

DENSITY through DESIGN

Research Reports



TABLE of CONTENTS

1. INTRODUCTION..... 1

2. LITERATURE REVIEW 2

 2.1. Definitions..... 2

 2.2. Visual Examples of Density..... 4

 2.3. Stakeholders 6

 2.4. Cultural and Historical Factors 7

 2.5. Frequently Stated Concerns about Density and Possible Responses..... 10

 2.6. Strategies and Tactics of Density Opponents 17

 2.7. Developer Disincentives to Building Higher Density Projects..... 18

3. COMMUNITY CONCERNS in the I-495 METROWEST CORRIDOR..... 19

 3.1. Arc of Innovation I-495/MetroWest Partnership Design Review Committee Findings.... 19

 3.2. Medway..... 21

 3.3. Sudbury 23

4. CONCLUSIONS 25

APPENDIX 1..... 27

 Interviews of Arc of Innovation I-495 MetroWest Partnership and 27

APPENDIX 2..... 28

 Town of Medway Comprehensive Plan Analysis and Interviews 28

APPENDIX 3..... 31

 Town of Sudbury Comprehensive Plan Analysis and Interview Notes..... 31

REFERENCES..... 32

1. INTRODUCTION

Understanding the basis of community opposition to denser residential development is essential to creating successful projects. Without this sensitivity, good projects may never be built—and bad ones certainly will (Schively, 2007). Significantly, disagreements among citizens, public officials and developers often involve values, rather than technical issues. In addition, community stakeholders may raise important, sensible critiques that planners and developers benefit from addressing (McAvoy 1998).

We begin with the assumption that in the housing market people tend to act in their own interests, that is, rationally. However, in the case of denser housing, regulatory and market forces and individual priorities can place different interests in opposition—even though people likely share the goal of creating housing that serves all sectors of the market. Public perception of project risks and impacts—accurate or not—can lead to real economic impacts, such as additional impact analysis and reduced project size. Further, the permitting and approval process may become less predictable because the involvement of additional regulatory and legislative bodies may be required (Portney, 1988).

Community concerns are often viewed as part of an equation to “balance” localized impacts of higher density development, real or perceived, against the benefits, also real or perceived, that such a project may bring to the wider community or region as a whole (Lober, 1995).

Therefore, it is essential that we develop a better understanding of community concerns about residential density generally, as well as in the communities located in the 495/MetroWest region. The information presented in this report is intended to provide a basis for the site design, zoning update and implementation program for the four residential project concepts that will be proposed by the UMass studio teams in the final report.

This report contains:

- A review of the literature pertaining to community opposition to increased housing density;
- Preliminary findings from interviews with members of the Partnership’s Design Review Committee and planning officials of Medway and Sudbury; and
- Conclusions and recommendations for the design phase.

2. LITERATURE REVIEW

The literature review identifies seven key subject areas in the study of community opposition to increased residential density:

- 2.1. **Definitions**, which are critical to discussing density and perceptions of it;
- 2.2. **Visual examples** of residential density;
- 2.3. **Stakeholders**, who have a range of motivations and authority;
- 2.4. **Cultural and historical** factors that have influenced current attitudes;
- 2.5. **The frequently stated concerns** of opponents and possible responses;
- 2.6. **The strategies and tactics** of opponents, which vary depending on the project;
- 2.7. **Developer disincentives** to building higher density projects.

2.1. Definitions

Understanding community attitudes towards denser residential development begins with vocabulary. “Residential density” itself is actually a measurement, usually expressed as the ratio of dwelling units to one acre (du/ac). What we are investigating, then, are perceptions of density. These perceptions are highly contextual and relative: a suburban resident may find downtown townhouses too dense; a native of a rural town may think detached suburban single family homes too close for comfort.

Anthony Flint observes, “there are broad misconceptions about what actually constitutes dense development; few people realize, for example, that Paris is about four times as dense as Boston...” (2005). In the end, the issue may not be density itself, but whether or not the solutions for achieving it are good or bad (Seidel in Fader, 2000).

In the 32 communities of the Arc of Innovation 495 MetroWest Partnership, residential densities are typically in the range of 1-2 dwelling units per acre (du/ac), depending on proximity to town centers. Community character varies from semi-rural settings to growing suburbs to the edge city of Framingham. Densities may vary widely within a single municipality. Therefore, perceptions of residential density likely vary throughout the I-495 Corridor.

Following are some terms that are used frequently in discussions of residential density.

Factors Driving Community Opposition to Residential Density

Residential density (also, intensity)	Usually the ratio of dwelling units to land area. Other measures include population density and the number of bedroom rooms to area. In this report, we take density to mean the amount of residential development, either built or permitted, on a specified area of land and expressed as the ratio of dwelling units (households) to acres (du/ac).
Gross density	The ratio of total residential units to total development land area. (American Planning Association (APA), 2004; Churchman, 1999; Sussna, 1973).
Net density	The ratio of total residential units to total residential land area, excluding roads and other municipal uses (Local Government Commission, 2003).
Density bonus	Allocation of development rights to allow a developer to build housing density(ies) greater than permitted by base zoning in exchange for the provision or preservation of an amenity at or near the project site (APA, 2004)
High density	Development that is denser than prevailing conditions. For example, in a suburb with detached single-family houses on 1-acre lots, houses on one-fourth or one-eighth acre lots would be higher density; townhouses and apartments would be still higher (Haughey, 2005).
Floor area ratio (FAR)	The total floor area of all buildings or structures (including all floors) divided by total lot area (APA, 2004). The higher this ratio, the greater the density. An FAR of 1:5 is considered quite high; much of Manhattan exceeds this ratio.
Traditional neighborhood density	Residential density consistent with development in the United States from colonial times until the 1940s. These neighborhoods encourage mixed-use, compact development that facilitates efficient public services. A traditional neighborhood district diversifies and integrates land uses within close proximity and provides for daily recreation and shopping (APA, 2004).
NIMBY	Acronym for Not In My Back Yard. The term emerged during the 1980s as shorthand for the phenomena of community opposition to two general categories of development: 1) land uses, such as affordable housing, prisons, halfway houses and homeless shelters; and 2) projects with adverse environmental impacts, such as waste processing or storage, industrial, energy, transit facilities, agriculture (Schively 2007; HUD 1991).
LULU	Locally Unwanted Land Use. Closely associated with NIMBY (Schively, 2007).
Cluster or compact development	Site or subdivision design technique that concentrates buildings in specific areas on a site to allow remaining land to be used for recreation, common open space, or the preservation of historically or environmentally sensitive features (APA, 2004).
Sprawl	Along with large single-family homes on large lots of an acre or more, sprawl has come to mean commercial strip development, ‘leapfrogging’ subdivisions and commercial centers further from urban areas, as well as other spatial discontinuities (Tsai, 2005).

Crowding A negative perception of density. High density is sometimes (mistakenly) equated with crowding (Sussna, 1973). But to many people, a suburban subdivision can seem overcrowded if it lacks adequate roads or design standards. Overcrowding is better defined as high density that is poorly planned. People form feelings about residential density based on culture, nationality, personal history and values. The perception of crowding may be independent of the actual number of homes per acre, but it is a very real phenomena to the person experiencing it (Rapoport, 1977).

Table 2.1 Terms that are frequently used in residential density discussions.

2.2. Visual Examples of Density

Researchers have attempted to quantify residential density, overcrowding and sprawl by creating various measures, such as the Moran Coefficient, which account for metropolitan size, activity intensity, the relative distribution of activities and clustering (Tsai, 2005; Lopez and Hynes, 2003). However, expressing density in such numeric terms is not always helpful during the public planning process. Often, people are unable to articulate to others what they consider dense- but they know it when they see it. The following are examples of densities achieved in suburban areas similar to those of Medway and Sudbury.

1 du/ac (approx) Maple Lake, MN



Factors Driving Community Opposition to Residential Density

5 du/ac Wellington Neighborhood, Breckenridge, Colorado



7.7 du/ac Mill Creek, Washington



17 du/ac Aggie Village, Davis California



18 du/ac Crawford Square, Pennsylvania



Figure 2.1. Density examples according to du/ac achieved in various suburban areas similar to those of Medway and Sudbury. Sources: Fader, Steven. *Density By Design*. Urban Land Institute. 2001, <<http://www.poplarhouse.com/index.htm>>, <<http://calthorpe.com/Project%20Sheets/aggie.htm>>, <<https://www.mlsonline.com/user/homepage.php>>

2.3. Stakeholders

A variety of people, agencies, businesses and organizations may be considered stakeholders in the decision-making process for creating denser residential development (Obrinsky and Stein, 2007). Resistance to denser development may be expressed by any or all of these stakeholders, depending on the design and location of a proposed development.

Following is a summary of stakeholders, their roles or interests, and authority and/or responsibilities in the housing approval and permitting process.

Stakeholder	Role or Interest	Authority/Responsibility
Municipal Planning, Zoning Variance and Conservation Boards and Agencies	Control local land use	Grant permits, enforce zoning, produce and update municipal comprehensive plans
Regional Agencies	Produce regional plans, goals; coordinate multi-municipality impacts	Perform regional analysis and goal-setting, propose and authorize funding for transportation and other designated facilities
State Agencies	Permitting (if required)	Issue permits for highway curb cuts, wetlands, air quality, and/or other regulated impacts

Factors Driving Community Opposition to Residential Density

Elected Officials	Represent constituents in local decision-making; represent municipality to other stakeholders	Approve permits
Community-based Organizations	Represent local interests (i.e., chamber of commerce, labor, agriculture, environmental)	Organize support and/or opposition; participate in legislative processes (i.e., hearings, town meeting)
Landowners and Real Estate Organizations	Maximize asset value	Provide project initiative, land, funding
Developers	Respond to market demand	Conceive and build viable housing, secure permits and funding
Neighborhood Associations	Review projects and express concerns	Participate in public hearings and permitting processes
Abutters	Most directly affected by new projects	Request mitigation, standing to appeal local and state permits
Community Members	Protect community interests, maintain quality of life, property values	Participate in the public process

Table 2.2 Summary of stakeholders, their roles or interests, and authority and/or responsibilities in the housing approval and permitting process.

2.4. Cultural and Historical Factors

The authors have identified several factors that contribute to modern day opposition to density:

- Idealization of the single family home throughout U.S. history;
- Racist and classist anti-housing policies and actions carried out under the guise of opposition to density;
- Assumptions about the need for dense housing and the attractiveness of its design; and
- Negative socioeconomic stigma associated with higher residential density.

Cultural and Historical Background

Strong cultural and historical trends have helped shape attitudes about residential density in the United States. During the last century, a largely positive association with the low residential density of suburbs has reigned—in sharp contrast to negative associations with the high residential density of urbanized areas. This section attempts to summarize key factors behind these positive and negative associations with different residential densities.

a. Perceptions of Density in American History

The streetcar and automobile made it possible for those with the means to live in low density communities. Moving to the suburbs was seen as “moving up” the social ladder (Flint 2005). From the westward expansion of the 1800s, to the streetcar suburbs of the early 1900s, to the post World War II suburbia of the 1950s, to the McMansions of the 1990s, the ideal of a nuclear family living in a single family home on a large lot is consistently identified in planning literature as contributing to Americans’ positive associations with low density. Civic unrest in American cities during the 1960s contributed to the flow of new residents to the suburbs. By the end of the century, the “ideal” American home was located in a new suburb with dramatically lower densities than previously built cities and suburbs (Flint, 2005; Kain, 1967; Holleb, 1978; Churchman, 1999).

Negative associations with higher residential density stemmed from the fact that the industrialization of American cities during the 1800s and early 1900s created living conditions of overcrowding, noise, dirt, crime, poverty, disease (Pawlukiewicz, 2002; Churchman, 1999). Furthermore, urban renewal public housing projects of the 1960s and 1970s failed on many accounts, creating strong negative associations between density and the economic and social problems of depressed areas—particularly crime.

In addition, evolving cultural norms in the U.S. during the late 19th and 20th centuries contributed to increased expectations of personal privacy. This led to new zoning and building code restrictions that reduced the number of people allowed to sleep in one room of a dwelling (Pader 2002). This cultural phenomenon had significant spatial implications for housing density expectations; communities simply needed more homes for the same number of people.

Opposition to higher residential development may stem from deep-seated and unspoken biases. Research has demonstrated that most Americans tend to avoid living arrangements that they consider cramped or which violate cultural norms of privacy. The nuclear family, with separate sleeping rooms for parents and children, became sacrosanct, and separate personal space for sleeping came to be viewed as essential for healthful living (Pader 2002).

b. Lack of Urgency in Planning for Population Growth and Demographic Changes

The U.S. will add roughly 43 million new residents by 2020 at the rate of approximately 2.7 million people per year. In this context, the previous residential spatial growth patterns of low-density, leap-frog, suburban development are arguably no longer financially or environmentally feasible. Increasing

residential density is the most promising strategy for accommodating the increasing population (Haughey, 2005).

However, new residential development continues to occur more rapidly in suburbs, where zoning regulations adopted in an earlier era encourage large lots and single family homes (Pawlukiewicz 2002). In addition to this regulatory inertia, groups and individuals concerned with property rights often oppose increased zoning restrictions of any nature.

The definition of “family” has also changed dramatically. Today, the nuclear family represents less than 1 in 4 households. The largest household representation is by people who are married or living together without children. This decline in household size also decreases the need for large homes. These new families have new real estate needs and desires. Many actually eschew the American Dream and prefer higher density dwellings in mixed use neighborhoods, where more vibrant cultural offerings and better social services are available (Flint, 2006; Haughey 2005).

c. Political and Class Issues

Racial and Class Discrimination: There is evidence that political, race and class issues are significant components of resistance to denser housing developments. “Shlay (1985) argues that expressed preferences for single-family home ownership may actually be shorthand for other unrevealed preferences such as a preference for a middle-class status, a family-centered lifestyle, or a homogeneous residential suburb” (in Churchman, p 406-407, 1999). This justification for opposing dense development tends to be area specific, and directly connected to the local and regional context.

Different areas tend to be more or less receptive to dense development based on the community’s historic land use patterns and socio-economic composition. For example, some researchers suggest that race and class issues related to development are more prominent in the Northeast (Flint 2005). These issues can reflect concern for reduced property value in addition to personal preference.

Assumptions: In addition to political, racial and class factors that motivate opposition to denser development there are also several assumptions about the desire for dense housing, its design, and specific socioeconomic associations with density that may play a role in a person’s objection to higher density housing.

i. No one in suburban areas wants high-density development. Another common misconception is that few current residents of suburban areas want to live in higher density developments. The notion is that the only people who have the desire to live in higher-density areas are those who live in the middle of the city (Haughey, 2005).

ii. High density is only for low income households. A common perception persists that high density housing is only for low-income households, thus creating a stigma (Haughey, 2005). This ties back to the negative associations with the failed urban renewal public housing projects in the U.S. of the 1960s and 1970s.

iii. High density projects are ugly: Many people who oppose density harbor misconceptions and outdated images of what high density actually looks like. One study found: "...given a choice between two attractively designed communities, one higher density and the other low density; the majority preferred the higher-density option" (Haughey, 2005).

2.5. Frequently Stated Concerns about Density and Possible Responses

Whether at a public meeting, in a letter to the editor, or on the website of a neighborhood association, community stakeholders are rarely shy about stating their views on proposals for higher density housing. This section presents some of the most frequently stated concerns of opponents of increased residential density and responses.

Summary of Leading Community Concerns about Increased Density

Increased costs of community services and adverse quality of life impacts to:

- a. Infrastructure, including roads, sewer, water and utility lines;
- b. School finances;
- c. Public safety and property values;
- d. Environmental impacts, including loss of open and recreational spaces;
- e. Traffic congestion, parking and safety;
- f. Community character and aesthetics.

a. Infrastructure: Roads, Sewer, Water and Utilities

Opponents' Concerns	Responses/Counter Claims
<p>Density opponents claim that higher density residential developments will fail to generate enough tax revenue to cover necessary infrastructure improvements and result in overburdening community services and budgets (Sierra Club 2005, 22; Obrinsky and Stein 2007, 3; Flint 2005, 23-4; Pawlukiewicz 2002, 2; Sandman 1986, 453).</p> <p>“Research by Dr. Helen Ladd (1992), of Duke University, compared the actual costs of urban services in hundreds of U.S. counties. Ladd found that at population densities greater than 200 people per square mile (the approximate density of rural Connecticut), increased density led to higher urban service costs.” (O’Toole, 2000, 509)</p>	<p>Some argue that low-density suburbanization costs society more than high-density development due to the need to stretch services beyond the core community (Sierra Club 2005; O’Toole, 2000).</p> <p>The impact of a new development may be more dependent on place-specific variables than density. Areas with existing infrastructure capacity may experience less impact than places with infrastructure operating at maximum capacity.</p> <p>Infrastructure requirements at either very low densities or very high densities could be more expensive than densities in the middle range. Sussna illustrates this with an example of a sewage treatment plant, “Per capita plant costs are extremely high when small populations are to be served.” Conversely, as density increases within a particular area, the sewage volume increases and plant construction and operation costs decrease” (1973).</p> <p>Mitigation: Developers may negotiate impact fees to cover the expense of expanding infrastructure. Providing convenient access to alternative modes of travel could relieve pressure on the road network. A greater mixing of uses could reduce vehicle trips.</p>

b. School Financing

Opponents' Concerns	Responses/Counter Claims
<p>Potential increased school costs for additional children in a community is one of the most frequently raised concerns (Obrinsky and Stein, 2007; Flint, 2005; Pawlukiewicz, 2002; Haughey, 2005).</p> <p>It has been shown that education accounts for one of the largest shares of annual expenditures (National Association of Home Builders 2005).</p> <p>A report by the Donohue Institute estimates the median state aid and cost per pupil in residential suburbs of Massachusetts to be \$1,350 and \$6,800 respectfully (Nakosteen 2000).</p>	<p>“The nature of who lives in higher-density housing—fewer families with children—puts less demand on schools and other public services than low-density housing.” (Sierra Club 2005, 9) There is an average of one school-aged child for every two households in the U.S.: .6 per single family home, and .4 per multi-family home. Since multi-family units account for less school-aged children in the average community they also require less annual local government expenditures and capital. (National Association of Home Builders 2005).</p> <p>“Per-dwelling capital costs for schools are 18 percent higher for housing units in large-lot, dispersed development (1 dwelling per acre) than for houses in compact developments. In addition to costs related to new school construction, school systems built in sprawling towns incur higher transportation costs related to student busing.” (Nakosteen 2000).</p> <p>Opponents’ school cost estimates also often fail to account for the economic multiplier of local purchases made by a new family in the community—often known as the “Mullin Multiplier.”</p> <p>Mitigation: To help communities address school costs associated with compact development, the Massachusetts legislature in 2005 enacted Chapter 40S to create a Smart Growth School Cost Reimbursement Fund. This program provides reimbursement for any net new education costs resulting from housing units built under Chapter 40R, which provides incentives for concentrated urban center development. (Rollins 2006).</p>

c. Public Safety and Property Values

Opponents' Concerns	Responses/Counter Claims
<p>To many opponents, high densities seem to correlate with higher crime rates (Obrinsky and Stein, 2007; Churchman 1999). Potential effects from increased crime include:</p> <ul style="list-style-type: none"> □ the loss of personal safety; □ increased cost of providing law enforcement; □ decreased property values. <p>Municipal officials often express concerns about potentially lower property values because of perceived adverse impacts on the local tax base or because they wish to appear responsive to constituent concerns (Obrinsky and Stein, 2007).</p> <p>Opposition to denser residential development sometimes arises because of unfavorable or discriminatory attitudes about potential new residents. One of the key components of this argument has been that the transient nature of apartment dwellers leads to increased crime because (1.) neighbors don't know each other well enough and (2.) people have less of a stake in the long-term health of the community (O'Toole, 2000; Obrinsky and Stein, 2007).</p>	<p>“People sometimes associate density with crime, even though numerous studies show that no relationship exists between the two...One reason...could be that crime reports tend to characterize multifamily properties as a single “house” and may record every visit to an apartment community as happening at a single house. But a multifamily property with 250 units is more accurately defined as 250 houses. To truly compare crime rates between multifamily properties and single-family houses, the officer would have to count each household in the multifamily community as the equivalent of a separate single-family household” (Sierra Club 2005, 19-21).</p> <p>Actual real estate values contradict the argument that higher density developments negatively affect the property values of single-family homes. Between 1970 and 2000, in each of the 42 largest U.S. metro areas home values rose in high multifamily working communities, and home values rose in mixed-housing-stock working communities in 41 of the 42 metro areas (Hoffman, 2003).</p> <p>Mitigation: To prevent crime, design should minimize areas where assailants could hide and provide adequate lighting. Ensuring the presence of adequate jobs to support new residents will also prevent crime.</p>

d. Environmental Impacts, Loss of Open and Recreational Spaces

Opponents' Concerns	Responses/Counter Claims
<p>The loss of open and recreational areas is a major concern for opponents to higher residential density. Studies have shown that shared space containing nature increases neighborhood satisfaction, particularly with respect to fostering a sense of community. (Kearney, 2006; Francis, Lindsey, & Rice, 1994; Kaplan & Kaplan, 1989).</p> <p>Opponents of denser developments often fear potential environmental consequences such as:</p> <ul style="list-style-type: none"> □ Increased energy use; □ Reduced capacity for stormwater infiltration; □ Reduced access to sunlight, impacting active and passive solar collection; □ Concentration of pollutants ; □ Heat island effect; □ Waste management problems; and □ Reduced space for vegetation (Churchman, 1999). 	<p>“Low-density development increases air and water pollution and destroys natural areas by paving and urbanizing greater swaths of land...It is inefficient land use, not economic growth, that accounts for the rapid loss of open space and farms” (Haughey, 2005).</p> <p>High density is associated with: fewer vehicles traveled, fewer fatal accidents, better air quality, less consumption of open and farmland, lower levels of automobile dependence and lower costs for public services.” (Pendall & Carruthers, 2003).</p> <p>Mitigation: Developers may be asked to preserve open space or new create parks. Good design can facilitate relatively higher densities while including sufficient community open spaces, for instance by using vertical space. Maximizing the functionality and aesthetics of open spaces will encourage their use.</p> <p>Low Impact Development (LID) promotes ecologically sound stormwater management. Green Building practices, such as those required for LEED (Leadership in Energy and Environmental Design) certification offers environmentally sensitive design and construction.</p>

e. Traffic congestion, parking and safety

Opponents' Concerns	Responses/Counter Claims
<p>High densities are often associated with traffic congestion, vehicular and pedestrian, which can cause problems such as increased difficulty in finding parking and increased accidents (Churchman, 1999).</p> <p>Local community members' concerns with these issues often lead them to oppose higher density residential development (Pawlukiewicz, 2002; Flint, 2005; Obrinsky and Stein, 2007).</p> <p>"...transformation of a neighborhood from single-family to multi-family dwellings can be very stressful. Increased numbers of people bring increased congestion" (O'Toole, 2000, 504).</p>	<p>Some researchers claim that people who oppose denser residential development on the basis that it will increase traffic inaccurately compare the new development to the status quo (not building it), when they should be comparing the number of units with an equal number of single-family units (Obrinsky and Stein, 2007).</p> <p>The Institute of Transportation Engineers noted that single-family homes generate more traffic than multi-family homes because they tend to garage more vehicles per unit and be located farther away from destinations and alternative transportation choices (Obrinsky and Stein, 2007).</p> <p>Mitigation: Facing windows away from roads and parking lots and towards greenery provides visual cues that enhance resident satisfaction (Kearney, 2006).</p> <p>Providing residents with convenient access to alternative modes of travel could relieve pressure on the road network. A greater mixing of uses could reduce the number of vehicle trips people need to make.</p>

f. Community Character and Aesthetics

Opponents' Concerns	Responses/Counter Claims
<p>People often oppose a denser development because they are attached to the look and feel of their community and do not want it “degraded” by incompatible structures (O’Connell, 2003; Obrinsky and Stein, 2007; Pawlukiewicz 2002). In this sense, community character is a quality-of-life issue, but for towns that depend on tourism, it is an economic issue as well.</p> <p>Fearing that a higher density project will lead to a spate of other developments, opponents may be concerned about “the inability of the community to keep out other undesirable land uses once one has been sited.” (Shively, 2007).</p>	<p>“Much of this resistance stems from the belief that denser housing is inevitably ugly, when in fact the real issue is the quality of design rather than density.” (Pawlukiewicz, 2002). The notion that high density inevitably equals ugly is disproved by visual preference studies where “...given a choice between two attractively designed communities, one higher density and the other low density; the majority preferred the higher-density option.</p> <p>Other visual preference surveys confirm that there is an almost universal negative reaction to the visual appearance of commercial strip sprawl and an almost universal positive reaction to traditional town-like communities of the past, communities that almost invariably included a mix of densities and uses.” (Haughey, 2005).</p> <p>Mitigation: High-quality, attractive design that complements its surroundings is the key to mitigating these concerns. A 1995 report by Lehman and Associates found that the most important community concerns regarding multifamily housing were building design, neighborhood integration, landscaping, visual appearance, and scale in terms of height—not density per se (Churchman 1999).</p>

2.6. Strategies and Tactics of Density Opponents

Stakeholders employ a variety of strategies and tactics to express their opinions about higher density in general or to a specific project. Opponents of a specific project often seek to either modify it or stop it completely. These strategies and tactics may include:

- Conducting public outreach to sway community members and decision-makers;
- Telephone calls and meetings with elected officials and municipal administrators;
- Speaking out at public hearings;
- Writing letters to the editor;
- Organizing new community groups or seeking support of an existing one;
- Publishing newsletters, website or blogs;
- Issuing press releases and talking to reporters;
- Picketing proposed development sites;
- Delaying or dragging out negotiations with developers;
- Filing lawsuits;
- Appealing regulatory decisions regarding site plans, wetlands or zoning boards of appeal; and
- Running and electing candidates for municipal office who support an anti-density position (Obrinsky and Stein, 2007; Bobrowski, 2002).

If a project requires a municipal zoning change, opponents may work to influence the legislative process. Zoning changes are relatively difficult to enact in Massachusetts because they require a two-thirds vote of the municipality's legislative body (either city council or town meeting) (Bobrowski 2002; O'Connell, 2003). Many residential projects are not able to attain necessary zoning changes, even with the support of municipal officials, numerous project revisions and subsequent re-votes.

During the permitting process, negotiations between developers, municipal officials and neighborhood residents can yield plan modifications, concessions, or "exactions," such as:

- Off-site amenities like sidewalks and recreational amenities;
- Open space, sometimes using a transfer of development rights agreement;
- The scaling back of projects by reducing heights, footprints, number of units or buildings;
- Restricting occupancy of the development to people without school-aged children (i.e., 55-plus, young professionals, singles, dual-incomes, and commuters);
- Including transportation improvements, such as new traffic lanes and intersections, stoplights, bus shuttles, and transit stops;

- Negotiating impact fees (though not technically allowed by Massachusetts law as a condition of zoning or permitting, developers are able to enter side agreements); and
- Donations to local educational and community programs (Bobrowski, 2002; Pawlukiewicz 2002; Flint 2005 and 2006).

In the case of some recent transit-oriented developments in Massachusetts, municipalities gave developers a density bonus in exchange for the donation of permanently protected open space elsewhere in the community. “A developer who proposed 300 condominiums on 30 acres in the village district was rejected in his bid to exchange a 13-acre parcel for that density; a new proposal to exchange 24 acres is being considered that would allow him to build 238 units on the same 30 acres” (Flint 2005).

2.7. Developer Disincentives to Building Higher Density Projects

Developers may be disinclined to propose higher density projects because of the increased uncertainty of the permitting and approval process for such developments. Developers require a predictable, efficient process; the extra fees, consultant services, taxes and other costs involved in a drawn out approval process can turn potential project proponents into opponents.

In many municipalities, the approval process is confusing, costly and time consuming, especially if the type of a proposed development differs from existing housing (Pawlukiewicz, 2002). Therefore, developers are most likely to propose a project allowed “by-right” on a given site. Zoning laws or comprehensive plans may have opposition to density woven right into the fabric of the regulation or plan, such as mandating large minimum lot sizes (Sussna, 1973; Flint, 2006). These factors, along with policies to manage, or even prevent growth, such as impact fees, “urban containment”, or moratoriums, act as density disincentives for developers (Obrinsky and Stein, 2007).

Developers will become disinclined to propose denser developments in a town that consistently thwarts such proposals. For example, where denser projects are permissible with a special permit, and yet officials repeatedly find ways to deny necessary building or other permits on the basis of technical noncompliance (Obrinsky and Stein, 2007). Community leaders may encourage developers to do a commercial development to relieve the residential property tax burden (Pawlukiewicz, 2002). Developers may also wind up not proposing a denser project because of concomitant obligations to update or provide new community infrastructure. Additionally, some studies have shown that denser projects may cost more to build and operate (Churchman, 1999).

It is often in the developer's interest to propose projects that will not spark public opposition. Whether accurate or not, public perception may act as a density disincentive on the developer, who is rationally interested in avoiding community opposition (Haughey, 2005; Pollakowski, 2005). Developers bring a distinctly different orientation to the promotion or opposition of higher density projects. Their focus is on their bottom line; municipal obstacles and public perception can contribute to uncertainty in permitting and approval process that can slow or stop a project.

3. COMMUNITY CONCERNS in the I-495 METROWEST CORRIDOR

This section presents key findings from interviews with members of the Arc of Innovation I-495 MetroWest Partnership Studio Review Committee and the municipal planning officials of Medway and Sudbury, as well as analysis of the current master plans of these two towns. (Full interview transcripts and notes are provided in Appendices 1, 2 and 3.)

Summary of I-495 Corridor Community Concerns

- A strong desire to maintain existing aesthetics and quality of life is a leading reason why denser housing projects are opposed in Massachusetts municipalities.
- Poor quality design and contextual incompatibility is the most consistently cited basis for opposition to increased density.
- School costs were consistently cited as a leading and legitimate concern for all stakeholders; however, informants said that opponents who calculate increased costs based only a straight per pupil basis are not taking into account other relevant factors, such as the existing capacity of the local school system, the multiplier effect of local spending by new residents, and costs of educating new pupils from families who purchase existing homes (re-sales).
- State Smart Growth funding policies should be expanded to support denser development outside the village centers and transportation stations to which support is currently limited.

3.1. Arc of Innovation I-495/MetroWest Partnership Studio Review Committee Findings

a. Organizational Background and Housing Priorities

The Arc of Innovation I-495 MetroWest Corridor Partnership is an advocate for the interests of businesses and residents in its 32 member municipalities. The I-495 Corridor is located along the 87-mile circumferential beltway at a radius of approximately 20-30 miles from Boston's downtown core. The

highway itself was constructed during the 1960s and 70s; residential development has been strong since 1990.

The corridor is generally regarded as the outer boundary of the Greater Boston Metro region. Residential and commercial densities are less than along Boston's Inner Belt, the I-495/Route 128 Corridor that developed during the 1950s and 60s as the region's technology corridor. During the past decade, rising commercial and residential real estate costs inside the I-495/Route 128 belt have made the I-495/MetroWest Corridor increasingly attractive to home buyers and businesses.

The Partnership's efforts in housing are critical to the organization's role as a regional advocate. U.S. Census information presented by the Partnership shows that housing in the corridor is increasingly unaffordable, with home prices rising more than 200 percent since 1980. The Partnership, as well as other housing advocacy and planning organizations, link these increased housing costs to recent worker outmigration and population loss; Massachusetts was the only state in the U.S. to experience a population decline in 2005. The Partnership highlights the acute nature of this problem in the Greater Boston area, with educational, biotech and health sciences economic sectors that depend on a highly educated work force.

Housing in the corridor has become unaffordable to first time home buyers in the 25-35 age range. The Partnership has identified cooperation among a wide range of stakeholders as critical to developing solutions to the housing crisis. These stakeholders include: state agencies, municipal governments, developers, housing advocates, and residents. The Partnership's goal is to promote the construction of "more housing across a range of pricing and types in appropriate locations."

b. Summary of Arc of Innovation Studio Review Committee Member Interviews

The principle reasons cited by interviewees for community opposition to denser residential housing were:

- Strong desire to maintain local control of aesthetics and existing zoning bylaws;
- General and de facto resistance to any project with a density greater than 1 du/ac;
- Poor design of existing denser housing developments, especially not "classic New England architecture";
- Potential/perceived cost increases to local school system for additional pupils, the lack of confidence that Chapter 40R and 40S will provide assistance, and the lack of municipal authority to charge school-related impact fees;
- Traffic congestion and increased parking demand;

Factors Driving Community Opposition to Residential Density

- Concerns about additional costs for water and/or sewer hook ups;
- Resistance to mixed use zones from residents and commercial landlords;
- Lack of understanding of “traditional” housing densities; and
- Lack of predictability in the permitting process.

Interviewees:

Mark Kablack, Esq., Whittemore & Wallace, Framingham; David LaPointe, Landscape Architect, RLA Beals and Thomas, Inc., Southborough; Pamela Resor, State Senator, Middlesex and Worcester Districts; Lauren Rosenzweig, Board of Selectmen, Town of Acton; Ronald Roux, Owner, Hallmark Companies, Hopkinton; Glenn Trindade, Board of Selectmen, Town of Medway.

3.2. Medway

The principle reasons cited by municipal staff and the Master Plan for past community opposition to denser residential housing were:

- High taxes for increased municipal services;
- Fast rate of residential growth;
- Water quality;
- Traffic and parking; and
- School cost impacts.

Interviewees and Source Documents

Andy Rodenhiser, Planning Board Chairman; Suzy Affleck-Childs, Planning Board Administrator; Glenn Trindade, Board of Selectmen; Dennis Crowley, Board of Selectmen; Medway Master Plan 1999.

Medway’s rural character was cited by 61% of survey respondents as the quality that they liked “best” about their town. Although the Master Plan Survey did not ask explicit questions about density, the responses offer some insight on community attitudes toward dense residential development. It is likely that the 67% of citizens who strongly supported limiting the annual number of building permits and the 52% who supported increasing the minimum lot size (to reduce total capacity of the proposed new Town well) may be opposed to dense residential development. It is noteworthy that the four top concerns expressed in the 1999 Master Plan and interviews (taxes, population growth, water quality and quantity, school impacts, and traffic and inadequate sidewalks) are often cited by the literature as reasons given by opponents of denser residential development.

Density through Design: Volume II

Interviewees stressed that good design is essential to successful residential project. They stated that the best residential designs respect and protect the natural features of the site; have buildings with outstanding architectural features that preserve the classic New England character; and are professionally landscaped.

Medway planning officials cited the projects shown below as examples of higher denser residential developments in their town.



Village Street Townhouses



Compact residential area, Charles River Neighborhood



Evergreen Street duplexes



Mahan Circle
Medway Housing Authority

Photos taken 4-Mar-2007, Kathleen Cahill and Sarah Raposa

3.3. Sudbury

Principle reasons cited for community opposition to denser residential housing:

- Proximity to lot line;
- Views into the development;
- Aesthetics of the development;
- Impervious surface area;
- Increased traffic near the site; and
- Loss of open space.

Types of housing development preferred (in order of preference):

- Single family homes;
- Condominiums for seniors;
- Diversity of housing varieties to provide for different ages and income levels; and
- Affordable housing mixed with market rate housing in new subdivisions.

Residents feel the top three issues Sudbury will face in the future are:

- Residential over-development and loss of community character;
- School overcrowding, costs and quality; and
- Traffic and transportation.

Interviewees and Source Documents

Jody A. Kablack, Director of Planning; Beth Rust, Community Housing Specialist; Michael C. Fee, Planning Board Chair [pending]; Jennifer Burney, Assistant Planner; Sudbury Master Plan 1999.

Sudbury municipal planning officials cited the projects shown below as examples of dense residential development in their town:



Senior Condominiums



Cluster Development



Frost Farm



Longfellow Road

Photos taken 4-Mar-2007, Kathleen Cahill and Sarah Raposa

4. CONCLUSIONS

Our research suggests that the design phase proposals will be able to address community opposition to increased residential density by crafting a program that focuses on:

- Creating excellent site design with classic New England architecture, low-impact landscape design and transportation alternatives to mitigate traffic impacts;
- Fostering mixed-use zoning to encourage retail uses and increase municipal tax revenues;
- Clarifying the provisions and applicability of Chapter 40R and 40S programs to offset costs of services;
- Reviewing municipal permitting processes with an eye to toward improving predictability; and
- Implementing the program with the involvement of all stakeholders and giving special focus to the municipal boards and officials involved in advancing zoning changes through annual town meeting.

The literature demonstrates that addressing community concerns in a respectful, sincere manner is essential to the success of new projects. Significantly, early engagement with the community can often dispel many of the fears regarding a new denser development. Fear is often exacerbated when stakeholders lack information. Early disclosure improves a project's local reputation, fosters community and instills good policy (Thomsett, 2004).

In Massachusetts, potential increased costs to local schools has emerged as one of the leading concerns of project opponents. Also, the supermajority required to enact any municipal zoning change is an effective shield that opponents may use to protect the status quo.

In the 495/MetroWest Corridor, denser residential developments have a poor reputation because they tend to be poorly conceived, designed and/or built. In most communities, there is an inertia or preference for existing aesthetics and approaches to housing development. There is also a lack of consistency between the expressed values of communities and their current policies. Even though the master plan surveys in the Medway and Sudbury reveal that a majority of residents would prefer to allow denser development, the surveys also show that equally large majorities still prefer large lot zoning (1 du/ac).

In Medway, key informants indicate that it is unlikely that the community would welcome denser development in existing residential areas of town.

In Sudbury, the leading concerns identified to date are the proximity of a development to abutters and residents, as well as the aesthetics of the development itself; projects with a poor appearance tend to generate opposition.

The nature of potential community opposition to denser development at the conceptual project sites in Medway and Sudbury may be complex. The sites are located well outside the town centers, which may mitigate typical traffic congestion and compatibility arguments of opponents. However, the remaining issues of school costs and overcoming “zoning inertia” will need to be addressed directly and proactively to help insure that opponents’ concerns do not hamper the project.

APPENDIX 1

**Interviews of Arc of Innovation I-495 MetroWest Partnership and
Studio Review Committee Members**

Glenn Trindade, Medway Board of Selectmen, interviewed 20-Feb-2007

Mark Kablack, Esq. Whittemore & Wallace, Framingham, interviewed 22-Feb-2007

Ron Roux, Owner, Hallmark Companies, interviewed 22-Feb-2007

State Senator Pamela Resor, District Name, interviewed 28-Feb-2007

Lauren Rosenzweig, Town of Acton Board of Selectmen, interviewed 27-Feb-2007

David LaPointe, Landscape Architect, RLA Beals and Thomas, Inc. interviewed 28-Feb-2007

APPENDIX 2

Town of Medway Comprehensive Plan Analysis and Interviews

1. Medway Master Plan – Community Density Survey

A Citizen Questionnaire Survey was conducted in 1997-98 by the Town of Medway Master Plan Committee to gather input from Town residents as part of the Master Plan process. The sample consisted of 2,474 respondents (Medway's total population is approximately 12,000) with the following characteristics: the average age was 45.6 and the average number of years the respondents lived in Medway was 16.6. Although the Citizen Questionnaire Survey does not ask questions explicitly pertaining to density, the answers do address the envisioned character of Medway and give clues about community attitudes toward dense residential development.

The 1999 Master Plan reveals four major concerns in Medway: high taxes, fast rate of residential growth, water quality, and traffic. When asked, "What do you like least about living in Medway?" 29% of survey respondents cited high taxes, 26% cited rate of growth, and 23% cited Route 109 (traffic concerns). That Medway was a rural community topped the responses to the question, "What do you like best about living in Medway?" with 61%.

a. Medway Major Concerns

Taxes: The 1999 Master Plan states that for every residential tax dollar collected, the Town spent an average of \$1.12 per resident on services. On the contrary, for every open space tax dollar raised by the Town, only \$0.25 was spent on open spaces, and for commercial/industrial \$0.33 was spent on these uses. The Master Plan states that this data is evidence that keeping land as open space and increasing the commercial and industrial properties in Town will decrease the tax burden on residents. It continues by stating: "Without another means of revenue, our tax rate or assessments must increase to cover the deficit generated from each new residence (5)."

Population Growth: The Metropolitan Area Planning Council conducted population projections for the Town of Medway, suggesting that the Town would reach its maximum population in the year 2028. The concern expressed in the 1999 Master Plan is that if the population were to reach this maximum before 2028 (as anticipated by the MP Committee), the outcome would be a higher tax rate, increased burden placed on services such as schools and water, and more traffic.

Water Quality and Quantity: The Water and Sewer Board reported that the current population in 1999 (approximately 12,000) exceeded the recommended State guidelines given the well capacity and per capita water use. At the time the Master Plan was written the Town was interested in building a new Town well. When the 1997-1998 Citizen Questionnaire Survey asked the following question, indicating concern about water quantity: "Medway's current population is approximately 12,000 people. Recent studies have predicted Medway's absolute capacity, based upon available building lots, to be between 17,000 and 18,000 people. Current water usage exceeds the town's well capacity. The projected new well would increase capacity to serve approximately 13,000 people. Would you support...?" sixty-seven percent of respondents strongly supported limiting the annual number of building permits to limit growth, 52% strongly supported increasing the minimum buildable lot size to reduce total capacity, and 29% were strongly against maintaining the current rate of growth.

Traffic and Sidewalks: The fourth major concern that is addressed in the 1999 Master Plan is traffic and inadequate sidewalk linkages, especially between new subdivisions. Thirty-three percent of respondents

were not at all satisfied with the traffic flow onto and off Route 109. Fort-one percent felt that Route 109 should be Medway's highest priority regarding traffic and safety issues, followed by sidewalks with 10%.

b. Land Use Goals and Objectives

The 1999 Master Plan states: "The most dramatic land use change to occur in the past decade has been the rapid residential development of land (8)." The Master Plan outlines the following land use goals and objectives:

- Manage residential growth:
 - Encourage mature citizen housing.
 - Encourage affordable housing.
 - Water, sewer, and traffic impact should dictate land use.
 - Rezoning to allow more commercial/industrial use.
- Encourage and manage commercial and industrial growth: "All new residential development should be offset with open space, commercial, or industrial development."
- Enhance Medway's New England character:
 - Maintain the feel of a small, rural, New England town (distinct neighborhoods, open space, and traditional architecture).
 - Traditional architecture- gabled roofs, shingled or clapboard siding.
 - Landscape architecture features- rock walls, trees/shrubs used to screen equipment.
 - "Changing zoning bylaws can help meet this goal."
 - Implement zoning strategies and design standards for New England character to promote a vibrant downtown center, sense of neighborhood, improved streetscape, and buffers between zones.
- Preserve rural character and natural resources: Raise money for purchasing available open space and creating greenways in Town that are also connected to nearby trail networks in abutting communities.

Medway's Master Plan suggests that zoning changes could help achieve some of the desired results mentioned above, such as preserved rural New England character. But the plan states: "Zoning changes should not increase the population density, that is, the maximum expected population given the zoning changes should not exceed that expected under 1999 zoning bylaws" (12). This statement implies that any changes to the zoning bylaws to achieve desired management of residential growth should not likewise increase the population density in Town more than what was expected.

2. Medway Municipal Interviews

Susy Affleck-Childs, Planning Board Administrator, interviewed 16-Feb-2007

Glenn Trindade, Medway Select Board member, interviewed 21-Feb-2007

Dennis Crowley, Medway Select Board member, interviewed 21-Feb-2007

3. Notes of Municipal Meeting (Barnhardt)

Attendees: Suzy Alfleck-Childs, Planning Board Administrator; Dennis Crowley, Select Board; Glenn Trindade, Select Board. 21-Feb-2007, Medway Town Hall

Town's situation

- 90% of the tax burden sits on the residents (90% of the tax revenue generated is from its residents not business)
- Medway is one of 2 municipalities in the state in a deficit. The town has a real problem. They truly cannot afford any more expenditures.

Things to keep in mind

- The area (and Town) needs a design that retains the look and feel of the community.
- The town already has a design review committee that reviews development projects under this premise.
- Architecture (design concept) of the site does matter.
- Working with existing landscape does matter.
- What would our revenue stream be for whatever we propose?
- How are we going to pay for this?

Current situation

- Current problem with developing the land on our site that is zoned “industrial” because of no sewer connection.
- The industrial park is very important to the community.
 - Cybex Corporate Headquarters in that building.
 - It provides good jobs for unskilled employees (benefits included).
 - The town would hate to see this company relocate in the future.
 - Town officials believe the company is currently staying put because the land, in effect, is worthless.
 - Since sewer does not go to the site and the land is zoned for industrial, the company would not be able to sell the property to any manufacturing company who would desire to use the site intensely.
 - Town officials believe, though, that if sewer is finally extended out to the site the company would stay because they would be able to construct their desired building expansion.

Goals

The project that we envision (and a developer ends up constructing) needs to help pay for the sewer system.

4. Medway Preliminary Observations

Community opposition to density was not explicitly discussed in the Medway Master Plan Committee’s 1997-98 Citizen Questionnaire Survey. Nevertheless, we conclude that the 67% of citizens who strongly supported limiting the annual number of building permits to limit growth and the 52% who supported increasing the minimum buildable lot size to reduce total capacity of the proposed new Town well were likely to oppose dense residential development.

In addition, the four major concerns expressed in the 1999 Medway Master Plan (taxes, population growth, water quality and quantity, and traffic and inadequate sidewalks) generally tend to be common grounds for opposing dense residential development. The Planning Board Administrator identified key residential areas in Medway that are typically considered dense, albeit with different levels of density. The interviewee also identified proposed dense residential developments including 40B developments and age-restricted housing. According to the municipal official, two major concerns people in Medway had with dense residential developments are school impacts and increased traffic.

Lastly, the interviewee discussed design principles and standards that could potentially make denser residential development more appealing to those that are typically opposed to such development. The best design features should respect and strive to protect the natural features of the site, have buildings with outstanding architectural features that preserve the classic New England character and be professionally landscaped.

APPENDIX 3

Town of Sudbury Comprehensive Plan Analysis and Interview Notes

1. Sudbury Master Plan – Community Density Survey

In September 1999, the town of Sudbury conducted a master plan survey of 1,540 residents of the community (total population is approximately 18,000). The survey questions gauged residents views on six areas: Land Use and Zoning, Water and Wastewater, Commercial and Industrial Development, Housing, Town Services and Town Government.

On the topic of Land Use and Zoning, residents were nearly unanimous on several points:

- Protect natural resources and wildlife habitat;
- Increase the amount of permanently protected open space;
- Support of historic preservation;
- Development more affordable housing; and
- Concentrate growth in parts of town to allow for more open space areas to be designated in other areas.

Residents also generally reported feeling current development trends were placing Sudbury's character in jeopardy.

However, when asked what types of residential development residents feel is appropriate for Sudbury, 81% chose single family homes on 1 acre or greater. Condominiums for seniors were the next most frequently given answer, at 66%. Only 42% of respondents supported cluster (open space) subdivisions where lot sizes are reduced to preserve open space.

On the topic of housing, residents expressed split views on several issues. Approximately 62% of respondents said there should be a diversity of housing varieties in Sudbury to provide for different ages and income levels. Slightly less than half (47%) supported creating affordable housing mixed with market rate housing in new subdivisions.

When asked, "In your opinion, what is the most critical issue Sudbury will face in the future?" the top four responses were: 1) residential over development and loss of community character; 2) school-related concerns, such as over crowding, costs, quality; 3) traffic and transportation; and 4) growth and its inherent problems, such as congestion.

2. Sudbury Municipal interviews

Jody Kablack, Planning Director, and Jennifer Burney, Assistant Planning Director, interviewed 23-Feb-2007 (notes of conference call)

Elizabeth Rust, Community Housing Director, interview scheduled [pending]

Mary Will, Director of Business Relations, Sudbury Elementary Schools, 6-Mar-2007

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