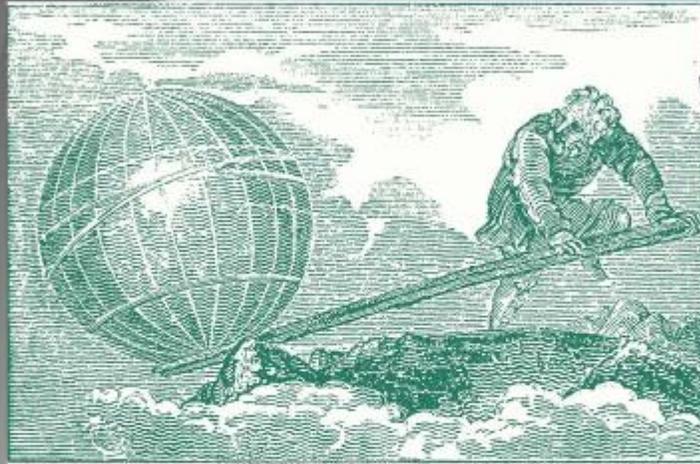
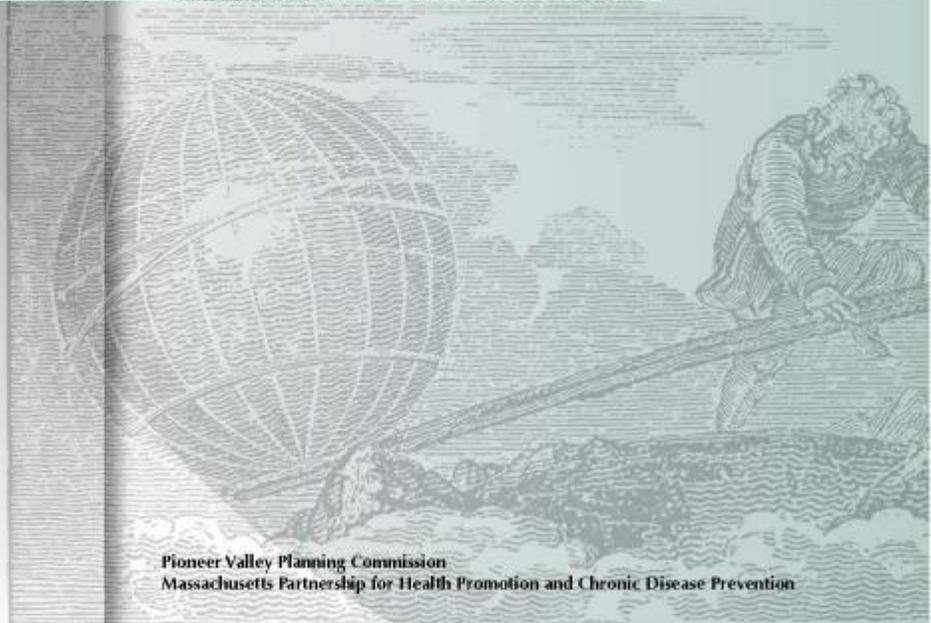


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Healthy Community Design Toolkit –  
Leveraging Positive Change



MASSACHUSETTS



Pioneer Valley Planning Commission  
Massachusetts Partnership for Health Promotion and Chronic Disease Prevention

# Healthy Community Design Toolkit— Leveraging Positive Change

“We ought to plan the ideal of our city with an eye to four considerations.  
The first, as being the most indispensable, is health.”

Aristotle, *Politics*

# Preface

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After less than a year in circulation, the “Healthy Community Design Toolkit—Leveraging Positive Change” is ready for a second edition. Responding to input from Mass in Motion partners, we have revised this edition to improve usability and to add a new focus on healthy aging throughout the report.

The focus on healthy aging accomplishes two goals. First, it provides a window into how the toolkit can be used to address the specific needs of a population. This example will provide a replicable model for thinking through how to link a population’s healthy living needs with specific community design leverage points. Second, meeting the needs of older adults will take communities a long way toward meeting the needs of their full populations. The needs of older adults are, in many ways, not unique; it is more a question of degree than difference. For example, while a younger couple may be physically able to navigate a narrow sidewalk that is cracked and slippery, they will have a more enjoyable and safer walk on a sidewalk that has smooth, high-grip pavement, a wide unobstructed area for walking abreast, and curb ramps that lead directly to crosswalks.

The new material on healthy aging is located throughout this version of the report. Look for boxes and sections labeled “Focus on Aging.”

Thank you for using the *Healthy Community Design Toolkit: Leveraging Positive Change*. We welcome your continued feedback.

## **Acknowledgements**

A Pioneer Valley Planning Commission Product

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Cover Image: Public domain (PD-ART) engraving from Mechanics Magazine published in London, 1824

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# Overview

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*“We ought to plan the ideal of our city with an eye to four considerations. The first, as being the most indispensable, is health.” Aristotle, Politics*

It is well established that community design and the built environment affect human health and well being. This toolkit provides health advocates with a concrete path forward to improve community health. These tools can be used comprehensively in an integrated approach that examines how well the physical characteristics of a community promote positive health outcomes, or individually to address a specific problem. A wide range and deep breadth of elements of community planning, design, and development are addressed, from how to promote the use of rain gardens to improve local water quality to how to establish municipal policies that plan for a healthier future.



This toolkit is prepared by professional planners with an interest in public health for use by public health professionals interested in planning. It identifies key “Leverage Points” in local community design, planning and development to facilitate the complicated process of making Massachusetts communities healthier. The toolkit fits squarely into the history of planning and public health, an exemplar of the reunion of these parallel professions to improve quality of life. The profession of Urban Planning in the United States was itself a response to the public health crisis created by the success of the industrial revolution and rapidly expanding communities. Overcrowding near unregulated polluting factories along with lack of adequate waste disposal caused infectious diseases and other health problems, driving the need for separation of uses and zoning regulations. Now, public health professionals and planners are advocating for mixed-use communities so that people can be physically active in their busy daily lives.

According to the U.S. Department of Health and Human Services, “In its broadest sense, environmental health comprises those aspects of human health, disease, and injury that are determined or influenced by factors in the environment. This includes not only the study of the direct pathological effects of various chemical, physical, and biological agents, but also the

effects on health of the broad physical and social environment, which includes housing, urban development, land-use and transportation, industry, and agriculture.”<sup>1</sup>

The Healthy Community Design Toolkit: Leveraging Positive Change is designed for use by Mass in Motion partners and Massachusetts municipalities to support and develop municipal policies, regulations, incentives, and programs that promote healthy communities. The toolkit provides many different avenues for action and enables communities to choose those ideas that fit well into their unique physical and social mosaic. Each tool includes a checklist with specific actions to promote a healthier community, along with links to additional information and example policies and regulations. The checklists are by no means exhaustive, and communities are encouraged to come up with new ideas that fit their own needs.

**Healthy community design can improve people’s health by:**

- Increasing [physical activity](#);
- Reducing [injury](#);
- Increasing access to [healthy food](#);
- Improving [air](#) and [water](#) quality;
- Minimizing the effects of [climate change](#) ;
- Decreasing [mental health](#) stresses;
- Strengthening the [social fabric](#) of a community; and
- Providing fair access to livelihood, education, and resources.<sup>2</sup>

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<sup>1</sup>Department of Health and Human Services (US). *Healthy People 2010*. Volume 1. Washington: DHHS; November 2000.

<sup>2</sup> National Center for Environmental Health . About Healthy Places (2104). Centers for Disease Control and Prevention. Accessed at: <http://www.cdc.gov/healthyplaces/about.htm>

# Community Design and Health – Making the Connection

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There is a growing body of research that links community design to health outcomes. The benefits of clean air and clean water are well known, as are the benefits of physical activity, but there are a great many connections between community design and human health that are not as widely recognized. A walk in the park not only exercises the body, but also relaxes the mind,<sup>3</sup> reduces brain fatigue,<sup>4</sup> and increases the ability to maintain focus on specific tasks.<sup>5</sup>

Introducing greenery to urban areas has also been shown to clean the air we breathe,<sup>6</sup> reduce and clean stormwater runoff (keeping nearby water bodies cleaner),<sup>7</sup> and reduce elevated outdoor temperatures that occur in developed areas.<sup>8</sup> Greener parts of inner cities have also been shown to feel safer and to have reduced crime (provided that vegetation does not block views).<sup>9</sup>

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<sup>3</sup> Tsunetsugu, Yuko; Lee, Juyoung; Park, Bum-Jin; Tyrväinen, Liisa; Kagawa, Takahide; and Miyazaki, Yoshifuma. *Physiological and psychological effects of viewing urban forest landscapes assessed by multiple measurements*. Landscape and Urban Planning. Volume 113. May 2013. Pages 90-93. ISSN 0169-2046. 10.1016/j.landurbplan.2013.01.014. Retrieved from:

<http://www.sciencedirect.com/science/article/pii/S0169204613000212>

<sup>4</sup> Reynolds, G. (2013, March 27). *Easing Brain Fatigue With a Walk in the Park*. The New York Times. Retrieved from <http://well.blogs.nytimes.com/2013/03/27/easing-brain-fatigue-with-a-walk-in-the-park/?src=meandref=general>

<sup>5</sup> Kaplan, S. (1995). *The Restorative Benefits of Nature: Toward an Integrative Framework*. *Journal of Environmental Psychology* 15: 169-182.

Taylor, A. (2009). Children With Attention Deficits Concentrate Better After Walk in the Park. *Journal of Attention Disorders* 12: 402-409.

<sup>6</sup> Pugh, Thomas A. M.; MacKenzie, A. Robert; Whyatt, J. Duncan; and Hewitt, C. Nicholas. *Effectiveness of Green Infrastructure for Improvement of Air Quality in Urban Street Canyons*. Environmental Science and Technology 2012 46 (14), 7692-7699

<sup>7</sup> Seitz, Jennifer and Escobedo, Francisco. May 2008. *Urban Forests in Florida: Trees Control Stormwater Runoff and Improve Water Quality*. University of Florida. Institute of Food and Agricultural Services. Retrieved: March 20, 2013. Retrieved from: <https://edis.ifas.ufl.edu/fr239>

<sup>8</sup> Tsunetsugu, Yuko; Lee, Juyoung; Park, Bum-Jin; Tyrväinen, Liisa; Kagawa, Takahide; and Miyazaki, Yoshifuma. *Physiological and psychological effects of viewing urban forest landscapes assessed by multiple measurements*. Landscape and Urban Planning. Volume 113. May 2013. Pages 90-93. ISSN 0169-2046.

A great deal of research has been done on the subject of transportation planning and its relationship to injury reduction, showing that streets can be made significantly safer for pedestrians and cyclists when traffic calming measures are implemented, speed limits are enforced and all road users learn to share the space.<sup>10</sup> Reduced traffic also improves mental health and social outcomes. Studies have shown that children who live on streets with less traffic have more friends,<sup>11</sup> and more time outdoors can lead to more chances for social interaction.

In Jane Jacobs' classic book, *The Death and Life of Great American Cities*, she argued that walkable neighborhoods with higher densities, mixed-uses, and a significant public realm bring people out onto the streets, leading to greater safety through more "eyes on the street", as well as an increase in social networks and community trust. One study found that a feeling of safety affects health, as evidenced by a higher prevalence of obesity in women who live in areas where they do not feel safe.<sup>12</sup> In another study, it was found that porches and other architectural features that promote viewing of the street from the exterior of a building have a positive impact on perceived social capital (connections within and between social networks).<sup>13</sup>

Having a healthy community for children to grow up in is one of society's biggest concerns. Being able to walk or bike to school or to a friend's house independently can help build competence and, by extension, self-confidence. In addition, one study found that children who cycle or walk to school perform measurably better on tasks demanding concentration, such as

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10.1016/j.landurbplan.2013.01.014. Retrieved from:

<http://www.sciencedirect.com/science/article/pii/S0169204613000212>

<sup>9</sup> Kou, F.E. and Sullivan, W.C. *Environment and Crime in the Inner City: Does Vegetation Reduce Crime?* Environment and Behavior, 2001

<sup>10</sup> Bunn, F.; Collier, T.; Frost, C.; Ker, K.; Steinbach, R.; Roberts, I.; Wentz, R. (2003). Area-wide Traffic Calming for Preventing Traffic Related Injuries. Cochrane Database of Systematic Reviews.

<sup>11</sup> Appleyard, Donald. *Livable Streets*. 1981. Palgrave Macmillan

<sup>12</sup> Burdette, H. L., Wadden, T. A. and Whitaker, R. C. (2006). *Neighborhood Safety, Collective Efficacy, and Obesity in Women with Young Children*. Obesity, 14: 518–525. doi: 10.1038/oby.2006.67

<sup>13</sup> Brown, Scott C.; Mason, Craig A.; Lombard, Joanna L.; Martinez, Frank; Plater-Zyberk, Elizabeth; Spokane, Arnold R.; Newman, Frederick L.; Pantin, Hilda; and Szapocznik, José. *The Relationship of Built Environment to Perceived Social Support and Psychological Distress in Hispanic Elders: The Role of "Eyes on the Street"* J Gerontol B Psychol Sci Soc Sci (2009) 64B(2): 234-246 first published online January 1, 2009 doi:10.1093/geronb/gbn011

solving puzzles, and that these effects last for up to four hours after children arrive at school.<sup>14</sup> Another study found that children who live in neighborhoods in which they can walk to school, the library, and nearby supermarkets with healthy food are 59 percent less likely to be obese than children in neighborhoods without these characteristics.<sup>15</sup>

“The built environment presents both opportunities for and barriers to participation in physical activity, thereby influencing whether or not we exercise. Research by CDC and others has indicated that two of the main reasons for not exercising are lack of structures or facilities (such as sidewalks and parks) and fears about safety.” —R. Jackson, et al., *Healthy Environment: The Impact of the Built Environment on Public Health*, Centers for Disease Control and Prevention, 2001.

The physical environment plays a powerful role in shaping the choices we make every day and can create impacts that we do not always perceive. For example, development patterns that include large amounts of parking affect transportation choices. Destinations become further apart, making it more difficult and less pleasant to walk or bike, as well as less efficient to provide transit service. More people choose to drive for more of their daily trips, leading to increased air pollution and decreased physical activity.

Access to healthy food also plays a significant role in the health of a community. Living closer to a supermarket leads to lower rates of obesity and diabetes.<sup>16</sup> In one study, the rate of overweight, obese and hypertensive people dropped by 9 percent, 24 percent and 12 percent respectively when compared to people who did not live near a supermarket.<sup>17</sup>

See Appendix for additional research connecting community design and health.

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<sup>14</sup> Goodyear, Sarah. *The Link Between Kids Who Walk or Bike to School and Concentration*. (2013). The Atlantic Cities Place Matters . Retrieved from: <http://www.theatlanticcities.com/commute/2013/02/kids-who-walk-or-bike-school-concentrate-better-study-shows/4585/>

<sup>15</sup> Rochman, Bonnie. *Walking to School, Libraries and Markets Helps Keep Kids Slimmer: A cluster of studies relies upon geographical data-mapping to analyze the impact of neighborhood on children's health*. (2012). Time Health and Family. Retrieved from: <http://healthland.time.com/2012/04/10/walking-to-school-libraries-and-markets-helps-keep-kids-slimmer>

<sup>16</sup> Drewnowski, Adam et al., *Obesity and Supermarket Access: Proximity or Price?*, American Journal of Public Health 102, no. 8 (August 2012): e74–e80, doi:10.2105/AJPH.2012.300660.

<sup>17</sup> Morland, Kimberly; Diez Roux, Ana V.; and Wing, Steve. *Supermarkets, Other Food Stores, and Obesity*, American Journal of Preventive Medicine 30, no. 4 (April 2006): 333–339, doi:10.1016/j.amepre.2005.11.003.

## Focus on Aging: Why Community Design Matters

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This edition of the “Healthy Community Design Toolkit—Leveraging Positive Change” adds a focus on healthy aging. Older adults are increasing in number and as a percentage of our total population.<sup>18</sup> In 2030, it is predicted that the older population (age 65 and over) will be twice as large as it was in 2000 (growing from 35 million to 72 million).<sup>19</sup> In Massachusetts, it is predicted that people 65-and-over will increase from 14% of the population to 21% of the population in 2030.<sup>20</sup>

As people age, the built environment of their immediate home and neighborhood has an increasing effect on them.<sup>21</sup> This is the result of two factors. First, a person’s daily travel radius tends to shrink. Second, if an older person’s physical capacity is diminished, barriers within the built environment can become more inhibiting. What was once solely an inconvenience—like a busy intersection between home and a grocery store—can become a significant deterrent to healthy living, keeping them venturing out.

The concept of ‘environmental press’ developed by M. Powell Lawton in “Ecology and the Aging Process” (1973), is useful for understanding the relationship between healthy aging and community design. Lawton argues that there is an optimal level of fit between a person’s competence and their environment. If the environment does not challenge the person enough, it can lead to boredom and loss of capacity. If the environment is too stressful, the person may change their behavior in maladaptive ways. For example, if the busy intersection between home and the grocery store exceeds an older person’s driving competence level, the person may adapt by shifting from buying fresh, perishable fruits and vegetables to non-perishable foods so that he or she can reduce how often he or she needs to brave the intersection. Maladaptive behavior can in turn reduce competence, resulting in a downward spiral.<sup>22</sup>

The study of environmental press indicates that a supportive environment can help an older person maintain optimal functioning for as long as possible, while an environment that presents obstacles can hasten decline. The implication for our communities is that if communities can provide a supportive built environment for older adults, the community will benefit from a

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<sup>18</sup> Durrett, Charles. *The Senior Cohousing Handbook: A Community Approach to Independent Living, 2<sup>nd</sup> Edition*. (2009). New Society Publishers.

<sup>19</sup> *Older Americans, 2012: Key Indicators of Well-Being* (2012). Federal Interagency Forum on Aging-Related Statistics (Forum)

<sup>20</sup> Renski, Henry, Koshgarian, Strate, Susan. *Section II. State Level Summary excerpt from: Long-term Population Projections for Massachusetts Regions and Municipalities* (November 2013). UMass Donahue Institute.

<sup>21</sup> Hans-Werner Wahl, Susanne Iwarsson, and Frank Oswald. *Aging Well and the Environment: Toward and Integrative Model and Research Agenda for the future*. *The Gerontologist* Vol 52, No. 3, 306-316.

<sup>22</sup> M.P. Lawton and L. Nahemow. “Ecology and the Aging Process,” in *The Psychology of Adult Development and Aging*, ed. C. Eisdorfer and M.P. Lawton (1973). Washington, D.C.: American Psychological Association.

healthier, more self-reliant population. On the other hand, a failure to accommodate the needs of all people may result in reduced health for older adults (as well as everybody else) thereby initiating a reinforcing loop that further stresses our healthcare and social support systems.

One of the values of the concept of environmental press is that it recognizes that older adults are diverse—each older person has a unique set of competencies and they interact with the environment in unique ways. This leads us to the important conclusion that there is no “one size fits all” approach to community design that will ideally suit all older adults. Instead, our research shows that communities should pursue a diverse set of interventions—diversifying the built environment so that it can better meet the needs of a wide range of people.

Since World War II, the development of American neighborhoods and communities has been characterized by the opposite trend—homogenization. Housing has been segregated from commercial and industrial uses. Variety in housing types and lot sizes has been reduced and standardized, often resulting in economic and age-based segregation. Furthermore, a single mode of transportation—the personal car—has dominated transportation and land use planning. For older adults, this means their range of options is limited.<sup>23</sup> The neighborhoods where many older adults set down roots as young people with families do not necessarily meet their needs as older adults. The house and yard may require too much maintenance, or have excessive expenses. Main roads may be too heavily trafficked and/or too fast moving and feel unsafe. Walking options may be limited by a lack of proximity to desirable destinations and/or inadequate sidewalks. In unsupportive neighborhoods, older adults may experience a loss of independence and reduced social interaction which can have effects on both mental and physical health.

As Deborah Howe, professor and chair of the Department of Community and Regional *Planning* at Temple University says, “If community livability is defined as a safe, engaging and healthy environment that allows us to carry out our daily activities, then senior citizens are shortchanged in most American communities.”<sup>24</sup> As the population ages, especially as the baby boom generation enters older adulthood, this is likely to become a major challenge. While our demographics are shifting rapidly, the built environment generally changes incrementally and slowly. Communities need to start making proactive changes now so that they can be prepared to meet the needs of an aging population. The consequences for communities that do not act will likely include reduced quality of life for older adults, deteriorating health outcomes, decreased independence, shorter life spans, increased health care costs, and crippling demand

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<sup>23</sup> Sarah Heaton Kennedy and Andrew L. Dannenburg. *Livability, Healthy, and Community Design* in Fritz Wagner and Roger Caves. Eds. *Community Livability: Issues and Approaches to Sustaining the Well-Being of People and Communities* (2012). Routledge.

<sup>24</sup> Deborah Howe. *Aging as the Foundation for Livable Communities* in Fritz Wagner and Roger Caves. Eds. *Community Livability: Issues and Approaches to Sustaining the Well-Being of People and Communities* (2012). Routledge.

on service providers, community organization, and family care givers. In some areas, communities may see flight of older adults with more resources to communities that better suit their needs along with associated declines in property values and tax revenues.

One of the challenges when planning for the needs of older adults is to avoid stereotypes and stigmas—particularly regarding physical abilities and health. When advocating for healthy aging in community design, it is important to always keep in mind that declines in health vary from person to person and the vast majority of older adults report that their overall health is good, very good or excellent.<sup>25</sup> At the same time, we must acknowledge that aging is often accompanied by declines in physical capabilities and that those declines can have far reaching impacts on the individual. For example, strength typically declines by about 10 percent a decade after age 25 and declines by 15-30 percent per decade after age 50. Vision, hearing, stamina, balance and response time also often decline.<sup>26</sup> If these declines become significant enough, then small impediments in the built environment can result in a loss of competence for healthy daily living. For example, a loss in strength can result in an inability to carry groceries, or to step up a large curb.

Our approach in this update to the toolkit is to point out leverage points for better community design to meet the needs of older adults. We focus on specific interventions that will eliminate barriers for older adults with common physical limitations because these interventions will help not only the most vulnerable older adults, but also because the interventions will improve quality of life for everyone else.

So how do we begin to plan communities for healthy aging? Met Life in its report *Livable Community Indicators for Sustainable Aging in Place*, lays out a framework for Livable Communities and Aging in Place. They identify four key aspects of the built environment that must be in place for Livable Communities for older adults. The first is a variety of **housing** options that are accessible and affordable. The second is there must be adequate community supports and services to meet the needs of older adults. For the purposes of this toolkit we call community supports and services, “**destinations**” to stress the fact that community design is primarily concerned with the built components of supports and services—where they are located and how they are designed—rather than their business models or social aspects. Housing and destinations must be linked by diverse **transportation** options and walkable neighborhoods. And finally, underlying all of this there must be both the reality and the

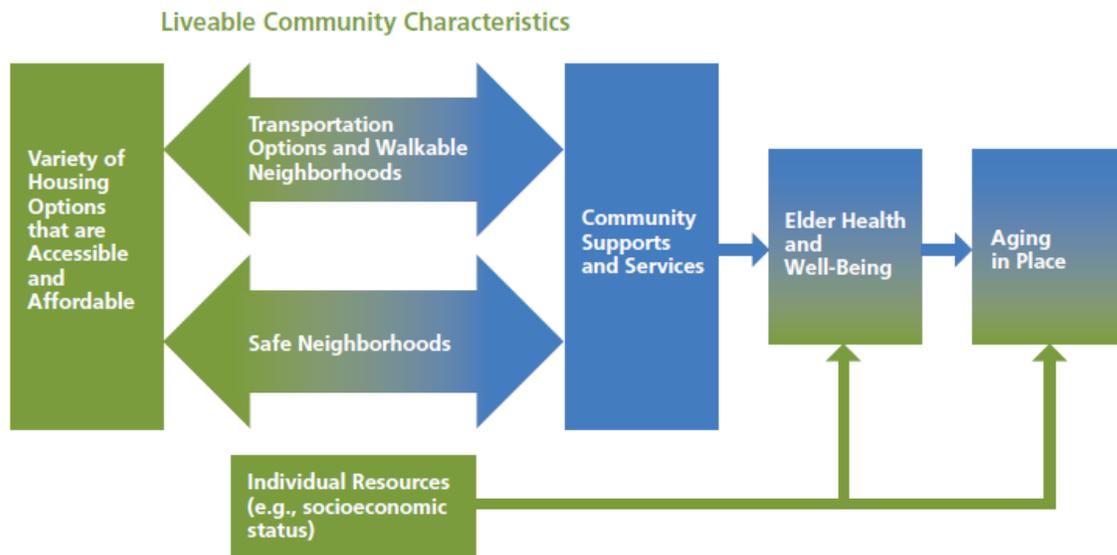
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<sup>25</sup> *Older Americans, 2012: Key Indicators of Well-Being* (2012). Federal Interagency Forum on Aging-Related Statistics (Forum)

<sup>26</sup> Greenhouse, Esther. *The Home Environment and Aging* in Henry Cisneros, Margaret Dyer-Chamberlain, Jane Hickie (Eds). *Independent for Life: Homes and Neighborhoods for an Aging America*. (2012). Austin: University of Texas Press.

perception of **safety** for older adults and the **individual resources** that make it possible for an older person to meet his or her needs in the community.<sup>27</sup>

Figure 1: Livable Communities and Aging in Place



This framework—which actually applies equally well to any population—helps us evaluate the needs of older adults and links them to leverage points for improving the built environment.

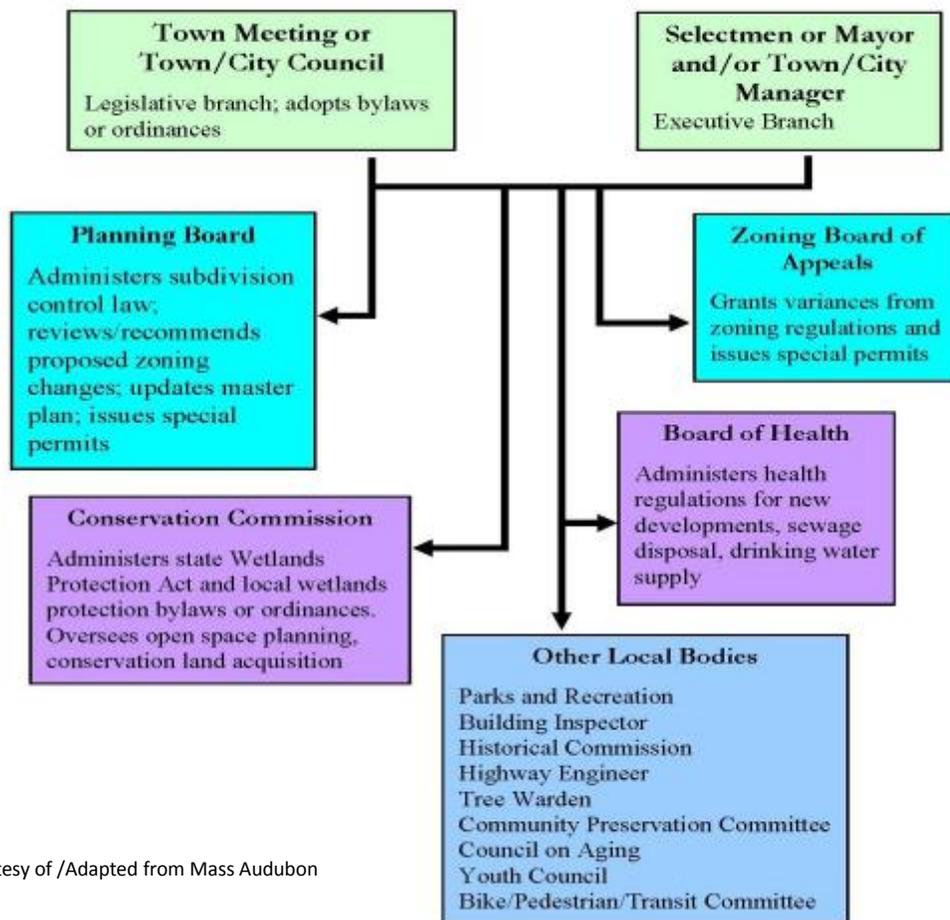
In the remainder of this toolkit, look for the sections that detail the specific housing, destinations, and transportation needs of older adults and how communities can be designed to better meet those needs (consideration of safety and diverse individual resources is woven throughout these sections). The sections on healthy aging are set within a framework of leverage points for community design that work for all people (including older adults). But before we can dive in, it is important to understand the context within which community design plays out: municipal processes in the Commonwealth of Massachusetts.

<sup>27</sup> *Livable Community Indicators for Sustainable Aging in Place*. (2013). Met Life Mature Market Institute.

# Understanding Municipal Processes and Where You Fit In

The cities and towns of Massachusetts have different forms of government. Most towns have a Select Board and a Town Meeting (or multiple town meetings as deemed necessary by the Select Board) at which a majority of residents present make decisions, voting on land use regulations, proposed budgets and other important aspects of local government. Some larger towns have a representative Town Meeting, which means that elected Town Meeting members are the only people who can vote on policy and regulatory decisions. Some towns also have Town Managers or Town Administrators. Most cities in the Commonwealth have a Mayor and a City Council, and some cities also have a City Manager. It is important to know which kind of government you are going to be working with, as your strategy to leverage change will vary. For additional information on Massachusetts government and details on our 351 cities and towns, visit [www.mma.org](http://www.mma.org), the website of the Massachusetts Municipal Association (MMA).

## Local Government Organizational Chart



Courtesy of /Adapted from Mass Audubon

If you are a government official, you will probably want to start your work within the local government structure to leverage change. If you go first to elected officials or advocacy groups, you might end up alienating your colleagues. However, if you try to work from within and fail, you might decide to work from the outside in.

If you are an advocate working to make your city healthier, you might start by speaking with a city councilperson for a specific area or ward, or with an at-large councilperson. You might also try working with the appropriate professional staff or Boards, most likely planners/Planning Board, engineers/Boards of Public Works, or the Public Health Director/Board of Public Health.

In the case of a town, ideas can be brought to professional staff or the boards they serve, or to members of the Select Board. In some smaller communities, professional staff may be limited to a Town Clerk (full or part-time) and Highway, Police and Fire Departments. Most communities have a Planning Board and a Board of Health.

If you are unsure whom to contact, check the municipality's website (nearly all 351 cities and towns in the Commonwealth have websites that can be found through a search engine or the Massachusetts Municipal Association website), or stop in at your Town or City Hall.

### **Think Globally, Act Locally**

In Massachusetts, community design is largely planned and regulated on the local level. Each town has its own set of laws that governs land-use and basic site design. Zoning says what kinds of uses (e.g. residential, commercial, or industrial uses) can happen where in a community. It also regulates the basic dimensions of lots and buildings. Subdivision regulations set standards for how land can be divided and often include standards for roads, sidewalks, etc. Subdivision regulations set the character of new neighborhoods. Modifying these local laws can have a significant impact on how a community develops and thereby the health of its population.

Likewise, transportation improvement projects are often initiated and managed at the local level. Local advocacy can make a difference between whether a project happens or not.

When one wants to make a positive change in community design, it makes sense to act locally.

Regardless of who you are or what kind of a government you are functioning in, it is essential for you to understand your municipality's existing rules and regulations as well as the established processes for changing them. For an overview of land use regulations in Massachusetts, visit the Massachusetts Executive Office of Housing and Economic Development (EOHED) website at: <http://www.mass.gov/hed/community/planning/zoning-resources.html>

The public can be a powerful force in transforming a community and also in directing the kind of transformation desired. Encouraging as much public involvement as possible from all community

stakeholders will give many people a voice and build momentum for a healthier community. Ideas for change may come from children at a local elementary school who want to be able to ride their bikes to school, from older adults who cannot find a nice place to walk, or perhaps from parents who want healthier food served in school cafeterias. Regardless of who originates ideas to make your community healthier, they may need assistance in bringing ideas before the appropriate board or committee. An argument that always gets the municipality's attention is "this idea will save us money."

The information provided in this toolkit includes processes for ensuring that health is considered in municipal planning decisions. There are times however when pursuing the provided strategies may not be sufficient (for example when a community is facing a decision on a large proposed development or a significant change to municipal bylaws) and a more focused assessment of health impacts is warranted. Health Impact Assessment (HIA) is a tool for doing this. HIA is a "combination of procedures, methods, and tools by which a project, program, policy, or legislative proposal may be judged for its potential effects on the health of a population and the distribution of these effects within it".<sup>28</sup> HIAs have been gaining popularity in Massachusetts, and there are now several organizations with the expertise to complete HIAs. However, while HIA is an important tool, putting into practice the principles outlined in this toolkit mitigate the need for it. For more information on Health Impact Assessment, visit:

[www.mass.gov/healthycommunitydesign](http://www.mass.gov/healthycommunitydesign) and [www.humanimpact.org](http://www.humanimpact.org).

This toolkit is designed to be a part of the healthy community development process, and we look forward to hearing your suggestions on how to make it better.

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<sup>28</sup> WHO European Centre for Health Policy, eds. (1999). *Health Impact Assessment. Main concepts and suggested approach. Gothenburg Consensus Paper, December 1999*. Copenhagen: WHO Regional Office for Europe.

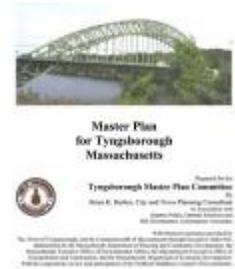
# Leverage Points

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The leverage points in this toolkit can be used to promote walking and biking, to protect water quality for recreational uses, and to improve local air quality.

## Community Plans

Community Plans set long-term goals and guide decision-making. The most widely used plans are Master Plans and Open Space and Recreation Plans.



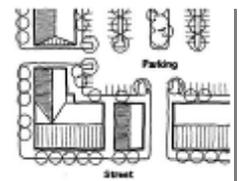
## Smart Growth Development

Smart Growth Development tools (including zoning regulations as well as incentives) promote Smart Growth, a comprehensive land use strategy that concentrates development around commercial centers (such as downtowns and village centers) and public infrastructure to create walkable communities, protect open space and farmland, revitalize downtowns, and provide more housing and transportation choices.



## Site Plan and Special Permit Review

Site Plan and Special Permit Review use established review criteria as the basis for requiring improvements to and approving development plans.



## Subdivision Regulations

Subdivision Regulations establish the characteristics of roads and other features of new neighborhoods.



## Road Design

Better road design standards encourage alternative forms of transportation, including more walking and biking. Complete Streets are designed to safely balance the needs of drivers, cyclists and pedestrians. Green Streets reduce the amount of polluted stormwater runoff that enters the storm drain system and flows to nearby water bodies.



### Walking, Biking and Transit Networks

Most vehicle trips are short (50 percent are within 3 miles of home<sup>29</sup>). Communities can promote walking, biking and transit use by establishing and maintaining interconnected sidewalk, multi-use path and bicycle lane networks.



### Stormwater Management

Pollution from stormwater runoff directly impacts surface water quality and whether it is safe to boat or swim in a given water body. Traditional approaches to stormwater management result in significant water pollution impacts. New approaches reduce water quality impacts by capturing and managing stormwater near to where it falls.



### Green and Fit Buildings

By designing buildings that take into consideration the health of people who use those buildings, everyday activities become healthier activities. Green buildings address energy efficiency, occupant health, stormwater management, urban heat island effects and other environmental issues. Better indoor air quality and greater exposure to sunlight (daylighting) improve occupant health. Fit buildings promote physical activity as part of the daily behavior of occupants.



### Municipal Policies and Programs

Municipalities must lead by example, and local policies and programs can have significant effects on community health. These tools range from policies to site municipal and school facilities in walkable locations to programs that install benches, water fountains, trees and bicycle racks throughout the community.



### Where should I start?

To identify which leverage points to begin with, the best starting place for using this toolkit is to meet with your local Planning Board/Department, Public Works Board/Department, and Health Board/Department. Much of the work ahead involves developing working relationships with these local representatives, as well as educating these representatives about how their area of jurisdiction relates to larger community health goals. In addition, these representatives will be able to help you formulate a plan and determine the best place to begin in your community.

<sup>29</sup> Federal Highway Administration. (2009) *National Household Travel Survey*. US Department of Transportation. Retrieved from: <http://www.fhwa.dot.gov/policyinformation/nhts.cfm> (via <http://www.bikeleague.org/content/national-household-travel-survey-short-trips-analysis>)

# Community Plans

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## Definitions

*Complete Streets* are roads that are designed for all modes of transit, including vehicles, public transportation, biking and walking, and people of all abilities. Design considerations include bike or bus lanes, road narrowing, sidewalks, crosswalks, and facilities such as covered bus stops or bicycle parking.

*Infill Developments* are projects in already developed areas that “fill in” vacant lots (e.g. between existing buildings). Infill most commonly happens in downtown areas and is designed to increase density to create a more walkable and more aesthetically uniform streetscape.

### *Master Plans and Community*

*Development Plans* are community-wide, action-oriented plans designed to achieve a shared community vision. A Master Plan establishes future goals in areas such as land use, transportation, housing and economic development.

*Smart Growth* refers to development that is concentrated in and around downtowns, village centers, transit stops, or other infrastructure that provides convenient access to goods and services without relying on use of automobiles. Smart Growth is characterized by mixed-use downtowns and neighborhoods, diverse housing options and increased walkability. This compact development pattern protects open space and farmland, revitalizes downtowns, supports affordable housing options, and provides more transportation choices by directing growth to locations where higher densities can be supported.

*Universal Design* incorporates the needs of everyone, including the older adults and people with disabilities, into a design to allow its use by the greatest number of people regardless of age or ability.



## Master Plan for Tyngsborough Massachusetts



Prepared for the  
**Tyngsborough Master Plan Committee**  
By  
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In Association with  
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With the cooperation, review and participation of the Northern Middlesex Council of Governments.

## Introduction

Because a Master Plan is a document that establishes a vision for the future, it can be a very powerful tool in shaping the future health of a community. A Master Plan can respond to changing demographics (e.g. increases in senior citizen populations with lower rates of automobile use), and can promote healthy community strategies such as protection or creation of open space, zoning regulations that increase walkability, and transportation network improvements. Healthy community principles can be incorporated throughout a Master Plan that is under development, or if a community's Master Plan is reasonably up to date, a standalone community health chapter can be appended to the existing Master Plan. However, it is preferable to include applicable healthy community principles in each chapter of a Master Plan.

Almost all municipalities have a Master Plan, but the frequency with which they are updated can vary widely. A Master Plan does not have to be updated all at once. Adopting a single chapter at a time can be a viable way to improve a plan. Depending on how the plan is organized, another option is to take a neighborhood by neighborhood approach.

An Open Space and Recreation Plan (OSRP) addresses preservation and development of open space, greenways, playgrounds and ball fields. The OSRP can provide guidance in protecting water supplies and open spaces, connecting different greenspaces to each other, or connecting trails and paths to create a more cohesive network. In addition to its planning purposes, a Commonwealth-approved OSRP makes a community eligible for grants from the Executive Office of Energy and Environmental Affairs (e.g. Land and Water Conservation Funds).

In addition to Master Plans and Open Space and Recreation Plans, there are a wide variety of additional plans that communities adopt, including greenway plans, bike and pedestrian plans, and plans that focus on a specific area of a city. Only Master Plans and OSRPs are included in the Community Plans Checklist below. Most if not all community planning processes have a large public outreach component. This provides advocates of particular issues with an opportunity to publically discuss and build support for their ideas within the community.

## Community Plans Checklist

### *Master Plan*

- Ensure that a health advocate serves on the Master Plan committee.
- Ensure that older adults are included on the Master Plan Committee.
- Require a public health component in each of the Master Plan chapters.
- Housing
  - Encourage siting of housing developments within walking distance of parks, schools, jobs, and shopping.
  - Establish zoning regulations that allow for a variety of housing types at densities that support walkable commercial services and transit.
  - Allow higher density development around transit stops.
  - Encourage affordable and senior housing projects to include access (by foot or transit) to public parks, fitness opportunities, and healthy food shopping.
- Transportation and Circulation
  - Promote development of interconnected bike lanes, multi-use paths and sidewalk networks.
  - Address sidewalk maintenance and snow clearing.
  - Ensure that different transit options connect to each other.
  - Plan for streets to be brought up to Complete Streets standards.
  - Assess the location of transit routes and stops.
  - Ensure universal design at transit stops.
  - Accommodate bikes on public transit.
  - Promote traffic calming and enhanced intersection design for pedestrian safety.
- Open Space and Recreation
  - Promote the development of interconnected pathway networks.
  - Develop recreational opportunities near underserved neighborhoods.
  - Acquire new public open spaces and maintain existing open spaces.
  - Create community gardens in parks.
- Education
  - Develop a Safe Routes to School program.
  - Site educational facilities centrally within walking distance of residential populations and transit options.
  - Close roads adjacent to schools to through-traffic during drop-off and pick-up times to increase safety for children who are walking and biking.

- Land Use
  - Revise zoning regulations to promote compact, walkable smart growth development.
  - Encourage the establishment of community gardens.
  - Allow/encourage infill, cluster and mixed-use development.
  - Reduce setbacks in zoning regulations to bring buildings closer to the street.
  - Leverage Agricultural Preservation Restrictions (APR) to protect farmland and local food sources.
  - Commercial development
    - Reduce off-street parking requirements and encourage on-street parking to facilitate smart growth and walkability.
    - Encourage integration of fitness opportunities for employees and customers.
- Economic Development
  - Encourage mixed-use developments over single-use commercial developments to increase density and pedestrian traffic.
  - Provide public transportation options to large commercial and industrial areas.
  - Enable and encourage commercial agriculture.
- Natural and Cultural Resources
  - Develop a walking or biking tour of cultural and historic sites.
- Services and Facilities
  - Locate or consolidate municipal facilities in town and city centers to increase walking and biking access.
- Include a Food/Food Systems Chapter
  - Leverage Agricultural Preservation Restrictions (APR) to protect farmland and local food sources.
  - Create community gardens.
  - Ensure universal access to healthy food.
  - Promote urban agriculture.
  - Establish community farmers markets.

### *Open Space and Recreation Plan (OSRP)*

- Require a public health advocate to serve on the OSRP committee.
- Require that older adults serve on the OSRP committee.
- Acquire conservation lands and develop hiking trails, focusing on efforts near existing open space and trails, as well as underserved neighborhoods and other residential populations.
- Develop new and improve existing parks and playgrounds, focusing on efforts near underserved neighborhoods and other residential populations.
  - Create community gardens in parks.
- Plan an interconnected system of accessible open spaces. Ensure that open spaces are connected to multiple modes of transportation and are easily accessed by all residents.
- Develop bike paths and greenways that connect to the larger community, and install bicycle parking facilities at open space locations and transit hubs.
- Build and maintain sidewalk networks, and ensure that they connect to the larger community, including community open spaces.
- Adopt the Community Preservation Act to help fund open space and recreation enhancements.
- Protect areas of the community that are important to flood and stormwater management.

## Resources

*Healthy Community Design Toolkit. General Plan Updates.* (2012). Healthy Community Design Collaborative. Retrieved from:

<http://www.azplanning.org/2012/HealthyCommunityDesignToolkit090112.pdf>

*Healthy Parks and Playgrounds.* (2011). Cambridge Department of Community Development.

Retrieved from: <http://www.cambridgema.gov/CDD/parks/osplanning/healthy.aspx>

*Open Space and Recreation Planner's Workbook.* (2008). Division of Conservation Services.

Executive Office of Energy and Environmental Affairs. Commonwealth of Massachusetts.

Retrieved from: <http://www.mass.gov/eea/docs/eea/dcs/osrp-workbook08.pdf>

*The Basic Elements of a Master Plan.* (n.d.). Pioneer Valley Planning Commission. Retrieved from:

<http://www.pvpc.org/granby/docs/basic%20elements.pdf>

# Smart Growth Development

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## Definitions

*Accessory Apartments*, sometimes called mother-in-law units, are smaller apartments located on single-family residential properties (e.g. an apartment over a garage or in a converted garage). Accessory Apartments can allow older residents to live near their family members or can offer low-cost housing options that provide supplementary income to homeowners. When located near existing centers (downtowns, village centers, etc.), new accessory apartments provide walkable access to a variety of goods, services and recreational opportunities.

*Chapter 40R Smart Growth Overlay District* is a zoning district superimposed over existing underlying zoning districts that allows for higher density development. Within a 40R District, a developer has a choice of undertaking a higher density development in accordance with the requirements of the 40R Overlay District, or may undertake a lower density development in accordance with the requirements of the underlying district. Chapter 40R Districts feature increased residential densities, may allow for mixed-uses, and may establish design standards. 40R Districts must be located near transit stations or “areas of concentrated development” such as downtowns, and must meet specific state criteria regarding allowed housing densities and required percentage of affordable housing. Communities that establish a 40R District receive a one-time incentive payment from the state based on the number of additional (“bonus”) residential units permitted by-right (beyond the number of units allowed by the underlying zoning districts), and also receive bonus payments upon the issuance an occupancy permit for each “bonus” unit. Compact Neighborhood Zoning (CNZ) is a new tool similar to 40R that features different residential density and affordability requirements.

*Form-Based Code* is a relatively new type of zoning code that places an emphasis on building, site and community design over use regulations. In form-based codes, the physical form of the building (including height, setbacks and design standards) is established, while allowed uses are not as restricted as they are in standard zoning. Compared to traditional zoning codes, form-based codes set more specific requirements for the physical design characteristics of development, and are similar in some ways to a regulatory set of design standards. Form-based

code can be combined with standard “Euclidian” or used-based zoning within several hybrid forms. Form-based codes are more illustrative than traditional zoning codes and are particularly appealing for use in special character districts (e.g. downtowns, historic districts and commercial corridors).

*Infill* is new construction or redevelopment that “fills in” empty lots or adds units or uses in areas that are already developed. For example, a new infill building would be constructed in an empty lot between existing buildings. Infill most commonly occurs in and near downtown areas and is designed to increase density in order to create a more walkable, vibrant and aesthetically pleasing community. Infill replicates historic city, town and village development patterns and is an important tool for concentrating development in walkable neighborhoods rather than sprawling into undeveloped areas.

*Mixed-Use Zoning Districts* allow more than one type of use on a single parcel. This typically refers to zoning that allows commercial uses on the first and sometimes second floors of a building, with the remaining floors above the commercial space zoned for residential uses. A mixed-use zoning district is not necessarily the same as a mixed-use district, which is a broader concept describing an area with a mix of complimentary commercial and residential uses where a variety of goods and services are available. Mixed-use districts can be zoned with a single Mixed-use zoning district, or may include a variety of different zoning districts. Mixed-use districts are also good candidates for form-based code.

*Smart Growth* refers to development that is concentrated in and around downtowns, village centers, transit stops, or other infrastructure that provides convenient access to goods and services without relying on use of automobiles. Smart Growth is characterized by mixed-use downtowns and neighborhoods, diverse housing options and increased walkability. This compact development pattern protects open space and farmland, revitalizes downtowns, supports affordable housing options, and provides more transportation choices by directing growth to locations where higher densities can be supported.

*Traditional Neighborhood Development (TND)* is characterized by homes on small lots with small setbacks. These developments, which can consist of both single family and multifamily homes, are modeled after older (traditional) neighborhoods near downtowns and village centers that have narrow streets, make use of on-street parking, and tend to have a more diverse mix of unit sizes and higher residential densities than newer neighborhoods.

*Transit Orientated Development (TOD)* is a mix of uses clustered within walking distance (usually ¼ mile) of a transit station with a relatively high frequency of service. Successful TOD districts typically feature high quality pedestrian and bicycle networks, reduced parking requirements for automobiles, and public amenities in order to encourage compact multifamily homes and varied businesses.

*Urban Sprawl* is low density, auto-oriented development that segregates residential, commercial and other uses. It is characterized by low density housing subdivisions, strip malls and shopping malls.

## **Introduction**

Smart growth, sometimes called compact growth, is a comprehensive land use strategy that concentrates development in and near commercial centers (downtowns, village centers, etc.) and infrastructure in order to create more walkable communities, protect open space and farmland, revitalize and beautify downtowns and nearby neighborhoods, and provide more housing and transportation choices. By increasing development densities in centralized locations and locating residential, commercial and civic uses within proximity of each other, smart growth increases the number of homes and destinations in walking distance, as well as associated pedestrian activity. Destinations can include work, shopping, parks, community gardens, municipal services and public transit. Higher residential densities and greater interaction among different uses enhances business vitality, supporting a greater variety of commercial services and employment opportunities within walking distances of each other and nearby neighborhoods.

Mixed-use development on a downtown street (e.g. ground floor commercial uses with residential uses above) is a good example of smart growth, such as on Newbury Street in Boston, State Street in Newburyport, or the Queset Commons development in Easton. Traditional neighborhoods within walking distance of mixed-use neighborhood or town centers are also a good example of smart growth. In rural communities, smart growth zoning restricts strip commercial development, allows residential units above commercial uses in the village center, and allows traditional neighborhoods near the village center. All of these examples encourage walking (for example, from home to a café, from shop to shop, from home to work, etc.) and lead to a healthier community. In addition, by concentrating development in areas where public infrastructure can support higher densities, urban sprawl development patterns are avoided. This preserves open space, farmland, critical environmental resources and valued rural landscapes.

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<sup>30</sup> Growing Smarter, Living Healthier: A Guide to Smart Growth and Active Aging. (2009). The Child and Aging Health Division, U.S. Environmental Protection Agency.

Smart growth zoning tools make communities more walkable by increasing allowed development densities and broadening the mix of compatible uses permitted in an area. These zoning tools allow for smaller lot sizes, mixed-use development and multifamily housing (e.g. duplexes, rowhomes or larger multifamily developments). Infill development, new neighborhood centers, Transit Oriented Development (TOD), cluster or Open Space Residential Developments, accessory apartments, urban parks and community gardens, and mixed-use districts are all examples of smart growth. A Chapter 40R Smart Growth Overlay District is a specific zoning tool enabled through state legislation (MA G.L. Ch. 40R) that was developed to promote housing production and smart growth development. The commonwealth provides incentive funds for municipalities to implement 40R Smart Growth Districts, which must meet specific housing density and affordable housing requirements. Compact Neighborhood Zoning (CNZ) is a new tool similar to 40R that features different residential density and affordability requirements.

**Smart Growth principles include:**

1. Mix land use;
2. Take advantage of compact building design;
3. Create a range of housing opportunities and choices;
4. Create walkable neighborhoods;
5. Foster distinctive, attractive neighborhoods with a sense of place;
6. Preserve open space, farmland, natural beauty, and critical resources;
7. Strengthen and direct development towards existing communities;
8. Provide a variety of transportation choices;
9. Make development decisions predictable, fair, and cost effective; and
10. Encourage community collaboration in development decisions.<sup>31</sup>

Even in communities that are largely car dependent, smart growth development can create a more walkable community by enabling drivers to “park once” in a single district in order to accomplish multiple tasks on foot. Making just one stop to accomplish multiple tasks improves health and reduces environmental impacts. Over time, smart growth retrofits (sometimes called suburban retrofits) can help to make all communities and neighborhoods more walkable and less car dependent.

## Smart Growth Development Checklist

- Assess how well your zoning regulations promote smart growth, walkability, healthy food access and physical activity.<sup>31</sup>
- Revise zoning maps and text to establish regulations that provide for diverse housing options, retail, services and employment within walkable distances. To increase walkability, amended zoning regulations should allow for increased density near downtown areas (e.g. by reducing minimum lot sizes and/or required lot area per unit) and should enable new infill development. Zoning map changes can be used to promote mixed-use neighborhoods with housing, schools and shopping within walking distances.
- Establish mixed-use zoning districts that allow residential units above commercial uses in downtown, village center and other appropriate locations.
- Reduce off-street parking requirements in order to allow more space in central locations to be utilized for housing, retail and other active uses (increasing development densities), and to reduce the negative impacts associated with an oversupply of off-street parking (aesthetic impacts, dead spaces in central commercial areas, sprawl and increased driving impacts, reduced walkability, increased stormwater pollution, etc.).<sup>32</sup>
  - Reduce off-street parking requirements and the number of automobile curb cuts allowed.
  - In downtowns and village centers, shift the burden of providing parking from private property owners to the municipality. Allow payments in lieu of meeting off-street parking requirements that can go into a municipal fund for public parking and transit improvements.
  - Allow the Planning Board to reduce off-street parking requirements when reduced needs are demonstrated through shared parking arrangements, mixed-uses with different peak parking times, demand management measures, etc.
  - Allow developers to set aside some portion of the space required for parking as green space that can be developed into parking later if needed.
  - Require parking to be located behind (or to the side) of buildings where appropriate, with the main entrance in the front and near the sidewalk for better pedestrian access and a more aesthetically pleasing streetscape.
- Adopt inverse zoning regulations such as maximum lot sizes, minimum building heights, and maximum off-street parking spaces to increase development densities.
- Allow and promote community gardens by amending the community's zoning land use tables, establishing a community garden ordinance, and encouraging integration of community gardens into new development (e.g. through Subdivision Regulations and Site Plan and Special Permit Review).<sup>33</sup>

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<sup>31</sup> See A Checklist for Downtown Zoning in Appendix in addition to Holyoke Food and Fitness Review in Resources.

<sup>32</sup> Also see Road Design section.

<sup>33</sup> See Subdivision Regulations section, as well as Site Plan and Special Permit Review section.

- Establish Transportation Oriented Development (TOD) zoning districts that create new housing within walking distance of public transit and provide walking/transit access to shopping, jobs, schools and other community resources.
- Allow accessory dwellings units. When located near existing centers (downtowns, village centers, etc.), new accessory apartments provide walkable access to a variety of goods, services and recreational opportunities. Accessory units can also create low-cost housing options that provide supplementary income to homeowners.
- Allow Cluster Residential Developments (also known as Open Space Residential Developments) that preserve open space and provide hiking and other recreational opportunities in neighborhoods.
- Utilize Chapter 40R Smart Growth or Compact Neighborhood Zoning Overlay Districts to increase residential densities and allow mixed-use development near shopping and public transit.
- Establish a Traditional Neighborhood Development (TND) Zoning Overlay District to allow new neighborhood developments that are modeled after older neighborhoods characterized by walkability, a diverse mix of housing options, and higher residential densities.
- Undertake a comprehensive Smart Growth Zoning Overhaul, reviewing and revising the following as needed to implement smart growth goals: Zoning Map, Table of Land Uses, Table of Dimensional Standards, Off-Street Parking Regulations, Site Development Standards, Site Plan and Special Permit Review, Form-Based Codes (in special districts or for entire municipality)
- Offer tax incentives (or, for nonprofit entities, lower payments in lieu of taxes) to new private educational facilities and other private institutional uses to site their facilities in walkable locations.
- Use tax incentives such as District Improvement Financing (DIF) to encourage private investment in appropriate locations.

## Resources

*Accessory Apartment Fact Sheet and Model Bylaw.* (2013). Pioneer Valley Planning Commission. Retrieved from:

[http://www.pvpc.org/val\\_vision/html/toolbox/PDFs/building%20blocks/Accessory%20Apartment\\_s.doc.pdf](http://www.pvpc.org/val_vision/html/toolbox/PDFs/building%20blocks/Accessory%20Apartment_s.doc.pdf)

*Chapter 40R (and Chapter 40S).* (n.d.). Executive Office of Energy and Environmental Affairs. State of Massachusetts. Retrieved from:

[http://www.mass.gov/envir/smart\\_growth\\_toolkit/pages/mod-40R.html](http://www.mass.gov/envir/smart_growth_toolkit/pages/mod-40R.html)

*Chapter 40R - Smart Growth Zoning Districts Fact Sheet and Model Bylaw.* (2013). Pioneer Valley Planning Commission. Retrieved from:

[http://www.pvpc.org/val\\_vision/html/toolbox/PDFs/building%20blocks/Smart%20Growth%20Zoning%20Districts%20%28Chapter%2040R%29.pdf](http://www.pvpc.org/val_vision/html/toolbox/PDFs/building%20blocks/Smart%20Growth%20Zoning%20Districts%20%28Chapter%2040R%29.pdf)

*Compact Neighborhood Zoning.* (2013). Massachusetts Executive Office of Housing and Economic Development (EOHED). Retrieved from:

<http://www.mass.gov/hed/community/planning/compact-neighborhoods.html>

*City of Fitchburg: Health Equity-Related Initiatives Zoning and Regulatory Analysis Report Draft.* (2013). Montachusett Regional Planning Commission. Retrieved from:

[http://www.mrpc.org/sites/montachusettRPC/files/file/file/city\\_of\\_fitchburg\\_health\\_equity\\_report\\_-\\_draft.pdf](http://www.mrpc.org/sites/montachusettRPC/files/file/file/city_of_fitchburg_health_equity_report_-_draft.pdf)

*Community Gardens Ordinance.* (2012). Springfield, Massachusetts. Retrieved from:

[http://www3.springfield-ma.gov/planning/fileadmin/Planning\\_files/Community\\_Gardens2-FINAL\\_2\\_x.pdf](http://www3.springfield-ma.gov/planning/fileadmin/Planning_files/Community_Gardens2-FINAL_2_x.pdf)

*Conservation Development Fact Sheet and Model Bylaw.* (2013). Pioneer Valley Planning Commission. Retrieved from:

[http://www.pvpc.org/val\\_vision/html/toolbox/PDFs/building%20blocks/Conservation%20Development.pdf](http://www.pvpc.org/val_vision/html/toolbox/PDFs/building%20blocks/Conservation%20Development.pdf)

*District Improvement Financing and Tax Increment Financing Fact Sheet, and Model Tax Increment Financing Agreement.* (2013). Pioneer Valley Planning Commission. Retrieved from:

[http://www.pvpc.org/val\\_vision/html/toolbox/PDFs/building%20blocks/Tax%20Incentive%20Programs.pdf](http://www.pvpc.org/val_vision/html/toolbox/PDFs/building%20blocks/Tax%20Incentive%20Programs.pdf)

*District Improvement Financing (DIF)/Tax Increment Financing (TIF).* (n.d.). Executive Office of Energy and Environmental Affairs. State of Massachusetts. Retrieved from:

[http://www.mass.gov/envir/smart\\_growth\\_toolkit/pages/mod-diftif.html](http://www.mass.gov/envir/smart_growth_toolkit/pages/mod-diftif.html)

*Downtown Zoning Repair.* (2012). Pioneer Valley Planning Commission. Retrieved from:  
<http://www.pvpc.org/resources/landuse/dwntow-zone-repair.pdf>

*Holyoke Food and Fitness Regulatory Analysis.* (2009). Pioneer Valley Planning Commission. Retrieved from:  
[http://www.mphaweb.org/documents/HolyokeFoodFitnessRegulatoryReviewFinal\\_012309.pdf](http://www.mphaweb.org/documents/HolyokeFoodFitnessRegulatoryReviewFinal_012309.pdf)

*Mixed-Use Village Centers Fact Sheet and Model Bylaw.* (2013). Pioneer Valley Planning Commission. Retrieved from:  
[http://www.pvpc.org/val\\_vision/html/toolbox/PDFs/building%20blocks/Mixed%20Use%20Village%20Center.pdf](http://www.pvpc.org/val_vision/html/toolbox/PDFs/building%20blocks/Mixed%20Use%20Village%20Center.pdf)

*Model Bylaw for Accessory Dwelling Units.* (n.d.). Executive Office of Energy and Environmental Affairs. State of Massachusetts. Retrieved from:  
[http://www.mass.gov/envir/smart\\_growth\\_toolkit/bylaws/ADU-Bylaw.pdf](http://www.mass.gov/envir/smart_growth_toolkit/bylaws/ADU-Bylaw.pdf)

*Model Infill Development Overlay District Bylaw.* (2013). Pioneer Valley Planning Commission. Retrieved from:  
[http://www.pvpc.org/val\\_vision/html/toolbox/PDFs/building%20blocks/Infill%20Development.pdf](http://www.pvpc.org/val_vision/html/toolbox/PDFs/building%20blocks/Infill%20Development.pdf)

*Model Mixed Use Development Bylaw.* (2013). Pioneer Valley Planning Commission. Retrieved from:  
[http://www.pvpc.org/val\\_vision/html/toolbox/PDFs/building%20blocks/Mixed%20Use%20Development.pdf](http://www.pvpc.org/val_vision/html/toolbox/PDFs/building%20blocks/Mixed%20Use%20Development.pdf)

*Model Open Space Design/Natural Resource Protection Zoning.* (n.d.). Executive Office of Energy and Environmental Affairs. State of Massachusetts. Retrieved from:  
[http://www.mass.gov/envir/smart\\_growth\\_toolkit/bylaws/model-osd-nrpz-zoning-final.pdf](http://www.mass.gov/envir/smart_growth_toolkit/bylaws/model-osd-nrpz-zoning-final.pdf)

*Neighborhood-Scale Planning Tools to Create Active, Livable Communities.* (n.d.). Local Government Commission. Retrieved from:  
[http://www.lgc.org/freepub/docs/community\\_design/fact\\_sheets/neighborhood\\_planning.pdf](http://www.lgc.org/freepub/docs/community_design/fact_sheets/neighborhood_planning.pdf)

*Open Space Residential (Cluster) Development Fact Sheet and Model Bylaw.* (2013). Pioneer Valley Planning Commission. Retrieved from:  
[http://www.pvpc.org/val\\_vision/html/toolbox/PDFs/building%20blocks/Open%20Space%20Residential%20Development.pdf](http://www.pvpc.org/val_vision/html/toolbox/PDFs/building%20blocks/Open%20Space%20Residential%20Development.pdf)

*Planned Unit Development Fact Sheet and Bylaw.* (2013). Pioneer Valley Planning Commission. Retrieved from:  
[http://www.pvpc.org/val\\_vision/html/toolbox/PDFs/building%20blocks/Planned%20Unit%20Development.pdf](http://www.pvpc.org/val_vision/html/toolbox/PDFs/building%20blocks/Planned%20Unit%20Development.pdf)

*Shared Parking Fact Sheet and Model Bylaw.* (2013). Pioneer Valley Planning Commission. Retrieved from: [http://www.pvpc.org/val\\_vision/html/toolbox/PDFs/building%20blocks/Parking-Shared%20Parking.pdf](http://www.pvpc.org/val_vision/html/toolbox/PDFs/building%20blocks/Parking-Shared%20Parking.pdf)

*Shaping the Future of Your Community – A Citizen’s Guide to Involvement in Community Planning, Land Protection, and Project Review.* (2007). Mass Audubon. Retrieved from: <http://www.massaudubon.org/shapingthefuture/shapingtoc.php>

*Smart Growth/Smart Energy Toolkit.* (n.d.). Executive Office of Energy and Environmental Affairs. State of Massachusetts. Retrieved from: [http://www.mass.gov/envir/smart\\_growth\\_toolkit/index.html](http://www.mass.gov/envir/smart_growth_toolkit/index.html)

*Traditional Neighborhood Development.* (n.d.). Executive Office of Energy and Environmental Affairs. State of Massachusetts. Retrieved from: [http://www.mass.gov/envir/smart\\_growth\\_toolkit/pages/mod-tnd.html](http://www.mass.gov/envir/smart_growth_toolkit/pages/mod-tnd.html)

*Traditional Neighborhood Development Fact Sheet and Model Bylaw and Subdivision Regulations.* (2013). Pioneer Valley Planning Commission. Retrieved from: [http://www.pvpc.org/val\\_vision/html/toolbox/PDFs/building%20blocks/Traditional%20Neighborhood%20Development.doc.pdf](http://www.pvpc.org/val_vision/html/toolbox/PDFs/building%20blocks/Traditional%20Neighborhood%20Development.doc.pdf)

*Transit Oriented Development (TOD) Fact Sheet.* (2013). Pioneer Valley Planning Commission. Retrieved from: [http://www.pvpc.org/val\\_vision/html/toolbox/PDFs/building%20blocks/Transit%20Oriented%20Development.doc.pdf](http://www.pvpc.org/val_vision/html/toolbox/PDFs/building%20blocks/Transit%20Oriented%20Development.doc.pdf)

*Walpole Zoning Bylaw. Section 10D. Open Space Residential Development (OSRD).* (2010). p.69. Retrieved from: [http://www.walpole-ma.gov/sites/walpolema/files/file/file/zoning\\_bylaw\\_per2010\\_stm.pdf](http://www.walpole-ma.gov/sites/walpolema/files/file/file/zoning_bylaw_per2010_stm.pdf)

*Zoning Overhaul Fact Sheet.* (2013). Pioneer Valley Planning Commission. Retrieved from: [http://www.pvpc.org/val\\_vision/html/toolbox/PDFs/building%20blocks/Zoning%20Overhaul.pdf](http://www.pvpc.org/val_vision/html/toolbox/PDFs/building%20blocks/Zoning%20Overhaul.pdf)

# Focus on Aging: Housing for Healthy Aging

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## Introduction

Just as is there is no one way that people age, the housing needs of older adults are diverse. Older adults choose to live in housing of all shapes and sizes and levels of quality: single-family homes, two-family homes, apartments, congregate housing. They live in traditional neighborhoods, condos, retirement communities, nursing homes, gated communities and subsidized housing. They in a wide range of

communities: 26% of Americans over 50 live in small towns, 23% live in suburbs, 19% live out in the country, 19% live in urban areas, and 12% live in rural villages.<sup>34</sup>

The housing needs of older adults are characterized by two opposing trends. Older adults express an overwhelming preference for aging-in-place, preferring to stay in their homes or community, and that preference grows stronger as they grow older.<sup>35</sup> Older adults are less likely to move than other age groups, and when they do move most stay in the same county.<sup>36</sup> On the other hand, people's housing needs often change as they age—driven primarily by economic, physical, and family and lifestyle changes. While the stereotype is that older adults have declining incomes and shrinking families and therefore downsize to smaller units, the changes associated with aging can have actually have unpredictable results. A more well-off older person may have the resources to downsize to a more desirable smaller unit, while sometimes lower-income older adults choose to stay in their existing housing—either because they cannot afford to re-enter the housing market, or because their grown children and their families continue to live with them. Likewise, regarding physical changes associated with aging, the stereotypes do not always hold. Some older adults want to change housing because of physical impairments. Doorways or hallways may not be wide enough to accommodate mobility devices. Their home may lack an accessible bathroom, or have a front door that requires too many steps. It is important to note that while home modification

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<sup>34</sup> *Beyond 50.05: A Report to the Nation on Livable Communities: Creating Environments for Successful Aging* (2005). AARP. Retrieved from: [http://assets.aarp.org/rgcenter/il/beyond\\_50\\_communities.pdf](http://assets.aarp.org/rgcenter/il/beyond_50_communities.pdf)

<sup>35</sup> *Beyond 50.05: A Report to the Nation on Livable Communities: Creating Environments for Successful Aging* (2005). AARP. Retrieved from: [http://assets.aarp.org/rgcenter/il/beyond\\_50\\_communities.pdf](http://assets.aarp.org/rgcenter/il/beyond_50_communities.pdf)

<sup>36</sup> Durrett, Charles. *The Senior Cohousing Handbook: a Community Approach to Independent Living, 2<sup>nd</sup> Edition*. (2009). New Society Publishers.

programs exist, many older adults are not aware of them, or cannot access them effectively.<sup>37</sup> In Massachusetts Aging Services Access Points (ASAPs) in communities, as well as Councils on Aging and Senior Centers are useful resources for learning about such programs.

In contrast to older adults who find their homes need modification as they age, some older adults find that their house is not physically challenging enough. It may be located where one cannot walk to goods and services, or it may not provide access to active recreation opportunities like golf, a swimming pool, or walking trails. Family and lifestyle changes can also render an older person's home not a good fit anymore. A rural house that suited an aging couple just fine for 50 years may become a scene of isolation when one spouse dies. A retiree who settled close to the freeway for a shorter commute may choose to relocate closer to the center of town so she can be closer to volunteer and social opportunities. Or a married couple may have one member who needs to move to a care facility and their spouse may choose to move near the care facility to facilitate more frequent visits.

Though older adults want and need to live in a wide variety of circumstances, it is generally acknowledged that in many communities the existing housing stock is not diverse enough to meet their needs. The inherent conflict between the desire to stay in a familiar home and community, and the need to change can be very stressful for older adults. The stress is exacerbated when the housing stock in a person's community does not meet their needs: either because housing with desirable features is unavailable or unaffordable. In 2012, 40% of older households (65+) had significant housing challenges.<sup>38</sup> We do our older adults a disservice by not designing communities with diverse housing options that can enable them to remain within their community of choice throughout the continuum of life. Instead, we should be striving for the ultimate goal of aging in place "achieving true choice in housing—the ability to live wherever we want, regardless of age or ability"<sup>39</sup>

So what steps can you take to steer your community toward housing that better meets the needs of older adults? The first step is for a community to inventory its existing housing and the housing needs of its population (including older adults). You can find more information about conducting a housing needs assessment at:

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<sup>37</sup> PVPC. Focus group results, Spring 2014.

<sup>38</sup> *Older Americans, 2012: Key Indicators of Well-Being* (2012). Federal Interagency Forum on Aging-Related Statistics (Forum)

<sup>39</sup> Jenni Chin Hansen and Andrew Scharlach. *Community Services* in Henry Cisneros, Margaret Dyer-Chamberlain, Jane Hickie (Eds). *Independent for Life: Homes and Neighborhoods for an Aging America*. (2012). Austin: University of Texas Press.

[http://www.housingpolicy.org//toolbox/strategy/policies/housing\\_needs\\_MA.html](http://www.housingpolicy.org//toolbox/strategy/policies/housing_needs_MA.html).

At the same time as one assesses housing needs, it is useful to take a close look at the physical layout of your community. Knowing the broad land use pattern of your community (is it a small town? Is it rural? Is it urban?), can help one understand what kinds of interventions in the built environment to prioritize. For example, in an urban place, identifying naturally occurring retirement communities (NORCs) and improving services to them may be the first step. In a small town, facilitating the development of diverse housing types within walking distance of essential goods and services might be important. In a rural village, the important step might be to allow accessory apartments to help older adults afford to remain in their homes, or to enable them to build accessible second units while renting out the “main house.” In rural areas, innovative forms of housing development, like cohousing or cottage housing, can foster a sense of community for older adults, while minimizing development impacts on farmland and forestland.

Once a community has a broad understanding of what kind of housing it needs, and how it can fit into the existing land use pattern, it is time to explore whether the community’s existing regulations, policies and programs are helping or hindering development of desirable housing.

## **Key Leverage Points**

### **Provisions about mixed-use development (zoning)**

One of the defining features of community design since the 1950’s has been separation of different kinds of land uses into different parts of a community—housing goes in one part of the community, commercial uses go in a central business district or along main road, industrial uses go in the industrial park, etc. This separation of uses is required by many zoning codes in Massachusetts. It has resulted in a fragmented landscape in which housing is far from the jobs, stores, and health clinics that residents frequent. The separation of uses goes hand-in-hand with auto-dependence, because the distance between home and destination often is simply too far to walk, bike, or travel in a wheelchair conveniently. In addition the separation of uses has often been accompanied by road planning that prioritizes maximal speed and convenience for cars to the detriment of pedestrians and bicyclists<sup>40</sup>. For example, commercial strips may not have sidewalks or crosswalks, or may have excessively long blocks. For seniors, whose travel radius often shrinks and for whom driving can become more difficult, the separation of uses and associated transportation system can be particularly challenging. It can make it difficult to carry out daily activities like shopping, or visiting the doctor. In addition, the separation of uses makes caring for older adults in their homes more challenging: care givers spend more time driving and less time caring. Zoning codes can be revised to encourage mixed-use development. This is one of the crucial steps for redesigning communities in which older adults (and everyone else) can make

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<sup>40</sup> For more on this topic, see the Transportation section below and the “Road Design” chapter.

the healthy choice to bike, walk (with or without a walker or cane), use a wheelchair or use another mobility assistive device to get to basic goods and services.<sup>41</sup>

### **Provisions about house-sharing (zoning)**

Some older adults want to share housing with unrelated adults, but find that their local zoning prevents it. An older person may want to: rent out rooms in their house to get some extra income; barter housing for help with daily chores, or just share daily life with others. Local zoning codes sometimes restrict house-sharing. This is often accomplished by limiting housing units to one family per unit and then defining a “family” as not more than a certain number of unrelated adults. Contact your local planning department, planning board, or zoning enforcement officer to see if your community’s zoning restricts house sharing.

### **Provisions about housing other than single-family (zoning)**

Single-family houses are generally the most expensive form of housing, require the most maintenance, have the highest utility expenses, and can be the most isolating. Recognizing this, some older adults want to move into an apartment in their home community, but many find that there are no apartments available. This can be the result of market forces, but it is also often the result of local zoning. Many zoning codes significantly limit—or even outlaw—housing other than single-family houses. A community’s zoning code may simply not allow two-family, three-family, or multi-family housing. This has disproportionate effects on older adults since 25% of those over age 55 live in multifamily housing, occupying 60% of all multifamily housing.<sup>42</sup> It may limit these unit-types to locations that are not desirable or economically feasible. Zoning codes sometimes steer development toward single-family housing in more subtle ways, including requiring large lots, having excessive parking requirements, limiting allowed building heights, or preventing the development of more than unit per lot (which restricts condo development). Zoning barriers to two-family, three-family and multi-family housing can severely limit the housing options available to older adults and can force older adults into choosing between staying in unsuitable housing so that they can maintain their social network and life patterns, or moving elsewhere and sacrificing social connections for housing that meets their size or cost needs. Review your community’s zoning code to see where your community allows housing other than single-family dwellings, and to understand where you can make the most efficient and effective changes to accommodate older adults who desire to stay in their homes. Usually this information can be found in the “table of uses” or “permitted uses table.”

### **Provisions about accessory dwelling units (zoning)**

Accessory dwelling units, sometimes called in-law apartments or granny-flats, are secondary dwelling units that are added to an existing house. The accessory dwelling unit may be in a converted garage, or in an underutilized wing of a house. Accessory dwelling units can be used in

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<sup>41</sup> For more on this topic, see the Smart Growth Development Chapter.

<sup>42</sup> Hipolito Roldan. *Multifamily Housing* in Henry Cisneros, Margaret Dyer-Chamberlain, Jane Hickie (Eds). *Independent for Life: Homes and Neighborhoods for an Aging America*. (2012). Austin: University of Texas Press.

several ways to provide better housing options for older adults. Adult children may develop an accessory dwelling unit to house their parents. Or an older person may develop an accessory dwelling unit to rent out for extra income. Sometimes an older person builds the accessory unit for himself or his spouse. Many zoning codes do not allow accessory dwelling units. Others limit where they can be built by requiring excessive large lot sizes or setbacks that do not fit the historical pattern of development in a community, or by preventing the conversion of existing non-conforming structures into accessory dwelling units (many garages and carriage houses in older communities predate zoning codes and are therefore closer to lot lines than current zoning allows). When implemented effectively, bylaws allowing accessory dwelling unit can have a significant effect. Santa Cruz, California has one of the nation's most developed accessory dwelling unit programs. It results in the creation of 40-50 ADUs.<sup>43</sup>

### **Provisions about innovative housing types (zoning and subdivision regulations)**

There are several unusual forms of housing development that are particularly suited to older adults. **Cohousing** is a method of development in which a group of people gets together to act as the developer for a housing community. Typically, cohousing groups attempt to reduce the cost of new house construction by eliminating the usual developer's profit margin, building units that are smaller than typical for their market. Smaller units are often achieved by sharing certain spaces amongst all housing units. For example, there may be a shared guestroom in the cohousing development, rather than each unit having its own guestroom. Cohousing often has a common green space, a common house, and keeps cars on the outside of the development with pedestrian only paths on the interior. All of these design features, create a sociable and safe environment for people of all ages. Furthermore, because a cohousing community's development and management is done by the residents, cohousing communities often develop a unique culture and sense of community that residents say enrich their lives. The social aspect of cohousing is particularly beneficial for older adults and elder cohousing developments are a growing trend with documented positive emotional impacts for older adults. Communities can promote cohousing by allowing "flexible development," sometimes known as cluster development, open space residential development, or natural resource protection zoning.<sup>44</sup> In addition, they can add cohousing as an allowed use in their zoning regulations, including explicitly allowing common buildings for residential use including shared home office and workshop space. Finally, communities can review their subdivision regulations to ensure that they do not erect roadblocks to the compact development patterns typically associated with cohousing.

Cottage housing is another innovative form of housing development that is particularly suited to older adults. A cottage housing development, sometimes called a pocket neighborhood, typically

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<sup>43</sup> Growing Smarter, Living Healthier: A Guide to Smart Growth and Active Aging. (2009). The Child and Aging Health Division, U.S. Environmental Protection Agency.

<sup>44</sup> Natural resource protection zoning is a recently developed zoning technique designed for rural and suburban edge locations. It was created to improve conservation outcomes for high priority land, while also allowing for predictable development of housing at appropriate neighborhood densities.

takes an in-town lot that would normally be developed for a limited number of large single family houses, and instead develops a larger number of small cottage units (under 1000 sq ft) around a shared green. Cottage housing is like cohousing, except that it is usually not initiated and developed by the future occupants. Also, the size of the housing units and the total developed parcel are typically smaller. Cottage housing is often targeted at a lower cost than typical single family housing development in the same area. Local zoning and subdivision regulations can be modified to encourage cottage housing. One way to facilitate cottage housing is for zoning to allow “multiple units per lot” in certain districts. This enables an applicant to avoid a costly subdivision permitting process and thereby promotes cohousing, cottage housing, and condos of all styles. If a community wants to target cottage housing while prohibiting other similar forms of development, they can establish a use category in zoning for cottage housing with an associated definition that distinguishes cottage housing from other forms of development (likely establishing benchmarks for parcel size, unit size, minimum and maximum densities, and provision of shared outdoor space). Cottage housing can be allowed “by-right”, but because cottage housing is typically located in existing neighborhoods but is intentionally different from the existing pattern of development, communities often require some level of review to ensure the cottage housing “fits in.” The local zoning may specify that cottage housing requires “site plan review” a process through which a reviewing board evaluates a proposed development’s lot layout (site plan) and can ask for modifications to the plan to ensure that the development meets the community’s goals. Or a community may require a “special permit” for cottage housing. Special permits are discretionary zoning permits which are more involved and costly for developers—especially since they carry the possibility that the application may be denied. In addition, zoning dimensional requirements, and subdivision regulations standards can be modified to facilitate cottage housing.

### **Provisions about senior housing (zoning)**

Though less than 5% of older adults live in “senior housing”<sup>45</sup> which includes continuing care communities, assisted living facilities, nursing homes, and other retirement communities, senior housing does meet important needs of diverse older populations. Zoning can, and often does, establish specialized use categories for various kind of senior housing. This enables communities to regulate where senior housing can go, and its basic lot characteristics. One of the challenges of senior housing is that it often requires large parcels which are often only available only in “greenfield” locations (undeveloped farm and forest land). Many communities want to preserve their existing undeveloped land. Furthermore, greenfield locations are often outside of existing neighborhoods and far from existing commercial center. Their location can force residents of the senior housing into a car dependent lifestyle and/or isolate them from the broader community. Communities can review site plan and subdivision regulations to ensure that senior housing will provide safe access and internal circulation for older adults and staff, and appropriate gathering

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<sup>45</sup> Durrett, Charles. *The Senior Cohousing Handbook: a Community Approach to Independent Living, 2<sup>nd</sup> Edition.*(2011). New Society

spaces. Communities can proactively identify appropriate parcels for senior housing and work to steer development toward them. It is especially helpful if communities can advocate for planned development that includes not only senior housing, but housing for other age groups as well and commercial development.

### **Provisions about Visitability (zoning)**

The Americans with Disabilities Act established standards for physical accessibility of buildings and spaces that must be met by most public and commercial entities (especially new construction). However, there is no similar requirement that covers private housing. Visitability is a relatively new movement that advocates for a small number of design modifications to all homes to enable a minimum level of access by almost all people. These modifications are:

- At least one zero-step entrance (meaning the front door is level with the ground outside)
- Doors and halls with at least 32 inches of clear passable width
- A ground floor half-bathroom that is accessible by wheel chair

Visitability can be incentivized through local zoning provisions. For example, density bonuses can be provided under cluster development provisions, for developments that provide visitable housing.

### **Policies about Universal Design (Municipal policies)**

Municipal policies can require universal design for municipal facilities like schools, senior centers, town halls and public spaces. For more on universal design see the box in the “Green and Fit Buildings” Chapter.

# Site Plan and Special Permit Review

## Definitions

*Low Impact Development (LID)* is a stormwater management approach that mimics nature by managing stormwater as close as possible to its source. LID employs techniques such as preserving and recreating natural landscape features, minimizing imperviousness, detaining and infiltrating stormwater in dry basins, and treating stormwater as a resource rather than a waste product.

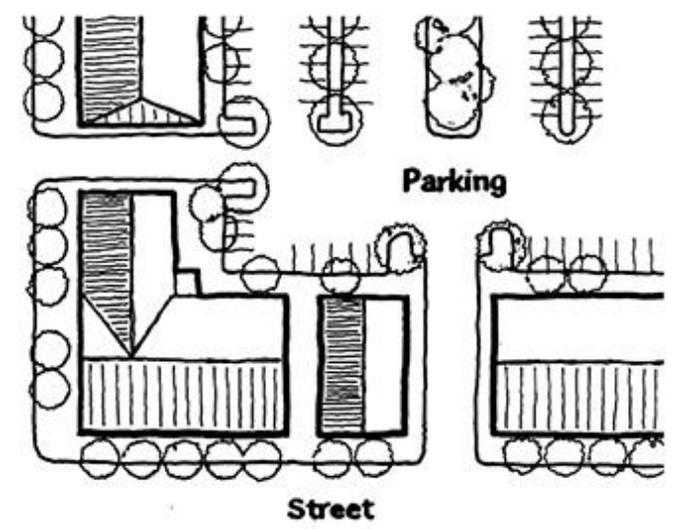
*Site Plan Review* is a process for reviewing site plans according to established goals

and design criteria. Criteria are established to meet environmental, health, walkability, urban design and other goals that fit new development into the larger community. The reviewing board can require reasonable changes to a plan, including road design, parking, lighting, etc., but, except in extreme cases, cannot block a plan from going forward.

*Special Permit Review* is a discretionary approval for a use or project that is not allowed by-right. Massachusetts state law requires a Special Permit use to be “in harmony” with the community. The Special Permit Granting Authority “in the proper use of its discretion, is free to deny a special permit even if the facts show that such a permit could be lawfully granted.”<sup>46</sup>

*Stormwater Runoff Pollution* is rain that falls on streets, parking lots, or other developed land, that carries pollution into lakes, rivers, streams, or other bodies of water. This can be pollutants such as oil or fuel from vehicles, fertilizers or pesticides from agricultural lands, pet waste, or soil from construction sites.

*Urban Heat Island Effects* occur when pavement and buildings absorb solar energy throughout the day and radiate that heat back into the air. This is due to pavement, buildings and other structures absorbing more heat from sunlight than the natural landscape. For example, this can cause the ambient temperature of a city of one million people to be 2-5°F hotter during the day and up to 22°F hotter at night than a rural location in the same area.<sup>47</sup>



<sup>46</sup> *Pioneer Home Sponsors v. Board of Appeals of Northampton* Mass App. Ct. 830, 831 (1973), via University of Massachusetts Citizen Planners Training Collaborative

<sup>47</sup> *Heat Island Effect*. (2013). US Environmental Protection Agency. Retrieved from: <http://www.epa.gov/hiri/>

## Introduction

The Site Plan Review process, which is commonly the purview of the Planning Board, uses established Site Plan Review criteria as the basis for reviewing development plans. After reviewing a site plan, the Planning Board or other reviewing authority can either approve the project or require changes prior to approval. This process can allow a community to require healthy community design criteria to be included in a project.

The changes required as a result of Site Plan Review can include improvements to plan layout, sidewalks, bicycle parking, stormwater management, etc. Due to their discretionary nature, Special Permit projects can be required to make more significant site plan changes, including amendments to the proposed use and scope of a project. However, even a Special Permit process should be guided by explicit principles and criteria that relate to larger community goals. All review decisions, whether through Site Plan or Special Permit Review, must be defensible and must serve a purpose that relates to public health, safety or well being.

Establishing the right community goals and review criteria is important. This can ensure the approval of projects that encourage walking, wheeling, biking and other outdoor activities, and that protect the quality of the outdoor environment.

## Site Plan and Special Permit Review Checklist

- Encourage submission of preliminary site plans (also known as a pre-application conference) to provide an opportunity to encourage healthy design strategies before plans are finalized.
- Create an Inter-Departmental Project Review Process that establishes meetings of representatives from various municipal departments/boards, including the Board of Health, to provide review and feedback on projects while still in design development.<sup>48</sup>
- Allow the Planning Board or other reviewing authority to reduce parking requirements through Site Plan or Special Permit Review based on information that demonstrates that the proposed development will have reduced parking demand.

### *Site development plans must:*

- Provide for safe internal traffic and pedestrian flows, and provide bicycle and pedestrian connections to the larger community.
- Include site-wide sidewalk networks in large developments, and reduce on-site driving through efficient design of roads and parking areas.
- Particularly in the case of institutional uses (including schools, churches and other community-based facilities), make appropriate connections to the larger community, including connections to sidewalks, bike lanes, multi-use paths, etc. (even if they will not connect to networks currently built).
- Include bicycle parking/storage.
  - All commercial and civic developments must provide bicycle racks for customers and employees.
  - Large commercial and civic developments (e.g. larger than 20,000 square feet) must provide covered bicycle storage and shower facilities for employees.
  - Multifamily residential buildings must provide covered bicycle storage for at least 15 percent of all building occupants.
- Orient buildings to serve pedestrians on the street, where appropriate.
  - Place parking lots at the back or to the side of buildings, with the main entrance in the front and near the sidewalk. A secondary entrance may be oriented to the parking.
- Minimize the total paved area to decrease stormwater runoff pollution impacts on waterways, and to reduce urban heat island effects.

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<sup>48</sup> See Inter-Departmental Project Review Process Fact Sheet in Appendix.

- Incorporate Low Impact Development (LID) stormwater management techniques to the extent feasible in order to protect the quality of surface waters that serve recreational and drinking water purposes.
- Provide landscaped parking lot islands (where applicable) and shade trees to create comfortable walking conditions and to reduce urban heat island effects.
- To the extent feasible, set aside 10 percent of all parking lot spaces for carpools and fuel efficient vehicles.
- Consider siting outdoor common areas (e.g. shaded outdoor seating for lunch) and exercise options where appropriate.
- Consider using light colored pavements and reflective roofing materials or green roofs in order to reduce urban heat island effects.

## Resources

*Bike and Pedestrian Features Fact Sheet and Model Bicycle Parking Bylaw.* (2013). Pioneer Valley Planning Commission. Retrieved from:

[http://www.pvpc.org/val\\_vision/html/toolbox/PDFs/building%20blocks/Bike%20and%20Pedestrian%20Features.pdf](http://www.pvpc.org/val_vision/html/toolbox/PDFs/building%20blocks/Bike%20and%20Pedestrian%20Features.pdf)

*Commercial Site Plan Review Fact Sheet.* (2013). Pioneer Valley Planning Commission. Retrieved from:

[http://www.pvpc.org/val\\_vision/html/toolbox/PDFs/building%20blocks/Commercial%20Site%20Plan%20Review.pdf](http://www.pvpc.org/val_vision/html/toolbox/PDFs/building%20blocks/Commercial%20Site%20Plan%20Review.pdf)

*Shaping the Future of Your Community – A Citizen’s Guide to Involvement in Community Planning, Land Protection, and Project Review.* (2007). Mass Audubon. Retrieved from:

<http://www.massaudubon.org/shapingthefuture/shapingtoc.php>

*Site Plan Review Module.* (n.d.). Massachusetts Citizen Planner Training Collaborative. Retrieved from: [www.umass.edu/masscptc/docs/Site%20Plan%20Review%20Module2.rtf](http://www.umass.edu/masscptc/docs/Site%20Plan%20Review%20Module2.rtf)

*Special Permits and Variances.* (n.d.). Massachusetts Citizen Planner Training Collaborative.

Retrieved from: [http://www.umass.edu/masscptc/2013-conference-training-materials/Session%205\\_Special%20Permits/Special%20Permits%20and%20Variances%20CPTC%2016\\_13%20.pdf](http://www.umass.edu/masscptc/2013-conference-training-materials/Session%205_Special%20Permits/Special%20Permits%20and%20Variances%20CPTC%2016_13%20.pdf)

# Subdivision Regulations

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## Definitions

*Approval Not Required (ANR)* refers to subdivisions that result in new parcels with frontage along existing roadways. This type of subdivision does not require approval by the local Planning Board.

*Complete Streets* are roads that are designed for all modes of transit, including vehicles, public transportation, biking and walking, and people of all abilities. Design considerations include bike or bus lanes, road narrowing, sidewalks, crosswalks, and facilities such as covered bus stops or bicycle parking.

*Low Impact Development (LID)* is a stormwater management approach that mimics nature by managing stormwater as close as possible to its source. LID employs techniques such as preserving and recreating natural landscape features, minimizing imperviousness, detaining and infiltrating stormwater in dry basins, and treating stormwater as a resource rather than a waste product.

*Stormwater Pollution* occurs when rain that falls on streets, parking lots and other land carries pollutants into lakes, rivers, streams or other water bodies. Pollutants can include oil and fuel from vehicles, fertilizers and pesticides from yards or agricultural lands, pet waste, and soil picked up by erosion.

*Subdivision* is the division of a tract of land into two or more smaller parcels. A subdivision can occur along an existing road or can create a new road.

*Subdivision Regulations* set rules that determine the characteristics of a land subdivision development. For example, Subdivision Regulations typically address road design, utilities, open space and stormwater drainage. In Massachusetts, Subdivision Regulations are adopted by a majority vote of a municipality's Planning Board or, in some small towns without a Planning Board, by the Board of Selectmen.

*Urban Heat Island Effects* occur when pavement and buildings absorb solar energy throughout the day and radiate that heat back into the air. This is due to pavement, buildings and other structures absorbing more heat from sunlight than the natural landscape. For example, this can cause the ambient temperature of a city of one million people to be 2-5°F hotter during the day and up to 22°F hotter at night than a rural location in the same area.<sup>49</sup>

## **Introduction**

The Subdivision Regulations established by a community have a dramatic effect on the characteristics of subdivision developments, and, by extension, affect community health. Perhaps most importantly, Subdivision Regulations govern the design of new roadways. Requiring sidewalks and shade trees helps create a safe and comfortable pedestrian environment that promotes walking. Requiring narrower roads and traffic calming measures creates safer streets for pedestrians and enables children to travel safely and to be more active. This is especially true if a subdivision sets aside land for a playground or community park. Connecting sidewalks and bike lanes to larger networks creates additional opportunities for physical activity and allows people to access the larger community without having to rely on an automobile. For example, connections to sidewalk networks can allow children to walk or bike to school.

A community's Board of Health can play a significant role in the subdivision approval process. The Subdivision Control Law gives a Board of Health 45 days to approve a subdivision design or return the plans to the applicant with required changes, along with specific reasons for the needed changes.<sup>50</sup> The Planning Board then cannot approve the plan without the Board of Health's changes. Failure of the Board of Health to submit its report with the 45 days constitutes approval of the plan.

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<sup>49</sup> *Heat Island Effect*. (2013). US Environmental Protection Agency. Retrieved from: <http://www.epa.gov/hiri/>

<sup>50</sup> Mass Dept. of Housing and Community Development (2009), *An Overview of the Subdivision Control Law*, p.34, 35.

## Subdivision Regulations Checklist

- Require sidewalks.
  - In rural environments or other locations where sidewalks on both sides of the street may not make sense, a sidewalk on one side of the street is acceptable.
- Require interconnecting street and sidewalk networks.
  - If a dead-end is created, require the subdivision design to allow for streets to be connectable in the future.
  - Where applicable, require multi-use paths at the end of dead-end streets that connect to a larger network of pathways.
  - Require bicycle and pedestrian linkages to nearby public ways.
- Design driveways to minimize pedestrian impacts.
  - Encourage shared/common driveways to reduce the number of automobile curb cuts.
  - Require driveways to rise up to the level of the sidewalk instead of designing the sidewalk to descend to the level of the driveway.
- Narrow road widths and the turning radius at intersections to reduce traffic speeds and the crossing distance at intersections. (Reducing the total amount of pavement also decreases stormwater runoff pollution impacts on waterways as well as urban heat island effects.)
- Require Low Impact Development (LID) stormwater management techniques to protect the quality of surface waters that serve recreational and drinking water purposes.
- Encourage a preliminary meeting with the Planning Board/Department prior to subdivision design to review potential healthy design strategies.
- Encourage submission of Preliminary Subdivision Plans to provide an opportunity to encourage healthy design strategies before plans are finalized.
- Create an Inter-Departmental Project Review Process that establishes meetings of representatives from various municipal departments/boards, including the Board of Health, to provide review and feedback on projects while still in design development.
- Require a set-aside of future parkland (even if only temporary, as required by Massachusetts law), to give the homeowner's association, municipality or other entity time to acquire it.<sup>51</sup> Encourage a community garden set-aside for subdivisions with small lot sizes.
- Require roads to be designed to "Complete Streets" standards, with equal attention to the needs of automobiles, cyclists and pedestrians.
- Require shade trees along pedestrian and bicycle pathways.
- Require traffic and environmental impact studies for subdivisions over 5 units.
- Require an analysis of pedestrian circulation for subdivisions over 15 to 20 units.

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<sup>51</sup> Mass. Gen L. c 41 § 81U. Retrieved from:

<https://malegislature.gov/Laws/GeneralLaws/PartI/TitleVII/Chapter41/Section81U>

## Resources

*Commentary on Updating Subdivision Regulations in Massachusetts.* (n.d.) Feiden, Wayne, AICP. Highland Communities Initiative. Retrieved from:

<http://www.thetrustees.org/assets/documents/highland-communities-initiative/Illustrated-Subdivision-Commentary.pdf>

*Model Sidewalk Regulations – Zoning and Subdivision.* (2013). Pioneer Valley Planning Commission. Retrieved from:

[http://www.pvpc.org/val\\_vision/html/toolbox/PDFs/building%20blocks/Sidewalks.pdf](http://www.pvpc.org/val_vision/html/toolbox/PDFs/building%20blocks/Sidewalks.pdf)

*Rules and Regulations Concerning the Subdivision of Land.* (2011). Worthington, Massachusetts.

Retrieved from: [http://worthingtonma.vt-s.net/Pages/WorthingtonMA\\_BComm/Planning/subdivregs.pdf](http://worthingtonma.vt-s.net/Pages/WorthingtonMA_BComm/Planning/subdivregs.pdf)

For information on Cluster/Open Space subdivisions and Traditional Neighborhood Development Subdivision Regulations, see Smart Growth Development section.

# Focus on Aging: Destinations for Healthy Aging

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## Introduction

Older adults utilize a wide variety of goods and services in their communities. Trips out of the home to destinations like stores, banks, healthcare facilities, senior centers, churches and cafes are a key component of staying active and engaged in one's life and community. As we discussed regarding housing for older adults, the built environment in many communities makes accessing destinations unsafe or inconvenient for some older adults. Our car-centered transportation system and lack of public investment in pedestrian infrastructure are partly to blame for this, but more fundamental is the basic land-use pattern of many communities and a general lack of attention to site design for healthy aging. We will address transportation issues in the section "Focus on Aging: Transportation." In this section we will discuss how to remedy some of the broader land use pattern and site design issues.

Zoning-based separation of uses (housing from commercial from industrial, etc.) has created the land use pattern in many communities. Some zoning codes prevent destinations of interest to older adults from developing in locations that would be convenient to older adults. The uses may be explicitly not allowed, or they may be made infeasible by excessive requirements for lot area, parking, etc. Doctor's offices for example may be required to have excessive amounts of on-site parking which effectively prevent them from locating in higher density areas where land is generally less available and more expensive. It is worth reviewing a community's zoning code to determine whether it encourages or discourages the kinds of destinations desired by older adults.

Destinations of interest to older adults may be allowed, but only in locations that are far from where older adults live. When housing is far from destinations, the trip between them becomes inherently longer and more difficult, often to the point where walking, using a wheelchair, or biking is not feasible. Mixed-use development that provides destinations in close proximity to housing is one of the best enablers of healthy aging. It makes the healthy choice—walking, using a wheel chair, walker or cane, for daily needs—the easy choice.

In places where combining housing and commercial uses in the same or adjacent buildings is not desirable, small neighborhood commercial centers can be inserted into existing housing-only neighborhoods. These targeted neighborhood centers replicate historical town development

patterns and are typically located at key intersections. For older adults, they provide convenience, motivation to get out of the house, a destination to walk to, and can reduce isolation.

Older adults, especially those with mobility impairments, benefit from destinations where they can fulfill multiple goals in close proximity—i.e. when the bank is next to the food store, is next to the pharmacy, is next to the post office.<sup>52</sup> This enables an older person to park once and make short walking trips to accomplish their goals.

Park-once destinations can be set within traditional downtown or neighborhood

center settings. They can also be located

along auto-oriented strips if they are designed to facilitate pedestrian circulation within the complex. The key design features for park-once destinations for older adults are: parking very close to a variety of destinations, safe sidewalks between destinations, and destinations that are close to one another. These goals can be difficult to achieve with large footprint stores (like a Wal-Mart or full-sized supermarket) because the length along the front of just one store can exhaust an older person with mobility or stamina limitations.

Once an older person arrives at a destination, the site design becomes very important. Parking lots should be laid out so that they have obvious circulation patterns with directional arrows indicating how to navigate them. Due to reduced peripheral vision and slower reaction times, many older adults prefer angled parking instead of 90 degree parking or parallel parking. However this desire can conflict with the goals of getting parking close to destinations, minimizing paved areas, and clear circulation. Older adults are often more sensitive to heat, so parking areas should be well shaded by trees. About 14 percent of people over 65 experience some trouble seeing. This increases to 23% for people over 85.<sup>53</sup> Vision changes include a need for more light in dark situations, increased sensitivity to glare, and decreased perception of contrast.<sup>54</sup> Sites can be designed to accommodate these common vision changes. Instead of having a small number of very bright fixtures, a larger number of less powerful fixtures can provide a more even quality of light. Fixtures should be placed and focused to minimize glare.

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<sup>52</sup> Huang D.L., Rosenberg, D.E., Simonovich S.D., and Belza B. "Food access patterns and barriers among midlife and older adults with mobility disabilities." *Journal of Aging Research*. 2012

<sup>53</sup> *Older Americans, 2012: Key Indicators of Well-Being* (2012). Federal Interagency Forum on Aging-Related Statistics (Forum)

<sup>54</sup> Greenhouse, Esther. *The Home Environment and Aging* in Henry Cisneros, Margaret Dyer-Chamberlain, Jane Hickie (Eds). *Independent for Life: Homes and Neighborhoods for an Aging America*. (2012). Austin: University of Texas Press.

Changes in level, like from a parking lot to a walkway or a speed hump, should be highlighted with contrasting colors and larger print. Sidewalks should provide clear and safe routes throughout parking lots and lead efficiently to the entrances of destinations. Benches protected from extreme weather are quite valuable, as are public bathrooms.

When advocating for site design for healthy aging it is important to note that there can be conflicts between the needs of older adults and broader healthy community design goals. For example, healthy community design proponents would generally advocate for restricting parking to the side or behind buildings to improve the pedestrian environment along the street. However, this can present barriers to older adults by increasing the distance from parking to a building entrance (assuming the entrance is on the street side of a building). Some green infrastructure techniques like bio-retention planters can limit the free movement of pedestrians from the street to the sidewalk. This can present a barrier to mobility or vision impaired older adults. Cobbled or brick sidewalks, streets, and paths are aesthetically pleasing—especially in historic districts—but can create tripping hazards. In community design, it is important to remain sensitive to competing priorities and to be aware of the physical and demographic context in which you are working.

## **Key Leverage Points**

### **Mixed-use zoning (zoning)**

Zoning codes should allow for horizontal and vertical mixed-use in key locations.

### **Development of neighborhood centers (zoning)**

Zoning codes should allow for appropriately-scaled commercial development in targeted neighborhood centers close within existing housing neighborhoods.

### **Allow desirable uses by-right (zoning)**

Zoning codes determine what “uses” are allowed on a site. Codes generally divide “uses” into four categories: allowed by-right, allowed by site plan review, subject to discretionary review by special permit, or not allowed. Applicants prefer uses allowed “by-right” because they involve minimal permitting time, fees, and complication. Most important, an applicant is ensured that they will receive a permit as long as they follow the requirements spelled out in the zoning. Allowing a use by-

right creates an incentive for that use, while requiring site plan review or special permit review can create a disincentive (sometimes warranted, sometimes not). Communities need to carefully think through which uses they desire in which districts, which uses really require additional review or discretion, and make permitting pathways as predictable and easy as possible for all uses. See the chapter, “Site Plan and Special Permit Review” for more on these reviews and how they can benefit communities). Whenever possible, communities should avoid unnecessary special permits. Communities should allow uses by-right if they are desirable and in character with the district. For example, senior centers and lifestyle centers, health care facilities, pharmacies, cafes and restaurants, community gardens, food stores, farmers markets and other uses that are important to older adults should be allowed by-right in appropriate districts (especially within walking distance of population centers).

**Encourage park-once designs for new commercial developments (Site Plan and Special Permit Review)**

Larger development projects should be encouraged to provide a variety of shapes and sizes of commercial spaces to facilitate co-location of a variety of community services and supports. And to design sites such that older adults can park once and walk from business to business.

**Require site plan review for major destinations to ensure that sites meet the needs of older adults (Site Plan Review).**

To meet the needs of older drivers site plan review should encourage safe parking lots with obvious circulation patterns and directional arrows, require signage that has high contrast large type and is located appropriately, require adequate lighting while minimizing glare, and providing safe entrances and exits to roads. To meet the needs of all pedestrians, and especially of older adults, (and drivers after they leave their cars), site plan review should encourage pathways throughout sites that lead directly to destinations. Pathways should be protected from car traffic with highly visible and predictable crosswalks at road or driveway crossings. Pathways should have smooth, high-grip surfaces. Site plan review should encourage pedestrian facilities like benches, shelters, and interesting ground level features including plantings. Site plan review should require lighting that provides enough light while minimizing glare. Site plan review can encourage reasonable levels of accessibility when ADA standards do not apply. Site plan review can encourage dedicated parking for older adults near building entrances. Finally site plan review should require adequate shade to minimize local heat island effects.

**Invest in retrofits for existing commercial areas to transform them into park-once areas (Smart Growth Development).**

Communities can make investments in public infrastructure to improve existing commercial areas so that they become pedestrian friendly environments. Areas where people can park-once and walk to multiple destinations in close proximity are particularly important to older adults. Possible investments include providing public parking (especially on-street parking), improving sidewalks, installing benches, street trees, and public restrooms.

**Maintain existing pedestrian infrastructure (Municipal process)**

Poorly maintained sidewalks are a hazard for all, and tripping and falling is a major concern for many older adults. These hazards can severely limit an older person's willingness to get out and walk. Cities should allocate regular funding for sidewalk repair and replacement to deal with cracks that inevitably arise from frost and tree roots. In addition, cities can enact and enforce snow removal ordinances and/or take on responsibility for removing snow from sidewalks. Enacting a Downtown Business Improvement Districts (BIDs) can be an effective way to fund maintenance of pedestrian infrastructure in key locations.

# Road Design

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## Definitions

*Complete Streets* are roads that are designed for all modes of transit, including vehicles, public transportation, biking and walking, and people of all abilities. Design considerations include bike or bus lanes, road narrowing, sidewalks, crosswalks, and facilities such as covered bus stops or bicycle parking.

*Cycletracks* are protected bike lanes that are physically separated from automobile traffic with parked cars, curbs or bollards.

*Urban Heat Island Effects* occur when pavement and buildings absorb solar energy throughout the day and radiate that heat back into the air. This is due to pavement, buildings and other structures absorbing more heat from sunlight than the natural landscape. For example, this can cause the ambient temperature of a city of one million people to be 2-5°F hotter during the day and up to 22°F hotter at night than a rural location in the same area.<sup>55</sup>

## Introduction

Incorporating Complete Streets principals into local standards governing the construction and repair of municipal roads can create a safer and more inviting environment for drivers, bikers and walkers alike. While the inclusion of “reasonable provisions” for Complete Streets planning is required by state law (MA G.L. Ch. 90E), implementation has been a gradual process. In communities with Complete Streets policies or standards, implementation often occurs only as roads are reconstructed or repaved.

Improved road design standards can address travel lane widths, bike lanes, sidewalks, streetscapes, and other aspects of roadway infrastructure. Better road design standards encourage alternative forms of transportation, including more walking and biking, as fewer people will walk or bike along roads that feel unsafe. Enhanced road design can also result in better stormwater management and improved water quality (see Stormwater Management

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<sup>55</sup> *Heat Island Effect*. (2013). US Environmental Protection Agency. Retrieved from: <http://www.epa.gov/hiri/>

section), as well as improved air quality through the use of “cool” (lighter color) pavements, which reduce urban heat island effects and smog formation.<sup>56</sup>

Good design of sidewalks and intersections enhances safety by improving interactions between cars, pedestrians and cyclists. Reducing the number of automobile curb cuts decreases the number of points of conflict between cars, pedestrians and bikers. Narrowing road widths, especially at pedestrian crosswalks, slows vehicles down and reduces the time required for street crossings.

Street design has a significant effect on driving habits. For example, traffic can be slowed by creating artificial chicanes, narrowing road widths, installing bump-outs at crosswalks, raising crosswalks (“tables”), or reducing an intersection’s turning radius. Proper signage and line painting for pedestrian crossings and bicycle lanes can alert drivers to potential interactions with pedestrians and cyclists and increase overall safety.

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<sup>56</sup> Heat pollution contributes to smog formation.

## Road Design Checklist

- Adopt a community-wide Complete Streets Policy with strong, enforceable language.
- Update/establish municipal standards for Complete and Green Streets, including design standards for sidewalks, crosswalks, bicycle lanes and cycletracks, bicycle and pedestrian signage, bicycle parking, lighting, street trees, intersections, etc.
  - Require pedestrian crossings at large or complicated intersections, with pedestrian refuges where needed.
  - Revise municipal road building standards to narrow travel lane widths and include bike lanes, sidewalks and streetscaping. Place bike lanes in between parking and the sidewalk if possible, and ensure that bike lanes are clearly separated from sidewalks.
  - Ensure that street design standards comply with the Americans with Disabilities Act (ADA) and meet the needs of people of all abilities.
- Promote on-street parking over off-street parking to increase pedestrian safety (by reducing automobile curb cuts) and to facilitate smart growth (by enabling increased development densities).
  - Provide public parking (on-street if possible), reduce/eliminate private off-street parking requirements, and work to reduce automobile curb cuts (through private property agreements, incentives and zoning regulations that limit new automobile curb cuts).
  - Evaluate the occupancy and price of on-street parking to reduce cruising for parking spaces.
  - Consider innovative parking designs such as angled parking to improve visibility and reduce conflicts between parking cars and cyclists.
- Develop and implement a Traffic Calming Program. Establish methods to survey residents and police to identify problem spots. Pay special attention to major pedestrian corridors and areas around schools.
- Incorporate street shade trees and bike lanes (along the street) or cycletracks (separate from the street) into municipal street improvement projects.
- Consider maintenance in the design of roads and sidewalks.
- Require public input for street improvement projects prior to design so that community concerns and suggestions can be incorporated into construction plans.
- Create an Inter-Departmental Project Review Process that establishes meetings of representatives from various municipal departments/boards, including public works and public safety (police, fire and ambulance) personnel, to provide review and feedback on projects while still in design development.<sup>57</sup>

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<sup>57</sup> See Inter-Departmental Project Review Process Fact Sheet in Appendix.

- Prioritize projects that promote walkability and bikeability in the community's Capital Improvement Plan. Develop a long-term Capital Improvement Plan if the municipality does not have one.
- Attach pedestrian and bicycle improvements to road maintenance, not just road reconstruction projects.
- Develop roadside paths in rural areas where sidewalks may not be appropriate.

## Resources

*Bike and Pedestrian Features Fact Sheet and Model Bicycle Parking Bylaw.* (2013). Pioneer Valley Planning Commission. Retrieved from:

[http://www.pvpc.org/val\\_vision/html/toolbox/PDFs/building%20blocks/Bike%20and%20Pedestrian%20Features.pdf](http://www.pvpc.org/val_vision/html/toolbox/PDFs/building%20blocks/Bike%20and%20Pedestrian%20Features.pdf)

*Complete Streets: Best Policy and Implementation Practices.* (2010). McCann, Barbara and Rynne, Suzanne. American Planning Association. Planning Advisory Service. Report Number 559.

Retrieved from: <http://www.planning.org/pas/brochure/pdf/report.pdf>

*Developing a Capital Improvements Plan.* (1997). Municipal Data Management and Technical Assistance Bureau. Retrieved from: <http://www.mass.gov/dor/docs/dls/publ/misc/cip.pdf>

*Disabilities.* (2010). National Complete Streets Coalition. Retrieved from:

<http://www.smartgrowthamerica.org/complete-streets/complete-streets-fundamentals/factsheets/disabilities>

*Memo: Shared Streets Standards.* (2011). Allen, J. J.. Pioneer Valley Planning Commission.

Retrieved from: <http://www.pvpc.org/resources/landuse/dlta-fy-2011/Share%20Street%20Standards.pdf>

*Model Complete Streets Ordinance Bylaw.* (n.d.). Massachusetts Municipal Association. Retrieved from: [http://www.mma.org/resources-mainmenu-182/doc\\_view/749-model-complete-streets-ordinance-bylaw](http://www.mma.org/resources-mainmenu-182/doc_view/749-model-complete-streets-ordinance-bylaw)

*Model Sidewalk Regulations – Zoning and Subdivision.* (2013). Pioneer Valley Planning Commission. Retrieved from:

[http://www.pvpc.org/val\\_vision/html/toolbox/PDFs/building%20blocks/Sidewalks.pdf](http://www.pvpc.org/val_vision/html/toolbox/PDFs/building%20blocks/Sidewalks.pdf)

*NACTO Urban Street Design Guide Overview.* (2012). National Association of City Transportation Officials. Retrieved from: [http://nacto.org/wp-content/uploads/2012/10/NACTOUrbanStreetDesignGuide\\_Highrez.pdf](http://nacto.org/wp-content/uploads/2012/10/NACTOUrbanStreetDesignGuide_Highrez.pdf)

*Sustainable Neighborhood Road Design.* (2011). American Planning Association – Massachusetts, Home builders Association of Massachusetts. Retrieved from: [http://www.apa-ma.org/apa-ma\\_documents/Publications/NRB\\_Guidebook\\_2011.pdf](http://www.apa-ma.org/apa-ma_documents/Publications/NRB_Guidebook_2011.pdf)

*Rural Walking in Massachusetts.* (2013). Sloane, Robert and Landman, Wendy. WalkBoston (for The Massachusetts Department of Public Health). Retrieved from:

<http://www.walkboston.org/sites/default/files/WBRuralWalking.TKit%20final.draft.pdf>

*Traffic Calming Manual*. (2008). Transportation and Parking Commission. City of Northampton.

Retrieved from:

<http://www.northamptonma.gov/tpc/uploads/listWidget/6504/NorthamptonTrafficCalmingManual.pdf>

*Traffic Calming Measures Fact Sheet and Best Practices in Traffic Calming in the Pioneer Valley Toolkit*. (2013). Pioneer Valley Planning Commission. Retrieved from:

[http://www.pvpc.org/val\\_vision/html/toolbox/PDFs/building%20blocks/Traffic%20Calming.pdf](http://www.pvpc.org/val_vision/html/toolbox/PDFs/building%20blocks/Traffic%20Calming.pdf)

# Walking, Biking and Transit Networks

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## Definitions

### *Capital Improvement Plans (CIPs)*

address large scale infrastructure projects such as road and school construction. A CIP details municipal capital improvement projects, ranks them in order of importance to the community, and provides timetables and a funding plan.

### *Community Preservation Act (CPA)* is an

act passed by the Massachusetts state legislature that allows communities to adopt an extra 1-3 percent property tax surcharge in order to create a fund for local improvements to affordable housing, historic preservation, open space and recreation. The state government matches a certain percentage of the funds collected.

Regional Transit Authorities (RTAs) operate transit services in a particular geographic region. RTAs such as the MBTA (Massachusetts Bay Transportation Authority) in Greater Boston operate large rail and bus systems, while smaller RTAs such as the Franklin Regional Transit Authority in Franklin County operate a handful of bus routes and shuttle services.

*Sustainable Transportation Networks* are interconnected systems for modes of transportation that do not rely on automobiles. Sustainable transportation networks include public transportation networks for busses, subways, streetcars, etc., as well as walking and biking networks, including wheel chairs.

## Introduction

Ninety percent of all travel is done by car, but 50 percent of trips are within 3 miles of home, and 63 percent of trips are within 5 miles of home.<sup>58</sup> Meanwhile, the Centers for Disease Control (CDC) recommends 150 minutes of exercise per week. Given that most vehicle trips are less than 3 miles, these short trips provide perfect opportunities for walking or biking and can be encouraged by establishing and maintaining networks of sidewalks, multi-use paths and bike

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<sup>58</sup> Federal Highway Administration. (2009) *National Household Travel Survey*. US Department of Transportation. Retrieved from: <http://www.fhwa.dot.gov/policyinformation/nhts.cfm> (via <http://www.bikeleague.org/content/national-household-travel-survey-short-trips-analysis>)

lanes throughout a community. Just a 15 minute walk each way 5 times a week meets the CDC exercise recommendation.

Unfortunately, most communities do not yet have comprehensive interconnected sustainable transportation networks that support walking and biking. Sidewalks are sometimes not present, or are present but are not well-maintained. Bike lanes are often present only along part of a street, and even in cases where bike lanes are provided along the entire length of a street, a turn onto a different street may not connect to another bike lane. Multi-use paths (bike paths, rail trails, greenways, etc.) are growing in popularity but often provide limited sustainable transportation connections across a community.

Extensive rail/subway systems require a huge investment and often make sense only in connection with large cities like Boston. Light rail, including trams and streetcars, can make sense for smaller cities but also involve a large investment that makes most communities and states shy of developing such systems. Bus networks often fill the void where rail and light rail investments have not or cannot be made. Greater Boston's MBTA (Massachusetts Bay Transportation Authority) and the Pioneer Valley's PVRTA (Pioneer Valley Transportation Authority) operate the two largest bus networks in the state, but there are 14 smaller regional transit authorities that operate bus service as well, including the MVRTA (Merrimack Valley Regional Transit Authority), the GATRA (Greater Attleboro Taunton Regional Transit Authority), and others. Smaller RTAs such as the FRTA (Franklin Regional Transit Authority) in Franklin County operate only a handful of bus routes.

In addition to fixed-routes, transit authorities must meet the need for more flexible transit options like shuttle services, especially for senior, disabled and low-income populations, and in rural areas. These vital on-demand networks provide mobility to those who do not drive, either by choice or need, and can provide critical connections to open space resources, farmers' markets and quality grocery stores, as well as to work, school and commercial centers.

Developing interconnected sustainable transportation networks makes walking, biking and use of transit more attainable for more people. Community plans can create a vision for walking and biking networks, and tools such as Capital Improvement Plans and the Community Preservation Act can help fund these projects. Large-scale community planning efforts can help get residents involved in planning, executing and eventually using a robust sustainable transportation network.

## Walking, Biking and Transit Networks Checklist

- Develop a sidewalk inventory and maintenance program. This can be added to existing pavement management programs/systems for streets, which are typically managed by the Department of Public Works.
- Create a community-wide Greenway and Bikeway Plan or add a Greenway and Bikeway chapter to the Open Space and Recreation Plan.
- Establish Capital Improvement Plans that include greenway, bikeway, sidewalk and other sustainable transportation projects.
- Ensure that annual municipal budgets include adequate funds for greenway, bikeway, and sidewalk maintenance. Provide public bicycle racks at strategic locations in the downtown or town center. If needed, use existing on-street parking spaces for this purpose.
- Adopt the Community Preservation Act (CPA) to help fund open space and recreation improvements identified by community plans. Ensure that the community's CPA Plan identifies recreation paths as a funding priority.
- Ensure a clear distinction between spaces for walking versus biking, as these uses can come into conflict and pose a threat to pedestrians. Where this is not possible, consider design solutions that minimize pedestrian/bicycle conflicts (e.g. wider greenways and bike paths).
- Design greenways and bike paths to have destination stops along the route as well as at each end.
  - Select routes that pass by destination locations.
  - Create extensions that lead to destinations.
  - Create new parks and open space destinations along routes.
  - Use redevelopment initiatives and zoning regulations to create/encourage new destinations along routes.
  - Install maps and signage to identify destinations.
  - Provide information about destination locations on appropriate websites.
- Evaluate which greenways and bike paths are used and why in order to improve the network.
- Advocate for public transportation that reaches those who need it most, that connects people to open space and recreation opportunities, and that provides access to quality food. Advocate for well-designed transit stops, including shaded waiting areas with seating, covered bicycle parking, and compliance with Americans with Disabilities Act (ADA) requirements.
  - Contact your municipality's representative to your Regional Transit Authority (RTA) governing or advisory board, and/or contact the RTA directly.
  - Attend public outreach meetings held by your RTA, and/or attend meetings of your community's Transportation or Public Transportation Committee.
  - Identify and work with organizations that are already involved with issues of concern.

- Adopt a community-wide Complete Streets Policy to ensure that streets accommodate all modes of transit.<sup>59</sup>
- Develop measures to monitor and maintain road markings for pedestrians and cyclists, and to provide an easy way for the public to notify the municipality of problem spots. These measures may be accomplished through a new program or integrated into an existing Traffic Calming Program.<sup>60</sup>
- Work with municipal staff and transit authorities to design walking, biking and mass transit networks that interconnect with each other. These interconnections (e.g. bike paths connect to bus routes and bus stops provide secure bicycle storage) facilitate use of multiple modes of sustainable transportation in a single trip.<sup>61</sup>
- Keep sidewalks clear of snow in order to provide for safe winter walking.
  - Publicize the requirement for private property owners to shovel sidewalks in front of their properties, and create a robust enforcement program to ensure that this requirement is met. Some communities have shoveling programs in which volunteers help those in need of assistance.
  - Establish and enforce procedures for municipal snow plowing to maintain clear pedestrian pathways where streets meet sidewalks (e.g. to avoid piling snow at street-sidewalk junctions, and to continue to regularly check and clear street-sidewalk junctions until all sidewalks are cleared of snow).
  - Alternatively, advocate for the sidewalk network to be considered a public service similar to the public street network that is kept clear of snow by the municipality. At minimum, the municipality should assume responsibility for snow clearing in downtown commercial districts. Councils on Aging are a resource to assist older adults with snow removal.
  - Work with MassDOT to address issues along state-owned roads.
- Develop procedures to include bike lanes and cycletracks in plowing and street sweeping operations.
- Ensure that sidewalk, greenway/bike path and transit networks comply with the Americans with Disabilities Act (ADA) and meet the needs of people of all abilities. Partner with groups that represent senior and disabled populations (e.g. the Council on Aging) to identify strategies to ensure that transportation networks are universally accessible.

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<sup>59</sup> See Complete Streets discussion and resources in Road Design section.

<sup>60</sup> See Traffic Calming discussion resources in Road Design section.

<sup>61</sup> See Road Design section for specific ways to improve the interaction between different transportation networks.

## Resources

*Being an Advocate.* (2013). WalkBoston. Retrieved from: <http://www.walkboston.org/what-we-do/being-advocate>

*Boston Bikes.* (2013). City of Boston. Retrieved from: <http://www.bostonbikes.org/>

*City of Davis Bicycle Plan.* (2009). Bicycle Advisory Committee. City of Davis. Retrieved from: <http://bicycles.cityofdavis.org/media/default/documents/pdf/bicycles/bike-plan-2009.pdf>

*Community Preservation Act Fact Sheet.* (2013). Pioneer Valley Planning Commission. Retrieved from: [http://www.pvpc.org/val\\_vision/html/toolbox/PDFs/building%20blocks/Community%20Preservation%20Act.doc.pdf](http://www.pvpc.org/val_vision/html/toolbox/PDFs/building%20blocks/Community%20Preservation%20Act.doc.pdf)

*CPA Adoption Overview.* (n.d.). Community Preservation Coalition. Retrieved from: <http://www.communitypreservation.org/content/adoption-overview>

*Developing a Capital Improvements Plan.* (1997). Municipal Data Management and Technical Assistance Bureau. Retrieved from: <http://www.mass.gov/dor/docs/dls/publ/misc/cip.pdf>

*Disabilities.* (2010). National Complete Streets Coalition. Retrieved from: <http://www.smartgrowthamerica.org/complete-streets/complete-streets-fundamentals/factsheets/disabilities> [See list at end for additional resources on public transportation/transit.]

*Guidance on Designing Specific Types of Recreation and Support Facilities that Exceeds ADA for Universal Accessibility.* (2011). Michigan Department of Natural Resources. Retrieved from: [http://www.michigan.gov/documents/dnr/ua-ada\\_guidelines\\_380528\\_7.pdf](http://www.michigan.gov/documents/dnr/ua-ada_guidelines_380528_7.pdf)

*NACTO Urban Bikeway Design Guide.* (2011). National Association of City Transportation Officials. Available for purchase at: <http://nacto.org/cities-for-cycling/design-guide/>

*Needs Met by Destinations on Multi-Use Corridors.* Ann Arbor, Michigan. University of Michigan Taubman College of Architecture and Urban Planning, 2002.) Retrieved from: <http://www.sigmaworksconsulting.com/annlusk.doc>

*Snow Removal Policy Toolkit*. (2012). Metropolitan Area Planning Council. Retrieved from:  
<http://www.mapc.org/sites/default/files/Snow%20Removal%20ToolkitFINAL1.10.12.pdf>

*Twenty-Three Design Guidelines for Greenways*. (2002). Lusk, A. (Paper Excerpted from PhD Dissertation *Guidelines for Greenways: Determining the Distance to, Features of, and Human Needs Met by Destinations on Multi-Use Corridors*. Ann Arbor, Michigan. University of Michigan Taubman College of Architecture and Urban Planning, 2002.) Retrieved from:  
<http://www.sigmaworksconsulting.com/annlusk.doc>

# Focus on Aging: Transportation

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## Introduction

Being able to go where one wants, using a means of transportation that one chooses is important for everyone and is a fundamental part of healthy aging. Transportation links us to essential goods and services, connects us with friends, family and activities, and provides an element of self-reliance that is important to older adults' emotional and physical well-being.

In Massachusetts, as in the rest of the nation, transportation options for many people are extremely limited. The personal car is by far the most dominant form of transportation accounting for 68.5% of trips in the state.<sup>62</sup> What this statistic doesn't communicate, however, is that for many older adults, there is functionally only one transportation option available. If a person lives in an area with no public transportation where travel distances exceed one's ability to walk, driving a car is the only option. Likewise, for the significant number of older adults who are not licensed to drive (12% of people 65-69 and increasing to 52% of people 85 and over)<sup>63</sup> or do not have access to a car (7% of people 60-69 increasing to 17.6% of people 80 and over),<sup>64</sup> there is often only one transportation option remaining. Depending on personal abilities and community setting, it may be only walking (including using a wheelchair, cane or walker), only using public transportation or only relying on others with cars. The lack of redundant transportation options leaves older adults vulnerable to isolation. Losing a driver's license or spraining an ankle can leave a formerly active older person

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<sup>62</sup> Mass Department of Transportation (2014). *Transportation Facts*. Retrieved from:

<http://www.massdot.state.ma.us/planning/Main/MapsDataandReports/Data/TransportationFacts.aspx>

<sup>63</sup> U.S. Department of Transportation, Federal Highway Administration. (2001). *Table DL-20, Distribution of Licensed Drivers – 2000 By Sex and Percentage in Each Age Group and Relation to Population*. Retrieved from:

<http://www.fhwa.dot.gov/policyinformation/statistics/2000/dl20.cfm>

<sup>64</sup> Federal Highway Administration. (2011). *Summary of Travel Trend: 2009 National Household Travel Survey*. U.S. Department of Transportation, Federal Highway Administration, Washington, D.C.

essentially housebound. As we have seen in our explorations of housing and destinations, increasing diversity in our community’s transportation systems will facilitate healthy aging. It is important to note that Council on Aging and Senior Centers have worked to address this issue creating volunteer ride services to assist older adults who do not drive.

There are several myths about older adults and transportation that need to be debunked. The first is that older adults stop driving and switch to walking, and then switch from walking to public transportation. This is not true. Older adults usually continue to drive longer than they continue to walk and transit usage by older adults is low and is dropping. It fell by 50% between 1995 and 2000 to 1.3% of all trips.<sup>65</sup> Not only do older adults continue to drive, but overall they are driving more than they used to. Vehicle miles traveled increased for people 65+ between 2001 and 2009, whereas it fell for all other age groups.<sup>66</sup> This may reflect older adults living increasingly active lives, it may reflect older adults continuing to work and commute into later ages, or it may reflect the “graying of suburbia”—older adults are disproportionately represented in the populations of outer ring suburbia where the land use pattern can require more driving. The evidence seems to show that for older adults, driving is a key way of getting out in the world. Older drivers take six trips a week outside of their homes, while non-drivers average only two trips.<sup>67</sup> This reduction may have significant impacts on social connections.

Another myth is that older adults are bad drivers. Older adults have fewer crashes per capita than do other age groups. They are more law-abiding and take fewer risks. However, older adults are more likely to be significantly injured or killed than younger people when they are involved in traffic accidents. They also experience more crashes per trip or vehicle mile traveled than other ages of drivers.

As dangerous as driving is for older adults, walking may be more so. Older adults are more likely to be hit by cars, and more likely to die when they are hit. “People 70 and over, who constitute less than 10% of the population, account for 18 percent of pedestrian deaths.”<sup>68</sup> What’s more, falls are a leading cause of death from injuries to older adults. Streets and sidewalks which present uneven surfaces, slick spots, grade changes, and tripping hazards can be particularly hazardous. It is possible that street falls may be a more significant health risk than auto-

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<sup>65</sup> Sandra Rosenbloom (July 2003). “The Mobility Needs of Older Americans: Implications for Transportation Reauthorization” in *The Brookings Institution Series on Transportation Reform*. The Brookings Institution, Washington, D.C.

<sup>66</sup> Federal Highway Administration. (2011). *Summary of Travel Trend: 2009 National Household Travel Survey*. U.S. Department of Transportation, Federal Highway Administration, Washington, D.C.

<sup>67</sup> *Livable Community Indicators for Sustainable Aging in Place*. (2013). Met Life Mature Market Institute.

<sup>68</sup> Sandra Rosenbloom (July 2003). “The Mobility Needs of Older Americans: Implications for Transportation Reauthorization” in *The Brookings Institution Series on Transportation Reform*. The Brookings Institution, Washington, D.C.

pedestrian crashes.<sup>69</sup> “Overall, the elderly may be fifteen times more likely to be injured or killed as pedestrians than as drivers.”<sup>70</sup>

Older adults face a complex situation when they evaluate which transportation option to use. Walking can help maintain overall health, but it can also lead to catastrophic injury or death. Driving is convenient, often the only option, and can also result in serious injury or death. Biking and public transportation also have their pros and cons. This is not an enviable situation and we should be able to design our transportation system better than this.

As discussed in the various “Leverage Points” sections of this toolkit, our transportation system includes publicly and privately owned components. Changing the transportation system involves intervening in community plans and policies, local regulations, and by local, state, and federal transportation infrastructure investments. On the local level, community plans and policies can set a basic framework for prioritizing infrastructure improvements. Zoning sets the basic land use pattern. It determines densities and distances between destinations and therefore has a fundamental influence on the type of transportation required to get from A to B. If a community’s zoning code does not allow densities that support public transportation, there will be no public transportation. If a community’s zoning code establishes commercial districts that are far from housing, then auto dependence will increase. Zoning also influences site level design through Site Plan Review and Special Permits. In this capacity zoning can influence how people enter, exit, move through, and move past a site. Site Plan Review and Special Permits have historically placed a strong emphasis on the traffic impacts of development. They are increasingly contemplating pedestrian and bicycle usage and can result in major improvements in this realm by requiring adequate sidewalks, limiting curb cuts, requiring street trees, requiring bike racks, requiring benches, etc.

Subdivision Regulations are another local regulation that influences the transportation system. In developments where land is subdivided and new roads and sidewalks are built, it is Subdivision Regulations that control their fundamental design characteristics. Subdivision Regulations can control road features like lane width, paving materials, allowed grades, sharpness of curves, and curb radii. They can also set design criteria for sidewalks, open spaces, and other pedestrian and bike necessities.

In most places in Massachusetts, the existing road, and sidewalk network is largely established and is under the control of a mix of private owners, organizations, local, state and federal governments. Improving existing transportation infrastructure requires well-organized advocacy for change, demonstrating need through rigorous transportation studies, and obtaining funding—

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<sup>69</sup> Ibid.

<sup>70</sup> Deborah Howe. *Aging as the Foundation for Livable Communities* in Fritz Wagner and Roger Caves. Eds. *Community Livability: Issues and Approaches to Sustaining the Well-Being of People and Communities* (2012). Routledge.

which can be a significant obstacle. That said, all roads and sidewalks need periodic maintenance which can provide an opportunity for minor improvements or major overhauls.

Each means of moving through our communities—driving, walking, biking, and public transportation—requires community design improvements to help everyone get around and keep active, and the improvements are particularly important for older adults. We will discuss each means of transportation separately below.

## **Driving and Healthy Aging**

As discussed elsewhere, older adults have a variety of characteristics that can influence how they drive. Years of driving experience, risk aversion, and adherence to laws can lead to safe driving habits. Changes in vision, hearing, neck mobility, and reaction time, can place older drivers at risk in certain situations. In response to limitations, older adults tend to adjust their driving behavior. Not only do they reduce their number of trips and the length of those trips, but they often plan routes to avoid fast streets, difficult intersections or other perceived dangers. Ultimately, these coping strategies reduce the number of accidents experienced by older adults, but they can result in isolation, increase gas consumption and emissions, and contribute to congestion on local routes. In places with poorly connected road networks, a single barrier (like a fast-moving road or a particularly dangerous intersection) can dramatically reduce an older person’s ability to get to destinations.

A small number of improvements to our transportation system will benefit everyone and are particularly important to older adults.

## **Key Leverage Points for Driving**

### **Provide diverse road types and speeds (zoning, Subdivision Regulations, Municipal Policies)**

Everyone is well served when they can choose to travel on the type of road that suits them best. Roads should have diverse widths, diverse travel speeds, and diverse intersection designs. Form-based codes (a type of zoning) can set requirements that guide the build-out of road networks and the rebuilding of existing roads. Typically the code shows desired street types through typical road cross-sections (a drawing that illustrates the width and arrangement of car and bike lanes, sidewalk widths and characteristics, street trees, medians, etc.). Form-based codes link these street types to specific locations on a map. This indicates clearly to developers and public works departments what kind of road is desired in which location. How well local public works adhere to this guidance is largely a matter of local policy and executive leadership. Subdivision regulations can also establish desired road cross-sections that apply to new developments.

### **Require a well-connected road and pedestrian network (Subdivision Regulations and zoning)**

In order to have a choice of roads, there must be a well connected road network with multiple

pathways between destinations. Ellen Dunham-Jones recommends that communities “establish a connectivity index based on minimum intersection density for new development as a means to improve street network efficiency.”<sup>71</sup> This can be included in subdivision standards and is primarily applicable to communities where large subdivisions are being built. For all sizes of developments, communities can require new subdivision roads and sidewalks to connect to roads and sidewalks on neighboring parcels, or set aside a right of way for future connections. Elizabeth Plater-Zyberk, a leading designer, recommends the following metrics for connectivity which can be required through subdivision standards: intersection spacing is frequent, with no more than 200-500 feet between intersections. Walking distance for the perimeter of a block is no more than a quarter mile or 1,320 feet. The number of street intersections per square mile is generous, ranging from 120 to 240. The ratio of four-way intersections to three way intersections is telling: four-way intersections provide more connection than three-way intersections.<sup>72</sup> Four-way intersections also happen to be generally safer for older adults. Form-based zoning can also help create a well-connected road and sidewalk network through the establishment of a regulating plan with designated street locations and types.

### **Install highly visible signs (zoning, Subdivision Regulations, and Road Design)**

Signs are regulated by zoning on the site level, Subdivision Regulations for street signs in new developments, and are part of Road Design for municipal, and state roads. In all of these situations, signs are more useful if they are reflective, and have high contrast, large type. For older adults the location of signs is important—when possible, they should be placed over the center of the road and well in advance of the destination to allow time to react and respond. Signs can also add to visual clutter and distract drivers. Zoning is the main tool for limiting overly distracting signs.

### **Establish dedicated left-turn lanes at busy intersections (Road Design)**

Left turns at busy intersections can be particularly difficult for some older drivers who experience slower reaction times and difficulty turning their neck. To compensate, some older drivers attempt to navigate to their destination by only making right-hand turns. To help them out, communities can consider adding dedicated left-turn lanes with a signal arrow at busy intersections. Beginning the lane at mid-block allows time for an older driver to enter the lane.<sup>73</sup> Note that adding dedicated left-turn lanes conflicts with the need to narrow intersections to reduce crossing times and improve walkability.

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<sup>71</sup> Ellen Dunham-Jones and June Williamson. *Retrofitting Suburbs* in Henry Cisneros, Margaret Dyer-Chamberlain, Jane Hickie (Eds). *Independent for Life: Homes and Neighborhoods for an Aging America*. (2012). Austin: University of Texas Press.

<sup>72</sup> Elizabeth Plater-Zyberk and Scott Ball. *Longevity and Urbanism* in Henry Cisneros, Margaret Dyer-Chamberlain, Jane Hickie (Eds). *Independent for Life: Homes and Neighborhoods for an Aging America*. (2012). Austin: University of Texas Press.

<sup>73</sup> Arizona State University Herberger Center for Design Excellence, *Livable Communities: An Evaluation Guide, Prepared for the AARP Public Policy Institute* (Washington, D.C: AARP Public Policy Institute, 2005).

### **Use medians on wide streets and streets with a lot of traffic (Road Design)**

Medians have multiple benefits. They can reduce glare from on-coming traffic. They can provide a protected space for pedestrians and bicyclists to stop and rest when crossing wide streets. When planted with trees they can provide shade and beautify the street. Medians can slow traffic by decreasing real and/or perceived road width (people drive faster on wider roads). Medians can also restrict left-hand turns to intersections increasing predictability for drivers travelling the opposite direction.

### **Enhance pavement markings (Road Design)**

Retro-reflective pavement markings, wider lane stripes (6-8" instead of the typical 4"), and curbs treated with retroreflective paint and/or reflectors can help older drivers stay on course, particularly at night and in wet conditions.<sup>74</sup>

### **Install brighter stoplights (Road Design)**

### **Convert two-way stop intersections to four-way stop intersections (Road Design)**

## **Walking and Healthy Aging**

Walking and/or using a wheelchair for daily activities is a valuable way to get recommended daily exercise. Walking has numerous health benefits including, improving blood pressure, reducing risk of heart disease, alleviating depression, and significantly reducing the risk of Alzheimer's.<sup>75</sup> Despite the numerous benefits, older Americans make less than 9% of their trips by walking.<sup>76</sup> This is in part due to the built environment—most communities are simply not set up for pedestrians. Both the general land use pattern of a community and the specific infrastructure for pedestrians can influence how much people walk. A study that compared older non-drivers who lived in

In his late 80's, Gene walks two and a half hours a day. He typically visits a local café for a healthy bowl of vegetarian soup and the library which is "his second home." He walks on the street rather than along the sidewalk because he thinks the danger of being hit by a car is lower than the danger of tripping and falling on the cracked, uneven sidewalks. For those who don't get out and move, he says, "Just get started. I started running marathons in my 50's and ran six of them because I wanted to set an example for my daughters."

<sup>74</sup> Lynott, J., Taylor, A., Hasses, J., Nelson, K., Ulmer, J. McCann, B., et al. (2009). "Planning For Complete Streets in an Aging America", AARP Public Policy Institute. Washington, D.C.

<sup>75</sup> Walk Boston. *For Health*. Retrieved from: <http://walkboston.org/initiatives/health>

<sup>76</sup> Pedestrian and Bicycle Information Center. *Who's Walking and Bicycling*. Retrieved from: <http://www.pedbikeinfo.org/contact.cfm>

high-density, walkable neighborhoods in the Philadelphia metro area with their counterparts in sprawling the Los Angeles metro area, found that in walkable Philadelphia, only 35% of older non-drivers stay home on a given day. In L.A., that number jumps to 53%. When considering pedestrian infrastructure, the barriers are obvious and fundamental. In a recent poll, “40 percent of adults age 50 and older reported inadequate sidewalks in their neighborhood. Nearly 50 percent reported that they cannot cross main roads close to their homes safely. Half of those who reported such problems said they would walk, bicycle, or take the bus more if problems were fixed.”<sup>77</sup> There are a lot of problems to fix, and there is some evidence that a substantial number of them must be completed before older adults will shift to walking more. A study of older Atlantans, found that only those who lived neighborhoods which were in the top third of walkability were more likely to walk than those in the least walkable neighborhoods. In other words, older adults require very high levels of walkability before their behavior changes. However, on the positive side, the study’s authors concluded that “walking levels could increase 2-fold if older adults had access to multiple destinations within short distances by living in a more walkable neighborhood as currently defined.”<sup>78</sup> There is much to do, but the potential rewards of improving walkability are great.

## **Key Leverage Points for Walking**

### **Encourage compact development patterns where housing is located close to destinations (zoning)**

#### **Set appropriate pedestrian crossing signal times (Road Design)**

Pedestrian crossing signals should be set for a walking speed of 3.5 feet per second plus 7 seconds to leave the curb.<sup>79</sup> (This signal length may still not accommodate all users, including those in wheelchairs). Note, however, that if pedestrian signal times are too long, drivers may become impatient and engage in risky behavior like running a red light to avoid waiting at a long light, or making an illegal right turn on red. Because of this conflict, the best approach is to reduce the curb-to-curb length of pedestrian crossings whenever possible.

#### **Limit right turn on red (Road Design)**

Right turns on red are a major source of auto-pedestrian fatalities for older adults and can result in death at even relatively low speeds. Channelized right turn lanes enable drivers to move

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<sup>77</sup> Lynott, J., Taylor, A., Hesses, J., Nelson, K., Ulmer, J. McCann, B., et al. (2009). “*Planning For Complete Streets in an Aging America*”, AARP Public Policy Institute. Washington, D.C.

<sup>78</sup> Lawrence Frank, Jacqueline Kerr, Dori Rosenburg, and Abby King. “Healthy Aging and Where You Live: Community Design Relationships With Physical Activity and Body Weight in Older Americans.” *Journal of Physical Activity and Health*, 2010, 7(Suppl 1), S82-S90.)

<sup>79</sup> Lynott, J., Taylor, A., Hesses, J., Nelson, K., Ulmer, J. McCann, B., et al. (2009). “*Planning For Complete Streets in an Aging America*”, AARP Public Policy Institute. Washington, D.C.

through an intersection faster, and therefore increase the likelihood of death if they hit an older pedestrian. There is a 5% chance that a pedestrian will die if hit by a motor vehicle at 20 mph. That chance increases to 45% at 30 mph and 85% at 40 mph.<sup>80</sup>

### **Build adequate sidewalks (Site Plan Review and Subdivision Regulations, Road Design)**

Sidewalks should have a minimum 4-6' pedestrian clearway. A pedestrian clearway is the area of a sidewalk in which a person is free to move without obstacles like signs, parking meters, benches, or café tables. Sidewalks should have smooth non-slip pavements. Sidewalks should have minimal cross-slope. Curb ramps should lead directly to sidewalks. Two curb ramps should be provided when there are two sidewalks, rather than one in the middle of the two sidewalks.

### **Limit corner radii (Site Plan Review and Subdivision Regulations, Road Design)**

A corner radius is the curved sections of a curb at the intersection of two streets, or a street and a driveway. Corner radii allow vehicles to make turns without the backwheels hitting the curb. The larger the curb radius, the faster a given vehicle can make a turn. Historically, communities have required large curb radii so that the largest vehicles could make turns without obstacles. However, large curb radii have a significant impact on pedestrians. Larger curb radii result in longer distances from curb to curb for pedestrians, and for pedestrians, the length of a road crossing is directly related to the length of time they are at risk of being hit by a car. Corner radii, in normal situations, should not be larger than 10-15 feet. Some urban areas make them as small as 2 feet.<sup>81</sup>

### **Provide complete pedestrian infrastructure (Site Plan Review and Subdivision Regulations, Road Design)**

For high levels of walkability, pedestrians require more than just sidewalks. They require shade which can be provided by street trees. They require places to rest which can be provided by benches or café tables. They require public bathrooms. All of these elements are particularly important to older adults who tend to be more sensitive to heat, need to rest more often, and require bathroom breaks frequently. These elements of pedestrian infrastructure for older adults should be seen as necessities--not amenities--for everyone .

### **Maintain existing pedestrian infrastructure (Municipal process)**

See Focus on Aging: Destinations for Healthy Aging

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<sup>80</sup> Lynott, J., Taylor, A., Hasses, J., Nelson, K., Ulmer, J. McCann, B., *et al.* (2009). *Planning For Complete Streets in an Aging America*, AARP Public Policy Institute. Washington, D.C.

<sup>81</sup> NACTO, Urban Street Design Guide, Corner Radii. Retrieved from: <http://nacto.org/usdg/corner-radii/>

### **Case Study: NYC Safe Streets for Seniors Initiative**

“Through its Safe Streets for Seniors initiative the City’s [NYC] Department of Transportation (DOT) is implementing safety improvements in 25 areas identified as having an above-average rate of senior pedestrian fatalities and injuries. Typical improvements include: extending pedestrian crossing times at crosswalks, adding countdown clocks, altering curbs and sidewalks, restricting vehicle turns, and narrowing roadways. As of May 2013, DOT had finished implementing improvements in 17 of the 25 areas. Since Safe Streets for Seniors began, senior pedestrian fatalities have decreased 21% citywide from 58 in 2008 to 46 in 2012 and safety for all road users, especially pedestrians, continues to improve where these projects have been implemented.”

–Age-Friendly NYC. “59 Initiatives: Age-Friendly NYC. (2013)

### **Biking and Healthy Aging**

Like walking, biking has numerous health benefits, as well as risks for older adults. Generally, biking is limited to older adults with few physical limitations. However, bicycle technology is rapidly expanding access to older adults with physical limitations, especially through three and four wheeled bicycles. Biking allows older adults to travel longer distances and is therefore important for carrying out daily tasks in areas where the distance between home and destinations are larger than about a ¼ mile.

### **Key Leverage Points for Biking**

Our research did not identify any special needs for older bicyclists. For key leverage points for all ages see “Walking, Biking and Transit Networks.”

## **Public Transportation and Healthy Aging**

Though older adults make relatively few trips via public transportation, for those who depend on it is a crucial link. While people of all ages want more frequent, faster public transportation with routes that go to desirable destinations, older adults also make some more humble requests as detailed below.

### **Key Leverage Points for Public Transportation**

#### **Create legible route maps and time tables (Walking, Biking and Transit Networks)**

Older adults who use public transportation find that the route maps and the time tables they use to navigate the system are difficult to read. Large, high contrast type and graphics would help everyone, especially older adults, take advantage of existing public transportation.

#### **Courteous Drivers (Walking, Biking and Transit Networks)**

Older adults deserve respect. They ask that public transportation employees act more courteously.

#### **Eliminate restrictions on what can be transported by public transportation (Walking, Biking and Transit Networks)**

Some public transportation systems limit the number of grocery bags that a person can carry onto a bus. Others limit when a bike can be moved by public transportation. This kind of limitation which is intended to reduce congestion on vehicles, also limits older adults's ability to use public transportation for daily activities.

#### **Reserve Seats for Older adults (Walking, Biking and Transit Networks)**

#### **Provide Shelters and benches at bus stops (Walking, Biking and Transit Networks)**

#### **Provide public restrooms near bus stops (Walking, Biking and Transit Networks)**

# Stormwater Management

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## Definitions

### *Combined Sewer Overflow (CSO)*

systems are older water management systems that collect both stormwater runoff and wastewater (sewage) using the same network of pipes. After small rain events, these combined sewers bring a stormwater/sewage mixture to wastewater treatment plants for treatment prior to discharge in local water bodies. However, after large rain events, stormwater overloads the system, causing the stormwater/sewage mixture to flow directly into rivers and streams. Most locations are now served by separate sewer and stormwater systems, but some CSO systems are still connected, as it is an expensive process to separate the systems.

*Green Infrastructure* consists of natural or engineered systems (including rain gardens, bioswales, green roofs and cisterns) that capture and control stormwater near to where it falls. In these systems, stormwater can be cleansed as it moves through soils and the roots of plants, returned through soils to groundwater (infiltration), returned to the air (evapotranspiration), or captured to irrigate plants or flush toilets (reuse). Because these systems typically use plants to enhance or mimic natural processes, they are called “green infrastructure.” Green infrastructure contrasts with traditional “gray infrastructure,” which is typically built to convey rainfall from roofs, parking lots and streets into catchbasins and pipes that have outlets at the nearest waterway.

*Green Roofs* incorporate soil and vegetation into a structure’s rooftop system. These systems can range from thin soils with moss up to thick soils capable of supporting micro-farms. The main benefits of green roofs are enhanced stormwater management, insulating properties, and UV protection for roof membranes.

*Green Streets* include green infrastructure into the overall design of the roadway. Instead of relying solely on storm drains, green streets incorporate techniques including permeable pavements, vegetated swales, and other systems that mimic natural processes to reduce the amount of runoff that is introduced into the stormwater system.

*Gross Floor Area* is a calculation of the amount of usable floor area of a structure. This is sometimes used in zoning regulations to determine how much usable floor space is allowed in a particular zone. This is often related to Floor to Area Ratio (FAR) which is a ratio of the gross floor area of a building to the actual size of the parcel it is built on. In some municipalities, an accessible roof counts toward the Gross Floor Area calculation. Note: The exact definition of what is and what is not included in this calculation varies by municipality.

*Low Impact Development (LID)* is an approach to land development that mimics nature by managing stormwater as close to its source as possible. LID employs techniques such as preserving or recreating natural landscape features and minimizing the amount of impervious surface area to create site drainage that treats stormwater as a resource (through reuse or infiltration back into the ground), rather than a waste product.

*Rain Gardens* are areas designed to collect and infiltrate water into the ground quickly, redirecting water that would normally drain into the stormwater system. The water is filtered by vegetation and soil as the water infiltrates either into the ground, or if the soil is not suitable, into a below-ground pipe connected to a larger system.

*Stormwater Utilities* are fees that charge users for municipal stormwater services, including maintenance and upgrades to a community's stormwater management infrastructure. Note: This term can be confusing because a stormwater or sewer utility is also the organizational entity that is in charge of collecting the fees and providing the service.

## **Introduction**

The health of a community's water includes not only the drinking water supply, but also the quality of surface waters used for recreational purposes, including lakes, rivers and streams. Pollution from stormwater runoff directly impacts surface water quality and whether it is safe to boat or swim in a given water body.

Traditionally, stormwater management systems have been designed to remove runoff from developed areas as quickly as possible, with little concern for other effects. This traditional approach creates considerable water pollution and flooding impacts. As stormwater runoff is collected and channeled to underground pipes, it carries pollutants that are discharged directly to local water bodies, including sediments, nutrients (e.g. from fertilizers that have been applied to lawns), pesticides, bacteria (e.g. from pet waste), and oil and heavy metals (e.g. from automobiles). Sometimes pollutants (e.g. used oil, paint thinners, restaurant grease) are illegally dumped directly into storm drains. Where Combined Sewer Overflow (CSO) systems are still in place, large rain events cause raw sewage to flow directly into local rivers and streams.

There are many documented health impacts associated with stormwater pollution. The most acute human health impacts result from fecal coliform bacteria in surface waters, which result

from nutrient pollution and commonly exceed standards for recreation. Exposure to bacteria and parasites from swimming and other recreation in water contaminated with stormwater runoff causes various illnesses, including ear and eye discharges, skin rashes, and gastrointestinal problems.

Today, communities are thinking of better ways to manage stormwater, ideally before the water reaches the drainage system. One significant management goal is to reduce peak flows, or the largest volume of runoff that occurs at a given time after a rain event. This reduces the amount of pollutants that are carried to nearby water bodies. In locations that still have Combined Sewer Overflow (CSO) systems, peak flow reduction reduces the frequency with which the volume of the stormwater/sewage mixture exceeds wastewater treatment plant capacity and must be discharged directly without treatment into local water bodies. In addition to more traditional approaches to reduce peak flows (e.g. detention basins, which hold and then slowly release water after a rain event), new Low Impact Development (LID) approaches such as rain gardens hold water and infiltrate it into the ground, reducing the total quantity of runoff that reaches the stormwater system.

By improving stormwater management, a community can create healthier waterways that allow residents to safely enjoy boating and swimming activities.

## Stormwater Management Checklist

- Adopt a stormwater bylaw/ordinance.
  - Require a large proportion of stormwater runoff to be infiltrated, and require that post-development runoff volumes and rates do not exceed pre-development conditions.
  - Give preference to Low Impact Development (LID) management techniques where appropriate.
  - Include standards for small projects, and encourage residential projects to manage stormwater with rain gardens.
  - Develop standards for improvement at redevelopment sites.
  - Minimize pooling of water, discourage large retention ponds and require retention ponds to drain within a maximum of 2-3 days to eliminate mosquito breeding.
- Create a stormwater management program responsible for systematic efforts to improve the municipality's stormwater services and local water quality.
- Establish a stormwater utility to charge for municipal stormwater management services (just as utility fees are charged for providing drinking water, sewers, and other public services) and to fund the local stormwater management program.
- Establish a stormwater rebate program to promote improved stormwater management practices at existing properties. Rebate incentives can be provided through stormwater utility fee reductions or direct rebate payments.
- Adopt a Green Streets Policy to ensure systematic stormwater management improvements on municipal roadways. Also see section on Road Design.
- Encourage Low Impact Development (LID) techniques through Site Plan Review and Special Permit criteria, as well as Subdivision Regulations.
- Incentivize green roofs through zoning regulations (e.g. through density bonuses or by exempting accessible green roofs from Gross Floor Area calculations).
- Within landscaping regulations (typically part of site development regulations in zoning), require or encourage the use of plants that need little watering or fertilizer.
- Establish source reduction regulations, including bans on use of chemical fertilizers, pesticides, and coal tar sealants.
- Install green infrastructure (e.g. rain gardens, green roofs) on municipal properties, and highlight municipal green infrastructure projects as public educational examples.
- Create/Participate in surface water quality monitoring programs and public education explaining the link between stormwater management and water quality.

## Resources

*CRWA Baseline Water Quality Monitoring.* (2008). Charles River Watershed Association. Retrieved from: [http://www.crwa.org/water\\_quality/monthly/monthly.html](http://www.crwa.org/water_quality/monthly/monthly.html)

*Drought-Tolerant Landscape Ordinance.* (2013). Los Angeles County, California. Retrieved from: <http://www.naco.org/programs/csd/Lists/GGLinksNew/Attachments/309/Los%20Angeles%20County,%20CA%20-%20Landscape%20Ordinance.pdf>

*Funding Stormwater Management.* (2010). Metropolitan Area Planning Council. Retrieved from: <http://www.epa.gov/region1/npdes/charlesriver/pdfs/MAPCSWFundingResourceGuide.pdf>

*Green Streets Policy.* (2007). The City of Portland, Oregon. Retrieved from: <http://www.portlandoregon.gov/bes/article/154231>

*How to Create a Stormwater Utility.* (1999). Ratte, C.. Pioneer Valley Planning Commission. Retrieved from: [http://www.pvpc.org/web-content/docs/landuse/storm\\_util.pdf](http://www.pvpc.org/web-content/docs/landuse/storm_util.pdf)

*Human Health Impacts from Stormwater Runoff.* (n.d.). Carson, H., Eaker, B., Gibson, P., Randall, M. Land of Sky Regional Council. Retrieved from: <http://www.riverlink.org/stormwaterseriesfinal2.pdf>

*Landscaping Requirements.* (2013). Community Development Department. City of Sacramento. Retrieved from: <http://www.cityofsacramento.org/dsd/code-compliance/landscaping/>

*Low Impact Development.* (2013). U.S. Environmental Protection Agency Retrieved from: <http://water.epa.gov/polwaste/green/>

*Phosphorus Fertilizer Ordinance.* (n.d.). City of Ann Arbor. Retrieved from: [http://www.a2gov.org/government/publicservices/systems\\_planning/Environment/Pages/PhosphorusFertilizer.aspx](http://www.a2gov.org/government/publicservices/systems_planning/Environment/Pages/PhosphorusFertilizer.aspx)

*Program Overview: Clean River Rewards.* (2013). Environmental Services. The City of Portland, Oregon. Retrieved from: <http://www.portlandoregon.gov/bes/article/390568>

*Rain Smart Rewards.* (2012). City of Chicopee. Retrieved from: <http://ecode360.com/documents/CH1214/source/478577.pdf>

*RainScapes Program.* (2013). Department of Environmental Protection. State of Maryland. Retrieved from: <http://www6.montgomerycountymd.gov/dectmpl.asp?url=/content/dep/water/rainscapes.asp>

*Restriction on Coal Tar-Based Sealants.* (2013). Minnesota Pollution Control Agency. State of Minnesota. Retrieved from: <http://www.pca.state.mn.us/index.php/water/water-types-and-programs/stormwater/municipal-stormwater/restriction-on-coal-tar-based-sealants.html>

*Stormwater.* (n.d.). McDonald, Doug. City of Northampton. Department of Public Works. Retrieved from:

[ftp://74.94.173.236/DPW/Stormwater/Stormwater%20System%20Brochure\\_v2.pdf](ftp://74.94.173.236/DPW/Stormwater/Stormwater%20System%20Brochure_v2.pdf)

*Stormwater Bylaws Toolkit.* (2010). Pillsbury, M.. Metropolitan Area Planning Council. Retrieved from: <http://www.mapc.org/resources/stormwater-bylaws-toolkit>

*Stormwater Funding Utility Starter Kit.* (2013). Metropolitan Area Planning Council. Retrieved from: <http://www.mapc.org/node/1522/view>

*Stormwater Management [Erosion Control and Illicit Connections] Fact Sheet and Model Ordinance.* (2013). Pioneer Valley Planning Commission. Retrieved from: [http://www.pvpc.org/val\\_vision/html/toolbox/PDFs/building%20blocks/Stormwater%20Management-Erosion%20Control-Illicit%20Connections.pdf](http://www.pvpc.org/val_vision/html/toolbox/PDFs/building%20blocks/Stormwater%20Management-Erosion%20Control-Illicit%20Connections.pdf)

*Stormwater Management [Low Impact Development Design Standards] Fact Sheet and Model Bylaw.* (2013). Pioneer Valley Planning Commission. Retrieved from: [http://www.pvpc.org/val\\_vision/html/toolbox/PDFs/building%20blocks/Low%20Impact%20Design%20Standards.pdf](http://www.pvpc.org/val_vision/html/toolbox/PDFs/building%20blocks/Low%20Impact%20Design%20Standards.pdf)

*Stormwater Utilities Fact Sheet.* (2013). Pioneer Valley Planning Commission. Retrieved from: [http://www.pvpc.org/val\\_vision/html/toolbox/PDFs/building%20blocks/Stormwater%20Utilities.pdf](http://www.pvpc.org/val_vision/html/toolbox/PDFs/building%20blocks/Stormwater%20Utilities.pdf)

*Water Quality Monitoring Project.* (n.d.). Connecticut River Watershed Council. Retrieved from: [http://www.criver.org/programs/outreach\\_education/water\\_quality\\_monitor/index.html](http://www.criver.org/programs/outreach_education/water_quality_monitor/index.html)

# Green and Fit Buildings

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## Definitions

*Fit Buildings*, also called Active Buildings, are buildings that promote physical activity as part of the daily behavior of occupants. For example, fit buildings can include designs that promote use of stairs over elevators.

*Green Buildings* are designed, built and operated in a manner that is environmentally responsible and resource efficient. Green buildings address energy efficiency, occupant health, waste reduction, materials production, and other relevant issues.

*Green Roofs* incorporate soil and vegetation into a structure's rooftop system. These systems can range from thin soils with moss up to thick soils capable of supporting micro-farms. The main benefits of green roofs are enhanced stormwater management, insulating properties, and UV protection for roof membranes.

*Smart Growth* refers to development that is concentrated in and around downtowns, village centers, transit stops, or other infrastructure that provides convenient access to goods and services without relying on use of automobiles. Smart Growth is characterized by mixed-use downtowns and neighborhoods, diverse housing options and increased walkability. This compact development pattern protects open space and farmland, revitalizes downtowns, supports affordable housing options, and provides more transportation choices by directing growth to locations where higher densities can be supported.

*Urban Heat Island Effects* occur when pavement and buildings absorb solar energy throughout the day and radiate that heat back into the air. This is due to pavement, buildings and other structures absorbing more heat from sunlight than the natural landscape. For example, this can cause the ambient temperature of a city of one million people to be 2-5°F hotter during the day and up to 22°F hotter at night than a rural location in the same area.<sup>82</sup>

## Introduction

By designing buildings that take into consideration the health of people who use those buildings, everyday activities become healthier activities. Green buildings address occupant health as well as larger community and environmental impacts. For example, indoor air quality can be improved by using low-VOC (volatile organic compound) paints and adhesives during construction, and by ensuring good ventilation while the building is in use. Green buildings are also often sited in smart growth locations within walking distance of multiple destination resources. Overall, green buildings reduce environmental impacts, and some of these measures directly augment the ability of local residents to maintain an active lifestyle. For example, better stormwater management improves the quality of nearby rivers and other

## Principles of Universal Design:

- **PRINCIPLE ONE: Equitable Use**  
The design is useful and marketable to people with diverse abilities. Take advantage of compact building design;
- **PRINCIPLE TWO: Flexibility in Use**  
Create walkable neighborhoods;
- **PRINCIPLE THREE: Simple and Intuitive Use**  
Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.  
Preserve open space, farmland, natural beauty, and critical resources;
- **PRINCIPLE FOUR: Perceptible Information** The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.
- **PRINCIPLE FIVE: Tolerance for Error**  
The design minimizes hazards and the adverse consequences of accidental or unintended actions.
- **PRINCIPLE SIX: Low Physical Effort**  
The design can be used efficiently and comfortably and with a minimum of fatigue.
- **PRINCIPLE SEVEN: Size and Space for Approach and Use**  
Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

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Source: "The Center for Universal Design (1997). The Principles of Universal Design, Version 2.0. Raleigh, NC: North Carolina State University." Accessed at: [http://www.ncsu.edu/ncsu/design/cud/about\\_ud/udprinciplestext.htm](http://www.ncsu.edu/ncsu/design/cud/about_ud/udprinciplestext.htm)

<sup>82</sup> *Heat Island Effect*. (2013). US Environmental Protection Agency. Retrieved from: <http://www.epa.gov/hiri/>

water bodies that are used for recreation purposes.<sup>83</sup> Another example is the use of light-colored roofs and pavements, both of which reduce urban heat island effects and smog formation (harmful gasses and particulates in the air), making developed areas more comfortable for physical activity (though decreased outdoor temperatures in summer) and improving local air quality.

Designing a building to be a fit building, or to promote physical activity as part of the daily behavior of occupants, also has lasting health impacts. For example, a building's design can increase stair use by locating the stairs prominently by the entrance while placing elevators out of direct sight. Another example gives employees the option to use standing workstations in place of desks in an effort to combat the harmful health effects of sitting all day (including increased blood pressure and cholesterol levels<sup>84</sup>).

Local actions promoting green and fit buildings are limited by the requirement for the Building Code to be uniform statewide. The state establishes the Building Code, and municipalities cannot make changes to it that would apply only locally.

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<sup>83</sup> See Stormwater Management section.

<sup>84</sup> Levine, James A., M.D., Ph.D., (June 16, 2012) "What are the harmful risks of sitting?" Adult Health. Mayo Clinic. Retrieved from: <http://www.mayoclinic.com/health/sitting/AN02082>

## Green and Fit Buildings Checklist

- Require new development projects over 25,000 square feet to meet the requirements of the most current applicable USGBC (United States Green Building Council) LEED (Leadership in Energy and Environmental Design) and/or other applicable green building rating systems.
- Encourage or incentivize (e.g. through density bonuses, expedited permitting, or reduced permitting costs) buildings that meet the requirements of EPA's Indoor airPLUS Certification program.
- Adopt bicycle parking/storage requirements.
  - Require commercial and civic developments to provide bicycle racks for customers and employees.
  - Require large commercial and civic developments (e.g. larger than 20,000 square feet) to provide covered bicycle storage and shower facilities for employees.
  - Require multifamily residential buildings to provide covered bicycle storage facilities for at least 15 percent of all building occupants.
- Provide green and fit building design guidelines to developers to promote:
  - Green building design, in particular measures addressing indoor air quality and daylighting (both improve occupant health and productivity).
  - Fit building design and healthy snack options in vending machines.
  - Work programs that encourage fit activities and that incentivize use of sustainable transportation by employees.
- Use development pre-application conferences, Site Plan Review/Special Permit processes and design guidelines to encourage the incorporation of fit building concepts into construction so that buildings are designed to:
  - Promote use of stairs and walking pathways.
  - Have well lit, prominent and wide stairways that promote walking.
  - Focus more on stairways and less on elevators and escalators.
  - Incorporate walking routes within the interior design layout.
  - Provide exercise rooms or other on-site exercise options, as well as showers and locker rooms, in larger facilities.
  - Include places to store and prepare healthy foods.
- Establish Site Plan Review criteria to encourage outdoor common areas (e.g. shaded outdoor seating for lunch) and exercise options where appropriate.
- Adopt green and fit buildings policies for school and municipal construction projects.<sup>85</sup>

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<sup>85</sup> See Municipal Policies and Programs section.

## Resources

*Active Building Design Checklist*. (n.d.). Center for Active Design. Retrieved from:  
<http://centerforactivedesign.org/dl/?id=42>

*Energy Efficiency Standards*. (2011). Cambridge Department of Community Development. Retrieved from:  
<http://www.cambridgema.gov/CDD/zoninganddevelopment/energyefficientbuildings.aspx>

*Green Building Incentive Strategies*. (n.d.). US Green Building Council. Retrieved from:  
<http://www.usgbc.org/Docs/Archive/General/Docs6248.pdf>

*Green Building Policies and Programs*. (2011). American Planning Association Planning Advisory Service. Retrieved from: <http://www.planning.org/pas/infopackets/subscribers/pdf/EIP-13.pdf>

*Green Building Standards Model Bylaw*. (2011). Pioneer Valley Planning Commission. Retrieved from:  
[http://www.pvpc.org/val\\_vision/html/toolbox/Part%20III%20Strategies/Model%20Bylaws/Model%20Green%20Building%20Standards.rtf](http://www.pvpc.org/val_vision/html/toolbox/Part%20III%20Strategies/Model%20Bylaws/Model%20Green%20Building%20Standards.rtf)

*Green Building/Stretch Code Fact Sheet and Model Green Building Standards*. (2013). Pioneer Valley Planning Commission. Retrieved from:  
[http://www.pvpc.org/val\\_vision/html/toolbox/PDFs/building%20blocks/Green%20Buildings.pdf](http://www.pvpc.org/val_vision/html/toolbox/PDFs/building%20blocks/Green%20Buildings.pdf)

*LEED*. (2013). US Green Building Council. Retrieved from: <http://www.usgbc.org/LEED/>

*Resources*. (n.d.). Center for Active Design. Retrieved from:  
<http://centerforactivedesign.org/resources/>

*What is Indoor airPLUS?* (2013). U.S. Environmental Protection Agency. Retrieved from:  
<http://www.epa.gov/iaplus01/about.html>

# Municipal Policies and Programs

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## Definitions

*Complete Streets* are roads that are designed for all modes of transit, including vehicles, public transportation, biking and walking, and people of all abilities. Design considerations include bike or bus lanes, road narrowing, sidewalks, crosswalks, and facilities such as covered bus stops or bicycle parking.

*Green Infrastructure* consists of natural or engineered systems (including rain gardens, bioswales, green roofs and cisterns) that capture and control stormwater near to where it falls. In these systems, stormwater can be cleansed as it moves through soils and the roots of plants, returned through soils to groundwater (infiltration), returned to the air (evapotranspiration), or captured to irrigate plants or flush toilets (reuse). Because these systems typically use plants to enhance or mimic natural processes, they are called “green infrastructure.” Green infrastructure contrasts with traditional “gray infrastructure,” which is typically built to convey rainfall from roofs, parking lots and streets into catchbasins and pipes that have outlets at the nearest waterway.

*Joint (or Community) Use Agreements* are formal agreements between separate government entities that allow for shared use of public property or facilities (e.g. an agreement between a city and a school district to allow community members to use playgrounds and fields when school is not in session).

*Safe Routes to School* programs designate a safe path to school for children using sidewalks, bike lanes and multi-use paths. Signage identifies the route to drivers where appropriate.

*Smart Growth* refers to development that is concentrated in and around downtowns, village centers, transit stops, or other infrastructure that provides convenient access to goods and services without relying on use of automobiles. Smart Growth is characterized by mixed-use downtowns and neighborhoods, diverse housing options and increased walkability. This compact

development pattern protects open space and farmland, revitalizes downtowns, supports affordable housing options, and provides more transportation choices by directing growth to locations where higher densities can be supported.

*Transportation Demand Management* employs strategies to decrease traffic that reduce travel demand, especially use of single-occupancy automobiles, or that redistribute travel demand.

*Walking School Bus* programs organize children, led by adults such as parents or teachers, to walk to and from school as a group. Bicycle trains are similar but involve biking instead of walking.

## **Introduction**

Municipalities must lead by example, and municipal policies and programs can have a very real effect on the health of a community. These strategies address siting of schools and municipal buildings, developing programs that promote healthy activities, and incorporating healthy community ideas into everyday municipal decisions.

The siting of municipal facilities including COAs and Senior Centers and schools in accessible, smart growth locations that can be reached with existing walking, biking and public transit options can go a long way to promote more walking and biking. For example, a school sited at the edge of a community may only be reachable without a car by a select few who live in that part of town. In comparison, a school located in the heart of downtown neighborhood allows many more students and staff to walk or bike to school. According to MassRIDES, in 1963 roughly 48 percent of children walked or biked to school.<sup>86</sup> Today that number is 13 percent, and travel to school may account for 25 percent of all morning traffic. The Federal Highway Administration points to the dangers of traffic as one of the largest reasons that parents do not allow their children to walk to school.<sup>87</sup>

Programs that attempt to overcome this barrier and actively promote walking and biking to school include Safe Routes to School and Walking School Buses or Bicycle Trains. In addition, by getting some students to walk and bike to school rather than being dropped off by cars, these programs also reduce traffic around schools, further increasing safety for students and increasing parent comfort levels with allowing their children to walk to school.

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<sup>86</sup> *Safe Routes to School*. (n.d.). MassRIDES. Retrieved from: <http://www.commute.com/schools>

<sup>87</sup> *Barriers to Children Walking and Biking to School*. (2005). U.S. Centers for Disease Control. (as cited in *Safe Routes to School*. (2012). USDOT Federal Highway Administration. Retrieved from: [http://www.fhwa.dot.gov/environment/safe\\_routes\\_to\\_school/#s4](http://www.fhwa.dot.gov/environment/safe_routes_to_school/#s4))

Municipal programs can also incentivize walking, biking and public transit use by municipal employees. Meanwhile, a robust network of Complete Streets promotes active lifestyles while ensuring that everyone can safely travel to where they need to go.<sup>88</sup>

### **Focus on Aging: Older adults are a key leverage point**

Older adults are an important civic resource for all communities. Their energy, wisdom and effort help to keep our communities running. Older adults play an active role in community politics, by voting<sup>89</sup>, promoting candidates for election, or serving as selectmen or city councilors. Many older adults also sit on the boards and committees that have a direct influence of community planning and design, like the planning board, or zoning board of appeals. Older adults's high participation rates in community processes gives them strong influence over community design. Often, for example, key decisions about a new land use regulation or a development project are made by older adults who hold positions of power and influence. Therefore, the opinions, beliefs and actions of older adults are a key leverage point for promoting healthy community design and planning. Luckily, “what is good for older adults is often good for everyone else,” so older adults can act in their own self-interest—by advocating for community design that meet their own needs—and they will simultaneously improve the quality of life for everyone.

Although older adults as a whole have a high rate of civic participation, there may be some barriers to full participation in municipal processes for some older. They may be unable to attend meetings due to mobility limitations, or unable to participate meaningfully in public meetings due to vision or hearing impairments. Public health and aging network professionals are natural advocates for the needs of these underserved older adults. At the same time, everyone involved in coordinating public meetings and processes needs to work to eliminate barriers to participation. Best practices include, holding meetings in accessible locations that are served by a wide range of transportation options, making sure the meeting room itself is easy to find within a building, holding meetings at a range of times and days of the week to meet the needs of a wide-range of participants, ensuring that meetings are held in locations with convenient bathrooms, and preparing graphics and handouts with legible type and graphics (e.g. large, simple fonts and high contrast graphics), and providing microphones at meetings to ensure that everyone can hear and be heard.

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<sup>88</sup>See Road Design section.

<sup>89</sup> In Massachusetts, only 22.4% of 18-24 year olds voted in 2010. Whereas, 68.5% of 55-64 year olds did, 68% of 65-74 year olds, and 60.4% of 75+ year olds. Source: National Conference on Citizenship, “Political Action: Massachusetts and Nationwide Data, Massachusetts Civic Health Index 2011,” February 7, 2012. Accessed at: <http://ncoc.net/Massachusetts-and-Nationwide-Data-on-Political-Action>”

## Municipal Policies and Programs Checklist

### *Adopted Policies and Resolutions*

- Adopt a policy to site new municipal facilities in walkable locations, and for site plans to be walkable. (City Council/Town Meeting)
- Adopt a policy to site new schools within walking distance of existing residential populations,<sup>90</sup> to focus on the renovation of existing neighborhood schools when feasible, and for school site plans to be walkable. (School Board)
- Adopt a policy to site public affordable and senior housing in walkable locations with easy access to shopping, services, recreation and transit. (City Council/Town Council)
- Adopt the Planning for a Healthier Future through the Built Environment and Community Design Resolution. (Board of Health)
- Adopt green and fit buildings policies for school and municipal construction projects.<sup>91</sup> (City Council/Town Meeting, School Board)
- Adopt a Complete Streets Policy<sup>92</sup> (City Council/Town Meeting, Board of Public Works)

### *Administrative Policies*

- Require a community health advocate to sit on the School Building Committee and all ad hoc municipal building committees.
- Create an Inter-Departmental Project Review Process that establishes meetings of representatives from various municipal departments/boards, including the Board of Health, to provide review and feedback on projects while still in design development.<sup>93</sup>
- Establish joint use agreements (also known as community use agreements) making school and municipal facilities (e.g. pools, playgrounds or playing fields) open to all residents.

### *Programs*

- Develop Safe Routes to School and Walking School Bus programs. Close roads adjacent to schools to through traffic during morning drop-off and afternoon pick-up times to increase safety for walking and biking students and faculty.
- Create a municipal program to implement, monitor and evaluate the effectiveness of municipal healthy community efforts.
- Implement a municipal Transportation Demand Management Program.

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<sup>90</sup> The location of public school facilities is selected by the local school district and is not governed by the Massachusetts School Building Authority (MSBA).

<sup>91</sup> See Green and Fit Buildings section for a discussion of green and fit buildings.

<sup>92</sup> See Road Design section.

<sup>93</sup> See Inter-Departmental Project Review Process Fact Sheet in Appendix.

- Offer incentives to encourage municipal and school employees to use sustainable transportation.
  - Subsidize public transportation passes.
  - Provide vouchers for employees who carpool, walk, bike or take transit to work. Vouchers could include coupons for local business or local currency such as the Berkshire region’s BerkShares.
  - Encourage opt-out parking programs for employees who do not regularly drive to work.
- Establish a Farm to School Program to source school foods from local growers.
- Establish a program to improve stormwater management on public land and roadways.<sup>94</sup>
- Establish a Traffic Calming Program.<sup>95</sup>

#### *Other Actions*

- Install green infrastructure (e.g. rain gardens and green roofs) on municipal properties, and use examples of municipal green infrastructure for public education.<sup>96</sup>
- Install benches, water fountains, trees and bicycle racks at schools, municipal facilities and in public spaces to promote walking and biking.
- Ensure local, safe and varied playgrounds for children of all ages.
- In downtowns and town centers, promote smart growth and walkability by providing public parking (on-street if possible), removing private off-street parking requirements, and working to eliminate automobile curb cuts.<sup>97</sup>
- Provide public bicycle racks at strategic locations in the downtown or town center. If needed, use existing on-street parking spaces for this purpose.<sup>98</sup>
- Develop contractual requirements for school (and other municipal) food providers to source a certain percentage of their food locally, and assist institutional food providers with local food sourcing.

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<sup>94</sup>See Stormwater Management section.

<sup>95</sup>See Road Design section.

<sup>96</sup>See Stormwater Management section.

<sup>97</sup>See Smart Growth and Road Design sections.

<sup>98</sup>See Walking, Biking and Transit Networks section.

## Resources

*Adopt a Green Building Policy/Resolution.* (2012). Sustainable Jersey Certified. Retrieved from: <http://sj-site-legacy-editor-doc.s3.amazonaws.com/p5!11.pdf>

*City of Cleveland Sustainable Municipal Building Policy.* (2013). Cleveland, Ohio. Retrieved from: <http://www.city.cleveland.oh.us/CityofCleveland/Home/Government/CityAgencies/OfficeOfSustainability/EnergyEfficiencyAndGreenBuilding>

*City of Long Beach Green Buildings Policy for Municipal Buildings.* (n.d.). Long Beach, California. Retrieved from: <http://www.lbds.info/civica/filebank/blobdload.asp?BlobID=2533>

*Healthy Parks and Playgrounds.* (2011). Cambridge Department of Community Development. Retrieved from: <http://www.cambridgema.gov/CDD/parks/osplanning/healthy.aspx>

*Joint Use Agreements. Creating Opportunities for Physical Activity.* (2012). Bridging the Gap. Retrieved from: [http://www.bridgingthegapresearch.org/asset/gl9776/btg\\_joint\\_use\\_agreements-2-10-12.pdf](http://www.bridgingthegapresearch.org/asset/gl9776/btg_joint_use_agreements-2-10-12.pdf)

*Massachusetts Farm to School Project (Home Page).* (n.d.). Retrieved from: <http://www.massfarmtoschool.org/>

*Mitigating Traffic Congestion – The Role of Demand-Side Strategies.* (2004.) The Association for Commuter Transportation, Urbantrans Consultants, Inc., and Parsons Brinckerhoff and ESTC. U.S. Department of Transportation – Federal Highway Administration. Retrieved from: [http://www.ops.fhwa.dot.gov/publications/mitig\\_traf\\_cong/index.htm](http://www.ops.fhwa.dot.gov/publications/mitig_traf_cong/index.htm)

*Parking at Smith.* (n.d.) Campus Police. Smith College. Retrieved from: [http://www.smith.edu/campuspolice/parking\\_optout.php](http://www.smith.edu/campuspolice/parking_optout.php)

*Parking Cash Out: Implementing Commuter Benefits as One of the Nation’s Best Workplaces for Commuters.* (2005). IFC Consulting. U.S. Environmental Protection Agency. EPA 420-S-01-006. Retrieved from: [http://www.bestworkplaces.org/pdf/ParkingCashout\\_07.pdf](http://www.bestworkplaces.org/pdf/ParkingCashout_07.pdf)

*Planning for a Healthier Future Through the Built Environment and Community Design.* (n.d.). Massachusetts Public Health Association. Retrieved from: <http://www.mphaweb.org/documents/ModelLocalResolution.pdf>

*Safe Routes to School Funding in Massachusetts.* (n.d.). Safe Routes to School National Partnership. Retrieved from: <http://www.saferoutespartnership.org/state/srts-in-your-state/massachusetts>

*Starting a Walking School Bus.* (n.d.). Pedestrian and Bicycle Information Center for the

Partnership for a Walkable America. Retrieved from <http://www.walkingschoolbus.org/>



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# Massachusetts Healthy Communities Research

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Facts about the health of Massachusetts Communities:

- The State of Massachusetts is ranked 10<sup>th</sup> overall in the *2012 State of Well-Being: Community, State, and Congressional Districts Well-Being Reports*. While the state ranked 1<sup>st</sup> in Basic Access (to necessities crucial to well-being), and 7<sup>th</sup> in Life Evaluation (a self-evaluation of present life situation and anticipated life situation five years from now using the Cantril Self-Anchoring Striving Scale), Massachusetts ranked 43<sup>rd</sup> in Mental Health (stress, happiness, etc.).<sup>99</sup>
- Massachusetts is making progress regarding obesity and is 4.7 percentage points better than the national average (In 2013, 27.6 percent of the national adult population was obese versus 22.9 percent in Massachusetts).<sup>100</sup> Even though there is progress in rates of childhood obesity (the percentage of overweight and obese Massachusetts public school students dropped from 34.3 percent in 2009 to 30.6% in 2013) much more work needs to be done.<sup>101</sup>
- Healthcare costs are greatly impacted by health. Obesity is associated with a 36 percent increase in inpatient/outpatient healthcare costs and a 77 percent increase in prescription medication costs.<sup>102</sup> Being overweight increases yearly per-person healthcare costs by \$125, while obesity increases these costs by \$395.<sup>103</sup> One study of individuals aged 15 and over without physical limitations found that average annual direct medical costs were \$1,019 for those who were physically active and \$1,349 for those who reported being inactive.<sup>104</sup>

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<sup>99</sup> Gallup and Healthways Well Being Index. (2013). *2012 State of Well Being: Community, State, and Congressional District Well-Being Reports*. Retrieved from: <http://www.well-beingindex.com/files/2013WBIRankings/2012WBICompositeReport.pdf>

<sup>100</sup> A Profile of Health Among Massachusetts Adults, 2012: Results from the Behavioral Risk Factor Surveillance System. (2014). Massachusetts Department of Public Health. Retrieved from: <http://www.mass.gov/eohhs/docs/dph/behavioral-risk/report-2012.pdf>

<sup>101</sup> Lazar, Kay. *Child obesity rates drop in Mass.* (October 17, 2013). Boston Globe. Retrieved from: <http://www.bostonglobe.com/lifestyle/health-wellness/2013/10/16/child-obesity-rates-drop-massachusetts/ZD5taMEdScD8shqFGuyx5K/story.html>

<sup>102</sup> Sturm, Roland. *The Effect of Obesity, Smoking, and Drinking on Medical Problems and Costs*. Health Affairs 21(2): 245-253, 2002.

<sup>103</sup> National Center for Policy Analysis. *Costs of Obesity, Drinking, Smoking and Growing Older*. Daily Policy Digest: Health Issues/Preventive Medicine. 19 Apr. 2002. Retrieved from: <http://www.ncpa.org/iss/hea/2002/pd041902e.html>

<sup>104</sup> Pratt, Michael, M.D.; Macera, Caroline A., PhD; and Wang, Guijing, PhD. *Higher Direct Medical Costs Associated With Physical Inactivity*. The Physician and Sportsmedicine 28(10), Oct 2000.

- Obesity rates and health indicators vary considerably among Massachusetts communities. In 2005, the percentage of the population that was obese ranged from 30 percent in Taunton (with a Median Household Income of \$53,000) to 11 percent in Brookline (with a Median Household Income of \$95,000).<sup>105</sup> In 2010, there were 610 emergency room visits for asthma-related issues per 100,000 persons statewide,<sup>106</sup> but in Springfield this number was almost triple the state average at 1,754 asthma-related emergency room visits per 100,000 people.<sup>107</sup>

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<sup>105</sup> Carroll, M. (2010, May 6) *Snapshot: Obesity Levels Among Mass. Adults*. Boston.com. Retrieved from: [http://www.boston.com/yourtown/massfacts/snapshot\\_percent\\_obese\\_in\\_massachusetts\\_communities/](http://www.boston.com/yourtown/massfacts/snapshot_percent_obese_in_massachusetts_communities/)

<sup>106</sup> Massachusetts. Executive Office for Health and Human Services. Dept. of Public Health. Massachusetts Community Health Information Profile (MassCHIP). (12/2010). *Asthma Report for Total State Mortality and Hospital Data*. Retrieved from: [http://www.mass.gov/eohhs/researcher/community-health/masschip/topics/asthma-mortality-and-hospital-data.html#state\\_total](http://www.mass.gov/eohhs/researcher/community-health/masschip/topics/asthma-mortality-and-hospital-data.html#state_total)

<sup>107</sup> Massachusetts. Executive Office for Health and Human Services. Dept. of Public Health. Massachusetts Community Health Information Profile (MassCHIP). (12/2010). *Asthma Report for Springfield Mortality and Hospital Data*. Retrieved from: <http://www.mass.gov/eohhs/docs/dph/masschip/asthma/asthmacity-townspringfield.rtf>

## Additional Resources

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*A Guide to the Benefits of Urban Trees.* (2012). Greenleaf Urban Tree and Landscape Products. Retrieved from: <http://www.greenleaf.co.uk/wp-content/uploads/2012/12/Benefits-of-Urban-Trees..pdf>

*A Primer on Active Living for Government Officials.* (n.d.) National Association of County and City Health Officials. Retrieved from: [http://www.naccho.org/toolbox/toolboxpercent5CA Primer on Active Living for Government Officials. 2.pdf](http://www.naccho.org/toolbox/toolboxpercent5CA%20Primer%20on%20Active%20Living%20for%20Governmen%20Officials.2.pdf)

*Active Urban Design Checklist.* (n.d.). Center for Active Design. Retrieved from <http://centerforactivedesign.org/dl/?id=43>

*Citizen Planner Training Collaborative Homepage.* (2012). University of Massachusetts. Retrieved from: <http://www.umass.edu/masscptc/index.html>

*Cleaner Cities Healthier Cities: Urban Environmental Challenges, Urban Successes.* (2007). United States. Environmental Protection Agency New England. Retrieved from: [http://www.epa.gov/region1/eco/uep/pdfs/urban\\_successes2007.pdf](http://www.epa.gov/region1/eco/uep/pdfs/urban_successes2007.pdf)

*Community Health Improvement Toolkit.* (n.d.) Healthy Wisconsin Leadership Institute. Retrieved from: <http://hwli.org/community-teams-program/community-health-improvement-toolkit/>

*Creating a Regulatory Blueprint for Healthy Community Design.* (2005). Schilling, J.; Mishkovsky, N. International City/County Management Association. Item No. E-43346. Retrieved from: <http://bookstore.icma.org/freedocs/Activepercent20Livingpercent20Codepercent20Reform.pdf>

*Cultivating Community Gardens.* (n.d.). Local Government Commission. Retrieved from: [http://www.lgc.org/freepub/docs/community\\_design/fact\\_sheets/community\\_gardens.pdf](http://www.lgc.org/freepub/docs/community_design/fact_sheets/community_gardens.pdf)

*Developing a Capital Improvements Program: A Manual for Massachusetts Communities.* (2007). Municipal Data Management and Technical Assistance Bureau. Retrieved from: <http://www.mass.gov/dor/docs/dls/publ/misc/cip.pdf>

*Drought Tolerant Plants for the Landscape.* (2011). Clark, R., Swanson, D. Landscape, Nursery and Urban Forestry Program. University of Massachusetts. Retrieved from: <http://extension.umass.edu/landscape/fact-sheets/drought-tolerant-plants-landscape>

*Establishing a Framework for Healthy Community Design in Massachusetts.* (In publication, 2013). Gorwood, C. M.S. Thesis. Boston, Massachusetts. Tufts University School of Engineering. #1538605.

*Massachusetts Healthy Aging Data Report.* (2014) Massachusetts Healthy Aging Collaborative. Retrieved from: <http://mahealthyagingcollaborative.org/data-report/explore-the-profiles/>

*Healthy Communities Action Strategies Toolkit.* (2011). Leadership for Healthy Communities. Retrieved from: <http://www.leadershipforhealthycommunities.org/index.php/home-toolkitnav-161?task=view>

*Healthy Community Design in Massachusetts.* (2013). Massachusetts Department of Health and Human Services. Retrieved from: [www.mass.gov/healthycommunitydesign](http://www.mass.gov/healthycommunitydesign)

*Healthy Urban Development Checklist.* (2009). NSW Department of Health. Retrieved from: [http://www0.health.nsw.gov.au/pubs/2010/pdf/hud\\_checklist.pdf](http://www0.health.nsw.gov.au/pubs/2010/pdf/hud_checklist.pdf)

*Land Use Planning for Public Health: The Role of Local Boards of Health in Community Design and Development.* (2006). Atlanta Regional Health Forum, Atlanta Regional Commission. Retrieved from: <http://www.cdc.gov/healthyplaces/publications/landusenalboh.pdf>

*List of Potential Municipal LID Incentive Programs.* (n.d.). San Luis Obispo County California. Retrieved from: <http://www.slocounty.ca.gov/Assets/PW/stormwater/Potential+LID+Incentives.pdf>

*Local Leaders: Healthier Communities through Design.* (2012). Rainwater, B.; Brown, T.; Haber, S. American Institute of Architects. Retrieved from: <http://www.aia.org/aiaucmp/groups/aia/documents/pdf/aiab096790.pdf>

*Low Water Use Plants.* (n.d.). Massachusetts Water Resources Authority. Retrieved from: <http://www.mwra.state.ma.us/04water/html/lowwaterplants.htm>

*Massachusetts Municipal Association Homepage.* (2013). Massachusetts Municipal Association. Retrieved from: <http://www.mma.org>

*New to HIA [Health Impact Assessment]?* (n.d.). Human Impact Partners. Retrieved from: <http://www.humanimpact.org/hia>

*Pioneer Valley Green Infrastructure Plan.* (Expected Publication 2013). Contact Pioneer Valley Planning Commission. <http://www.pvpc.org/>

*Public Health in Land Use Planning and Community Design Checklist.* (n.d.). National Association of County and City Health Officials. Retrieved from: [http://www.precaution.org/lib/naccho\\_land-use\\_checklist.101005.pdf](http://www.precaution.org/lib/naccho_land-use_checklist.101005.pdf)

*Public Health Development Checklist.* (n.d.). Shasta County Public Health. Retrieved from: <http://www.co.shasta.ca.us/HHSA/CommunityPartners/Checklist.sflb.ashx>

*Resources and Library: Greenways and Community Trails.* (n.d.). National Trails Training Partnership. Retrieved from: <http://www.americantrails.org/resources/greenways/>

*Shifting Gears. An Introduction to Better Bicycling for your Community.* (2013). Massachusetts Bicycle Coalition (MassBike). Retrieved from: <http://massbike.org/resourcesnew/publications/>

*Smart Growth Strategies. Valley Vision Toolbox.* (n.d.). Pioneer Valley Planning Commission. Retrieved from: [http://www.pvpc.org/val\\_vision/html/toolbox/SmartGrowthStrategy.html](http://www.pvpc.org/val_vision/html/toolbox/SmartGrowthStrategy.html)

*The ABC's of Urban Agriculture.* (n.d.). Somerville, Massachusetts. Retrieved from: [http://www.somervillema.gov/sites/default/files/SomervillesABCsOfUrbanAgriculture\\_5.pdf](http://www.somervillema.gov/sites/default/files/SomervillesABCsOfUrbanAgriculture_5.pdf)

*Tips for Promoting Bicycling.* (2013). Bikes Belong. Retrieved from: <http://www.bikesbelong.org/resources/promoting-bicycling/tips-for-individuals/>

*Triple Bottom-Line Benefits of Street Trees in Devens.* (n.d.). Devens Enterprise Commission. Retrieved from: [http://www.devensec.com/forms/Benefits\\_of\\_Street\\_Trees.pdf](http://www.devensec.com/forms/Benefits_of_Street_Trees.pdf)

*Urban Agriculture.* (n.d.). United States Department of Agriculture. Retrieved from: <http://afsic.nal.usda.gov/farms-and-community/urban-agriculture>

*Urban Agriculture Zoning.* (n.d.). Pittsburgh Department of City Planning. Retrieved from: [http://www.pittsburghpa.gov/dcp/files/urbanagriculture/Urban\\_Agriculture\\_Handout.pdf](http://www.pittsburghpa.gov/dcp/files/urbanagriculture/Urban_Agriculture_Handout.pdf)

*Urban Forest Management Plan Toolkit.* (2013). California Urban Forests Council and Inland Urban Forest Council. Retrieved from: [http://www.precaution.org/lib/naccho\\_land-use\\_checklist.101005.pdf](http://www.precaution.org/lib/naccho_land-use_checklist.101005.pdf)

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## **Fact Sheet**

**Strategy:** Inter-Departmental Project Review Process

**Goal:** Identify and resolve possible issues during the preliminary planning and design stages of construction and building projects prior to beginning the formal Site Plan or Special Permit process.

**Objectives:** To reduce the cost of the design process for applicants.  
To foster dialogue between various departments and developers.  
To reduce the time needed in the Site Plan and Special Permit Review process.

### **Why Do We Need this Strategy?**

By having informal discussions with departmental staff, applicants, developers, and designers can identify technical problems in preliminary designs and discuss ways to resolve the issues early in the design stages. This will reduce, or eliminate, the need for revisions to plans during the Site Plan Review/Approval or Special Permit process, saving both the municipality and the applicant time and money.

### **What Issues Does the Strategy Address?**

The Site Plan and Special Permit processes can become a prolonged ordeal with multiple revisions and changes and Board members trying to address issues that are better handled by the community's professional staff. By having the technical deficiencies of a plan identified and addressed prior to submission, Boards can be free to concentrate on the planning and policy aspects of a proposal. The submission of better prepared and more complete plans can result in the project receiving a more positive reception by the municipality and the public and can lead to a better outcome for all parties involved.

## How does the Strategy Work?

Inter-departmental review participants are typically the city's professional technical staff (from Planning, Community Development, Conservation, Engineering, Building Inspector, Zoning, Water, Sewer, Gas & Electric, Health, Police, Fire, etc.) and do not include elected officials or board/commission members. Such a process can offer a one-stop comprehensive review of all projects. Many communities utilize some form of inter-departmental review of projects and, while primarily established to expedite the review of Zoning related permits (i.e. Special Permits and Site Plan Approvals) some have evolved to review many types of construction and public works projects as well as conducting most pre-construction conferences.

While all projects may have to go through this review process once they are formally filed, applicants should be strongly encouraged to bring their project in at project's earliest stages of plan development and prior to its formal submission to the Planning Board or other permit granting authority. The mantra of "come early and come often" is sound advice. The primary function of the review is to identify and address problems as early in the process as possible so that when a project is formally filed it has already received the approval of the relevant city departments. For example, it makes for a much smoother Public Hearing if, when the question is asked about traffic issues, it can be reported that those aspects have already been reviewed and approved by the City Engineer, Public Works Director and Police Department. Attending the inter-departmental review early in the plan development process also allows for easier identification of, and more efficient coordination with, any other local or state permitting that might be required. Participation in this process goes a long way to avoiding last minute surprises.

Strategy adopted from City of Westfield MA Round Table Review Process.

# A Checklist for Downtown Zoning

## Three principles:

1. Calibrate regulatory standards in support of downtown's brand and downtown goals.
2. Don't place unnecessary procedural burdens on downtown compared to other parts of town.
3. Don't suppress the market for downtown houses and buildings; use the right zoning to strengthen it.

## Areas of zoning policy to check for needed repairs:

### Zoning Districts

Downtown commercial area should have its own zoning district, tailored to its needs

Downtown residential neighborhoods should have their own zoning district(s), tailored to their needs

### Setbacks and Build-To Lines

Downtown commercial: Replace minimum setbacks with build-to line or a narrow setback range (min/max)

Downtown residential: Measure the minimum and maximum prevailing historical setbacks, and set those as the minimum and maximum build-to lines

### Lot Size Standards

Downtown commercial: No minimum (Alternative: Set based on the low end of prevailing historical lot sizes, bringing most downtown lots into conformance with zoning)

Downtown residential: As a general guide, use the low end of prevailing lot sizes in the district as minimum; allow houses on lots as small as 3,000 square feet – but fit the standards to the neighborhood's particular needs

### Lot Coverage, FAR, Open Space

Downtown Commercial: Allow 100% lot coverage except for rights-of-way such as alleys OR calibrate based on prevailing historical conditions. If your town-wide stormwater regulations require incremental improvements for pre-existing properties that do not conform to the stormwater requirements (recommended!), couple the increased lot coverage allowance with reasonable stormwater runoff regulations specific to and tuned for downtown (i.e. that don't place an unreasonable burden on downtown properties)

Downtown residential: No fixed percentage; let setbacks (building envelope) determine coverage. (Alternative: Set based on prevailing historical conditions)

### **Building Heights**

Do not set building heights that would dwarf downtown icons or exert pressure to take down historic buildings. Set a 2-story minimum to prevent concrete and other 1-story structures that do not fit existing downtown character

### **Driveways**

Do not allow individual curb cuts for downtown commercial sites; use alleys or shared access to parking lots behind

### **Off-Street Parking**

NO off-street parking requirement for individual downtown uses and sites. Couple with parking demand management strategies as necessary. (Alternative: Phased reductions within a parking supply management plan, off-street parking behind buildings, and encourage reduction of curb cuts through shared access to parking lots)

Allow on-street parking and exhaust parking management approaches before developing a downtown parking lot; and then only do so where it will not interrupt the primary retail street

For residential units downtown, do not require off-street parking (residents use street parking or lots)

In downtown residential neighborhoods, do not require excessive off-street parking. (1 to 1.5 required off-street parking spaces per unit is sufficient, depending on the prevailing neighborhood character and coupled with on-street parking and parking demand management strategies as needed. Properties can provide more than is required if they desire to do so.) Do not require off-street parking spaces for accessory units (Alternative: Require only 1 parking space for these smaller “mother-in-law” units).

### **Table of Allowed Uses**

**Prohibit** uses that undercut downtown’s brand identity:

As a pedestrian place – automotive orientation or service, drive-ins, standalone parking, repair as a fit setting for quality goods & services – adult uses, check cashing

As a place with aesthetic appeal – uses that are unsightly, noisy, or generate unwanted side effects as a critical mass of complementary uses – non-retail uses on the prime retail street face

**Allow** uses that promote downtown’s brand identity and downtown goals: Allow more than one use in a building or on a site

Allow non-retail uses in fitting locations: housing in upper-floors and behind buildings; offices not on the primary retail street front are desirable (Some towns choose to allow office uses on the first floor in the downtown district so that market forces to determine the size of the primary customer-serving retail zone versus mixed retail/office districts. For this strategy to work best, do not undersize your downtown commercial zone and extend this zone up appropriate side streets off the main commercial street.)  
Allow outdoor dining & beverage service, sidewalk displays, food carts, farmers markets, gardens B&Bs and Inns OK

**Promote** quality downtown residential neighborhoods and allow some flexibility as resident needs change:

Allow flexible conversions from single family to small multi-family, and back! A maximum of two to four units in a multi-family home is appropriate - tune based on the prevailing character of the neighborhood, community goals and lot size. Allow single family homes on small lots. Establish design standards for multi-family dvpts. B&Bs OK, apply development standards to address impacts  
Review home occupations provisions to ensure sufficient flexibility and minimize impacts to neighborhood Allow small accessory units (e.g. <900 sq. ft) with reduced parking requirements on SF residential properties

### **Development Standards**

Apply quality development standards in downtown commercial areas: Buffering - No suburban-style buffering between different uses; apply quality development standards for compatible development, and screen utility/vehicular areas Landscaping: Apply no requirement on individual sites. Apply downtown-appropriate standards: planters and flowerboxes, street trees in public space – implemented through a town master plan

Screening: Site dumpsters, recycling, grease receptacles, HVAC, & loading areas at rear alley or along rear street where they are physically screened by buildings from view (if not, use wall or vegetative screening)

Signage: No monument signs except special/civic sites; OK types include pole, wall-mounted, window lettering, shingle, A-frame signboards on sidewalks  
Apply sensible rules to outdoor display: maintain 3'- 4' clear zone on sidewalk, bring items inside daily, no boxes/pallets

### **Zoning Procedures and Permitting**

Do not make downtown subject to overly extensive procedures. Under no circumstances make downtown subject to more uncertain procedures than other zoning districts. As a general rule, enact correct standards, and then allow development by-right pursuant to

those standards. Streamline multiple permits, use pre- submission meetings, employ administrative approvals for small projects

Never require exceptions, appeals, special staff determinations, etc. to allow downtown to develop according to its correct setting. Instead, calibrate the standards correctly for downtown to begin with, so that development can take place by-right whenever possible.

Don't rezone or extend infrastructure to create general commercial areas that will compete with downtown for similar tenants and customers. If you have a general commercial district next to downtown, relegate auto uses to this area and minimize overlaps in allowed uses between downtown and general commercial.

This document was adapted by the Pioneer Valley Planning Commission (PVPC) from a checklist developed by the North Carolina Main Street Program. Adaptations were made based on PVPC experience in the Pioneer Valley region of Massachusetts. Call 413- 781-6045 or email [crattepvpc.org](mailto:crattepvpc.org) to for questions in applying this checklist.