

IS DENSITY DETRIMENTAL?

DOES HIGHER DEVELOPMENT DENSITY HELP OR HURT CAPE COD'S ECONOMY?	
Does higher density:	Or does it:
<ul style="list-style-type: none">Enable housing to be affordable?Make downtowns more vibrant?Utilize infrastructure more efficiently?	<ul style="list-style-type: none">Lower property values?Generate traffic congestion?Detract from community character?

A RESEARCH BRIEF

IS DENSITY DETRIMENTAL?

Most people agree that Cape Cod will continue to grow. Approximately 16% of Cape Cod’s land area is unprotected and could be developed in the future.¹ There is additional growth potential in the redevelopment of existing buildings. It is projected that Cape Cod will add 70,000 people by 2020², fueling demand for homes and businesses.

How Cape Cod grows over the coming decades will influence the region’s economy, environment and quality of life. Can Cape Cod sustain more of the dispersed growth that has characterized development over the past several decades?

WHICH IS SMARTER: DENSITY OR SPRAWL?

We hear a lot these days about smart growth as an antidote to sprawl. On Cape Cod where there is a blend of rural and suburban areas, smart growth means clustering more development into villages and creating mixed-use walkable neighborhoods.³ Compact development is a key element of smart growth. Examples of compact development on Cape Cod include Commercial Street in Provincetown, the Main Streets of Chatham and Hyannis, and Mashpee Commons. These very different areas share common traits: buildings are multistory, on smaller lots, and closer to the street and to each other. These areas exhibit *density* in that there is more development per unit of land than is found in most other areas on Cape Cod.

Table 1- Defining Features of Compact and Sprawl Development Patterns

Features	Compact	Dispersed (Sprawl)
Location	Development occurs within a limited area, generally a traditional downtown, that has been designated for growth	Development is dispersed, often leapfrogging over previously developed areas to outlying areas
Density	5-7+ units per acre	1-4 units per acre
Design Features	<ul style="list-style-type: none"> *Sidewalks *Pedestrian oriented *Mix of commercial and residential uses *Multi-story, smaller lots conserve land 	<ul style="list-style-type: none"> *Few sidewalks *Auto oriented *Separate commercial and residential uses *Single story, larger lots consume land

When properly designed and maintained, compact development can allow higher density with the same or fewer environmental impacts than lower density development that is dispersed.

1 Cape Cod Commission, Cape Cod Regional Policy Plan, Effective January 16, 2009, page 56.

2 Calculated using MISER countywide population projection of 299,035 in 2020, up from 229,545 in 2003 according to the estimate from Cape Trends Update, 2005.

3Litman, Todd. “Understanding Smart Growth Savings: What We Know about Public Infrastructure and Service Cost Savings and How They Are Misrepresented by Critics.” Victoria, B.C. Victoria Transportation Policy Institute. 2008

DOES DENSITY HELP OR HURT CAPE COD?

Zoning regulations in most Cape Cod towns separate land uses and require structures to be more spread out.⁴ These regulations lead to low residential densities and single-story commercial strip development that consumes land and promotes auto dependency. Recently a number of towns have passed local bylaws to allow multi-story mixed-use development in village and commercial centers.⁵ To some people this trend recognizes the need to direct growth to Cape Cod's village centers. To others, higher density raises concerns about congestion, uncertain fiscal impacts, and loss of rural charm.

This paper examines the different impacts of higher density and sprawl in the following areas:

- Economic Development
- Public Finance
- Natural Resources; and
- Community Character

The economic development section covers impacts of density on disposable income, business diversity, property sales values, and housing alternatives while public finance looks at the differing costs of water, sewer, transportation, and other publicly funded infrastructure and services under different density scenarios. Natural Resources including open space and habitat fragmentation, water and air quality, and energy consumption are considered relative to development density and community character looks at the consistency between density and historic character and uniqueness, particularly relative to tourism.

In each of these areas, we considered information gathered in national studies as well as studies conducted for this region.

ECONOMIC DEVELOPMENT

How do land use patterns affect personal income, productivity and economic growth?

Suburban development patterns were made possible with the advent of the personal automobile and have been designed around the auto as the sole means of transportation. More traditional compact development was based on public transportation which tends to be less costly than the auto-centric suburban model. Reductions in transportation costs free household income for spending in other areas of the economy that have a greater positive impact on wealth and economic growth.

⁴ For example, the dominant residential zoning density is one dwelling per acre, or 40,000 square feet per lot. Cluster or open space residential zoning, a subdivision option requiring special permits, may allow the same number of dwellings as conventional acre lots, but will cluster them on lot sizes of 15,000 or 20,000 square feet.

⁵ Barnstable (Hyannis), Dennis (Dennisport), Orleans (Orleans Village Center), and Bourne (Buzzards Bay) have examples of village center bylaws allowing mixed uses and/or increased building height.

Price of Auto Dependency. Households in automobile-dependent areas spend more than 20% (\$8,500) of household expenditures on transportation while households in smart growth communities spend less than 17% (\$5,500).⁶

Opportunity Costs of Auto Dependency. The purchase, maintenance, and operation of automobiles account for 94% of transportation spending by households⁷ nationally and 16% of total spending annually including housing and food.⁸ Yet, vehicles, unlike homes, do not usually generate long-term equity. One estimate shows that for every \$10,000 spent on housing would generate \$4,730 in equity but only \$910 in equity if spend on an automobile.⁹

Lost Economic Impact of Auto Dependency. Consumer expenditures have a larger ripple effect on the economy than the direct cost of the purchase might suggest; some types of expenditures will generate more positive economic impacts than others. Table 2 shows the ripple effect when consumer spending shifts from automobile related to non-automobile related spending. Thus, increased density will have a positive economic impact as it frees up more income for use on other goods and services.

Table 2 - Economic Impacts of \$1 Million in Auto vs. Non-auto Expenditures

Type of Expenditure	Region Income	Regional Jobs
Auto expenditure	\$307,000	8.4
Non-auto expenditure	\$526,000	17

Density can also benefit businesses, workers, and customers. Business clustering benefits both the consumer and the business owner by bringing them all together in close proximity.

Business & Workforce Synergy. Financial services firms, creative industries, high technology firms and education benefit from being near each other through the interaction of their customers and their labor force.¹⁰

Access to Customers. Retail businesses also benefit from being clustered together. A critical mass of stores, based on the size and demographics of the market, helps an area to maintain and increase market share.¹¹

DOES DENSITY ERODE PROPERTY VALUES?

While many are concerned that density will reduce the value of their property, studies find there is no discernable difference between appreciation rates for properties located near higher density developments and those that are not.¹²

6 Litman, Todd. "Evaluating Transportation Land Use Impacts." Victoria, B.C. Victoria Transportation Policy Institute. 2008.

7 Technically, households are termed "consumer units" for the purposes of the US Bureau of Labor Statistics' 2008 Consumer Expenditure Survey from which this data is extracted

8 US Bureau of Labor Statistics' 2008 Consumer Expenditure Survey: <http://www.bls.gov/cex/home.htm>

9 Litman, Evaluating Transportation Land Use Impacts

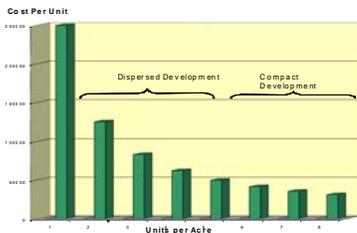
10 Litman, Evaluating Transportation Land Use Impacts

11 Barringer, Peg. "East Harwich Village Center Retail Market Assessment." Prepared for the East Harwich Village Center Collaborative. December 2007.

- According to a study by the National Association of Homebuilders, using data from the American Housing Survey, between 1997 and 1999 the value of single-family houses within 300 feet of an apartment or condominium building went up 2.9%, compared to 2.7% for single-family homes without these buildings nearby.¹³
- A long-term study published in 2003 by Harvard’s Joint Center for Housing Studies found that apartments pose no threats to nearby single-family home values (based on data from 1970-2000).¹⁴
- A 2003 study conducted by researchers at Virginia Tech University found that higher density developments could increase property values. Investment in multifamily housing may enhance values because new apartments are an indicator that an area has a vibrant economy; multi-family housing increases the pool of future homebuyers in the housing market; and a mix of housing and commercial uses can be a community amenity.¹⁵

Rather than undermining property values, the density characteristics of compact town centers provide opportunities for a variety of housing types, including townhouses, “top of the shop” apartments, and small-lot single-family homes. Because higher density reduces land costs per unit of housing, there is greater opportunity for housing that is affordable to the average Cape Cod family.

Figure 1 – Affordability of Housing Units Relative to Development Density



12 Haughey, R. “Higher Density Development Myths and Facts.” Urban Land Institute - ULI. Washington, D.C. 2005. Haughey cites the following studies: National Association of Homebuilders, “Market Outlook: confronting the myths about apartments with facts” (Washington, D.C.: author, 2001.); Alexander Hoffman, “The Vitality of America’s Working Communities” (Cambridge, MA: Harvard University Joint Center for Housing Studies, 2003.); Arthur C. Nelson and Mitch Moody, “Price Effects of Apartments on Nearby Single-Family Detached Residential Homes,” Working Draft (Blacksburg, VA: Virginia Tech University, 2003.)

13 Haughey, R. “Higher Density Development Myths and Facts.” Urban Land Institute

14 Haughey, R. “Higher Density Development Myths and Facts.” Urban Land Institute

15 Haughey, R. “Higher Density Development Myths and Facts.” Urban Land Institute. Cites Nelson, Arthur et al. “Price Effects of Apartments on Nearby Single Family Detached Residences,” Working Draft. Virginia Tech University.

Decades of local, state, and federal policies have also facilitated sprawl development.

Local Zoning. Local zoning laws separated and spread out land uses;

Highway & Road Spending. State and federal highway programs underwrote the cost of building roads, making it easy and cost effective for communities to spread out; and

Tax Policy. Federal tax policies, including the home mortgage interest federal tax deduction, helped to make the single-family home the dominant housing choice in dispersed communities. Some believe that demand for single-family homes on large lots was driven by consumer preferences. However, numerous studies argue that tax policies and¹⁶ did as much as consumer choice to promote residential sprawl. Decades of favorable local, state and federal policies also have facilitated sprawl

In the years ahead, the changing nature of demographics nationwide and on Cape Cod, coupled with difficult economic trends, suggest that households will be increasingly looking for different types of housing other than single-family dwellings.

- US Census data show that, between 2000 and 2010, the number of families without children will grow 16%, while the number of families with children under the age of 18 will decline 3%.¹⁷ The trend may be away from traditional single-family homes and towards different housing choices.

The need for a greater variety of affordable housing choices on Cape Cod is also supported by economic trends. The available supply of affordable housing will influence the ability of households to remain on Cape Cod, and the ability of businesses and institutions on Cape Cod to continue to attract employees.

- There is a \$28,950 gap between the median household income on Cape Cod (\$70,400) and the income needed (\$99,350) to afford a median-priced (\$346,000) home.¹⁸
- There is a gap of \$15-\$20 between the hourly wage needed to afford a one- or two- bedroom apartment on Cape Cod and the hourly wage that many construction and retail sales positions pay.¹⁹

The effect of land use on housing and other costs depends on many factors, including whether household have the flexibility choose among more transportation and housing alternatives.²⁰ Higher density can help to lower the per unit land cost for housing, but can lead to other building costs (the installation of elevators, for example.) At the same time, Higher density development creates opportunities for housing to be located closer to shops, services, and employment opportunities

16 Litman. Understanding Smart Growth Savings. He identifies a number of market distortions that favor sprawl, including local tax policies and parking requirements and institutional lending practices, citing his previous work, "Market Distortions." Victoria Transportation Policy Institute. 2003.

17 Haughey, R. "Higher Density Development Myths and Facts." Urban Land Institute. Cites projections of number of households and families in the United States 1995-2010, US Bureau of Census, 1996.

18 Cape Cod Commission. Cape Home Ownership Affordability Gap, 1997-2007.

19 Cape Cod Commission. Wages and the Cost of Housing in Barnstable County, 2006.

20 Litman, Evaluating Transportation Land Use Impacts

which can reduce transportation costs. The compact nature of higher density housing can result in lower costs for installing infrastructure such as roads and water and sewer systems.²¹

A study sponsored by Good Jobs First²² looked at differences in labor and construction costs between buildings that fit the characteristics of smart growth versus sprawl. The study found that:

- Extensive interviews with contractors associated with smart growth or New Urbanism indicated that urban infill projects tend to cost more per unit than sprawl development—as much as 20% to 25% more according to one firm—due to many complicating factors involved with building in an existing urban environment.
- Total construction costs per square foot tend to be higher for townhouses, apartment buildings, and office buildings than single-family homes.
- Smart growth developments create as many or more construction jobs as sprawl development; Construction-related industries are major employers on Cape Cod.

Table 3 - Construction Costs for Compact and Dispersed Development²³

Building Type	Average Size (sq. ft.)	Labor Wages & Benefits	Total Contracting Cost (\$)	Total Contracting (\$ per sq. ft.)
Single-family house	2,006	\$32,792	\$155,727	77.63
Townhouse	3,384	\$50,612	\$284,011	83.93
Apartment Building	126,400	\$3,757,411	\$16,922,400	133.88
Office Building	80,000	\$1,824,955	\$9,117,975	113.97
One-story Department Store	110,000	\$1,934,725	\$9,167,100	83.34

PUBLIC FINANCE

How do land use patterns affect the need for public spending and tax revenues?

A large body of literature examines the differential in costs associated with compact development (usually higher density) versus sprawl development. Most of this literature suggests that compact development is associated with lower public costs.

Table 4 shows that a low residential density of one house per five acres costs nearly 60% more to provide services and infrastructure than a higher residential density of 4.5 units per acre. This is primarily due to higher costs of building infrastructure when development is spread out (e.g., more

21 Haughey, R. "Higher Density Development Myths and Facts." Urban Land Institute

22 Mattera, Philip et al. "The Jobs are Back in Town: Urban Smart Growth and Construction Employment." Prepared for Good Jobs First. Washington, D.C. 2003.

23 Mattera

miles of roadway, longer pipes for sewer and water service.) Operations and maintenance costs are also higher for dispersed development, according to studies.²⁴

Table 4 - Annualized Municipal Costs per Household for Different Densities²⁵

Costs	Higher Density	Medium Density	Rural Cluster	Rural Sprawl
Units/Acre	4.5	2.67	1	0.2
Schools	\$3,204	\$3,252	\$4,478	\$4,526
Roads	\$36	\$53	\$77	\$154
Utilities	\$336	\$364	\$497	\$992
Totals	\$3,576	\$3,669	\$5,052	\$5,672
%Cost Increase as Density is Reduced	Baseline 0%	3%	41%	58%

Table 5 shows study results that costs for roads and other infrastructure were cut by more than half when density increased from 2.1 units per acre to 5.5 units per acre.²⁶

Table 5 - Comparison of Development Patterns, Twin City Area²⁷

Units per Acre	2.1	5.5	% Difference
Miles of Local Roads	3,396	1,201	(65%)
Costs of Local Roads Per Unit	\$7,420	\$2,607	(65%)
Other infrastructure costs per unit	\$10,954	\$5,206	(52%)
Total	\$18,374	\$7,813	(57%)

Many public services cost less in rural areas where households provide their own infrastructure (private wells, septic systems) and where residents may be accustomed to lower levels of public services such as unpaved roads, volunteer emergency services, and fewer cultural and recreational amenities. Yet as the population becomes more dispersed, people from urban areas accustomed to urban service levels move to rural locations and expect the same high level of services.²⁸

Transportation. A densely developed village center provides opportunities to reduce auto dependency and associated costs and to increase alternate transit options. Sprawl increases auto-dependency because more travel is needed to get to housing, jobs, shopping, and other

24 Puget Sound Resource Council. Information Paper on the Costs of Sprawl.

25 Smythe, R. Density-related Public Costs, American Farmland Trust, 1986, Per-household annual municipal costs increase with sprawl, based on a community of 1,000 housing units, 3,260 people, 1,200 students.

26 Minnesotans for an Energy Efficient Economy, Center for Energy and the Environment. "Two Roads Diverge, Analyzing Growth Scenarios for the Twin Cities."

27 Minnesotans for an Energy Efficient Economy.

28 Litman, Understanding Smart Growth Savings.

activities. Higher density helps to reduce transportation costs paid directly by consumers (as noted above) as well as costs borne by the general public (road and bridge repairs, school bussing costs, etc.)²⁹ Meanwhile, higher density is necessary to establish the critical mass of activity needed to make public transportation efficient.

School Spending. Closely related to transportation is the impact of density on school spending. Greater density can reduce school costs - which represent the highest share of local spending - by reducing the need and cost of school bus service. On Cape Cod school transportation costs amount to hundreds of thousands of dollars per town.³⁰ Data also indicates that households with fewer children tend to live in higher density housing, which puts less pressure on schools, which account for 50-80 percent of local expenditures.³¹

Water, Sewer, and Other Utilities. A densely developed village center provides greater opportunities for state-of-the-art, economically efficient wastewater treatment and helps to reduce costs associated with providing public utilities such as water and sewer service. As sewers and public water are introduced into a community the dispersal of development can significantly impact the cost of construction and operation.

- A study of the effect of spatial attributes of development on water and sewer costs found that smaller lots, shorter distances to facilities, and lower housing tract dispersion characteristic of higher density all led to reduced costs. Cost of services was most affected by lot size. Costs increased 30% as lot size went from 0.25 to 0.5 acres. Cost increased 6% when the same number of housing units was spread across 2 miles rather than 1; costs increased 3% when distance to water and sewer centers increased 0.25 to 0.5 miles.³²
- Overall, studies find that smart growth could generate public cost savings of \$5,000 to \$75,000 per housing unit annually for utility costs (roads and utility lines), and public cost savings of \$500 to \$10,000 per unit annually for incremental operational and maintenance costs.³³

Overall, higher density has a beneficial effect on three drivers of fiscal impacts from land use:

Public infrastructure and services. The compact nature of higher density housing can require less extensive infrastructure to support water, sewer and other utilities.³⁴

Property values. Property values located near high-density development are maintained or enhanced. Property values influence the local tax levy, now limited to a 2.5% annual increase in Massachusetts.

29 Litman, Evaluating Transportation Land Use Impacts.

30 Based on Barnstable FY07 approved school budget (\$2.6 million out of \$56.6 million); Harwich FY06 approved school budget (\$665,000 out of 13.6 million).

31 Why Smart Growth: A Primer. International City/County Management Association. Smart Growth Network and USEPA 1998 (www.epa.gov/smartgrowth).

32 Spier, C. "Does Sprawl Cost Us All? Isolating the Effects of Housing Patterns on Public Water and Sewer Costs." Chicago, Illinois. Journal of the American Planning Association. 2002. Study tested lot size, subdivision dispersion and distance to facilities as having influence on water and sewer service cost.

33 Litman. Understanding Smart Growth Savings. Litman notes that some public costs can be recaptured through impact fees but in practice these fees never reflect full costs.

34 Haughey, R. "Higher Density Development Myths and Facts." Urban Land Institute

NATURAL RESOURCES

How do land use patterns and the density of development affect natural resources?

Whether development is compact or dispersed determines other costs and impacts associated with the environment and community character. These impacts could include open space, driving time, pollution, and community character. Some of these impacts are difficult to quantify, but they are no less important than the economic impacts noted above.

Auto-related Pollution and Congestion. Higher density development creates less traffic per unit than lower density development, and makes walking and public transit more feasible and creates more opportunities for shared parking. Vehicle emissions account for 57% of CO₂ emissions.³⁵

Energy Consumption. Higher density can help to reduce fuel consumption and increase efficiencies from shared walls and shared heating and cooling systems.³⁶

Open Space and Habitat Fragmentation. Higher density requires less land for a given amount of development. By clustering development, higher density allows for more undisturbed open space. Higher density of development should be steered toward areas where infrastructure can support it, and away from sensitive natural resources areas. Otherwise, Cape Cod will lose its critical natural resources and character.

Run-off from impervious surfaces. Higher density helps to reduce the amount of impervious surface cover such as paved roadways, parking lots, rooftops and decks. Impervious surfaces increase stormwater run-off, which carries nutrients and pollutants to surface waters and is the leading cause of surface water quality impairment in Massachusetts. A one-acre parking lot generates a volume of runoff almost 16 times that of a one acre undeveloped meadow.³⁷

A number of planning tools are emerging to measure the environmental impacts of smart growth. In general these tools are based on the premise that most methods commonly used to measure environmental and transportation impact from development were developed for auto-dependent, sprawl-type land uses. While there is no definitive method for assessing the difference in impacts between density and dispersed growth, the tools are emerging as a way to account for the fact that compact development reduces some impacts, such as automobile trips.

Compact Development Factors. The Town of Barnstable developed a set of compact development factors to demonstrate that one unit of housing or one square foot of commercial space built in downtown Hyannis would have fewer environmental impacts than the same space built in an auto-oriented, decentralized development. Overall a unit of housing in Hyannis was estimated to

35 Arigoni, D. Affordable Housing and Smart Growth, Making the Connection, National Neighborhood Coalition. 2001.

36 Litman, Evaluating Transportation Land Use Impacts.

37 "Our Built and Natural Environments, A Technical Review of the Inter-relationships between Land use Transportation and Environmental Quality." EPA 231-R-01-002. US EPA Jan 2001

reduce negative impacts by 40%. The impact of commercial growth downtown was estimated to be 34% less than it would be outside of downtown.³⁸

4D Indices. 4D Indices translate a land use plan's density, diversity, design, and destinations ratings, through use of research-based elasticities to reductions in vehicle trips and vehicle miles per capita. According to the sample elasticities shown in Table 6, doubling residential density (a +100% change) would reduce per-household vehicle trips by about 4%. Elasticities are additive, so that 100% increases in density *and* diversity *and* design *and* destinations can reduce vehicle trips by 15%.³⁹

Table 6 - Sample 4D Elasticity from Synthesis of National Research⁴⁰

Neighborhood Characteristic	Elasticity for Vehicle Trips Per Household	Elasticity for Vehicle Miles Per Household
Residential or Job Density	-0.04	-0.05
Jobs/Housing Diversity	-0.06	-0.05
Walkable Design	-0.02	-0.04
Destinations	-0.03	-0.20

COMMUNITY CHARACTER

How do land use patterns and density influence community character?

Recent trends and current demographic patterns suggest that Cape Cod will continue to grow. The form this growth takes will greatly influence the character of our communities. Cape Cod is treasured for its magnificent natural beauty. However, the region's built environment—including our historic villages, residential neighborhoods, and community buildings—also contributes to the Cape Cod experience. Higher density may be a part of future growth on Cape Cod, and may enable more areas of natural beauty to be preserved and enjoyed.

Design and Architecture. Density, in the sense of closeness or compactness of development, is very much a part of the Cape Cod tradition. Multi-story buildings were typical in most New England villages, including those on Cape Cod. With proper design guidelines, multi-story buildings in a dense setting can contribute to community character. Building heights, for example, enable greater use of historical roof pitches and architectural details. A mix of commercial and residential activity creates a vibrant community that enhances community character. Attracting residential development

³⁸ Downtown Hyannis Growth Incentive Zone Application, Town of Barnstable revised 2006

³⁹ Smartgrowthplanning.org, a website sponsored by Fehr & Peers Transportation Consultants. The 4Ds is a modeling methodology that emphasizes the effects of density, diversity, design and destinations in modeling transportation impacts of alternative growth patterns. The approach was used in a number of West Coast planning initiatives: Sacramento Regional Blueprint, Smart Growth Twin Cities, and San Luis Obispo Visioning workshops.

⁴⁰ Smartgrowthplanning.org

to community centers can allow the protection of more open space and natural resources critical to community character.⁴¹ Conversely, sprawling development tends to degrade community character. Often sprawling commercial areas include numerous national businesses with uniform signs and building formats that erode a community's uniqueness.

Public Safety. Density influences public safety in terms of community and individual health. Higher density communities tend to have a lower rate of traffic fatalities. Because they are more auto-dependent and lack transit options, lower density communities tend to have a higher rate of traffic-related fatalities.⁴² Research has shown that people in walkable communities are more likely to achieve recommended levels of physical activity than residents of auto-dependent communities.⁴³ Studies have shown that crime rates at higher density developments are not significantly different than crime rates at lower density developments

Local and Regional Branding. By influencing the many economic and environmental factors noted above, higher density can positively affect the attributes that make a community an attractive and appealing destination. A branding study conducted for the Town of Yarmouth found that among community stakeholders, "Route 28" and "traffic" were viewed as negatives in public perceptions of the town, and were singled out as things that people would remove from the town if they could. On the other hand, the study reported that the biggest perceived positives for Cape Cod were its quaintness, historic charm, natural beauty, and variety among towns.⁴⁴

WHAT'S NEXT

Cape Cod will continue to grow. How it grows will greatly influence the region's economy, natural resources, and quality of life. Higher density development in selected areas is likely to replace the sprawling development pattern that has characterized growth in the last several decades. Communities across Cape Cod are recognizing that solutions to some of the most costly and complex issues—curtailing sprawl, protecting natural resources, and meeting needs for wastewater treatment, economically diverse housing, and enhanced transit service—can best be addressed by guiding future growth into a compact, mixed-use development pattern characteristic of historic village centers.⁴⁵ Achieving these benefits will require coordinated planning for land use, resource protection, wastewater, and transportation at the regional and local levels. These efforts may not reverse all of the effects of several decades of sprawl on Cape Cod, but they could help ensure that future growth protects natural resources and community character, and makes efficient use of limited infrastructure. Potential local and regional actions include:

- Supporting smart growth planning and zoning at the local and regional levels, including:
 - **Local Comprehensive Plans.** Local Comprehensive Plans developed in concert with the Cape Cod Regional Policy Plan allows towns to identify areas for growth

41 Ridley, C. "Cape Cod Guide to Town Center Revitalization." Association to Preserve Cape Cod. Barnstable, MA. 2007.

42 Litman, Evaluating Transportation Land Use Impacts.

43 Litman, Evaluating Transportation Land Use Impacts. He cites Lawton (2001) and Khattak and Rodriguez (2003).

44 Yarmouth Brandprint™. Conducted for the Yarmouth Chamber of Commerce by North Star Destination Strategies. June 2005.

45 Ridley

and protection, and to consider future demographic changes in the context of broader issues of infrastructure and community character.

- **Open Space Plans.** Every town should have an up-to-date open space plan that identifies and prioritizes open space resources and identifies strategies for maintenance or future protection through conservation restrictions, purchase, transfer of development rights, or other means.
- **Affordable Housing Plans.** Every town should have an up-to-date affordable housing plan that inventories affordable housing in the community, quantifies needs, and provides strategies for meeting future needs, including designation of areas for higher density multi-family housing.
- **Village Center Bylaws and other zoning changes.** Several towns have adopted or are developing new zoning that encompasses smart growth principles. These include the Hyannis Zoning Districts, Dennisport Village Center Bylaw, Orleans Village Center Bylaw, and Yarmouth Route 28 Corridor planning. These bylaws include build-out assessments and identification of open space offsets, design guidelines, increased building heights, mixed uses with housing affordability requirements, provision of public green spaces, and pedestrian amenities.
- **GIZ and DCPC.** Cape Cod towns have access to two powerful planning tools to achieve smart growth planning: the Growth Incentive Zone (GIZ) and District of Critical Planning Concern (DCPC). Dennis, Yarmouth and Barnstable are among the towns that have sought a GIZ designation for a portion of town. The DCPC is a tool that has been used by a greater number of towns including Bourne, Dennis, Falmouth, Barnstable, Harwich, Sandwich and Brewster.

➤ Supporting wastewater planning and implementation.

- **Comprehensive wastewater planning** in each town and regional efforts to support wastewater planning through the Cape Cod Water Protection Collaborative are and should continue to be supported by state, regional, and local policies and resources.
- **Coordination and integration of wastewater planning, zoning and land use planning** are needed to ensure that nitrogen management strategies do not promote or allow undesirable growth, and that limited wastewater capacity is used to support development that addresses communities' needs and preserves water resources, community character, and economic vitality.

➤ Supporting continued operation of transit services as well as evaluation of new or expanded service.

- **Public and private transit service** on Cape Cod has a varied history, primarily due to the difficult economics of serving a large and dispersed area. The introduction of Flex bus route service from Harwich to Provincetown shows promise for establishing transit service that is convenient for a broad ridership.
- **Exploration and evaluation of new and expanded transit service** that link village growth centers should continue to be evaluated and supported.

RECAP: HOW DOES DENSE AND DISPERSED DEVELOPMENT COMPARE?

✓ Signifies greater positive performance or public benefit

Areas of Comparison	Dense Development	Dispersed Development
<p>Economic Development</p> <ul style="list-style-type: none"> ➤ Higher density reduces auto dependency and personal automobile expenditures, which frees household funds for more economically productive use. ➤ Higher density promotes efficiencies that can be gained by having businesses clustered closer together. ➤ There is no significant difference in values of properties located near or distant from higher density development. ➤ A vibrant mixed-use development can be an asset that enhances surrounding property values. ➤ Higher density development allows for a greater variety of housing choices to meet the needs of a demographically and economically diverse community. ➤ Lower land cost per unit for higher density housing can make housing more affordable. ➤ Infill development is costlier to build, but creates as many or more jobs than sprawl development. 	<p style="text-align: center;">✓</p>	<p style="text-align: center;">✓</p>
<p>Public Finance</p> <ul style="list-style-type: none"> ➤ Overall density helps to keep down public costs for public infrastructure and services. ➤ Compact higher density development provides greater opportunities for efficient wastewater treatment. ➤ Density helps to reduce costs associated with providing public utilities such as water and sewer service. ➤ Higher density development encourages alternate transit options. ➤ Higher density reduces transportation costs borne by the general public. 	<p style="text-align: center;">✓</p>	
<p>Natural Resources</p> <ul style="list-style-type: none"> ➤ Higher density development <ul style="list-style-type: none"> ○ Reduces air pollution from automobiles ○ Uses less land ○ Reduces storm water runoff ○ Reduces energy consumption 	<p style="text-align: center;">✓</p>	
<p>Community Character</p> <ul style="list-style-type: none"> ➤ Higher density development is typical of historic villages in New England. ➤ With proper design guidelines, multi-story buildings in a dense setting can contribute to community character. ➤ By influencing the many economic and environmental factors noted above, higher density can positively affect the attributes that make a community an attractive and appealing destination. 	<p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>	

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Yarmouth Brandprint™. Conducted for the Yarmouth Chamber of Commerce by North Star Destination Strategies. June 2005.