality (treating the runoff to remove suspended solids, nutrients, and toxic substances). Throughout Cape Cod varying levels of stormwater infrastructure exist; from gray infrastructure (systems of curbs, gutters, and conveyances to divert

the flow of stormwater from buildings, streets, and parking areas) to green infrastructure or Low Impact Development (LID) structures that have been designed to mimic natural hydrologic processes and improve the quality of stormwater runoff while still allowing for aquifer recharge. Most towns on Cape Cod are now required under the EPA’s MS4 program to inventory existing infrastructure and identify problems such as illicit discharges.

Recent history indicates that storm frequency and intensity are increasing. The quantity

and quality of stormwater and the need for appropriate management strategies is anticipated to require more attention in the future.

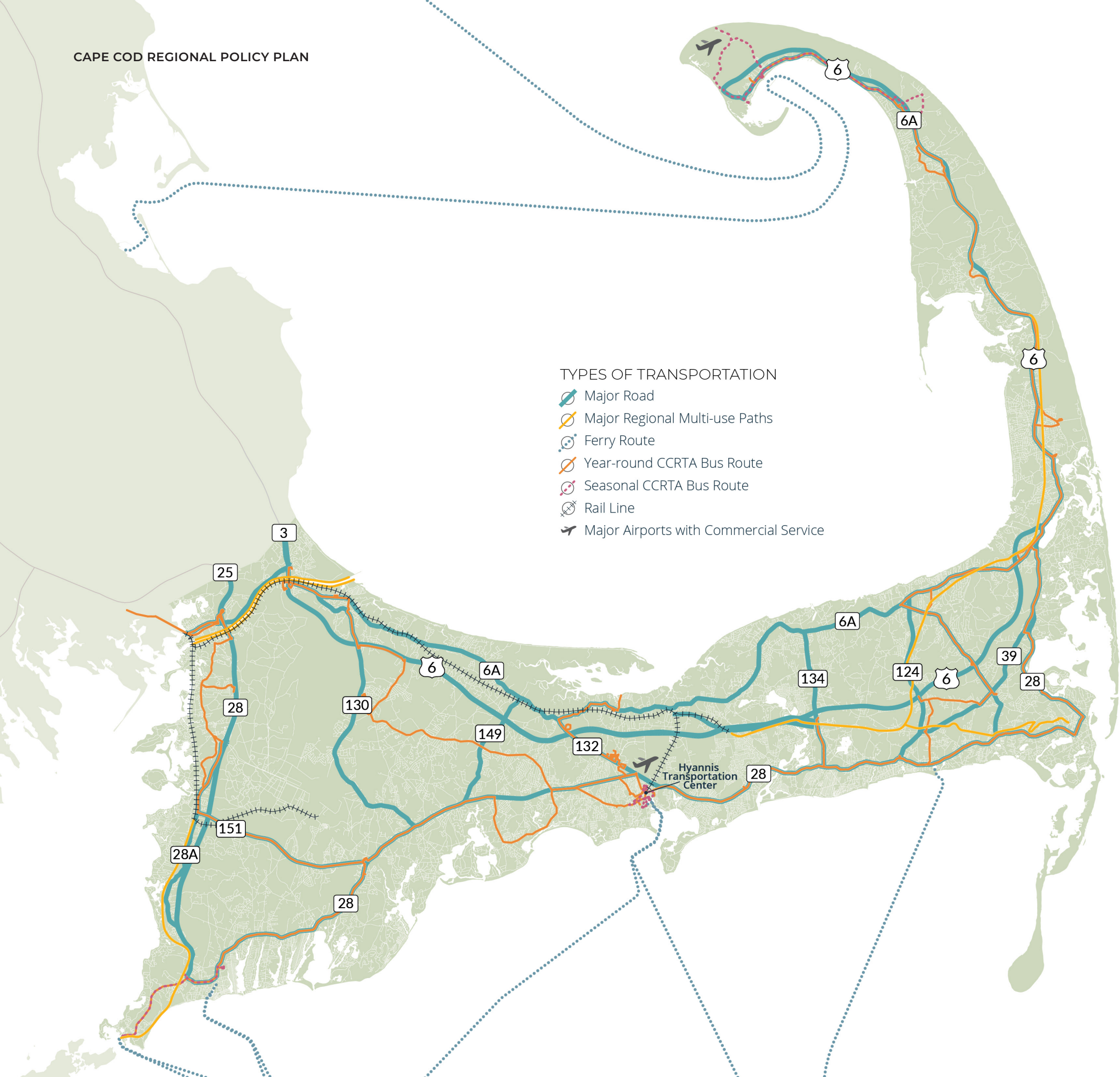
TRANSPORTATION NETWORK

Numerous subsystems make up Cape Cod’s transportation network including vehicular roadways, railways, public transportation, air travel, marine transportation, and pedestrian and bicyclist accommodations and networks. These systems are responsible for safely and effectively moving the people of the region and

the goods they rely on. Additionally, these systems must serve not only the year-round population but must also effectively handle the movements of the more than doubled seasonal population, which requires building and maintaining a transportation system that functions under the strain of the peak season, without negatively impacting the character that defines this unique place.

Central to Cape Cod’s transportation system is its over 3,800 miles of roadways, 80% of which are smaller, local roads. Route 6, Route

28, and Route 6A—the three major arteries of the Cape—only account for 6% of the region’s roadways. The remaining 14% of roadways are medium-sized local or state roads. The roadways meet in 129 signalized intersections and 25 roundabouts and rotaries. Cape Cod has over 100 vehicular crossings over roadways, railways, and water bodies including the Bourne and Sagamore Bridges over the Cape Cod Canal. The Bourne and Sagamore Bridges are critical to the long-term viability of the region.



TYPES OF TRANSPORTATION

- Major Road
- Major Regional Multi-use Paths
- Ferry Route
- Year-round CCRTA Bus Route
- Seasonal CCRTA Bus Route
- Rail Line
- Major Airports with Commercial Service



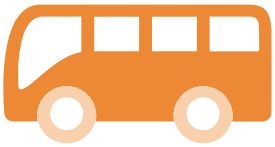
ROADWAYS
3,800 miles of roadways
80% local roads,
20% regional roads



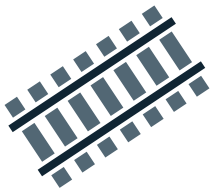
BIKE & PEDESTRIAN
90 miles of multi-use paths
provide safe, separate mode for
bicyclist and pedestrians



MARINE
9 ferry routes link Cape Cod to
Boston, Plymouth, Nantucket,
and Martha's Vineyard



PUBLIC TRANSPORTATION
Year-round and seasonal Cape
Cod Regional Transit Authority
bus routes and inter-city bus
connections to Boston and
Providence



RAILROADS
Single line for seasonal
passenger service to Boston,
freight, and excursions



AIRPORTS
2 airports with commercial
service to Boston, New York,
Nantucket and Martha's Vineyard

Source: MassDOT; Cape Cod Commission; Cape Cod Regional Transit Authority



Rail service and infrastructure ultimately extended the entire length of Cape Cod, from Bourne to Provincetown, and points between, beginning in the mid-1800s through the first half of the 1900s. Today the extent and usage of rail is reduced to a single rail line, the Cape Cod Line, which travels through Bourne before branching off to termini in Hyannis, Yarmouth, and Joint Base Cape Cod. Together, these branches and the single line form a network of rail infrastructure for the freight services,

scenic rail excursions, and CapeFlyer seasonal, weekend passenger service. While personal vehicle travel is the predominant transportation mode on Cape Cod, the Cape also hosts a number of transit-dependent residents who do not have access to a private automobile. Data from the U.S. Census Bureau, 2011-2015 American Community Survey (ACS) 5-year Estimates indicates that 5.7% of Cape residents do not have access to a vehicle. These residents are dependent on public transport, bicycle or other modes of transportation.

The Cape Cod Regional Transit Authority (CCRTA) provides public transit throughout the region and connects Cape Cod to neighboring communities and regions. The CCRTA offers several types of services, including fixed route service, flexible route service, and demand-response or paratransit service. Six of the CCRTA's fixed routes run year-round, primarily through the Upper, Mid, and Lower Cape regions. Demand-response service includes Dial-A-Ride Transportation (DART) and ADA Paratransit Service. The Greater Attleboro-Taunton Regional Transit Authority

(GATRA) also operates one line, the Onset-Wareham Link (OWL), with stops in Bourne. There are also several private bus companies connecting Cape Cod to other regional destinations such as Boston and New York City. Six airfields and airports also link Cape Cod residents and visitors to Boston, New York, and the islands of Martha's Vineyard and Nantucket.

Water also plays a large role in the transportation network of Cape Cod. Harbors and channels provide connections between marine transportation and land

transportation routes and nine ferry routes connect Cape Cod to Martha's Vineyard, Nantucket, Boston, and Plymouth.

Destinations and pathways for bicyclists and pedestrians to use on Cape Cod are abundant, however, bicyclists and pedestrians face numerous challenges on Cape Cod roadways. Cape Cod has over 90 miles of multi-use paths, including the Cape Cod Rail Trail and Extension, Cape Cod Canal Bike Paths, Shining Sea Bike Path and Extension, and numerous paths in the Cape Cod National Seashore

and Nickerson State Park. These pathways provide safe, separate accommodations for bicyclists and pedestrians, but frequently do not connect to one another, inhibiting bicyclists' and pedestrians' abilities to use them to travel throughout the region. A more comprehensive regional path network is envisioned with a spine that runs from one end of Cape Cod to the other with connections into villages and destinations in each of the communities. In addition to the separate paths, several bicycle routes exist, allowing bicyclists a wide network of travel across the region,

but on roadways rather than dedicated paths separated from motor vehicle traffic. Sidewalks provide not only pedestrian accommodations but encourage travelers to walk instead of drive, thereby supporting village centers and local businesses. However, significant gaps in the regional sidewalk network exist in many communities across Cape Cod. Furthermore, auto-oriented site design, including large parking lots without appropriate pedestrian accommodation, can make travel as a pedestrian challenging.



The mixture of narrow roadways, high seasonal and locational traffic volumes, and inconsistent pedestrian and bicyclist accommodations create a great deal of conflict between vehicles and people walking and biking.

UTILITIES

The Cape’s population and economic and social activities depend on reliable and affordable access to electricity, natural gas, and telecommunications.

Eversource is the local distribution company and is responsible for distributing electricity to the region. The Cape Light Compact Joint Powers Entity (JPE) is the largest single energy supplier for residents and businesses on the Cape; however, electric customers may choose their competitive supplier. Electricity is primarily distributed through overhead wires.

Electricity supply to the Cape comes from many fuel sources. Massachusetts generates 68% of its electricity from natural gas, 10% from nuclear sources, and 0.3% from petroleum. The state generates 1,867 MW of electricity by solar photovoltaics, surpassing its goal of generating 1,600 MW by 2020. There are additional sources from other renewables and hydroelectric power.

Microgrids, which have the ability to disconnect from the traditional electric

grid in order to operate autonomously, are not prevalent on Cape Cod; however, the Department of Defense operates a wind-powered microgrid at Joint Base Cape Cod and in 2019 another is anticipated at Dennis Yarmouth Regional High School.

Approximately 100,000 customers get natural gas from National Grid—the sole natural gas service provider on Cape Cod. Natural gas lines

are not provided everywhere on Cape Cod, and there are no lines north of Eastham.

Education, government, healthcare, and other service and innovation sectors of the economy rely on effective and reliable access to broadband and telecommunications. Residential internet service is available virtually throughout the region and is primarily served by a single provider (Comcast). Depending on where a business is located, it may have a choice of

internet service providers with OpenCape’s continual expansion of its fiber optic internet services infrastructure. As more people choose to work from their homes, and more services such as doctor visits are conducted virtually, fast and reliable internet service will become even more important. Most of the region is served by multiple wireless communications providers, but there remain some places without service.

Maintaining and enhancing the wireless communications infrastructure is increasingly critical to the region’s need for emergency and non-emergency communications while also ensuring protection of the region’s scenic and historic character.



COMMUNITY SYSTEMS

The Cape’s community systems, which include the culture, people, and economic activity of the area, are critical for fostering and maintaining vibrant communities and social networks that serve and support the people who live, work, and play in the region. The community systems are intricately tied to the environment. Impacts to natural systems, such as those related to climate change or water quality, will present challenges with respect to

protecting cultural heritage, community character, and the economy.

CULTURAL HERITAGE

The Cape’s rich cultural heritage and historic character stem from its Native American beginnings to its maritime industrial growth and success as a resort destination. The Cape Cod Commission Act recognizes the importance of the region’s significant historical, cultural, archaeological, and architectural resources and charges the Commission with protecting them.

Many of the region’s historic buildings have been protected with special designations. Thousands of the Cape’s buildings are listed on the National Register of Historic Places, either individually or in one of the region’s 45 National Register Historic Districts, and many more are within the Cape’s 16 Local Historic Districts. These resources, including Cape Cod’s rural areas and historic villages, are tangible connections to the region’s agricultural heritage, maritime history, artist colonies, and unique past and play a key role in attracting

and retaining residents and visitors to Cape Cod. Challenges faced in preserving these resources are discussed in the next section of this plan.

Responses to the 2014 homeowner survey highlighted the importance of these resources, with over 70% of respondents rating the historic character of the Cape as important or very important in their decision to live or own a home on the Cape. The survey also highlighted support for preserving this historical character: 81% of respondents would support requiring new buildings to

conform with the traditional design and architectural character of Cape Cod and 56% would support preservation or restoration of historic buildings through dedicated sources of public funding such as local tax receipts.

PEOPLE

The environmental and social challenges this region faces are largely due to rapid population growth beginning in earnest in the 1960s. By the 2000 Decennial Census, Cape Cod had grown over 400%, adding just over

175,000 year-round residents in five decades. Housing on the Cape went from being 60% seasonal in 1960 to 65% year-round in 2010; in total units the region went from just under 55,000 homes in 1960 to over 160,00 homes in 2010. During this same period, most towns invested in road improvements, schools, and public water to accommodate growth but fewer invested in wastewater treatment systems. Growth, due to post-war zoning, took a suburban form, consuming much of the Cape’s land and undermining the historic character that

made the region such an appealing place to live and visit. Cape Cod’s population includes the Mashpee Wampanoag Tribe, which has inhabited present day Massachusetts for more than 12,000 years. According to their website, the Mashpee Wampanoag were re-acknowledged as a federally recognized tribe in 2007. In 2015, the federal government declared 150 acres of land in Mashpee as the Tribe’s initial reservation, on which the Tribe can exercise its tribal sovereignty rights.



Year-round Residents

Cape Cod’s year-round population peaked at just over 228,000 residents around 2003 according to US Census Bureau population estimates. The 2010 Decennial Census showed a decline of about 10,000 to 12,000 people; estimates since that time have the population holding steady at about 214,000 year-round residents. Population projections vary greatly, but a recent study of housing supply and demand suggest that the resident population could grow by about 6,000 people by 2025; other population

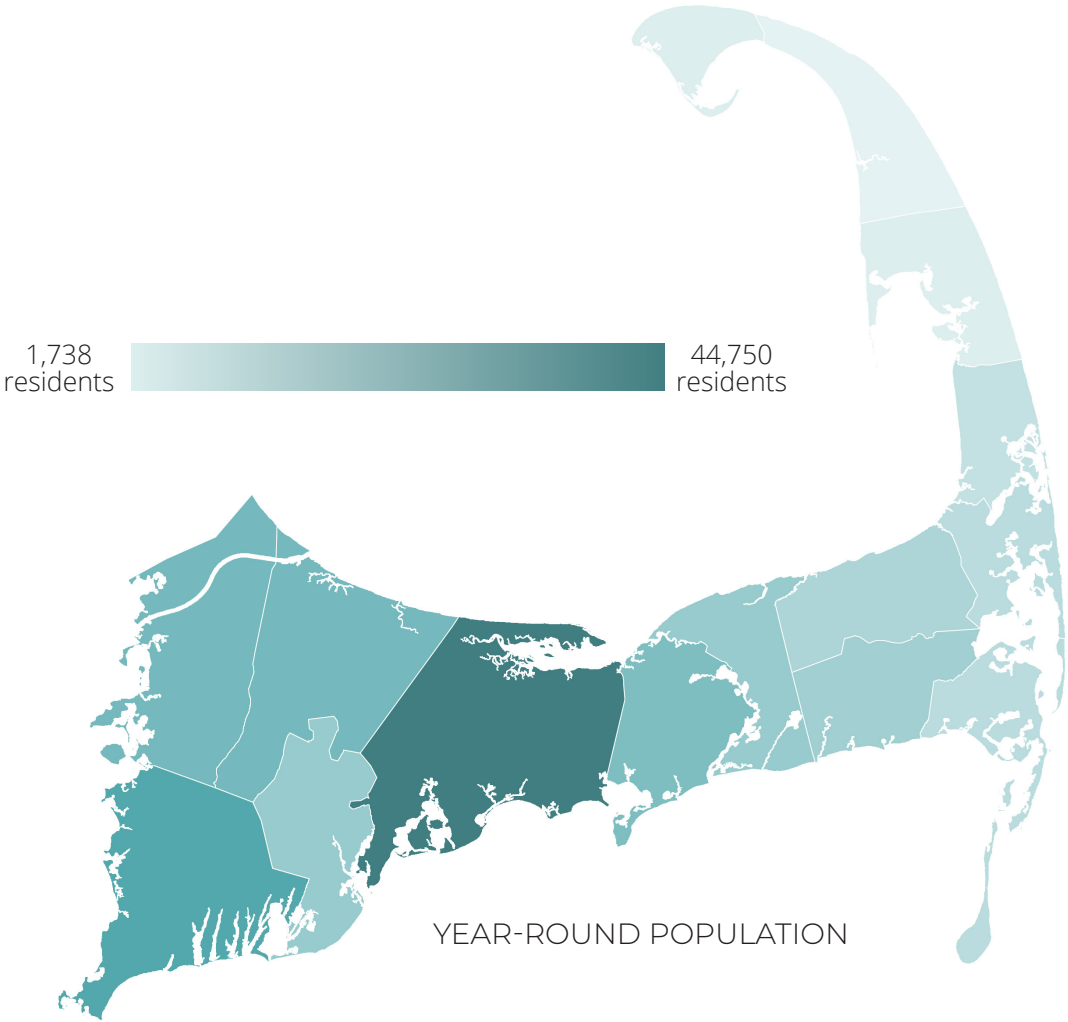
projections indicate a continued loss of population in the region.

Data from the US Census Bureau tells us that within the population of year-round residents, the Cape hosts various populations that should be considered in the Commission’s planning efforts. Minority populations identified for their origin or language include about 8% of regional residents who speak a language other than English at home; most of those (70%) speak English as well. About 2% of the region’s population (over 5 years of age) speak

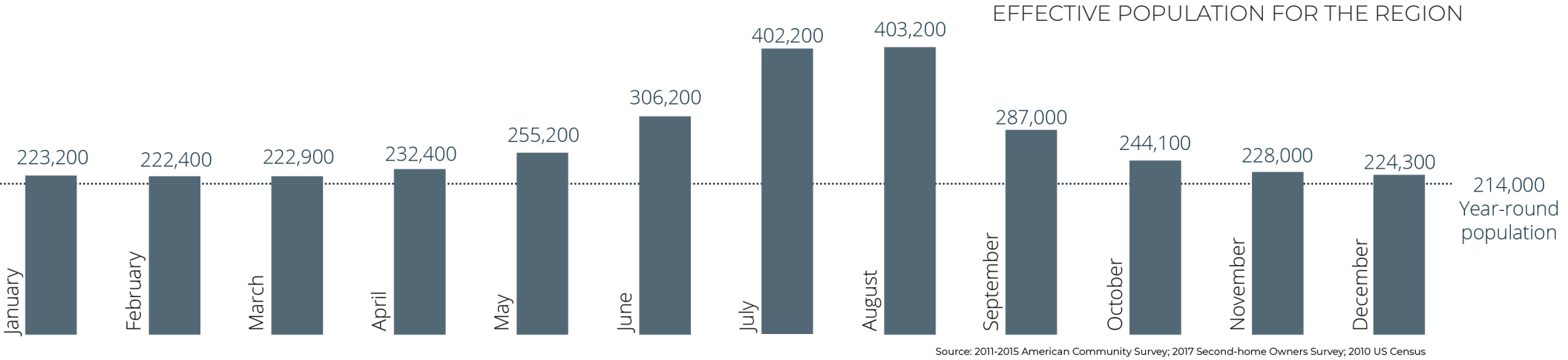
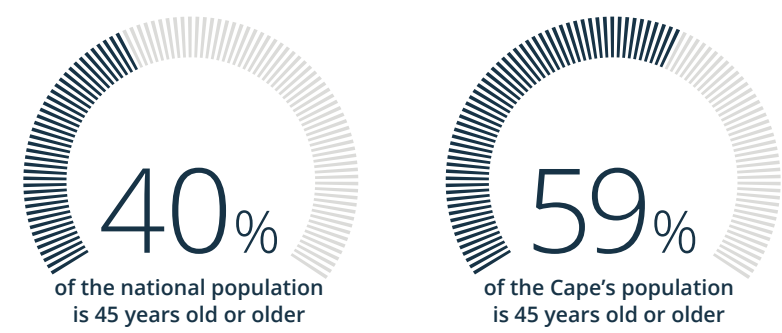
little or no English. The largest number of non-English speakers are Portuguese speaking (and this represents 1% of the county population). Eight percent (8%) of county residents self-identified as “Minority” in the 2010 US Census.

Migration has played a key role in the region’s population changes. The region became popular for both retirees and younger families as it became more accessible and, at the time, affordable. Migration to the Cape continues today, but at a much slower rate than the 1980s and 1990s.

Meanwhile, the natural growth rate, births over deaths, is currently negative and the resident population continues to age. While the median age of the population is getting older across the US, as a retirement community Cape Cod’s median age (51 in 2016; ACS) is significantly higher than average. In 1990 most of the population (58%) was under the age of 45, but now about 60% of the population is over the age of 45, compared with about 40% nationwide. These age and growth trends are important elements for understanding the region’s past and how best to plan



Source: 2012-2016 American Community Survey



for its future, but resident population is only one piece of the puzzle.

Second-home Owners

Second-home owners have long been major players in the region’s economy and housing market; this fact is unlikely to change in the future. The number of second homes on Cape Cod has grown more slowly than year-round homes, growing 73% since 1960 versus the nearly 400% increase in year-round homes during that same time. Going forward, however, the recent housing study projected that demand through 2025

for seasonal housing units will be more than double that of demand for primary residences. Seasonal units are non-uniformly distributed over the land; many are clustered along the coast and the greatest number are in the Mid-Cape, but in the Outer-Cape they represent over 50% of all the housing units.

According to a 2017 second-home owners survey carried out by the University of Massachusetts Donahue Institute (UMDI), the average Cape Cod second-home owner is 65 years-old, four years older than

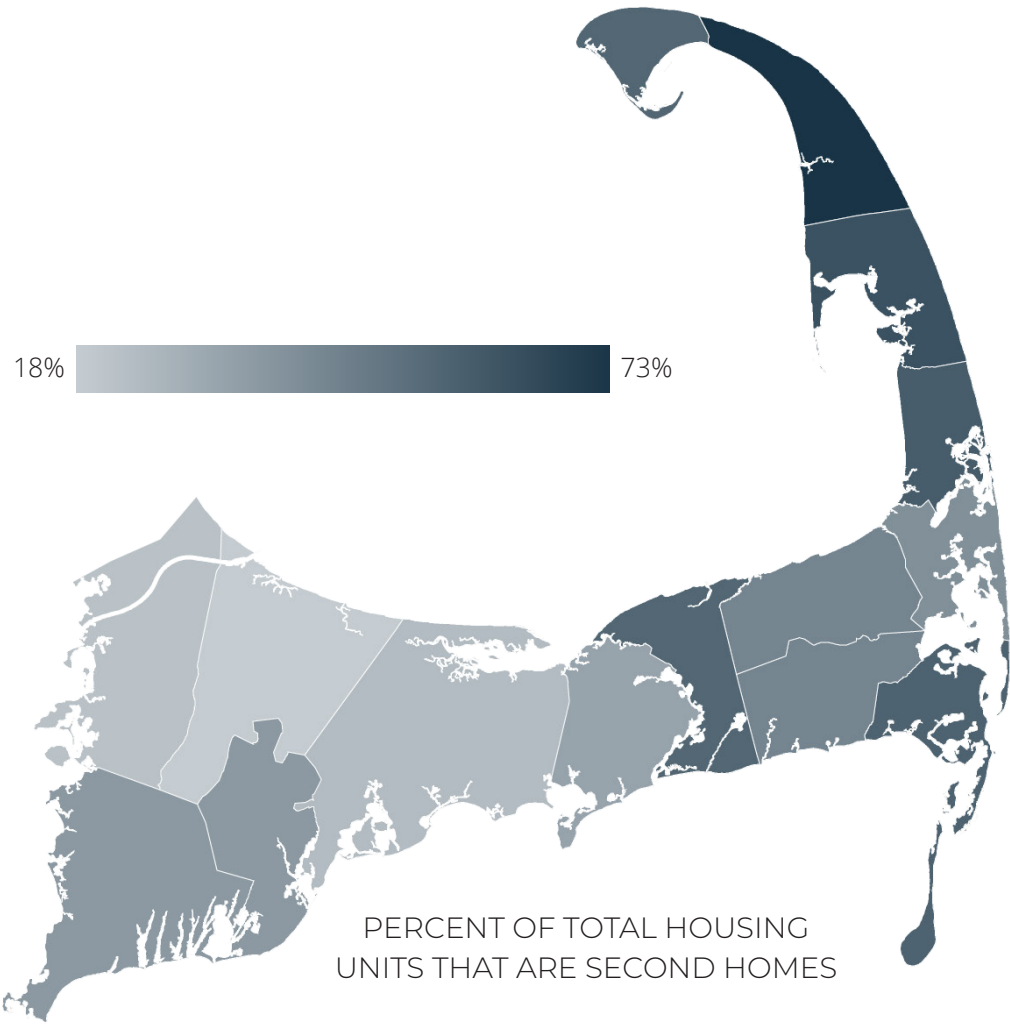
from the 2008 survey. The vast majority—80%—have a bachelor’s degree and 70% have an annual income of \$100,000 or more. Most of the respondents live year-round in Massachusetts, with 1/3 of respondents calling the metropolitan Boston area home. Approximately a quarter of second-homes are rented either year-round or short-term.

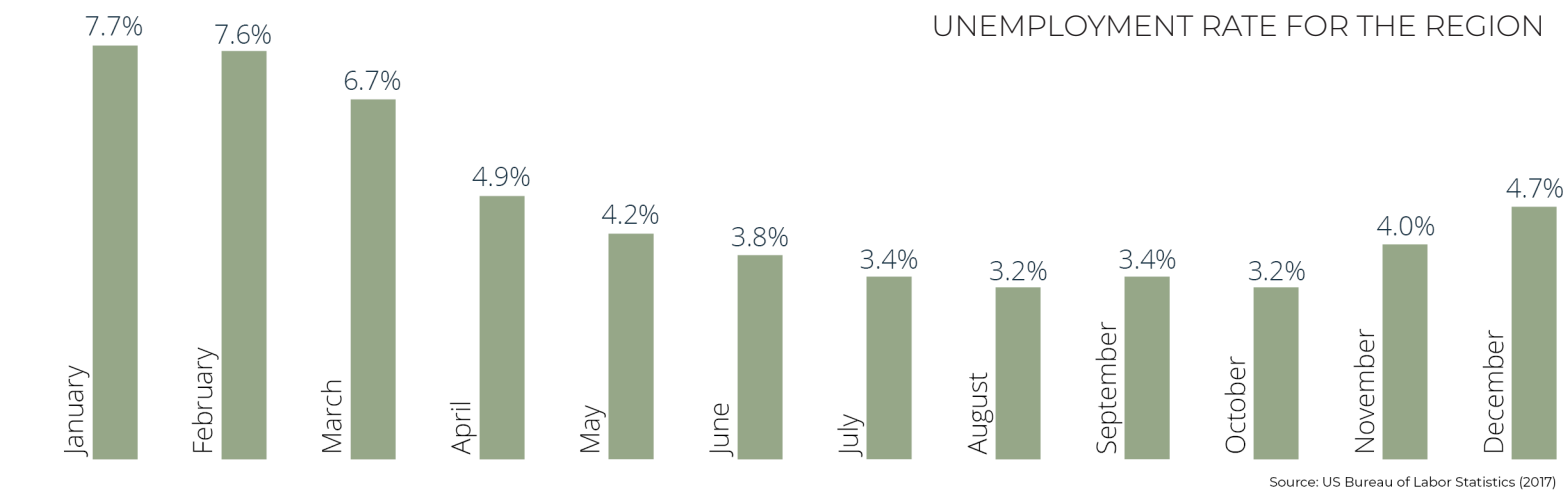
July and August are when second homes are used the most, with much lower use in the winter months. However, nearly 20% of respondents anticipate moving to the Cape

full-time in the next 20 years. Of those respondents, 40% state they plan to work part- or full-time on the Cape after relocating here.

Visitors

Visitors are an important segment of the Cape community, coming mostly in the summer but also on weekends throughout the fall and spring. Data on rooms tax receipts, an indicator of visitor activity, suggest that visitors today are as numerous as at their peak in 1999. Like the seasonal population, visitors bring new resources to the region that serve to





increase economic output and generate jobs and wages. They support local arts and culture and value the region’s beaches and natural areas. Visitor patterns will change with national and international economic and political changes; typically, the Cape has weathered recessions well and been successful at attracting both international visitors and those from the larger northeast region to maintain steady levels across the decades.

ECONOMY

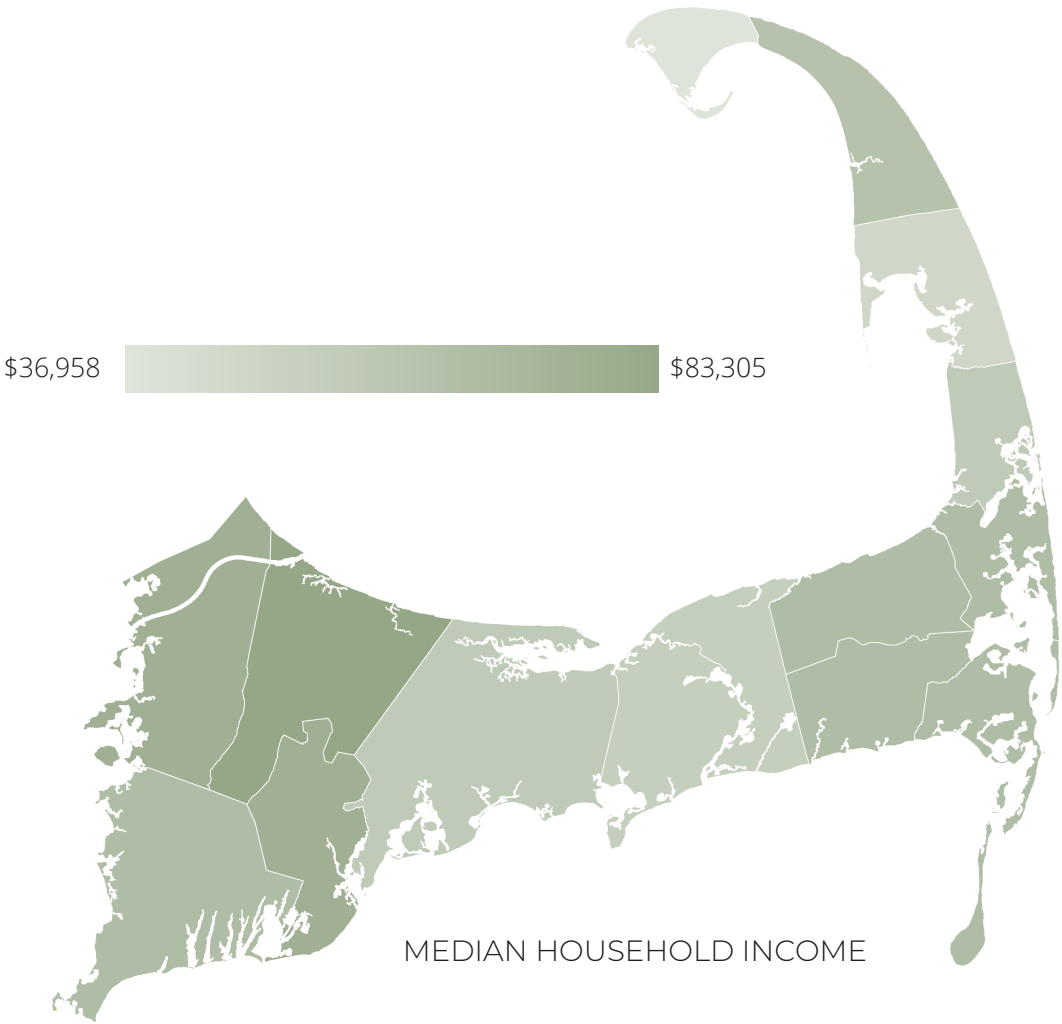
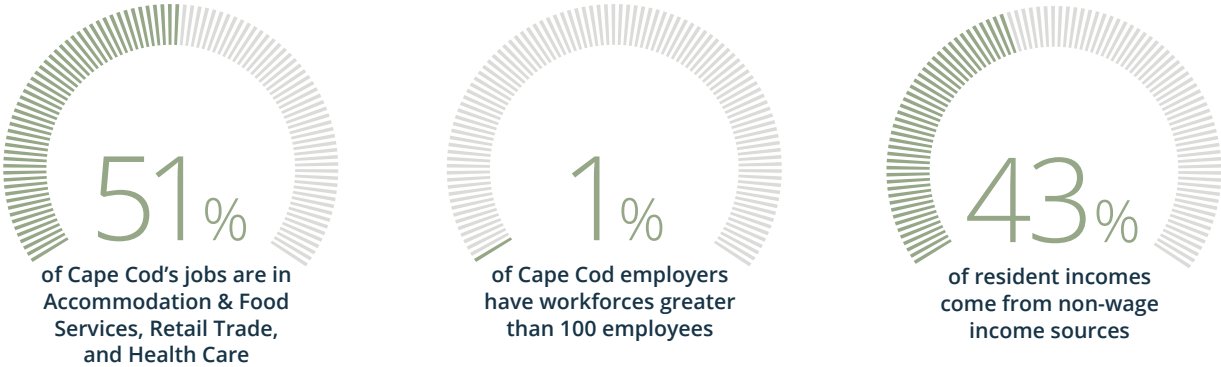
The Cape Cod Commission Act calls for the Commission to implement a balanced and sustainable economic development strategy for Cape Cod capable of absorbing the effects of seasonal fluctuations in economic activity. The economy of Cape Cod reflects the region’s population mix of full-time and seasonal residents, and visitors. It also reflects the age of the population, which tends to be older than communities off-Cape. As such, the dominant industries in the region are Accommodation & Food Service, Retail Trade,

and Health Care; in terms of employment 17% of jobs are in Accommodations & Food Service, 16% are in retail trade, and 18% are in Health Care (US Bureau of Labor Statistics, 2017). Just under a quarter of jobs in the region are in emerging industry sectors including creative economy sectors, financial and information sectors, and professional services and technical service sectors. The region’s marine assets, location, and the presence of Woods Hole Oceanographic Institute, the Marine Biological Laboratory, and the National Oceanic and

Atmospheric Administration provide unique employment opportunities in the marine sciences and technology sector. Additionally, Cape Cod Community College, Bridgewater State College, and the Massachusetts Maritime Academy, and good K-12 schools, provide educational opportunities that contribute to the region’s economy.

While employment growth has been steady, the average wages paid by Cape employers, when adjusted for inflation, have been largely stagnant and consistently below state and national averages since 1990.

150,000 JOBS ON THE CAPE



Source: US Census Bureau (2015)



As a retirement community, over 43% of resident incomes come from non-wage income sources such as real estate, social security, and investments.

The Cape Cod economy is aptly characterized as a “Blue Economy” driven by the extensive shoreline and direct access to open water. Historically, the Cape’s blue economy was based on extracting resources from the sea, such as fish, whales, salt, or shellfish. Some of these activities continue today along with new ventures around enjoying and understanding

the region’s blue resources. Tourism is a blue sector focused on bringing people here to directly enjoy the Cape’s blue resources. Marine sciences is a blue sector focused on understanding marine resources, making new discoveries to help improve human wellbeing and protecting marine ecosystems. New economic sectors will continue to emerge that are directly dependent on marine resources and Cape Cod is in a strong position to embrace these new ventures and thus progress towards a balanced and sustainable economy. Seeing the region’s economy

through this Blue Economy lens reinforces understanding of the interdependencies of the economy and environment. The marine environment, unique historic character of the region, and vibrant arts and culture scene attract both residents and visitors to the region. Most of the businesses on the Cape are small and independent, with fewer than 10 employees. Only 1% of the employers on Cape Cod have workforces greater than 100 employees. Because the tourism industry is most active in the summer months

and many tourism-related businesses close during the winter, unemployment fluctuates drastically throughout the year, especially in Lower and Outer Cape towns. In the summer and fall, businesses typically import labor to fill seasonal jobs. Cape Cod second-home owners actively support the Cape Cod community and economy. Nearly 75% of the 2017 Second Homeowner Survey respondents support arts, cultural, and other nonprofit organizations on the Cape through donations and purchases and about

70% reported attending or visiting museums, concerts, galleries, or theater productions. In addition to contributions to community organizations, second-home owners contribute to the local economy as nearly all respondents report purchasing groceries, hardware/building supplies, and garden supplies on Cape Cod for their second home. However, few respondents expressed the need to have used local financial or medical services and specialists while on the Cape and have already-established providers off-Cape.

HOUSING
Cape Cod’s housing supply lacks diversity. Today, detached, single-family homes comprise more than 80% of the region’s housing stock, compared with just over 50% for Massachusetts as a whole and 62% nationwide (ACS 2016 data). This means there are few housing options for those people who either cannot afford or do not want a detached single-family home. Given the high land value in the region, detached single-family homes are typically the most expensive housing option, driving up the cost of living in the region.

High demand for housing, by both year-round residents and second-home owners, and low average wages on Cape Cod results in a housing market that is unaffordable for many year-round residents. In all but one of the 15 towns on the Cape, the median home value exceeds the affordable home price for residents at or below 100% of the Median Household Income (MHI), and for seven of the eight Lower and Outer Cape towns, the median home value far exceeds the affordable home price for a household earning even 120% MHI.



The June 2017 Regional Housing Market Analysis finds that about 22,000 Barnstable County households that earn \$90,000 or less experience housing-cost stress, meaning they spend more than the recommended 30% of their income on housing costs. The lack of diverse housing options on the Cape, such as townhouses and apartments, also contributes significantly to the high cost of housing. Younger families starting out lack housing options that are often a building block to long-term financial stability. Similarly, older individuals looking to downsize struggle

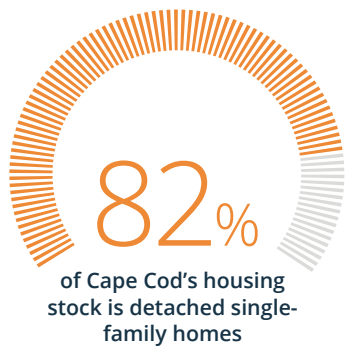
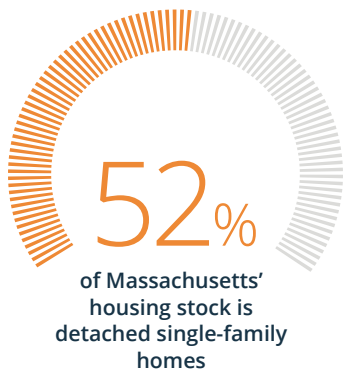
to find suitable options and often stay in single-family homes that are large, further constraining the housing market.

Chapter 40B, also known as the Comprehensive Permit Law in Massachusetts, was enacted in 1969 to help address the shortage of

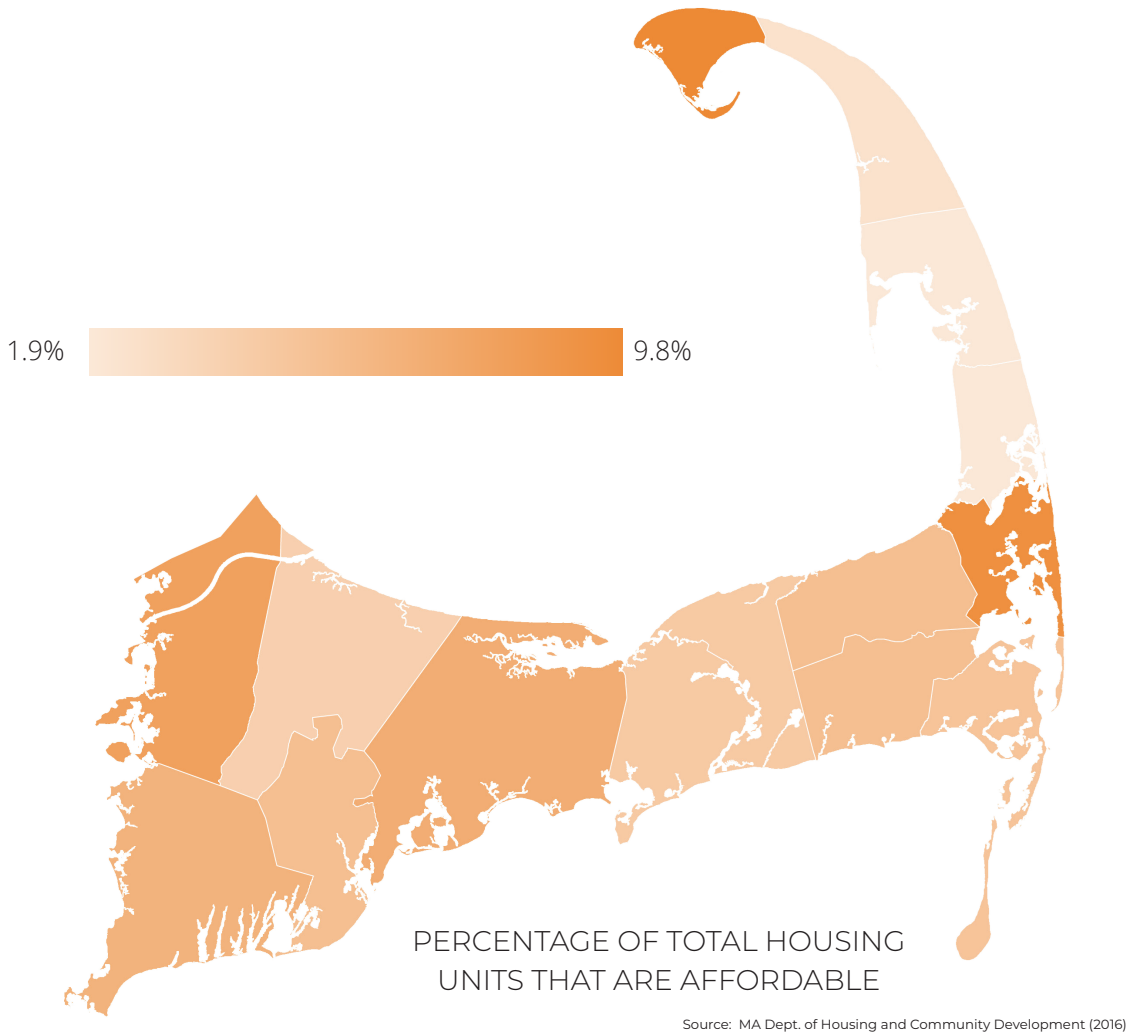
affordable housing statewide by reducing unnecessary barriers created by local approval processes, local zoning, and other restrictions. The goal of Chapter 40B is to encourage the production of affordable housing in all cities and towns throughout the Commonwealth. The standard is for communities

to provide a minimum of 10% of their housing inventory as affordable. Despite the enactment of Chapter 40B, on average, only 5.3% of the Cape’s housing inventory is affordable.

Regional housing challenges are discussed further in the next section of this plan.



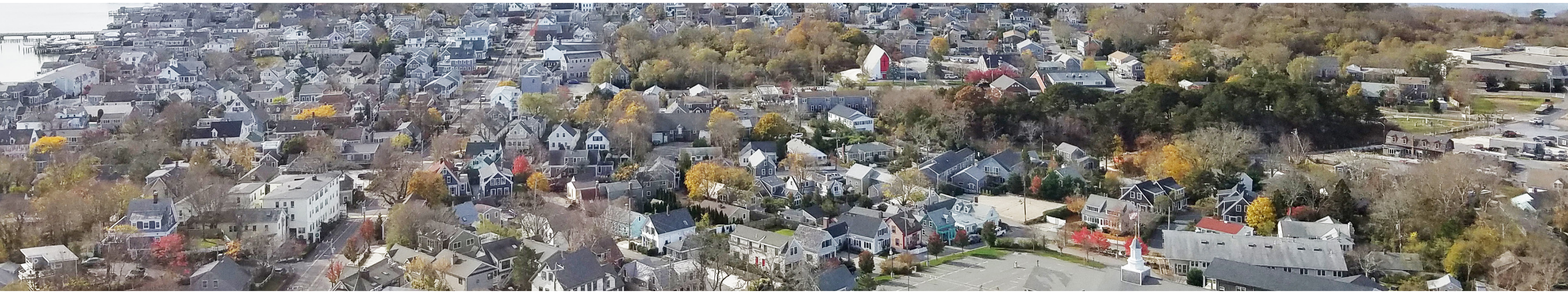
Source: 2012-2016 American Community Survey







Key Challenges Facing the Region



As illustrated by the region’s systems in the previous section, Cape Cod is a special place, but one that also faces significant challenges. Though in many cases the natural, built, and community systems augment one another and contribute to what makes the Cape a special place, they can also have conflicting needs or functions. At the regional scale, ensuring that the environment is protected will generally have positive effects on sustaining the economy since these areas of interest are so closely linked.

MORE DEVELOPMENT, FEWER NATURAL AREAS

Between 2001 and 2011, the Cape lost more than 2,300 acres of forest cover, with 70% of the loss replaced by development (buildings, driveways, parking lots, etc.). Losses vary in size from full lot clearing for individual development projects and subdivisions to more selective discrete tree removal on individual lots. Approximately

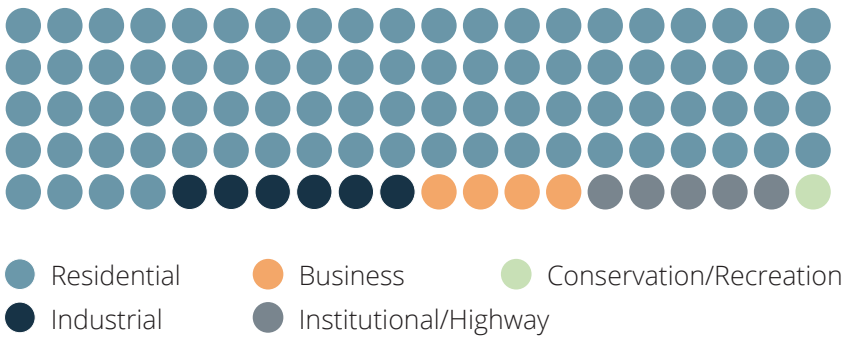
84% of the clearing is associated with residential use and development.

The broad loss of forest cover, and related forest fragmentation, negatively affects regional character as well as the natural functions tree cover provides such as wildlife habitat, carbon sequestration, nutrient uptake, and stormwater and flood water management and filtration. At the same time, with the increase in impervious surfaces occasioned by forest loss, stormwater run-off has

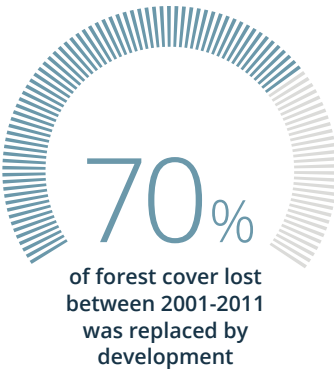
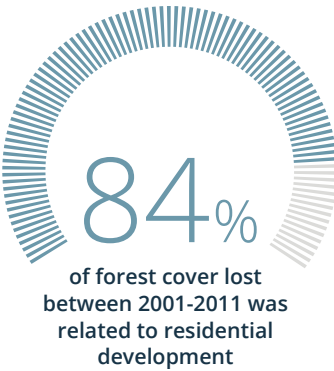
increased and with it the need for natural systems to recharge such run-off.

Land use policy and regulation in the region, though intended to better protect the natural environment by reducing the overall density of development, has resulted in larger minimum required building lot sizes, and other lot requirements under prevailing policies and regulations have contributed to more impervious cover that is more spread out across the region.

SOURCES OF FOREST COVER LOSS 2001-2011



Residential development accounts for the vast majority of forest cover lost in recent years.



Source: Cape Cod Commission



DEVELOPMENT
IMPACTS ON
WATER QUALITY

Surface water quality in Cape Cod ponds has been significantly impacted by surrounding development. A comparison of 1948 and 2001 dissolved oxygen concentrations suggest that many of these pond ecosystems are not only impacted, but seriously impaired.

The fresh water ponds of Cape Cod provide a significant benefit in removing nitrogen as it moves through the

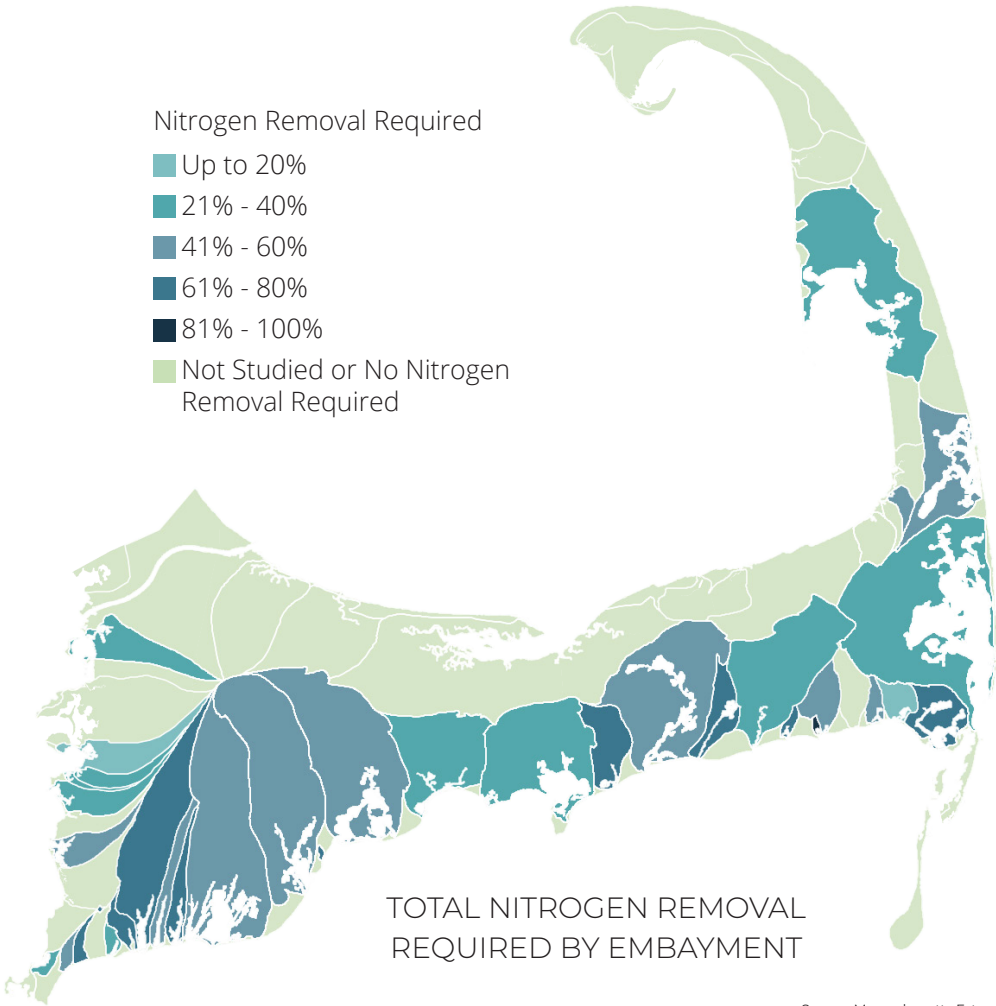
watershed. Ponds provide natural attenuation of nitrogen in groundwater and are an important consideration in watershed planning, as they act as “nitrogen filters.” However, Cape Cod soils lack the geological buffering to neutralize acid rain and allow pollutants to drain rapidly into the aquifer. The anticipated increase in storm frequency and intensity due to climate change has the potential to exacerbate impacts.

The Cape Cod Aquifer is extremely susceptible to contamination from various

land uses and activities. The aquifer has been seriously impacted in the past from military activities, gas stations, landfills, and development generally. The quality of Cape Cod’s community public drinking water supply is generally very good, but the cumulative impact of development has resulted in a trend toward degradation in areas that contribute to certain wells. The presence of contaminants of emerging concern also present a threat to drinking water.

EXCESS
NITROGEN
IN COASTAL
WATERS

Nearly all development on Cape Cod continues to utilize on-site septic systems that release nitrogen to groundwater, which eventually travels to coastal embayments and results in degraded water quality. Cape Cod is home to 53 embayment watersheds with physical characteristics that make them susceptible to nitrogen impacts. Thirty-two of these watersheds cross town boundaries and 34 have



TOTAL NITROGEN REMOVAL
REQUIRED BY EMBAYMENT

Source: Massachusetts Estuaries Project



been found to be impaired and require nitrogen reduction to meet water quality goals.

Nitrogen is impacting coastal water quality. About 80% of the nitrogen that enters Cape Cod’s watersheds is from septic systems. Excess nitrogen destroys animal habitat and results in fish kills and diminished shellfisheries. Climate change threatens to increase nitrogen loading to coastal waters and increases in temperature have the potential to increase the risk of algal blooms.

The Cape Cod seasonal economy relies on the water that surrounds the region and degraded water quality negatively impacts important economic drivers including coastal property values. Initial findings from a recent Cape Cod Commission study evaluating home prices in the Three Bays area in the Town of Barnstable indicate a 1% increase in nitrogen is associated with a decrease in single-family home sale prices in the range of 0.407% to 0.807% (average 0.61%), with a 95% confidence level.

Environmental quality (clean air and water) is a primary reason people bought a house on the Cape, according to the 2014 homeowner survey.

There have been significant efforts towards implementing solutions aimed at restoring the health of bays and estuaries since the approval of the Section 208 Area Wide Water Quality Management Plan Update in 2015. Communities are working across town boundaries to solve watershed-based problems and exploring the use of non-traditional technologies in areas where

traditional collection and treatment is too expensive or not feasible.

Barriers to implementation of wastewater infrastructure and potential alternatives for restoring coastal water quality remain. Funding for infrastructure design and construction and comprehensive monitoring to support the use of non-traditional approaches is needed. The challenge moving forward is to create a regional strategy around capital infrastructure needs that can reduce costs for municipalities and ensure that the

remaining burden is shared appropriately. The solution to the financial threat facing the region must be one that supports innovative ideas that communities have embraced through the 208 Plan Update and its process.

CLIMATE CHANGE

Cape Cod faces threats due to climate change. Flooding and erosion will be exacerbated by sea level rise and changing storm frequency and intensity. These threats can cause loss of life, damage buildings and infrastructure, impair coastal

environments, and otherwise impact a community’s economic, social, and environmental well-being. The 2018 Intergovernmental Panel on Climate Change Special Report projects continued sea level rise into the next century, with the rate of rise depending on how future greenhouse gas emissions are managed. Bringing emissions under control sooner than later will provide more time to plan for and respond to the Cape’s changing shoreline. The report calls on the global community to act collectively to reduce emissions to achieve a net zero CO2 emission rate

as soon as possible in order to allow time for adaptation to the inevitable changes. While the problems posed by climate change appear unstoppable, there are actions the Cape community can take to reduce emissions and participate in the effort to slow the rate of change. Increasing the region’s resilience to climatic changes and a rising sea level means thinking into the future and adjusting behaviors that put people and property at risk. Mitigating the causes of climate change and adapting to its effects on Cape Cod involves making



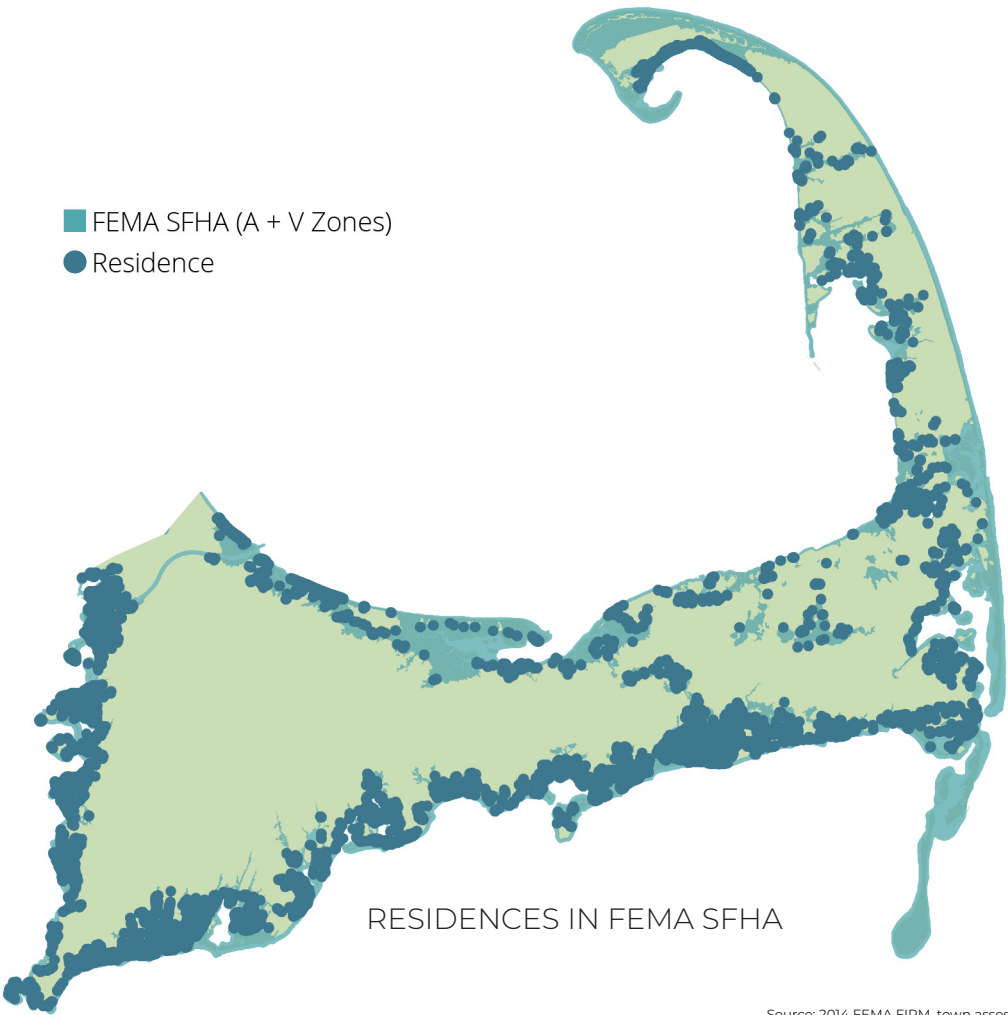
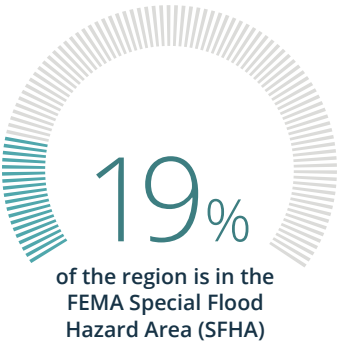
policy decisions with both environmental and economic considerations.

It is likely that the region’s vulnerability will increase in the future as sea levels continue to rise, climate change intensifies, and the region experiences an increase in storm activity and severity. Scientists anticipate that climate change will bring stronger storms with more precipitation and the threat of more frequent and extensive flooding to the region. Storms have resulted in power outages, limiting access to necessary services,

and increased storm activity is likely to further impact the region’s power resources. In addition, temperatures are anticipated to rise, with related degradation of air quality, strain on local indigenous flora and fauna, increases in foreign pest migration, and more health-related problems, and significantly for Cape Cod, changes in sea surface temperature and the viability of the coastal environments for the region’s native wildlife. Sea level rise poses a major and particular threat to Cape Cod, which has 586 miles of

vulnerable, tidal shoreline. Projected sea level rise will increase flooding, both elevating the height of storm and non-storm surges and flood levels, and exacerbating inundation and storm surge by sending floodwaters further inland, resulting in potential inoperable first response facilities, and substantial loss to property, economic prosperity, and habitat. In addition to structural and economic losses, sea level rise also threatens Cape Cod’s groundwater with potential higher groundwater levels and, to a lesser effect, saltwater intrusion.

Even today, without the increased risk of climate change and sea level rise, flooding threatens more than 13,000 single-family homes—worth a combined \$9 billion—located within the FEMA special flood hazard areas.



Source: 2014 FEMA FIRM, town assessing data



Cape Cod’s response to these threats must consider the region’s vulnerabilities, priorities and opportunities. The extent of private property development and public assets located within coastal hazard areas poses the greatest challenge to sensitive but meaningful response to climate change. Additionally, in Massachusetts, private ownership of the shoreline to the mean low-water line affects potential responses to coastal impacts of climate change, including what adaptation strategies are feasible and who’s responsible for paying for them. The

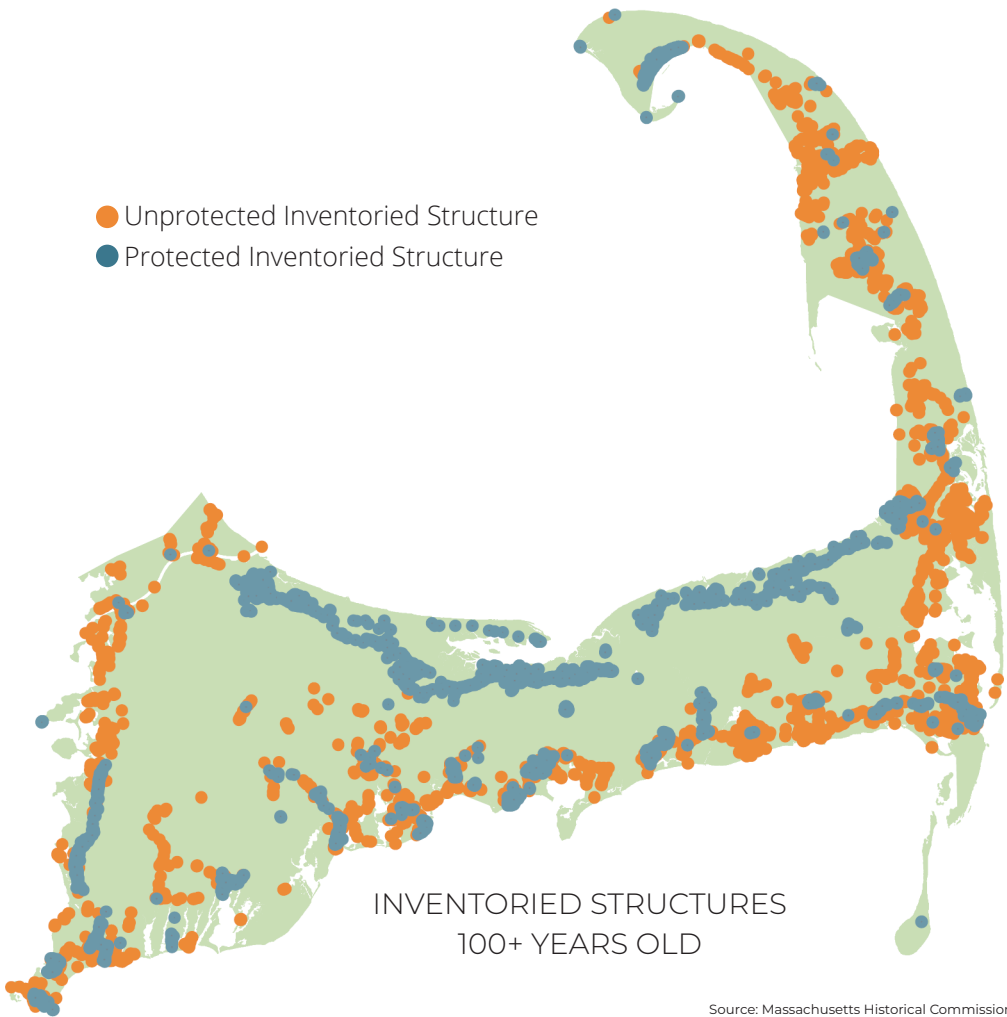
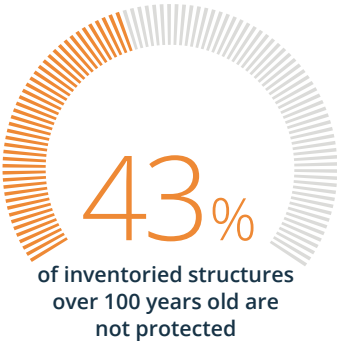
regulatory environment, particularly along the shoreline, complicates the ability of communities to appropriately plan for and implement actions that benefit the whole community’s interest.

PRESERVING HISTORIC RESOURCES

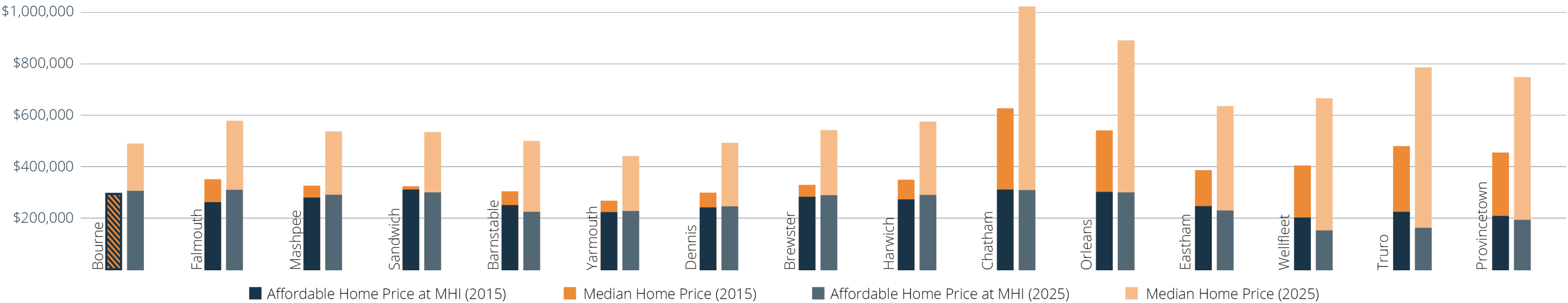
Even with the many National Register and Local Historic Districts, thousands of historically significant buildings on the Cape are not protected. More than 40% of the region’s inventoried

historic buildings over 100 years old have no protection from demolition or alteration of their character-defining features. Archaeological sites and historically open landscapes are similarly unprotected. Development pressures in waterfront areas and historic neighborhoods continue to threaten these resources that embody the region’s history and character. Demolition of these irreplaceable resources not only destroys the physical elements of the region’s cultural heritage, but also negatively impacts community character and the

economy, which are strongly tied to Cape Cod’s unique architectural heritage. Working with Cape towns and other organizations, the Commission seeks to improve and update historic inventories, better integrate cultural resource concerns into development reviews,



Source: Massachusetts Historical Commission MACRIS data



In 2015 in all but one town—Bourne—the median home value exceeded the affordable home price for those earning the median household income (MHI) of homeowners. Without changes, this problem is projected to become more acute in the next several years as the median household incomes and related affordable median home prices are only expected to increase minimally, if at all. Source: Crane/EPR 2017

and create new zoning that establishes incentives to re-use historic buildings to help protect the region’s distinctive historic character and culture.

EXPENSIVE HOUSING, LIMITED OPTIONS

The Cape Cod housing market does not meet the region’s diverse needs. Lower than average wages, higher than

average costs, a lack of choice, limited supply, and the ever-present demand for seasonal and retiree housing by baby boomers makes housing for the current and future year-round population a high priority challenge.

To buy a median priced home on Cape Cod requires an income of at least \$75,000 a year. The median price for a home is over \$350,000 with most of the lower 50% of units closely clustered around

the median. Rental housing is even more limited on Cape Cod given that many property owners can make more money renting their property for six weeks in the summer than renting it year-round, or they choose not to rent out their seasonal homes at all. The 2017 Regional Housing Market Analysis predicts that by 2025, close to half of the region’s population will experience housing-cost stress, meaning they will spend more than the recommended 30% of their

income on housing costs. Even those businesses with higher-paying jobs still struggle to fill professional positions in banking, engineering, and medicine because housing options on the Cape are significantly more expensive and limited than other regions.

While achieving the Commonwealth’s 10% affordable goal remains an important standard for each Cape Cod community and for the region overall, Cape

Cod’s needs exceed 10%. To address housing needs moving forward, the region must recognize that the Cape Cod housing market is not simply fifteen separate economies but represents a single housing market, with sub-regional distinction. A regional strategy is needed to address the structural deficiencies in the regional market. As the “baby boomer” and general population ages, and as single-parent families and single-person households

increase, two-person households over the age of 65 will dominate the Cape in the next 20 years. The decline in the average household size means that more housing units will be required to house the same number of people as 30 years ago. Without increasing housing supply and choices, the Cape’s housing affordability problem is likely to worsen.



**PROVISION
OF ADEQUATE
INFRASTRUCTURE**

The existing infrastructure fundamentally limits the region’s ability to grow in a way that balances economic and social wellbeing with the protection of natural and cultural resources. The region’s rural and suburban development patterns make providing adequate infrastructure more expensive on a per-unit or per-user

basis as networks are typically more spread out, with fewer users able to utilize and pay for the same systems or materials. These development patterns also require greater development and disturbances of natural resources. However, directed, improved, and expanded transportation, water, wastewater, electric, and broadband infrastructure that mitigates and adapts to climate change will be necessary to support long-term regional economic

stability. These regional networks must be resilient and provide last-mile connectivity, bringing the benefits of the regional investments to the people, businesses, and institutions that are the backbone of the economy. Implementing these large-scale infrastructure improvements requires significant community dialog to determine the most effective, efficient solutions that are consistent with

community values including its plan for growth, equity, cost sharing, climate change response, and environmental benefit. The environmental and public health imperatives requiring timely investment in water quality infrastructure across Cape Cod offer this region an opportunity to reset, change the paradigm, and to develop a coordinated plan to direct growth to areas that can support it.





LONG-TERM ECONOMIC STABILITY

Cape Cod’s environment is its economy. The region’s character and amenities attract a wide range of people who want to visit, live, or work on the Cape, including tourists, retirees, second-home owners, scientists, entrepreneurs, and artists.

The Commission’s regular surveys over the past 15 years consistently find that a clean, natural environment and Cape Cod’s historic character are fundamental values.

Economic development for the region depends on a healthy natural environment, continued development of infrastructure to support the population and remediate the

impact of 20th century growth patterns, resources to support an appropriately skilled labor pool, and effective and fair regulatory and land use policies.

Unlike business development, economic development focuses on the economic environment rather than

on individual businesses. Economic development for the region should:

- protect and build on the region’s competitive advantage, the unique natural environment, historic village character, harbors, and cultural heritage;

- use natural assets, capital facilities, infrastructure, and human capital and land use patterns efficiently;
- foster balance and diversity through a mixture of industries, businesses, workers, ownership types, and employment options;
- and expand opportunity and regional wealth by increasing exports,

substituting imports locally, attracting capital, and fostering local ownership.

The long-term challenge is to maintain and improve the quality of the environment and mitigate climate change in the face of ongoing development pressure and environmental and social change to ensure a stable and robust economy into the future, thereby improving

economic resilience. In the 2014 homeowners survey, nearly 83% of respondents listed the availability of jobs or economic opportunities as a serious or moderate problem in their community. The imbalance between wages and cost of living is a threat to the economy and social structure of the region.

