

TOWN OF LUDLOW MASTER PLAN



DECEMBER 2011

*Prepared by the Pioneer Valley Commission with guidance from the
Ludlow Master Plan Committee*

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VISION STATEMENT

In 2030, Ludlow is a culturally dynamic model community that proactively plans for the future. The town has retained its historical and cultural roots while embracing sustainability to achieve its long-term goals. Residents have a strong sense of community with safe neighborhoods. Ludlow supports a healthy residential, commercial and industrial base. This has allowed for the redevelopment of underutilized properties, preservation of agricultural land, access to abundant open space, good schools, and quality town services, while promoting and maintaining a healthy and historical downtown.

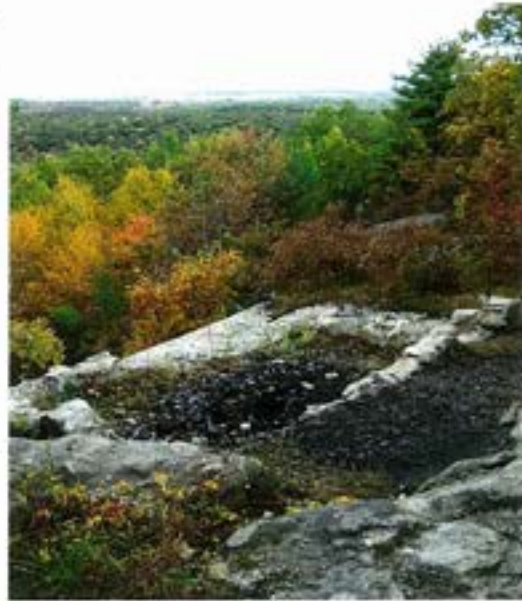
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EXECUTIVE SUMMARY

Small town charm and location to major transportation routes has made Ludlow one of the fastest growing municipalities in the Pioneer Valley region. With its many community assets, from historic mill buildings and the downtown area to abundant open space and agricultural fields, Ludlow has become a desirable bedroom community in the Springfield-Hartford metropolitan area. Since the 1960s, the population in Ludlow has steadily grown, and as a result acres of agricultural and forest lands have been converted to large lot residential development. This new residential development located in the outskirts of the community, as well as increased development in neighboring communities, have greatly impacted traffic congestion and travel patterns.



Facing Rock

Until recently, Ludlow residents had not developed a shared vision on how to address future growth and protect the valuable community access that makes the community such a desirable place to live. In 2008, town residents voted to fund the development of a Master Plan inspired by the belief that developing a Plan with an in-depth visioning process will enable Ludlow to develop strategies to protect and enhance its key assets, as well as advance a clear community character.

The Proposed Future Land Use map identifies key priorities of the Master Plan Committee for future development in Ludlow over the next 20 years. One of the priorities of the community is to continue to invest in the Center Street / East Street / State Street downtown area, and encourage new commercial and residential development in this location where public water, sewer, and building infrastructure already exists. This includes support for the Ludlow Mills Redevelopment project, as well as increasing recreational and open space opportunities in this area. Another

priority of the community is to make efforts to connect permanently protected open spaces and create a greenway network for recreational and ecological purposes. A completed network could connect the Chicopee River to the Reservoir to the Westover Conservation area.

Developed by a Master Plan Committee consisting of town officials and citizens, this Plan has over 120 strategies that will promote and create a sustainable community that will enable its residents to thrive throughout the 21st century. Each chapter provides a summary of data trends, identification of opportunities and challenges, and specific goals, strategies, and action steps for future implementation of the plan. It is the hope of the Master Plan Committee that town officials, boards, and commissions will work collaboratively to implement the goals and strategies identified in this plan to ensure Ludlow's assets remain for generations to come.

COMMUNITY ENGAGEMENT

The first phase of the master planning process was dedicated to provide various opportunities for the public to comment about the future of the town. This is a critical component to any master planning process for two reasons. First, it is important to get a sense of the priorities, issues, and concerns of the residents who live, work and play in the community and attempt to find consensus on how the community will change or grow in the future. Second, as master plan committee members made decisions on goals and strategies with respect to the nine chapter elements in the plan, members have a sense which proposed strategies will be the easiest to implement based on the public's feedback, and which will be the most difficult.

In 2009, Ludlow citizens and its business community were invited to participate and provide comment on the future of the community in three public events: stakeholder interviews, a community survey, and a two-day community visioning workshop. These methods were used in a hope to capture a wide audience of residents who traditionally do not participate in community planning events. In addition, residents could comment anonymously in the community survey or stakeholder interview, or publicly in a community workshop. The following is a summary of the results of these three community engagement opportunities.



Participants at the two day community workshop

Stakeholder Interviews

Community stakeholder interviews were held June 17-19, 2009 at the Ludlow Town Hall. The purpose of the interviews was to hear concerns about the future of Ludlow, thoughts on pressing issues facing the community, and recommendations for improving the quality of life in town.

The consultant team worked with the Ludlow Master Plan Committee members to identify key community stakeholders that should be interviewed as part of this public participation process. Interviews were also open to the general public, with notices placed in the Register and Republican to encourage participation. The interviewees included town staff, town committee members, large employers, small business owners, clergy and church members, and active and interested residents.

About 60 stakeholders were interviewed for this process. Each interview session was 50 minutes and ranged from 2-5 people per interview group. Stakeholders of varying interests were grouped together in order to encourage a dynamic discussion.

What issues does Ludlow face today and in the future?

What do you like and dislike about Ludlow?

If money were no object, what recommendations would you have to plan for Ludlow's future?

Do you have any questions regarding the master plan process or the town in general?

Participants were encouraged to speak honestly and openly, with no names attributed to their comments. The interviewees were asked to answer the four questions in their interview session regarding quality of life and future recommendations (see sidebar).

Interviewees were quick to note that Ludlow is a family-friendly, safe community with small town charm and as a result, the town has seen a lot of rapid, unplanned growth, as well as increased traffic issues. Interviewees explained that most of the town's rapid growth takes place towards the outskirts of town, specifically around Miller Street towards Belchertown and upper East Street around Red Bridge.

As a result of the recent growth trends, Ludlow community stakeholders understand the need to plan and prepare. On the whole, people in Ludlow want to plan growth to keep their much-loved small town feel. As an alternative to the current system of development, many Ludlow community stakeholders showed support for "Smart Growth"

principles. Smart Growth is a planning theory that advocates for concentrating growth in the center of a community to avoid urban / suburban sprawl, and encourages compact, walkable land uses. While some interviewees mentioned Smart Growth by name as a possible remedy to Ludlow's growth problems, others spoke of some of its tenets or principles. A full summary of the results of the Stakeholder Interviews can be found in Appendix A.

Community Survey

Ludlow citizens had an opportunity to express issues, concerns, and recommendations for the future of the town through a community-wide survey released by the Ludlow Master Plan Committee in September 2009. Master Plan Committee members worked with the consultant team to develop a 40-question survey that addressed the key chapter elements in the master plan. A copy of the survey and survey results are available in the Appendix.

Surveys were available online and in hard copy format in both English and Portuguese. The online version of the survey could be accessed through the Ludlow Master Plan website. Paper versions were available at the Town Hall, library, senior center, Fire Department, and Randall's Farm. Three thousand five hundred paper copies were also included as an insert in the Register. Survey results were collected from September through December 2009.

The total number of survey respondents was 410. Based on 7,659 households (Census 2000) the survey response rate was 5.3 percent. Despite the low respondent rate, the survey was able to support many of the issues that were heard by the consultant team through the stakeholder interviews, and eventually in the community workshops.

Demographics

Most of the survey respondents were residents of Ludlow, with 65 percent residing in Ludlow over 20 years. Eighty-nine percent were homeowners, which is consistent with existing housing trends in the community. The majority of respondents are over the age of 40. The highest percent of respondents reside in Precinct 3 (27 percent) and Precinct 6 (22 percent). Precinct 3 is located in the most northern and western portion of the community, and covers the highest geographic region. Precinct 6 is located north of the Massachusetts Turnpike and is located in the geographic center of the community.

Housing

Eighty-nine percent of survey respondents would like to see future housing to be developed as detached single family homes. The preferred location for new residential development is along existing roads where there is little existing development (51 percent). There is moderate support for new housing development within new subdivisions (25 percent) and mixed-use development (23 percent).

Sixty percent thought there was sufficient housing for their income level. However, sixty percent of respondents believed that there are not enough housing options for seniors, and there is a need for affordable assisted living (55 percent), retirement communities (48 percent), and small market rate homes (47 percent). There is support for affordable housing development by 39 percent of the respondents. Nineteen percent of respondents were "indifferent".

While there is limited support (30 percent) for the idea of rezoning portions of the community to accommodate higher density housing development, close to 58 percent of respondents support cluster development.

Housing Opportunities & Challenges

- Respondents prefer "sprawl" development patterns for residential growth – conflict with open space goals & transportation issues
- Higher density housing is acceptable when partnered with open space protection.
- Garner support for senior housing and affordable housing developments

Open Space & Recreation

There is overwhelming support (92 percent) for open space protection. Of all the recreational facilities listed in the survey, all of the 12 locations had the highest ranking under “never” used. Percentages ranged from 40 percent to 85 percent. Sixty-six percent claimed they would use the facilities more if information on access and location were provided.

Open Space Opportunities & Challenges

- How to address the challenge on the best way to balance open space protection with new economic development and housing.
- The resident's desire for open space protection conflicts with current large lot housing development pattern.
- Residents are unclear on the location of existing public recreational resources.

Land Use

There appears to be no strong opinion as to the location of the center of town. Locations identified include Big Y plaza, East Street, historic town center (First Church), and Mass Pike exit. There is extremely high support for green infrastructure and technologies, including requiring new large commercial buildings to be built to green building standards. Sixty-three percent of respondents would like to see new commercial development along State Street. This may be referring to the Ludlow Mills project. Many of the comments stated they believed there is enough commercial and industrial development already.

Land Use Opportunities & Challenges

- No consensus on the location of a downtown.
- Support for standards identified in the Green Communities Act.
- Identify additional locations for new commercial development in addition to Ludlow Mills.
- Determine if there is a need for new commercial / industrial development to offset lost taxes from open space protection.

Transportation

Concern for traffic volume and congestion is the biggest transportation issue the town is facing. Forty percent find the congestion the most unacceptable traffic issue. However, most respondents “never” take the bus, use the MassPike park and ride lot, or bike instead of driving the car. Sixty-two percent stated they do not bike on Ludlow streets, and 54 percent stated they do not feel safe biking on the streets.

Transportation Opportunities & Challenges

- Encourage more people to take the bus or alternative transportation methods to alleviate congestion issues
- Expand transit routes to service more areas
- Create designated areas for bikes / pedestrians

Community Visioning Workshop

The University of Massachusetts regional planning graduate students along with Pioneer Valley Planning Commission collaboratively coordinated and conducted a Visioning Workshop – “Looking at Ludlow”, which was held at the Ludlow High School on Friday, November 13 and Saturday, November 14, 2009. The workshop was planned in conjunction with the Town of Ludlow Master Plan Committee members. Over 100 people attended the weekend event. The public was invited to participate in the following ways:

- Two focus groups were held to get the community’s feedback on the issues of housing, land-use, open space and recreation, cultural and natural resources, infrastructure, green communities, and transportation.
- UMass Graduate students presented overviews of their proposed growth scenarios. Each scenario team had interactive discussion with the community about what they liked and didn’t like in regards to the proposed 20-year growth scenarios for Ludlow’s future.
- Participants also had the opportunity to comment on poster displays and ask questions of the UMass graduate students.
- A visual preference survey was conducted during the two-day workshop where participants were asked to rank pictures of development types and styles based on preference.

LUDLOW VISIONING WORKSHOP SUMMARY

Most people **prefer single-family homes** but would **like to see a variety of housing types** to meet people's needs as they age.

Participants liked the **concept of having greater mixed-use development** downtown and wanted to see more housing and retail opportunities along East Street and at the Ludlow Mills.

Generally, community members **supported a future density of around four housing units per acre outside the downtown area**, and a greater density in select areas, such as downtown or in a new neighborhood near the industrial park, with proper design standards.

There was a consensus to **pursue renewable energy opportunities**, such as utilizing solar, wind, landfill gas, as well as establishing an energy committee.

Workshop participants wanted to see **greater connectivity and accessibility** in their town, especially regarding the river, sidewalks, neighborhoods, and social interactions and activities.

Many people supported the continued **development and maintenance of playing fields** as well as off-road biking and walking trails.

Take efforts to **maintain the culture and history** of Ludlow.

Many people wanted to see **continued support for the Portuguese community and events**, and believed that the East Street neighborhood did not need any changes, except provide more parking.

Residents liked the **safe, neighborhood community character** in Ludlow, as well as the excellent services and wanted to retain these assets in the future.

Participants wanted to **retain the industrial and agricultural heritage** of the town by growing the industrial base in the northwest and west areas of town and conserving agriculture.

Some individuals **preferred smaller lot sizes in the future in order to protect agricultural land** from development and to promote open space protection.

Many people wanted **more consistent zoning regulations** implemented.

Most people supported **design standards** near the Massachusetts Turnpike and potentially in other areas as well.

Future Growth Scenarios

The graduate students from the Department of Landscape Architecture and Regional Planning of the University of Massachusetts-Amherst developed three future growth scenarios for consideration by the citizens of Ludlow at the Visioning Workshop, and revised scenarios were presented to the Master Plan committee for consideration in December 2009. While there was no consensus by the Master Plan Committee members on one scenario for implementation, there were elements that were liked in all three scenarios that Committee members would like to consider to implement in the future.

The three scenarios presented to the committee were:

Proposed Scenarios		
Neighborhood	Cultural Core	Green Community
Identified three neighborhood centers that promote mixed use development near existing public infrastructure.	Concentrate new development within the "downtown", the historical and cultural core of the community.	Focus on dependence on local renewable energy resources, concentrated development, protection of open spaces, and alternative transportation networks.

More information on the details of each of the proposed scenarios can be found in the final report, titled "Part II: Envisioning 2030 – Future Growth Scenarios & Potential Policy Implementation, December 2009" and available in the office of the Ludlow Planning Department.

Bringing It All Together

It is clear that Ludlow residents who participated in the stakeholder interviews, the community survey, or the visioning workshops are concerned about the rapid growth trends in the community, and the impact this growth has had on traffic congestion and loss of open space. Despite these concerns, participants support policies and regulations that encourage dispersed, unplanned growth and are unsure of regulations that would encourage higher density development or a variety of housing configurations (such as multi-family developments) in identified locations where public water and sewer infrastructure exist. Public perception of these development standards may be considered to be too "urban" in design, and residents may believe that this type of higher density housing is not consistent with the "small town character" so loved in Ludlow. The challenge for the community will be to come to terms with policies and recommendations that will direct growth in a manner that will allow Ludlow to maintain its small town charm, and acknowledge that Ludlow has grown in the past and will continue to grow in the future.

LAND USE

Introduction

The past, present and future of a community is, in large measure, determined by its geographical location and physical characteristics. The relatively steep topography of Minnechaog Mountain and Facing Rock encouraged early settlement in the lowest point in the community, the historic Town Center. The hydropower potential of the Chicopee River, as well as other small waterways throughout town, resulted in commercial and residential development clustered around industrial centers, such as Jenksville. Such clusters allowed large open tracts in other parts of the community to be used for farming activities.



Downtown Ludlow

Following the Great Depression, Ludlow manufacturing activity slowed. Industrial activity shifted to the northwest corner of town by the mid-20th Century, following the 1939 construction of Westover Air Force Base in the neighboring town of Chicopee. In 1972, Westover was decommissioned which made 850 acres available for development. Currently located on these decommissioned lands are Westover Industrial Airpark East and the offices for Massachusetts Municipal Wholesale Electric Company. Commercial activity concentrated along key transportation corridors and the local workforce increasingly shifted to jobs in other towns. In 1957, the building of the Massachusetts Turnpike bisected the town, separating the Ludlow Manufacturing mill district from the historical Town Center, agricultural lands and the open space of the north. The opening of the Center Street interchange (Exit 7) for the Turnpike spurred additional commercial development in the immediate area and extending in all directions along the major roads. Access to the Turnpike also significantly increased local traffic flow, especially from commuters who live in neighboring communities.

Recent residential growth has changed the agricultural character north of the Massachusetts Turnpike and along Route 21 heading northeast into Belchertown. Ludlow's location within the Pioneer Valley region has made the town a prime location for new residential development. Easy access to the Massachusetts Turnpike, Route 20, and Interstate 291 and 91 has turned Ludlow into a pleasant bedroom community to the Springfield metropolitan area and beyond. However, the historically dense village core that supports a vibrant mix of uses is currently threatened by the increasing traffic volume, strip development, and a lack of design standards to preserve the existing scale and character.

The purpose of this chapter is to review the recent trends and patterns of residential, commercial, industrial and public development, as well as natural lands within the town of Ludlow. This chapter forms the basis for comprehensive planning and largely determines the need for environmental protection measures, public facilities, and transportation infrastructure. The goal is to review these trends and provide a series of recommendations of how Ludlow can meet its long range Vision, as determined by the citizens of Ludlow through the public engagement process of this master plan.

Trends and Data

Over the past 30 years, Ludlow's developed lands, such as residential, commercial, and industrial uses, have increased by 2,100 acres but only encompass 35 percent of the total acreage in Ludlow (Table 1). The majority of the community remains in a natural state, such as forests, wetlands, water bodies, and active agricultural lands. Of the 11,000 acres that remain undeveloped, approximately 38 percent are permanently protected from future development. The majority of this protected land is located in the northern portion of town and surrounds the Springfield Reservoir. The greatest amount of development occurred between 1985 and 1999, where almost 900 acres were developed into residential, commercial, or industrial uses (Table 2).

Table 1: Comparison of Developed and Undeveloped Land in Ludlow, 1971-2005

	1971	1985	1999	2005
Undeveloped land (in acres)	13,863.40	13,188.65	12,304.73	11,756.65
Developed land (in acres)	4,252.48	4,897.96	5,773.46	6,399.96
Percent Developed	23.45%	27.01%	31.84%	35.29%

Source: McConnell Land Use data 1971, 1985, 1999, 2005

Since 1971, a total of 2,100 acres of land in Ludlow have been developed (Table 2) and 1,400 acres of forest and 650 acres of farmland and pasture have been lost (Table 3). While this is consistent with regional and state trends, the loss of farms and forests altered the landscape and character of the community. The once rural agricultural lands in the outskirts of town are now more suburban in character.

Table 2: New Development in Ludlow

<i>New Development</i>	<i>Acres</i>
1971-1985	645.5
1985-1999	875.5
1999-2005	626.5
1971-2005	2,147.5

Source: McConnell Land Use data 1971, 1985, 1999, 2005

Ludlow experienced the greatest increase in developed land in the form of residential lots greater than ½ acre in size. Between the years 1985 and 2005, there was a 39

percent increase in large lot residential lands in town. Since 1971, this has resulted in almost 500 acres of new large lot residential development in the community. Based on the Ludlow zoning bylaw, lots of this size can be built in the Agricultural zoning district, with a minimum lot size of 40,000 square feet, or approximately one acre, for



any single family home. The Agriculture zoning district is located mostly north of the Massachusetts Turnpike and covers 74 percent of the community (Table 4). Residential B district also allows residential uses over one acre, however the residential use must be either duplex or multifamily.

According to the McConnell Land Use data, Ludlow also experienced a loss of about 100 acres of residential parcels less than ½ acre in size between the years 1985 and 2005 (Table 3). It is unclear on whether this loss is a result of conversion of residential lands to commercial and industrial uses, or consolidation of smaller parcels to larger residential lots.

Table 3: Land Use Change by Category, 1971-2005

Land Use Category	Change '71-'85 (acres)	Change '71-'85 (%)	Change '85-'05 (acres)	Change '85-'05 (%)	Total Change '71-'05 (%)
Active Agriculture	-100.40	-11.88	-298.69	-40.09	-47.21
Pasture	-65.72	-12.71	-191.18	-42.35	-49.67
Forest	-596.29	-5.54	-804.34	-7.92	-13.02
Multi-Family	34.46	324.11	14.22	31.55	457.91
Residential < ¼ acre	9.29	2.58	-6.60	-1.79	0.75
Residential ¼ to ½ acre	282.83	18.79	-91.98	-5.14	12.68
Residential > ½ acre	125.34	15.86	369.91	39.52	62.68
Commercial	13.54	14.57	63.34	59.45	82.67
Industrial	48.96	66.31	98.63	80.33	199.91
Transportation	13.9	4.73	29.98	9.73	14.92

Source: McConnell Land Use data 1971, 1985, 1999, 2005

*** Negative Numbers = loss in acres or percentage

The map on the following page (Figure 1) shows the pattern of land use, both developed and undeveloped in the Town of Ludlow as of 2005.

Ludlow Land Use 2005

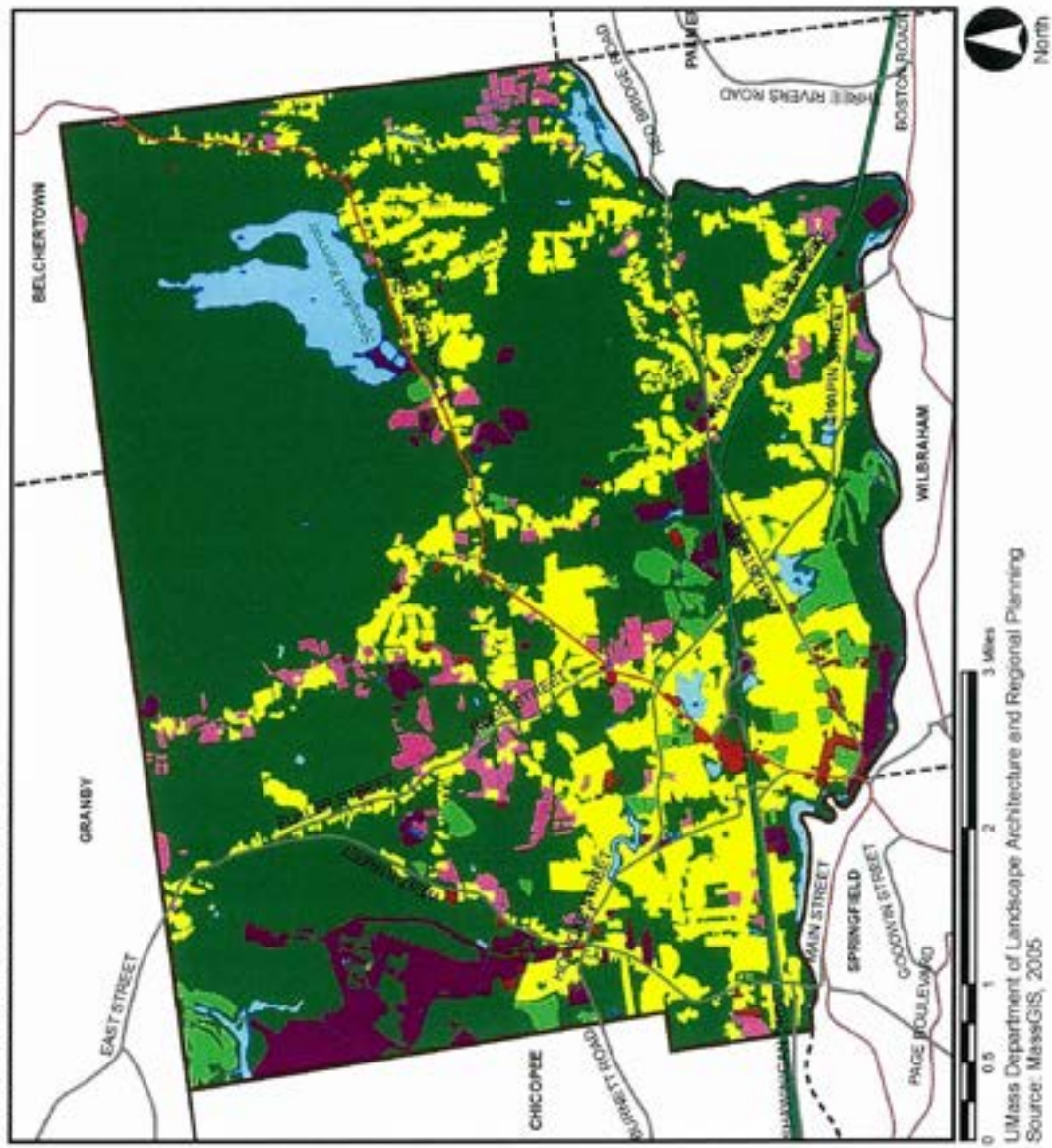


Figure 1: Land Use, 2005

Zoning Districts

Ludlow has a total of nine zoning districts (Table 4), with Industrial B mentioned in the zoning bylaw but not currently reflected in the zoning map (Figure 2). The four residential districts represent over 90 percent of the community. The two Business zones represent one percent of Ludlow with approximately 73 percent of the business-zoned land located along the East Street and Center Street corridors. The three Industrial zones represent 7.6 percent of the total land, and include the Ludlow Mills site and two other tracts along the Chicopee River. As mentioned earlier, there is currently no Industrial B zone reflected in the zoning map but use and dimensional regulations are provided in the town's zoning bylaw. The 894-acre Industrial C zone is exclusively the Westover Industrial Airpark in the northwest of town.

In the Residential zoning districts, single family homes are permitted by right and require a minimum lot size of 15,000 square feet. According to the official zoning map, the Residential A district is located mostly in the southwestern portion of the community and south of the Massachusetts Turnpike. The zoning map reflects some spots of Residential A district near the historic town center, Springfield Reservoir, and Minnechoag Mountain. The inconsistency of these zones within the overall zoning map begins to reflect what could be considered "spot zoning". Spot zoning occurs when a single lot or a small part of a neighborhood is granted a zone change different from neighboring property. This typically benefits the interest of the owners of property in the spot zone, and can have a negative effect of leading to land uses that are potentially incompatible with existing land uses and the uniformity of the overall zoning scheme.

Table 4: Ludlow Zoning Districts

Zone	Intended Use	Acres	Percent of Total
Agricultural	Rural uses, low-density residential	12,954	73.7 %
Residential A	Low density residential	2,489	14.2%
Residential A-1	Low density residential	178	1.0%
Residential B	Higher density residential	393	2.2%
Business A	Consumer goods/services, offices	137	0.8%
Business B	Consumer goods/services, offices	45	0.3%
Industrial A	Light manufacturing, general industrial	432	2.5%
Industrial B	Trailer camps / overnight camps	0	0.0%
Industrial C	Light manufacturing, general industrial	894	5.1%
Not Zoned	Water	55	0.3%

Source: MassGIS 2005

Figure 2: Ludlow Zoning Districts

While the majority of the two business zones are located along Center Street and East Street, it appears from the zoning map that this zoning district is also fractured, with some individual parcels identified for business within the southwestern portion of town between Scott's Corner and Cady's Corner. There are several parcels also identified as Business A on Massachusetts Avenue. The town should carefully review and amend the zoning bylaw to avoid possible legal challenges in the future.

The majority of the Industrial zones are located in the northwest section of town for the Westover Industrial Park and along the Chicopee River for the Ludlow Mills. There is an Industrial A zone located on Carmelina's Circle, which houses several construction companies as well as the Ludlow Tennis club. Town officials have also stated that there are several non-conforming industrial parcels along West Street between Bruni Avenue and Libby Street. These parcels are currently assessed as residential, and are adjacent to residential neighborhoods.

Ludlow also has five overlay zoning districts: Water Supply Protection District, Floodplain District, Agriculture Moderate Density District, Aircraft Flight District, and East Street Revitalization District. These overlay districts are used to modify allowable uses in the underlying zone, but do not change the underlying lot size requirements.

The Water Supply Protection District provides additional regulations for public water protection for the watershed areas of the Springfield Reservoir and Nash Hill Reservoir. The Floodplain District requires a special permit for the construction of structures within the 100 year floodplain. The Agriculture Moderate Density District requires additional site design standards and a special permit for business uses within the Agricultural zoning district. The Aircraft Flight District regulates the hazards of airplane noise and accidents from the Westover Air Force Base. The East Street Revitalization Overlay District allows residential uses that are not permitted in the underlying zoning district, as well as specific commercial uses not currently listed in the Table of Uses.

Parcel Inventory

Analysis of the town's parcel inventory (Table 5) show that 77 percent of parcels in the community are assessed as residential, and account for 37 percent of the total acreage in Ludlow. This is consistent with the existing zoning bylaw, which dedicates 90 percent of the overall zoning districts to residential uses. Tax exempt lands account for 23 percent of the total acreage in Ludlow, with a majority of these lands owned by municipal and state government and currently under permanent protection.

The community also has a significant amount of vacant lands assessed as developable or potentially developable. Approximately 2,000 acres of vacant lands could be developed as residential, commercial, or industrial uses in the future (Table 6). About

2,450 acres are assessed as undevelopable by the assessors' office, which means that there are environmental constraints that currently make these lands unbuildable.

Table 5: Ludlow Parcel Inventory

	# of parcels	% of total	Acres	% of total
Residential	6,930	77.7%	5,438	37.3%
Commercial	253	2.8%	691	4.7%
Industrial	105	1.2%	814	5.6%
Mixed Use	105	1.2%	267	1.8%
Ch. 61/61A/61B	45	0.5%	758	5.2%
Tax Exempt	273	3.1%	3,312	22.7%
Developable(Vacant) Lands	522	5.9%	2,058	14.1%
Undevelopable Lands**	678	7.6%	1,235	8.5%
TOTAL	8,911	100%	14,573	100%

Source: Ludlow Assessors Office, February 2010

** Vacant lands with environmental constraints

The greatest concentrations of developable, vacant lands are assessed as residential, which is consistent with the local zoning districts. Around 1,900 acres of land in Ludlow have the potential to be developed as new residential uses in the future. The majority of these residential vacant lands are located in the Agriculture zoning district. Based on the existing zoning regulations, if these vacant parcels were to be developed, Ludlow could see a substantial influx of single family homes on a minimum of one acre lots.

Table 6: Vacant Lands

	Acres	Parcels
<i>Residential</i>		
Vacant, Developable	1,113	324
Vacant, Potentially Developable	795	152
Vacant, Undevelopable	1,220	670
<i>Commercial</i>		
Vacant, Developable	13.1	18
Vacant, Potentially Developable	1.4	2
Vacant, Undevelopable	2.8	7
<i>Industrial</i>		
Vacant, Developable	135.5	26
Vacant, Undevelopable	12.0	1
TOTAL	3,292	1,200

Source: Ludlow Assessors Office, February 2010

The greatest concentration of vacant, developable residential parcels is located between Lyon Street and Fuller Street, along the Granby town boundary (Figure 3). This area was identified by the graduate students at the University of Massachusetts as priority farmland conservation area, and is the largest cluster of active farmland in the community. A second large cluster of undeveloped land is located along the Belchertown town line, behind Alden Street. Looking at the town parcel map, it appears a subdivision plan was filed at this location, but aerial photography shows these lands as undeveloped. These lands are also adjacent to Alden Pond, a mill pond that is along Broad Brook, a tributary that connects the Springfield Reservoir to the Chicopee River. Protection of these key resource areas would be adjacent to Alden Pond, a mill pond that is along Broad Brook, a tributary that connects the Springfield Reservoir to the Chicopee River. Protection of these key resource areas would provide important open space linkages between Springfield Reservoir / Facing Rock area to the Westover Conservation Area and the Chicopee River.

The highest concentrations of vacant lands considered undevelopable by the town assessor are located on Minnechoag Mountain, due to the steep slopes. These parcels are adjacent to the Ludlow State Forest, which is owned and maintained by the Massachusetts Department of Conservation and Recreation (DCR). This 48-acre parcel provides residents opportunities for hiking, walking, and nature / wildlife watching, as well as a fire tower to provide long range views from the mountain. While these lands might be difficult to develop from a financial standpoint, there is nothing in the zoning bylaws that would prohibit future development on these lands. In addition, there are several large parcels with frontage from Miller Street, Fox Run Drive, and Dowd Court and located at the base of the mountain that are vacant and assessed as developable. The town should work with DCR to acquire and place permanent protection on this valuable recreational and ecological resource.

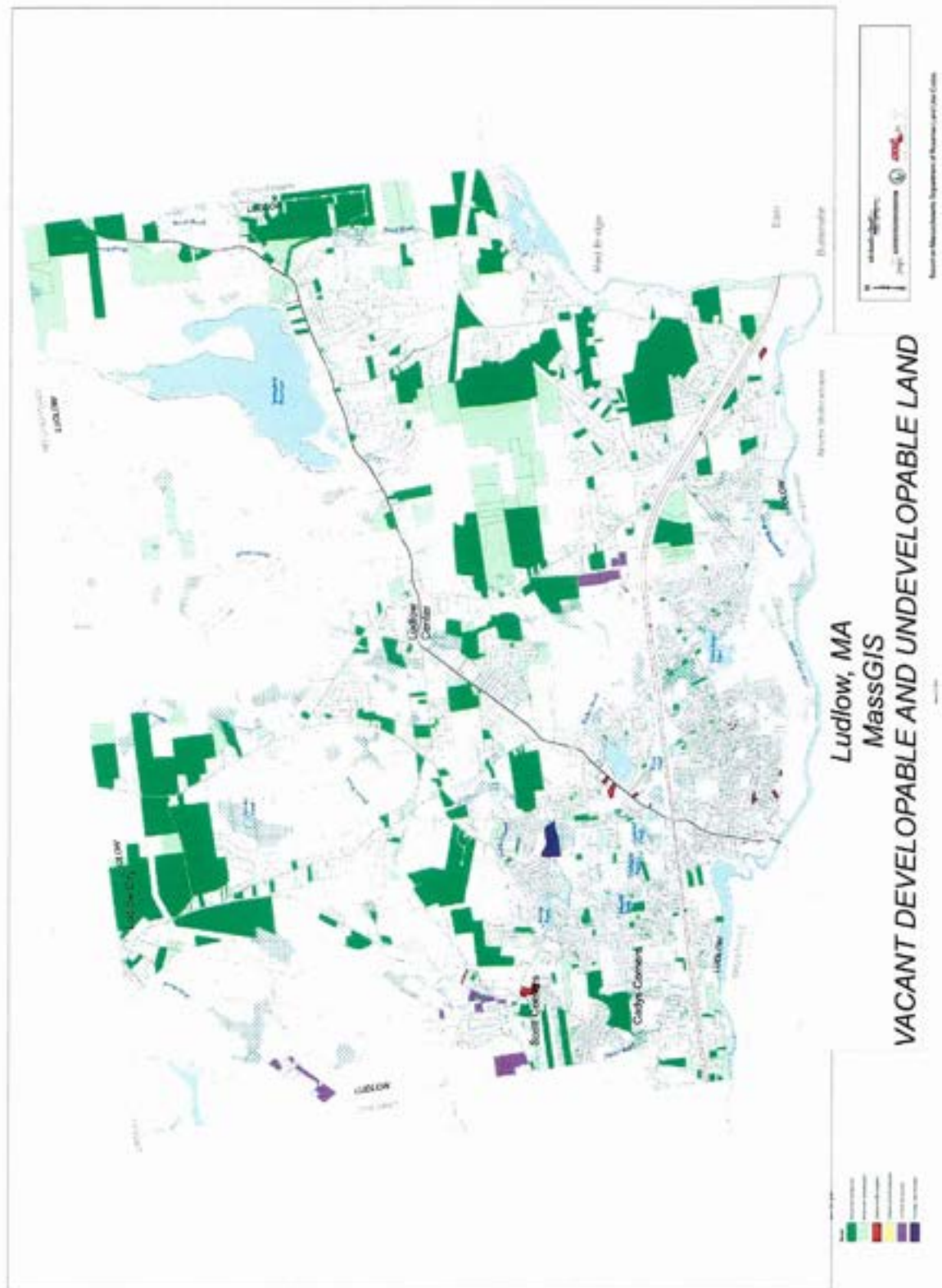


Figure 3: Vacant Developable and Undevelopable Land, 2010

Permits

Ludlow had about 1,300 building permits granted between the years 1990 and 2008, with the majority of these permits for single family homes (Table 7). The highest number of single family building permits was in the year 1998, with 101 permits.

Table 7: Ludlow Residential Building Permits 1990-2008

Year	All Housing Units	Single Family Units	% for Single Family Units
1990	67	53	79%
1991	46	44	96%
1992	76	74	97%
1993	68	68	100%
1994	71	63	89%
1995	108	108	100%
1996	110	90	82%
1997	58	56	97%
1998	107	101	94%
1999	68	68	100%
2000	53	51	96%
2001	71	69	97%
2002	62	59	95%
2003	68	68	100%
2004	46	46	100%
2005	57	57	100%
2006	143	53	37%
2007	61	50	82%
2008	33	25	76%
TOTAL	1,373	1,203	87%

Source: SOCDS Building Permit Database, HUD February 2010

Recent regional, state, and national trends in the housing market are also evident, with only 33 residential permits in the year 2008, an 18-year low. A significant number of permits were approved for multi-family housing in 2006, but on average, permits for this type of housing development is annually low.

Ludlow had more residential permits granted in the year 2007-2008 than any of the neighboring communities of comparative size, except for Chicopee and East Longmeadow (Table 8). Ludlow had less overall residential permits than East Longmeadow, but outpaced the town in single family permits. Belchertown, which is considered to be the fastest growing community in the Pioneer Valley region, had slightly higher single family permits in the year 2007, but in general had less residential building permits granted than in Ludlow. Eight percent of the total residential permits awarded in Hampden County were located in the town of Ludlow.

Table 8 Residential Building Permits 2007-2008, Community Comparison

Town Name	2007	2007	2008	2008
	All Units	Single Family	All Units	Single Family
Chicopee	80	64	42	38
East Longmeadow	79	35	153	23
Ludlow	61	50	33	25
Belchertown	59	59	18	18
Monson	33	33	9	9
Palmer	29	29	21	21
South Hadley	23	23	18	18
Wilbraham	20	20	12	12
Granby	14	11	9	9
Hampden County	715	575	402	216
Pioneer Valley Region	1068	878	456	270

Source: SOCDs Building Permit Database, HUD February 2010

According to the study conducted by regional planning graduate students at the University of Massachusetts, 73 percent of single family residential building permits granted in the years 2000-2007 were located outside the compact public sewer area in Ludlow. A significant cluster of these residential permits were located along the Minnechoag Mountain and Springfield Reservoir areas, priority open space areas. This is consistent with new subdivision development that has occurred in Ludlow since 2000.

Since the year 2000, subdivision activity in Ludlow has been vigorous, with 314 new lots approved over a seven year period (Table 9). These subdivision projects are located throughout town, but most are located in the Agricultural zoning district. It appears from the zoning map that the zones were changed on several of the subdivision projects to Residential A, which requires a minimum lot size of 15,000 square feet and a smaller frontage requirement of 90 feet for single family homes than the Agricultural district, which requires a minimum of 40,000 square foot lots and 140 feet of frontage. This may explain some of the "spot zoning" that has occurred in the Agricultural zoning district, and mentioned earlier in this chapter.

Table 9: Approved Subdivision Activity, 2000-2007

Year Approved	Name of Project	Number of Lots
2000	Boulder Creek off Moore Street	11
	Cislak Estates off Miller Street	20
2002	Ayers Country Estates	7
	Applewood Drive	13
	Allison Lane	25
	Pinewood Road Ext.	33
	Deer Hill Circle	8
	Sugar Hill Estates	25
2003	Emma Way and Mariana Lane (off West & Cady Streets)	16
2004	Cislak Estates	17
	Alden Heights	8
	Bowles Avenue Ext.	5
	Alden Hill Estates	11
	King Street Ext.	3
2005	Old Farm Road	15
	Dowd Court Phase II	30
	Rosewood Estates	49
2006	Longford Development Corporation	17
	Irla Drive Ext.	4
2007	Timberidge Road – Phase II	27
	Avelino Way	10

Source: Existing Conditions Inventory, Ludlow Master Plan, University of Massachusetts, 2009; Ludlow Town Planner

Opportunities and Challenges

Development trends in Ludlow over the past 30 years have been mostly in the form of large lot residential development, either as new subdivisions or Approval Not Required (ANR) developments. Much of this new residential development occurred in the Agricultural zoning district, which is located mostly outside the compact public water and sewer district and comprises 74 percent of the community. Based on the existing zoning, and the availability of vacant, developable residential lands in the Agricultural zoning district, it appears that this type of residential development will continue in the future unless the community amends its zoning bylaw. Otherwise, Ludlow will continue to see the remaining priority natural lands be converted to large lot residential development.

This type of dispersed, large lot residential development is contributing to “suburban sprawl” development patterns in the Pioneer Valley. According to *Valley Vision 2, the Regional Land Use Plan for the Pioneer Valley* (PVPC, 2007) between the years 1971 and 1999, over 30,000 acres were converted from natural lands to residential development, while the region’s population remained stable. The costs of sprawl to the community and to the region can include loss of natural lands, degradation of the environment, increased traffic congestion resulting in reduced air quality, fewer housing options, and loss of community character.

Smart growth¹ and sustainability practices encourage communities to consider an alternative to large lot development through the adoption of regulations that encourage adaptive reuse and infill development, smaller lot sizes and a higher density in suitable locations of undeveloped lands. Ludlow should consider amending the existing zoning bylaws to provide infill opportunities within the downtown district, and adopt zoning regulations that encourage smaller lot sizes in appropriate locations in the community. Examples of these types of zoning bylaws are Open Space Residential Development, Mixed Use Villages, Transfer of Development Rights, and Infill Development Overlay Districts.

The challenge will be to educate Ludlow residents about the costs of sprawl development to the town. Results of the community survey show that 88 percent of survey respondents would like the town to promote detached single family homes as the primary form of housing. Fifty percent would also prefer to see new residential development directed to existing roads where there is little or no development. In addition, 70 percent do not support the rezoning of areas of the community for higher density housing developments.

However, results from the stakeholder interview process revealed that many interviewees believed the number of housing units has increased too quickly while the population remained steady, and even though detached single family homes are praised, it was recognized that this form of residential development might not always fit with the town’s character. Stakeholders also supported the idea of cluster zoning, where residential structures are built on smaller lots, and a percentage of the parcel would be protected in perpetuity as open space. Cluster zoning also received support from 58 percent of the survey respondents. The concept of Neighborhood Villages, that promote a dense mix of residential, commercial, and civic uses, was received favorability after much discussion at the community Visioning Workshops.

¹ An urban planning and transportation theory that concentrates growth in the center of a community to avoid urban / suburban sprawl; and advocates compact, transit-oriented, walkable, bicycle-friendly land use, including neighborhood schools, complete streets, and mixed-use development with a range of housing choices. Its goals are to achieve a unique sense of community and place; expand the range of transportation, employment, and housing choices; equitably distribute the costs and benefits of development; preserve and enhance natural and cultural resources; and promote public health.

The town of Ludlow is already taking steps to adopt regulations that would promote a higher density of development in appropriate areas. Local officials are currently working with the Pioneer Valley Planning Commission to designate and adopt Chapter 40R Smart Growth Zoning Districts. These optional zoning overlay districts allow developers to build new market rate and affordable residential housing units in an eligible location, as defined by the state enabling legislation. Generally, these districts are located in or near town centers and help to maintain the character of the community's "downtown". Within this district, a city or town shall zone for primary residential use as of right and may also permit business, commercial or other uses by right or by limited site plan review. There are minimum density requirements for single family homes, duplex and triplex units, and multi-family units. The community also develops design standards for this district to assure that the required density is achieved in a way that preserves and reflects the existing character in the town's district.

The community can also encourage new units to be built in existing underutilized or vacant buildings. The Ludlow Mills project is a perfect example of upgrading a cluster of underutilized buildings to provide additional retail, professional office, light manufacturing, housing, and open space within the downtown district. Redevelopment of the Ludlow Mills will impact both local and regional economic development opportunities. Town officials should continue to work with Westmass Area Development Corporation to provide assistance on the development of this project.

Ludlow also has the opportunity to continue to promote infill development where public water and sewer infrastructure already exists. The town has already invested millions of dollars into the East Street corridor, one of the main commercial corridors in Ludlow. Since its official designation of the project area in 2002, this business district has received \$1.95 million in federal and state funding and \$324,000 in local matching grants. These funds have been used for streetscape improvements such as sidewalks, signs and awnings, benches, street, infrastructure, trees, light fixtures, and planters. These investment funds have transformed this neighborhood into a thriving commercial district. The town should continue to focus revitalization efforts to the East Street / State Street / Center Street area.



East Street Corridor

At the Visioning workshop, regional planning graduate students from the University of Massachusetts-Amherst introduced the concept of amending the current zoning to allow Neighborhood Villages in designated areas in the community. These mixed use villages would allow new, high density residential development, limited commercial and retail uses and be centered to a civic use, such as a school or community center. These new growth centers could also provide bicycle and pedestrian amenities, environmentally sensitive design (such as Low Impact Development techniques for stormwater management), and green building technologies. Workshop participants and Master Plan Committee members agreed that town officials should consider identifying specific areas in the community that could accommodate this type of development. Areas identified by residents included Cady's Corner and the historic Town Center. Committee members also agreed that limited commercial uses should be allowed on Center Street near the Belchertown town line.

As mentioned earlier, three-quarters of the community is zoned Agricultural, which allows agricultural uses, single family homes, and some very limited commercial uses within the district. Over time, as new subdivisions were built, applicants went before the town and were granted a zone change to Residential A to build single-family homes on smaller lots and reduced frontage requirements, therefore building at a higher density than would be allowed under the Agricultural zone. These new districts are dispersed throughout the community, and could potentially be considered spot zoning, if ever legally challenged. However, the community now has the opportunity to re-evaluate the current zoning district boundaries and determine if the Residential zones should be expanded, the Agricultural zone be reduced in size, and minimum lot size and frontage requirements are appropriate given the context of specific neighborhoods. Clearly, the representatives at Town Meeting, who voted these zone changes, agreed that 15,000 square foot lots were appropriate at these locations. The community should carefully consider lot size and frontage requirements in each of the residential and the agricultural district to determine if these thresholds are appropriate.

In the past, the community has also adopted the East Street Overlay District and the Agriculture Moderate Density District to allow more commercial uses than allowed under the current Table of Uses. Currently, the zoning regulations for these districts provide additional uses allowed in these districts. The community should consider expanding this zoning language to provide additional performance and design standards for these overlay districts. In addition, the Agriculture Moderate Density District boundary is consistent with the public sewer area. The community could also consider amending the density levels allowed in the zone, since the infrastructure is there to support it.

An assessment completed by the landscape architecture graduate students at the University of Massachusetts-Amherst identified priority areas for open space

protection based on habitat, hydrology, topography, and land use. There were several key areas identified for natural resource protection: Minnechaog Mountain, Springfield Reservoir / Facing Rock, Lyon Street Corridor, Alden Pond, and the Chicopee River. While much of the lands around the Springfield Reservoir, Facing Rock, and Westover Conservation Area are under protection, there are significant areas of prime farmland and forestland that are under the threat of development. Much of the available vacant, developable lands are located within these key priority conservation areas. The community should make efforts to either acquire or protect these lands.



Example of Mixed Use Development in South Hadley, MA

Ludlow has the opportunity to be a model smart growth community in the region – encouraging new residential and commercial development to the compacted sewer areas, protecting outlying quality natural resource lands, regulating the design and style of new commercial development, promoting green building and technologies, and continued investment into the downtown. However, the time is of the essence. Residential growth rates continue to rise, and more and more natural lands are being lost to development. Town officials need to revisit and amend the town's zoning regulations and determine appropriate locations for higher concentrations of development, and put into place regulations to protect the high quality natural lands that exist in the community.

Goals and Strategies

Immediate	Completion within one year of master plan adoption
Short Term	Completion within five years of master plan adoption
Mid Term	Completion within ten years of master plan adoption
Long Term	Completion within fifteen years of master plan adoption

GOAL 1: Amend the current zoning bylaw to identify deficiencies, resolve inconsistencies, and adopt smart growth / sustainable policies.

Strategy 1: Evaluate the boundaries, dimensional standards, and allowable uses in the three Residential zones and the Agriculture zone and make amendments to more accurately reflect existing conditions and community vision.

Responsible Party: Planning Board, Town Planner

Resources Needed: Staff time, Volunteer time, funding for consultant

Target Date for Completion: Mid Term

Strategy 2: Provide a district on the official zoning map for the Industrial B zone, or remove standards from the existing zoning bylaws.

Responsible Party: Planning Board, Town Planner

Resources Needed: Staff time, Volunteer time, funding for consultant

Target Date for Completion: Immediate

Strategy 3: Amend the current Industrial A zone and include non-conforming parcels along West Street.

Responsible Party: Town Planner, Planning Board

Resources Needed: Staff time, Volunteer time, funding for consultant

Target Date for Completion: Short Term

Strategy 4: Provide continued outreach and education to Ludlow residents regarding zoning amendments and adoption of smart growth policies through the town website, the Ludlow Register, and Ludlow Community TV.

Responsible Party: Town Planner, Planning Board, interested citizens, LCTV staff

Resources Needed: Staff time, Volunteer time

Target Date for Completion: Ongoing

GOAL 2: Promote development in the Center Street / East Street / State Street “downtown” area, where existing public water, sewer and building infrastructure exists.

Strategy 1: Adopt Downtown Design Guidelines that portray architectural features the Town of Ludlow wishes to promote in its downtown area.

Responsible Party: Planning Board, Historical Commission

Resources Needed: Staff time, Volunteer time

Target Date for Completion: Mid Term

Strategy 2: Amend the East Street Revitalization Overlay District and provide additional design and development standards for pedestrian circulation and amenities, landscaping, parking, lighting, and architectural design.

Responsible Party: Planning Board, Town Planner

Resources Needed: Staff time, Volunteer time

Target Date for Completion: Short Term

Strategy 3: Conduct and maintain an inventory of vacant & underutilized properties within the downtown, and market these properties for development.

Responsible Party: Town Planner, Assessor, Town Engineer, Economic Development Board

Resources Needed: GIS mapping, staff time, funding for consultant

Target Date for Completion: Mid Term

Strategy 4: Provide continued support to local developers for the redevelopment of the Ludlow Mills project and other significant properties in town.

Responsible Party: Board of Selectmen, Town Administrator, Town Planner, Historical Commission, Economic Development Board

Resources Needed: Staff time, Volunteer time

Target Date for Completion: Ongoing

Strategy 5: Adopt an Infill Development Overlay District bylaw to encourage infill and redevelopment in the downtown area to include parcels of land that do not meet the minimum dimensional requirements of the zoning bylaw as well as to encourage mixed use developments.

Responsible Party: Town Planner, Planning Board

Resources Needed: Staff time, Volunteer time, funding for consultant

Target Date for Completion: Mid Term

GOAL 3: Adopt regulations and policies that promote higher density and mixed use development in appropriate locations

Strategy 1: Adopt a mixed-use commercial/residential zoning overlay district, such as Chapter 40R, at appropriate areas. This zoning overlay bylaw should include Design Guidelines for architectural elements and signage.

Responsible Party: Town Planner, Planning Board, Chapter 40R Advisory Committee

Resources Needed: Staff time, Volunteer time, funding for consultant

Target Date for Completion: Immediate

Strategy 2: Designate specific locations in the community as Neighborhood Centers, and adopt zoning bylaws and regulations that will encourage a mix of residential, commercial, and civic uses to be developed at a higher density, creating additional open space, than what is currently allowed under existing zoning.

Responsible Party: Town Planner, Planning Board

Resources Needed: Staff time, Volunteer time

Target Date for Completion: Long Term

Strategy 3: Develop zoning regulations that allow for greater development densities where water and sewer infrastructure is available, and to reduce development densities where water and sewer infrastructure is not available.

Responsible Party: Planning Board, Town Planner, Department of Public Works, Springfield Water and Sewer Commission

Resources Needed: Staff Time, Volunteer Time, funding for Consultant

Target Date for Completion: Immediate

GOAL 4: Adopt regulations and policies to protect key natural resource areas, such as Minnechaog Mountain, Lyon Street Corridor, Alden Pond / Broad Brook, and the Chicopee River.

Strategy 1: Compile a list of priority parcels and respective land owners for permanent protection, and work with town boards or local / state conservation groups to acquire and protect lands within these priority areas.

Responsible Party: Conservation Commission, Department of Public Works (Parks Division), Town Planner, Planning Board, Open Space and Recreation Committee, Board of Selectmen, Town Assessor

Resources Needed: Staff time, Volunteer time, state LAND grant, federal LWCF grant (Land and Water Conservation Fund)

Target Date for Completion: Short Term (list); Ongoing (acquisition)

Strategy 2: Develop a town-wide Greenway Plan that includes multi-use trails and natural corridors that connect and protect recreational, ecological, and cultural / historic resources.

Use the greenway plan developed by the landscape architecture and regional planning graduate students at the University of Massachusetts for this planning document as a base.

Responsible Party: Town Planner, Planning Board, Open Space and Recreation Committee, Department of Public Works

Resources Needed: Staff Time, Volunteer Time, funding for consultant

Target Date for Completion: Long Term

Strategy 3: Continue to update the town's Open Space and Recreation Plan (OSRP) every seven years in order to qualify for state and federal grants.

The state Local Acquisitions for Natural Diversity (LAND) grant and federal Land and Water Conservation Fund (LWCF) grants provide funding to communities for acquisition of open space, but the town must have an updated OSRP in order to qualify.

Responsible Party: Town Planner, Conservation Commission, Board of Selectmen

Resources Needed: Staff time, Volunteer time

Target Date for Completion: Ongoing

Strategy 4: Re-establish the Community Preservation Act Committee.

The Community Preservation Act is a law passed in September 2000 that enables Massachusetts communities to establish a local Community Preservation Fund, through a ballot referendum, dedicated to open space protection, provision of low and moderate income housing, and historic preservation. Revenue for the fund is generated by a local property tax surcharge of up to 3% and a state match of about \$25 million annually to participating communities.

Responsible Party: Board of Selectmen, Town Administrator, Town Planner, Housing Partnership, Conservation Commission, Historical Commission, Community Volunteers

Resources Needed: Staff time, Volunteer time, outreach and education materials

Target Date for Completion: Immediate

Strategy 5: Adopt zoning regulations that promote residential structures built on smaller lots, and a percentage of the parcel would be protected in perpetuity as open space. Target this type of development to areas with public sewer and water.

Responsible Party: Planning Board, Town Planner, Department of Public Works, Conservation Commission

Resources Needed: Staff time, Volunteer time, funding for consultant

Target Date for Completion: Mid Term

Strategy 6: Review the zoning bylaws and adopt regulations that will protect priority natural resources and farmland.

Zoning bylaw examples include Transfer of Development Rights, Open Space Residential Development, Green Development Performance Standards, and Resource Protection Overlay Districts.

Responsible Party: Planning Board, Town Planner, Conservation Commission, Open Space and Recreation Committee

Resources Needed: Staff Time, funding for consultant

Target Date for Completion: Ongoing

Strategy 7: Establish a local Agricultural Fund that can be used for either local match money for state Agricultural Preservation Restrictions (APR), or used to purchase priority farmlands for protection.

Utilize a Payment in Lieu system that can be tied to new commercial uses and the Transfer of Development bylaw (see Town of Hadley, MA).

Responsible Party: Town Planner, Conservation Commission, Board of Selectmen, Town Administrator, Agricultural Commission

Resources Needed: Staff time, Volunteer time

Target Date for Completion: Long Term

Strategy 8: Work with current or future owners of the Ludlow Mills complex to provide access to the Chicopee River for recreational purposes.

Responsible Party: Board of Selectmen, Town Administrator, Conservation Commission

Resources Needed: Staff time, Volunteer time

Target Date for Completion: Ongoing

HOUSING

Introduction

With easy access to the Massachusetts Turnpike and Interstate 291, pleasant rolling hills and excellent public schools, it is no surprise that Ludlow is a desirable and growing residential community. The purpose of this chapter is to review demographic and housing trends in Ludlow and provide a blueprint for addressing Ludlow's housing needs. Based on the findings of this master planning process, the proposed goals and strategies in this chapter attempt to balance residential development, protect the town's natural, scenic and historic resources, and improve housing opportunities in town.

Trends & Data

Demographics

Population

Ludlow has a population of over 20,000 residents (Table 1). The town's greatest periods of population growth occurred in the 1950s, 1960s and 1990s, when thousands of people became town residents. While the volume of residential construction over the last decade suggests substantial population growth, population estimates by the U.S. Census Bureau and Ludlow Town Clerk's office shows moderate to negative growth.¹ The U.S. Census Bureau's American Community Survey estimated Ludlow's population at 22,042 residents in 2006-2008, which represents a four percent increase in population from 2000 to 2006-2008. The 2010 Ludlow Town Census, maintained by the Ludlow Town Clerk's office, shows slightly lower population figures with 20,170

Table 1: Population Change by Decade

Year	Population	Percent Change
2006 -2008	22,042	4%
2000	21,209	13%
1990	18,820	4%
1980	18,150	3%
1970	17,580	27%
1960	13,806	59%
1950	8,660	6%
1940	8,181	-8%
1930	8,876	

Source: U.S. Census Bureau, 2005-2007 American Community Survey*

¹ The U.S. Census Bureau American Community Survey (ACS) is the new source for detailed demographic, social, economic, and housing characteristics. The Census Bureau discontinued the decennial long-form sample during the 2010 Census. The ACS utilizes continuous measurement approaches and a rolling sample, and the U.S. Census Bureau will release ACS data for areas based on the accumulated responses to the previous 3 years of data collection. For more information, go to the U.S. Census Bureau's American Community Survey website: <http://www.census.gov/acs/www/>

residents (19,647 town residents and 1,063 jail inmates), which suggests that Ludlow's population is declining.

Comparatively, Ludlow's population growth from 1980 to 2000 was significantly higher than Chicopee and Springfield, which saw negative growth, but paled in comparison to the growth experienced by Belchertown. Ludlow's rate of growth was comparable to that of Granby, Wilbraham and the state (Table 2).

Table 2: Population Growth Comparison

	1980	1990	2000	Percent Change 1980-2000
Ludlow	18,150	18,820	21,209	17%
Belchertown	8,339	10,579	12,968	56%
Chicopee	55,112	56,632	54,653	-1%
Granby	5,380	5,565	6,132	14%
Palmer	11,389	12,054	12,497	10%
Springfield	152,319	156,983	152,082	0%
Wilbraham	12,053	12,635	13,473	12%
Massachusetts	5,737,037	6,016,425	6,349,097	11%

Source: US Census Bureau, Decennial Census

Table 3: Population by Age Group, 2005-2007

Age Group	Ludlow	% of Total	Hampden County	% of Total	Massachusetts	% of Total
Under 10 years	2,243	10%	57,729	13%	764,402	12%
10 to 19 years	2,753	13%	67,871	15%	871,564	14%
20 to 29 years	2,504	11%	62,835	14%	855,035	13%
30 to 39 years	3,205	15%	56,928	12%	889,450	14%
40 to 49 years	3,416	16%	68,162	15%	1,037,015	16%
50 to 59 years	2,930	13%	60,390	13%	858,528	13%
60 to 69 years	2,016	9%	36,405	8%	524,992	8%
70 to 79 years	1,720	8%	26,260	6%	360,926	6%
Over 80 years	1,174	5%	21,969	5%	275,847	4%
Total:	21,961		458,549		6,437,759	

Source: U.S. Census, 2005-2007 American Community Survey

Population Distribution by Age Group

The American Community Survey shows that Ludlow's population is older than the regional or state average (Table 3). While there are a slightly higher percentage of residents in prime childbearing years (30-49), this has not translated to a high

percentage of children. This may be due to the Ludlow Prison facility, which holds roughly around 2,000 inmates counted in the U.S. Census.

Over twenty percent of all Ludlow households are age sixty or greater, which is slightly higher than the county and the state. Mirroring demographic trends statewide, the percentage of elderly residents is expected to increase. The aging population in the town may create different housing and social service needs in the coming decades.

Ludlow also has a small percentage of residents between the ages of 20 and 29 (11 percent). Recent studies argue that the lack of residents in this population group for municipalities statewide has been largely due to the high housing costs that have plagued the state since the early 2000s. Residents in this population group tend to be new workers or still in school, and they seek attractive rental units, condominiums, and starter homes.

Table 4: Ludlow Household Size Trends, 2000 to 2006-2008

	2000	% of Total	2006- 2008	% of Total
Total Households	7,666		7,637	
1-person household	1,857	24%	1,850	24%
2-person household	2,547	33%	2,621	34%
3-person household	1,373	18%	1,440	19%
4-person household	1,259	16%	1,131	15%
5-person household	461	6%	429	6%
6-person household	151	2%	144	2%
7-or-more person household	18	0%	22	0%
Average household size	2.55		2.63	
Average family size	3.03		3.11	

Source: U.S. Census Bureau, 2000 U.S. Census and 2006-2008 American Community Survey

Household Composition

According to the 2006-2008 American Community Survey, Ludlow had an estimated 7,637 households of which 60 percent consisted of married-couple families. Ludlow's percentages of family and married couple families are higher than those of both Hampden County and the state of Massachusetts. A little over five percent of Ludlow households were headed by a single parent with children under the age of eighteen and over ten percent of all households consisted of an elderly resident who lived alone. These are considered special needs households and as such may require public assistance for basic needs.

Ludlow has a variety of household sizes (Table 4). Over fifty percent of Ludlow households in 2006-2008 comprised of single-person or two-person households, which suggests that Ludlow's existing population may be interested in housing options outside of three to four bedroom single-family homes, such as town houses, condominiums, and one to two bedroom single family homes. In contrast to much of the country, Ludlow's average household size and average family size, as a whole, increased since 2000 (Table 4). This can be attributed to the slight growth in the number of two and three person households. The average household size for owner-occupied housing units in Ludlow in the year 2006-2008 was 2.80 compared to the household size of 1.96 for renter households. This data supports the fact that renter households typically have fewer household members than owner occupied housing units.

Race, Ethnicity, Ancestry

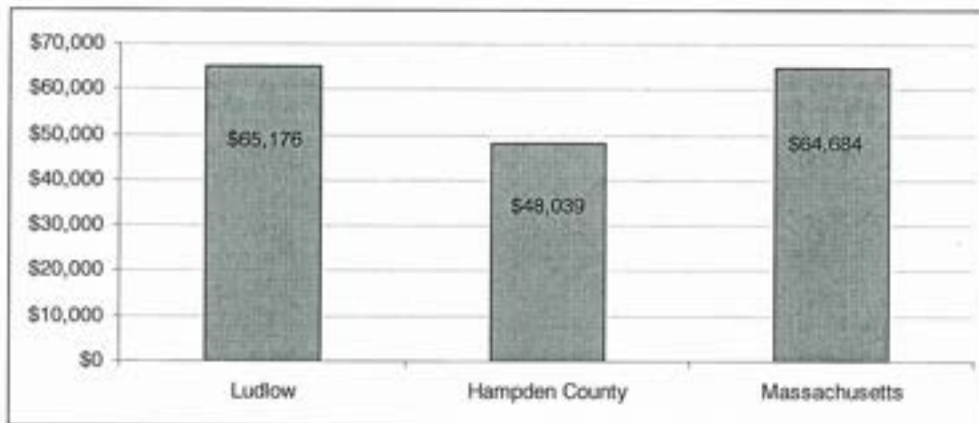
According to the 2000 census, the Town of Ludlow is a racially homogenous community with 95 percent of its residents being Caucasian. This is higher than the percentages for the Hampden county (79 percent) and the state (83 percent) but similar to surrounding towns with the exception of Springfield. Diversity in town is concentrated more in ethnicity, since the community is home to a very large Portuguese-American population. American Community Survey data 2006-2008, based on ancestry showed that approximately twenty-two percent (22 percent) of Ludlow residents reported Portuguese ancestry and over twenty-five percent (25 percent) reported French or French Canadian ancestry. A significant subset of the population also reported Irish, Polish or Italian ancestry.

Household Income

Level of household income is one sign of financial security in a town, and Ludlow is overall doing very well. The 2006-2008 Annual Community Survey estimated Ludlow's median household income to be approximately \$65,000 which was higher than the median household income for Hampden County and the state (Figure 1). Seventy-seven percent of the households received earnings and 25 percent received retirement income other than Social Security. Thirty-four percent of the households received Social Security. The average income from Social Security was about \$16,000. These income sources are not mutually exclusive; that is, some households received income from more than one source.

Ludlow's median household income also rose by nine percent (when adjusted for inflation) over the period from 1990 to 2006-2008. This data suggests that as Ludlow is growing in population, the town is becoming more affluent.

Figure 1: Median Household Income, 2006-2008 American Community Survey



However, not all Ludlow households are affluent. In total, around twenty-three percent of Ludlow households earned less than \$35,000 a year (Table 7). The median household income for single person households (Table 5) and households headed by a householder age sixty-five years and older was substantially less than the median household incomes for the other household sizes and age groups (Table 6). Over sixty percent of the Ludlow households who earned less than \$35,000 a year were headed by a householder age sixty-five years and older.

Table 5: Median Household Income by Household Size

<i>Median Household Income</i>	<i>\$65,176</i>
1-person households	\$28,239
2-person households	\$68,373
3-person households	\$75,548
4-person households	\$81,369
5-person households	\$85,917
6-person households	\$105,085

Table 6: Median Household Income by Age Group

<i>Median house hold Income</i>	<i>\$65,176</i>
Householder under 25 years	\$76,638
Householder 25 to 44 years	\$72,423
Householder 45 to 64 years	\$75,894
Householder 65 years and over	\$31,629

Source: U.S. Census Bureau, 2006-2008 American Community Survey

Table 7: Ludlow Households by Income Level, 2006-2008

Income Level	Estimate	Percent
Less than \$14,999	608	8.0%
\$15,000 to \$24,999	640	8.4%
\$25,000 to \$34,999	531	7.0%
\$35,000 to \$49,999	1,088	14.2%
\$50,000 to \$74,999	1,836	24.0%
\$75,000 to \$99,999	1,406	18.4%
\$100,000 to \$149,999	1,013	13.3%
\$150,000 or more	515	6.7%
Total households	7,637	7,637

Source: U.S. Census Bureau, 2006-2008 American Community Survey

Residents Living in Poverty

Despite the fact that Ludlow is a growing, affluent community, the town also has residents whose annual household income is below the poverty level and therefore likely confronting housing affordability issues. A little over four percent of individuals residing in Ludlow lived in poverty in 2006-2008. In comparison, the percentage of individuals below the poverty level in Hampden County was approximately sixteen percent and ten percent for the state.

Table 8: Percentage of Ludlow Residents Below the Poverty Level

Year	Families			Children			Individuals		
	Ludlow	Hampden County	State	Ludlow	Hampden County	State	Ludlow	Hampden County	State
2006-2008	3.5%	12.8%	7.1%	3.8%	25.5%	12.6%	4.4%	16.2%	10.0%

Source: U.S. Census Bureau, 2006-2008 American Community Survey

Almost four percent of all Ludlow families, four percent of all Ludlow children, and four percent of Ludlow residents' age 65 years and older were also below the poverty level over this same period. Eighty-six households received public assistance through cash (1.1 percent of all Ludlow households) and two hundred and thirty-one households received food stamp benefits (3.0 percent of all Ludlow households) in

2006-2008. Both of these figures are much lower than the county and state's percentages. While it is unknown at this time how many Ludlow residents qualify for but do not apply for public assistance, the data still highlights the fact that a small subset of the town's population is facing severe financial difficulty.

The Ludlow School Department has also seen the percentage of children in the Ludlow Public School system who participate in the free and reduced lunch program almost double over the last decade, from twelve percent for the 2000/2001 school year to nearly a quarter for the 2009/2010 school year (Table 9). Children from families with incomes at or below 130 percent of the poverty level (currently \$21,710 for a family of four) are eligible for free meals. Those between 130 percent and 185 percent of the poverty level (currently \$30,895 for a family of four) are eligible for reduced-price meals, for which students can be charged no more than 40 cents.

Table 9: Ludlow Free and Reduced Lunch Program Enrollment Trends

Fiscal Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
% of Students	12.0	11.7	11.6	14.2	14.9	16.6	17.3	21.8	18.0	21.5	24.5

Source: Massachusetts Department of Education, April 2010

The Ludlow Public School System's Office of the Superintendent attributes the local increase in enrollment in the free and reduced lunch program to a variety of factors, including:

- improved reporting mechanism to the Department of Elementary and Secondary Education;
- implementation of the Point-of-Sale (POS) system, which provided anonymity and thus made it more comfortable for families to identify their financial situation;
- changing demographics of the Ludlow population; and
- changing economy.

The Office of the Superintendent believes the implementation of the Point-of-Sale (POS) system during the 2005-2006 school year was the most significant factor, after which the school district saw an immediate surge in the percentage of low income students.²

² According to Ludlow Public School Office of the Superintendent, less than one percent of the students enrolled in Ludlow's Free and Reduced Lunch Program are non-residents attending school in Ludlow through the School Choice program.

Residents with Disabilities

Ludlow does not have sufficient subsidized housing or housing programs for disabled persons to serve its existing population (Table 10). Residents with disabilities often face substantial rental affordability problems. A new report by the Technical Assistance Collaborative (TAC), "Priced Out in 2008", has found that fair market rents for studio and one-bedroom apartments are now 119 percent and 131 percent, respectively, of the average income of people with disabilities living on Social Security Income.

Table 10: Ludlow Residents by Disability Status, Census 2000

Population 5 years old and over	18,485
With a Disability	3,799
Percent	21%
Population age 21 to 64 years	11,278
Population age 21 to 64 years with a disability	2,169
Percent	20%
Population age 21 to 64 years with a disability & unemployed	706
Percent	6%
Population age 65 to 74 years	1,670
Population age 65 to 74 years with disability	442
Percent	26%
Population age 75 years and over	1,486
Population age 75 years and over with a disability	813
Percent	55%

Source: U.S. Census Bureau, Census 2000

According to the 2000 Census, twenty percent of Ludlow residents' age 21 to 64 years had a disability. Of the 11,278 residents in this age group, six percent had a disability and were unemployed, likely due to their disability. Elderly residents were disproportionately represented in the number of Ludlow residents with disabilities with 442 residents age 65 to 74 years (26 percent) and 813 residents age 75 years and older (55 percent) with a disability. The town of Ludlow currently has only 150 units of subsidized affordable housing reserved for elderly individuals or individuals with disabilities.

Ludlow Household Income & Area Median Income Limits

The United States Department of Housing and Urban Development (HUD) establishes the income level thresholds that are used to determine which households in a community qualify for subsidized housing or other forms of public aid. These income level thresholds are referred to as "Area Median Household Income limits" and they are set for geographic regions called Metropolitan Statistical Areas (MSAs) and not

for specific communities. All municipalities in Hampshire and Hampden County are part of the Springfield Metropolitan Statistical Area (MSA).

Households are considered to be very low-income if they earn less than 30 percent of AMI and low income if they earn 30 percent to 50 percent of the AMI. Households earning 50 percent to 80 percent of the AMI are considered to be moderate income. Middle income households earn between 80 percent and 150 percent of the AMI. The table below shows the current household income limits for the Springfield MSA that qualifies a household for affordable housing (Table 11). Income limits are updated annually to reflect evolving demographic and housing market conditions. HUD uses a rather complicated formula that adjusts the AMI limit to account for different household sizes. You can find the income limits for the Springfield MSA on HUD's website: (<http://www.huduser.org/datasets/il.html>)

Table 11: Area Median Income Limits for Hampden & Hampshire Counties (Springfield MSA)

Income Limit Area	Area Median Income	FY 2009 Income Limit Category	People per Household					
			1 Person	2 Person	3 Person	4 Person	5 Person	6 Person
Springfield MSA	\$67,200	Very Low (30%)	\$16,300	\$18,650	\$20,950	\$23,300	\$25,150	\$27,050
		Low (50%)	\$27,150	\$31,050	\$34,900	\$38,800	\$41,900	\$45,000
		Moderate (80%)	\$43,450	\$49,700	\$55,900	\$62,100	\$67,050	\$72,050

Source: U.S. Department of Housing & Urban Development, Last updated March 2009

While it is impossible to determine the exact number of Ludlow residents who fall into these low to moderate income categories, the data presented in the Income, Poverty, and Disability subsections suggest that there are households that do indeed qualify—family and elderly households. According to the Valley Opportunity Council, which is the agency who administers the fuel assistance program for Hampden County, 802 Ludlow households received fuel assistance in the year 2009 and 850 households have been certified to receive assistance in 2010. To qualify for fuel assistance, a household must earn up to 60 percent of the AMI for the Springfield Metropolitan Statistical Area.

Housing Inventory

Housing Units & Recent Residential Development

The Land Use Chapter reviewed residential development activity over the last decade and noted that development occurred through both subdivision and "approval not required development." The Planning Board approved 314 new subdivision lots from 2000 through 2007. These subdivision projects are located throughout town, but most are located in the Agricultural Zoning District.

In total, the town of Ludlow issued 607 building permits for new residential units from 2000 through 2009, some of which were never constructed. According to the American Community Survey, Ludlow contained 8,140 housing units in 2006-2008. This showed an increase of four percent from the 7,841 units counted in the 2000 Census. This increase was comparable to the state but slightly higher than the county's.

Table 12: Building Permits Issued for New Residential Construction (by Permit Type)

Permit Type	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Totals
1-Family	58	59	61	63	47	50	49	29	20	11	447
2-Family	0	1	0	1	0	0	0	0	0	1	3
Multi-Family 3+	0	0	1	1	0	0	90	0	0	0	92
Condominium Units	0	0	0	0	8	12	4	17	5	19	65
Total Units Permitted	58	60	62	65	55	62	143	46	25	31	607

Source: Ludlow Building Department

Table 13: Total Housing Units Comparison, 2000 to 2006-2008

Year	Ludlow	Percent Increase 2000-2008	Hampden County	Percent Increase 2000-2008	Massachusetts	Percent Increase 2000-2008
2008 Total	8,140	3.81%	189,000	1.68%	2,724,787	3.92%
2000 Total	7,841		185,876		2,621,989	

Source: U.S. Census Bureau 2006-2008, American Community Survey

Zoning & Housing Characteristics

Municipal zoning authority has an important influence over housing development patterns. Zoning regulations substantially determine the location, size, and type of housing in a community, which, in turn, has a substantial influence on housing cost in a community. Ludlow's Zoning Bylaws and special permit exceptions generally allow for flexibility with the size and type of housing located throughout the town. The

Ludlow Zoning Bylaw establishes nine zoning districts, four of which are specific to residential uses. The four residential districts represent over 90 percent of the community. In the Residential zoning districts, single family homes are permitted by right and require a minimum lot size of 15,000 square feet. Two-unit residential structures are permitted only in the Residence B zone and buildings with multiple dwelling units are only permitted in the Residence B zone through special permit/site plan approval by the Planning Board. The East Street Revitalization Overlay District allows residential uses that are not permitted in the underlying zoning district, as well as specific commercial uses not currently listed in the Table of Uses. Ludlow received state grant funding in 2009 to explore locations for establishing smart growth zoning overlay districts under the state's Chapter 40R program and will work with the Pioneer Valley Planning Commission to develop an overlay district bylaw to encourage denser housing and mixed use development.

Residential Development Patterns

According to 2005 McConnell Land Use Data, almost fifty percent of residential acreage in Ludlow consists of single family homes on one-quarter to half-acre lots. This is consistent with Ludlow's zoning bylaw which allows a minimum lot size of 15,000 square feet (0.34 acres) in three of its four residential zoning districts. An additional thirty-eight percent of Ludlow residential acreage consists of single-family homes on half acre to one acre lots. Ludlow's Agricultural Zoning district requires a minimum of 40,000 square feet (0.92 acres). The percentage of residential land devoted to homes on lots greater than one-half acres has increased since 1971 (Table 14).

Table 14: Ludlow Residential Land Use by Lot Size

Year	Multi-Family	Less than 1/4 acre lot	1/4 - 1/2 acre lot	Greater than 1/2 acre lot	Total Residential Acreage
1971	0.4%	13.5%	56.5%	29.6%	2,667
2005	1.7%	10.7%	49.8%	37.8%	3,404

Source: 2005 McConnell Land Use Data

As the Land Use Chapter discussed, the greatest concentrations of developable, vacant lands are assessed as residential, which is consistent with the local zoning districts. Around 1,900 acres of land in Ludlow have the potential to be developed as new residential uses in the future. The majority of these residential vacant lands are located in the Agriculture zoning district. Based on the existing zoning regulations, if these vacant parcels were to be developed, Ludlow could see a substantial influx of single-family homes on a minimum of one acre lots. Even though Ludlow residents preferred their existing pattern of development of single-family homes on existing

roads where there is little existing development, dissatisfaction with unstructured development, or suburban sprawl, emerged as a main issue in both the interviews and survey. Some community members urged infill downtown and higher densities as part of a greater strategy toward sustainability. Residents are also optimistic about the redevelopment proposal for the Ludlow Mills and believe that it is a great opportunity for change. The Community Survey showed moderate support for new housing development within new subdivisions (25 percent) and mixed-use development (23 percent).

Housing Characteristics: Ownership, Building, & Use Types

Seventy-nine percent of housing units in Ludlow are owner occupied units and 21 percent are renter occupied (Table 15). Housing stock with less than 30 percent rental-occupied units typically indicates a need for additional rental housing units in the community.

Table 15: Housing Stock by Housing Occupancy Type

	Ludlow	%	Hampden County	%	State	%
Total Housing Units	7,637		174,307		2,457,167	
Owner-occupied housing units:	6,087	79%	110,716	64%	1,594,928	65%
1, detached or attached	5,419	89%	96,954	88%	1,309,565	82%
2 to 9 units	426	7%	10,432	9%	198,477	12%
10 or more units	167	3%	1,349	1%	69,374	4%
Mobile home and all other types	45	1%	1,981	2%	17,512	1%
Renter-occupied housing units:	1,580	21%	63,591	36%	862,239	35%
1, detached or attached	304	19%	9,477	15%	118,869	14%
2 to 9 units	836	53%	36,334	57%	472,543	55%
10 or more units	393	25%	17,491	28%	268,171	31%
Mobile home and all other types	47	3%	289	0%	2,656	0%

Source: U.S. Census Bureau, 2006-2008 American Community Survey

The most affordable market-based housing in a community tends to be multi-family housing such as rental apartments and condominiums, while single-family homes tend to be less affordable. Table 15 shows that almost ninety percent of owner-occupied units in Ludlow are single-family homes. The percentage of owner-occupied housing units in structures with two or more units reflects the growing number of condominiums in Ludlow. While the high percentage of rental units with two or more units certainly provides Ludlow residents with increased housing choice, close attention should be paid to the fact that over twenty percent of all rental units consist of single-family homes. Since single-family homes often represent the most expensive rental housing, a high percentage of single-family rentals may be an

indicator of limited supply of affordable units, or in some instances may indicate a pattern of divestment by homeowners.

Table 16 analyzes Ludlow's housing stock by reviewing parcel types in town, according to 2010 Ludlow Assessor's Office information. This information confirms that Ludlow has an abundance of single-family homes. In addition, almost six percent of Ludlow parcels are condominiums and almost seven percent are duplexes. The community stakeholder interviews showed concern about the growing number of condominiums in town. Ludlow also allows homeowners to legally create small "accessory apartments" for family members within or attached to their homes, and twenty-two homeowners have taken advantage of this housing option. The town may want to consider amending town zoning to allow non-family members the ability to live in small accessory apartments.



Table 16: Ludlow Housing Stock by Parcel Type, 2010

Parcel Type	Total Acres	Total Parcels
Mixed Use-primarily residential	237	85
Mixed Use-primarily commercial	30	20
Single family	4,773	5,875
Condominium	78	418
Mobile Home	14	4
Two-family	284	467
Three-family	7	26
Accessory land with improvement	279	47
Accessory Apartments	28	22
Multiple houses on one parcel	27	17
Four to eight units	13	38
More than eight units	11	13
Group Home	6	3
Housing Authority	16	14
Vacant, Housing Authority	4	2
Other Tax Exempt Housing	1	3
Totals	5,726	7,054

Source: Ludlow Assessors Office, 2010 Parcel Data

Age of Housing Stock

The age of the existing housing stock provides insight into the character and condition of existing housing units in an area. It can be assumed that more housing units will need to be rehabilitated or replaced as the overall housing stock of an area

ages. Areas with concentrated numbers of older housing may be eligible for Community Development Block Grant (CDBG) funding to improve the housing condition of substandard housing. Owing to the volume of residential construction during the past three decades, Ludlow has a younger housing stock when compared to the county and the state (Table 17). The median age of a housing unit was 1965 and thirty percent of all owner-occupied housing units were constructed after 1980.

Table 17: Median Year House Built by Tenure, 2006-2008

	Ludlow	Hampden County	Massachusetts
Total	1964	1956	1957
Owner Occupied	1965	1957	1960
Renter Occupied	1961	1949	1948

Source: U.S. Census Bureau, 2005-2007 American Community Survey

Table 18: Housing Stock by Ownership Status and Construction Date, 2006-2008

	Ludlow	% of Total	Hampden County	% of Total	State	% of Total
Owner occupied:	6,057		110,716		1,594,928	
Built 2000 or later	414	7%	5,119	5%	97,461	6%
Built 1990 to 1999	677	11%	7,940	7%	148,758	9%
Built 1980 to 1989	711	12%	10,248	9%	194,415	12%
Built 1970 to 1979	736	12%	11,791	11%	173,270	11%
Built 1960 to 1969	1,078	18%	14,278	13%	176,363	11%
Built 1950 to 1959	1,126	19%	23,297	21%	215,850	14%
Built 1940 to 1949	330	5%	9,544	9%	97,006	6%
Built 1939 or earlier	985	16%	28,499	26%	491,806	31%
Renter occupied:	1,580		63,591		862,239	
Built 2000 or later	20	1%	1,218	2%	37,737	4%
Built 1990 to 1999	22	1%	2,126	3%	38,272	4%
Built 1980 to 1989	114	7%	5,686	9%	77,734	9%
Built 1970 to 1979	336	21%	8,930	14%	116,422	14%
Built 1960 to 1969	321	20%	6,461	10%	80,250	9%
Built 1950 to 1959	127	8%	6,571	10%	71,945	8%
Built 1940 to 1949	110	7%	5,456	9%	56,538	7%
Built 1939 or earlier	530	34%	27,143	43%	383,341	44%
Total	7,637		174,307		2,457,167	

Source: U.S. Census Bureau, 2006-2008 American Community Survey

The town of Ludlow has a younger rental stock compared to the county and state with the median age of a renter-occupied unit of 1961 (Table 17). In 2006-2008, a little over 90 percent of all rental units were constructed prior to 1980 (Table 18). The lack of rental housing production in the past decade suggests a need for newer rental housing. A community dependent on older rental housing stock will also typically experience more deteriorated properties, which are more likely to have lead paint, code violations and substandard conditions. New rental stock may be needed to expand housing choice in town, especially since the town sits nine percent below the 30 percent rental unit threshold.

Subsidized Affordable Housing Inventory

Ludlow has 182 housing units on the state's subsidized housing inventory (SHI) for the town. This makes up approximately 2.2 percent of Ludlow's year-round housing stock in the year 2000, a percentage well below the 10 percent affordability mandate of Massachusetts state law Chapter 40B.³ Also known as the Comprehensive Permit Law, Chapter 40B was enacted in 1969 to make affordable housing more widely available throughout the state by reducing unnecessary barriers created by local approval processes, local zoning, and other restrictions. For communities with less than 10 percent of their housing stock deemed affordable, the state statute enables local Zoning Boards of Appeals (ZBAs) to approve housing developments in any zoning district in town if at least 20-25 percent of the units have long-term affordability restrictions.



Older single family homes in Ludlow



Public housing for the elderly in Ludlow

Fifty-three of the state's 351 cities and towns have met or surpassed the 10 percent goal, including Amherst, Hadley, Northampton, Chicopee, Holyoke, Springfield, and Ware. As it currently stands, Ludlow would need an additional 600 subsidized housing units to reach its 10 percent affordable housing requirement to be exempt from Chapter 40B developments. The 2010 Census will show an increase to the town's housing stock, which will have the effect of lowering Ludlow's overall percentage of affordable housing units and raising the number of

subsidized housing units needed to reach the town's 10 percent affordable housing requirement.

³ The Massachusetts Department of Housing and Community Development used the latest decennial census as a baseline to determine a municipality's percentage of affordable housing.

The Ludlow Housing Authority (LHA) provides affordable housing to eligible seniors, disabled individuals, and families.⁴ The LHA oversees 168 of the 182 units of subsidized housing in Ludlow. The remaining sixteen units are located within group homes at undisclosed locations throughout town. A group home is a state-licensed facility intended for occupancy by elderly persons and/or persons with disabilities who do not require continuous medical or nursing care. Group homes house up to 12 people, including assisted and unassisted residents and any live-in aides.

Their units include state-aided elderly / handicapped housing at Colonial Sunshine Manor located on Wilson Street (76 units), State Street Development (40 units), Chestnut Street Development (34 units) and two congregate living units. Rental for these apartments is based on thirty percent of the tenant's net income and includes heat, water, and electricity. The LHA also owns ten single family houses located on scattered sites within the Town and six units called the John Thompson Manor located on Benton/Butler Streets. Rents for these units are based on 27 percent of the tenant's net income with the tenants responsible for their own utilities. A 168 unit, mixed-income condominium development called Southview Estates received a Comprehensive Permit in 2001, which drew considerable local controversy. Many residents believed that it was forced upon them through Chapter 40B comprehensive state permitting. Since Ludlow has no affordable housing plan or bylaw and has only 2.2 percent affordable housing stock, it has very little say on new developments that include affordable housing. The town also issued a Comprehensive Permit to HAP Housing in 2009 to rehabilitate the Stevens Memorial Building in downtown Ludlow into approximately 30 housing units for the elderly/disabled. By contrast, this proposed project has drawn little controversy.

Housing Market & Housing Demand

Rental Market & Rental Rates

The American Community Survey showed that median contract rent in Ludlow from 2006 through 2008 was \$665, which was slightly higher than Hampden County's median but about \$200 less than the state's median (Table 19). Out of the 1,522 residents who paid rent, almost 80 percent paid between \$500 and \$1,000 a month in rent. The ACS also showed that the median monthly housing costs for renters, including utilities, were \$831. One bedroom units posted on Craig's List, for rent over a one month period, from mid-February 2010 through mid-March 2010, ranged from \$550 to \$850. Two bedroom units ranged from \$725-\$1,200 a month over this same

⁴ The Ludlow Housing Authority also works with its tenants to further their levels of post-high education and provides training at the Housing Authority office to local women interested in learning new job skills. In addition, the LHA collaborates with Westmass Elder Care and the Ludlow Health Department to promote independent living by providing home health staff and nursing care.

period. According to a local realtor, two bedrooms rental units can also be found for around \$650.

Table 19: Median Contract Rent, 2006-2008

	Ludlow	Hampden County	Massachusetts
Median contract rent	\$668	\$611	\$855

Source: U.S. Census Bureau, American Community Survey, 2006-2008

Fair Market Rents (FMR) for the Springfield Metropolitan Statistical Area (which includes Ludlow) showed rental unit prices comparable to rents listed on Craig's List (Table 20). FMR's are set by the federal government for an area and are based on 2000 Census data updated with more current survey data, including the 2006-2008 American Community Survey (ACS) data, Random Digit Dialing (RDD) telephone rent surveys, and Consumer Price Index (CPI) rent and utility indexes. FMR's establish the maximum amount needed to pay the gross rent (shelter rent plus utilities) of privately owned, decent, and safe rental housing of a modest (non-luxury) nature with suitable amenities for an assisted family in a Housing Choice Voucher program.⁵ A point-in-time capture for March 31st, 2010 showed sixteen households living in Ludlow with a Housing Choice Voucher.

Table 20: 2009 Fair Market Rents by Number of Bedrooms

	Efficiency	One- Bedroom	Two- Bedroom	Three- Bedroom	Four- Bedroom
Springfield MSA	\$579	\$688	\$874	\$1,046	\$1,214

Source: U.S. Department of Housing & Urban Development, 2010

Rents for one or two bedroom units generally tend to be affordable for households with stable, average-to-well paying jobs. A household earning approximately \$40,000 a year could afford, at the most, an apartment renting for \$850. Households earning less than \$30,000 a year will find it more difficult to live in Ludlow while staying within their budget. The ACS found that 45 percent of renters in Ludlow spent 30 percent or more of household income on housing in 2006-2008, which means that a high number of Ludlow renters are financially burdened by the cost of housing.

⁵ The Section 8, Massachusetts Rental Voucher Program (MRVP) and Alternative Housing Voucher Program (AHVP) are examples of Housing Choice Voucher Programs.

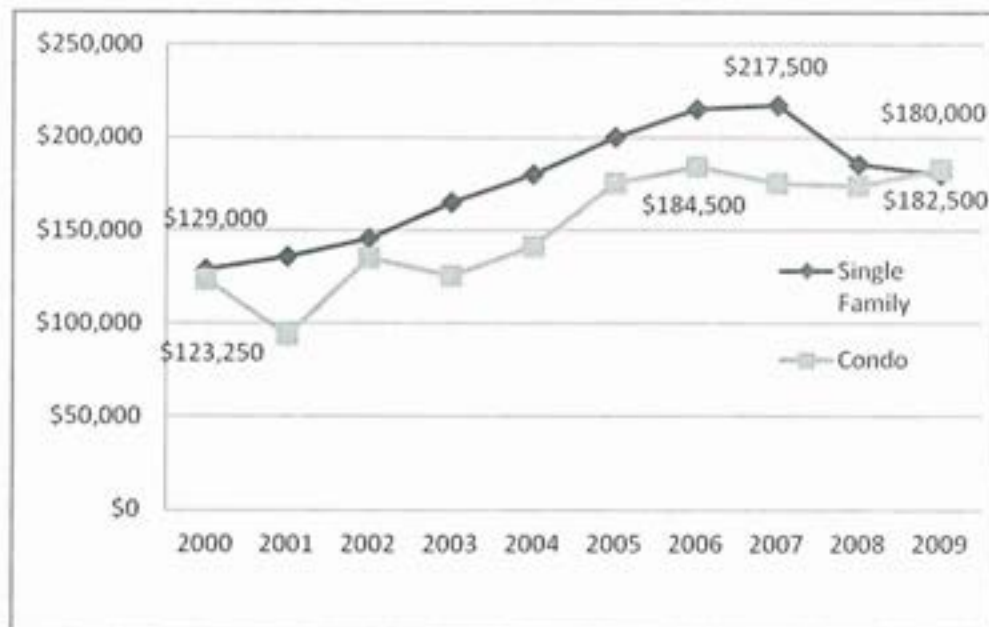
The ACS estimated the rental vacancy rate for 2006-2008 at 10.8 percent. According to a local realtor, that percentage is grossly high. In his opinion, Ludlow has a tight rental market for well-priced units and for this reason, vacancy rates are low.

Homeownership Market

Consistent with regional and state housing trends, the median sales price for a single-family home in Ludlow dramatically increased and then slowly fell in the last decade (Figure 2). The market peaked in 2007 with a median sale price of \$217,500. Over this ten year period 150 to 200 single-family home sales a year took place, with the highest volume of sales occurring in 2003 with 216 sales. Comparative sales price data from 2009 shows Ludlow to be more expensive than Chicopee, Palmer, and Springfield, but more affordable than Belchertown, Granby, and Wilbraham (Figure 3).

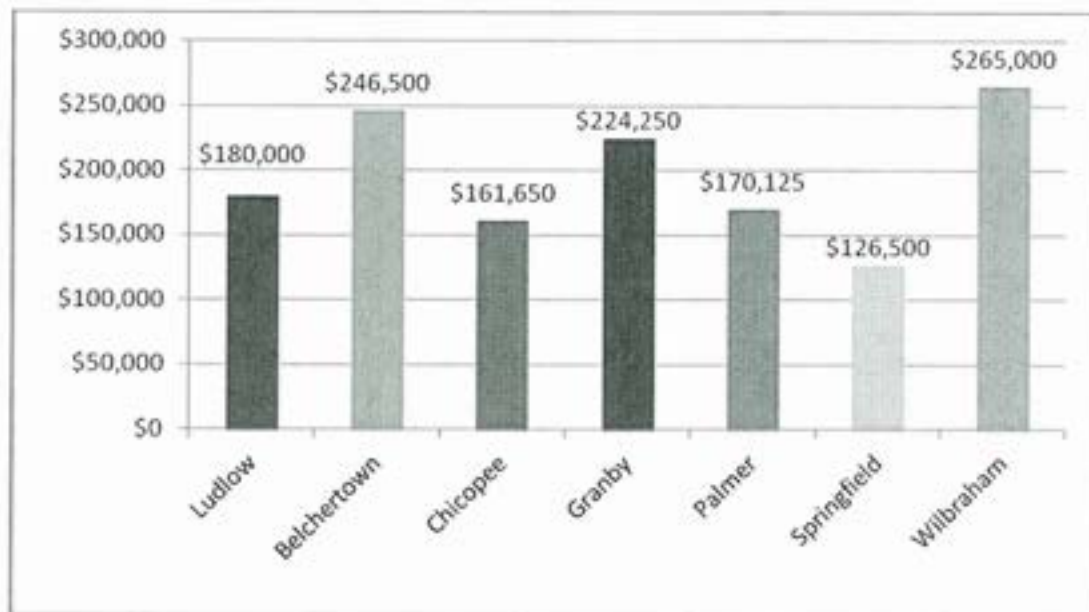
Ludlow condominium sale prices peaked in 2006 with a median sale price of \$184,500 and have not seen as sharp of a drop as its single-family home prices. Around 30 condominium sales a year took place over this ten year period with the exception of 47 sales occurring in 2002 and 38 sales in 2008.

Figure 2: Median Sale Price for Single-Family Homes and Condominiums, 2000-2009



Source: Warren Group

Figure 3: Median Single-Family Home Sales Price Comparison, 2009



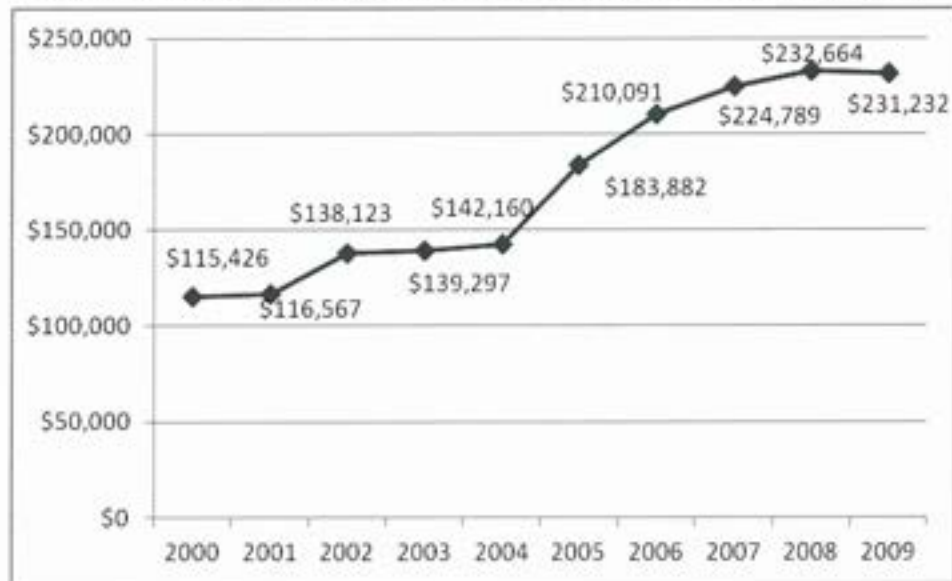
Source: Warren Group

Homeownership Affordability

Homeownership opportunities in Ludlow are available to households of varying income levels; however, houses selling at or above the median 2009 sale price of \$180,000 will generally be affordable households in the moderate to upper-income levels. A household who wanted to purchase a home selling at the 2009 median sale price of \$180,000 would need an annual household income of \$52,000 if they were to put down a five percent down payment, or an income of \$45,500 with a twenty percent down payment. To put this in local perspective, the average salary for a teacher in the Ludlow Public School system was \$56,967 and the median Ludlow household income in 2008 was \$65,176.

Figure 4 shows that average assessed value for a single-family unit increased 63 percent since 2004, from \$142,160 to \$231,232 in 2009. With a tax rate of 14.28 in the year 2009, the average tax bill for a household living in a single-family home was \$3,302. The town of Ludlow issued 213 property tax exemptions for the FY 2010, which includes thirty-three elderly individuals. Ludlow has a senior property-tax work program which has been in effect for a number of years to help ease the tax burden on elderly residents.

Figure 4: Single Family Home Average Assessed Value Trends, 2000-2009



Source: Massachusetts Department of Revenue

Figure 5: Ludlow Housing Sales by Price, January 2008 through September 2009

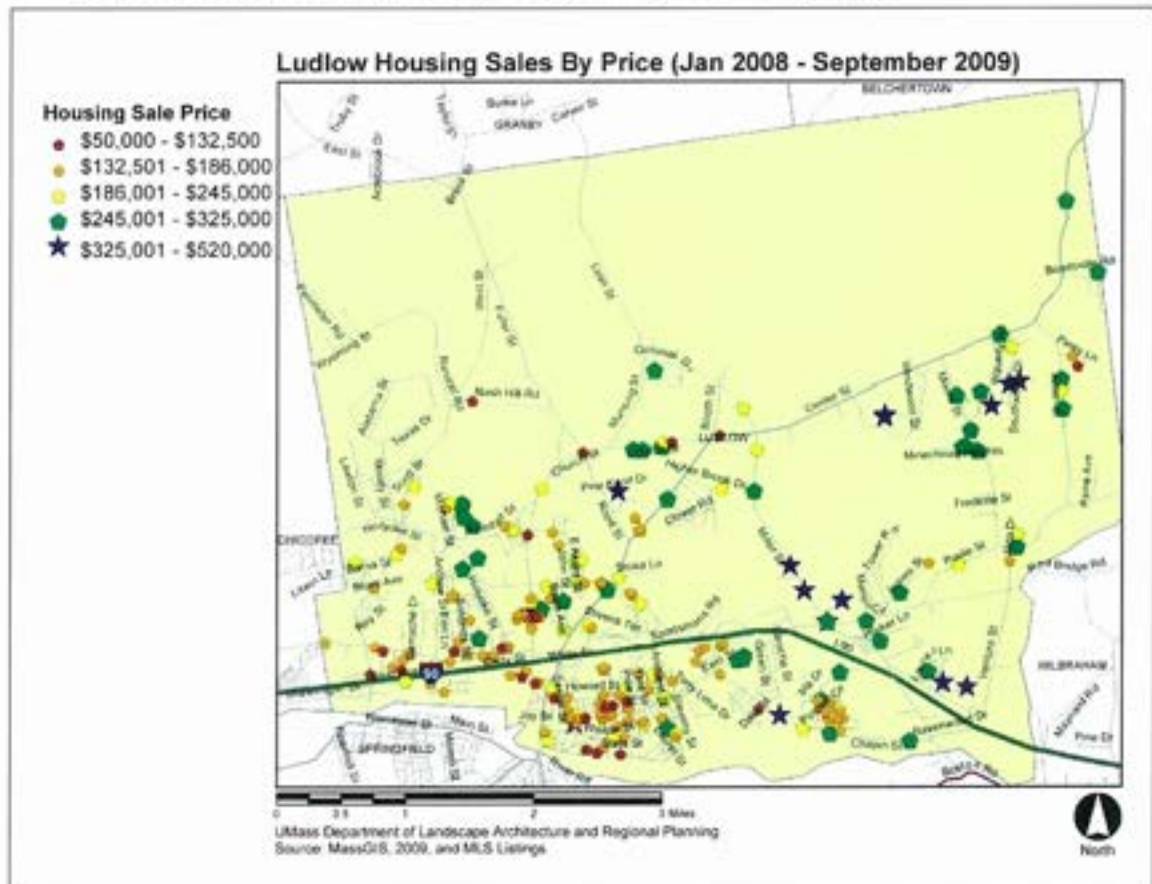


Figure 5 shows most of Ludlow's more affordable homes to be located in areas with older housing stock such as the downtown. Most new residential construction over the last decade has generated homes unaffordable to households earning less than the Ludlow's median household income. Home value trends point to growing levels of un-affordability in town.

Ludlow residents expressed mild concern during the stakeholder interviews about the lack of affordable housing in town. The community survey also showed that sixty percent of respondents thought there was sufficient housing for their income level. However, sixty percent of respondents believed that there are not enough housing options for seniors, and there is a need for affordable assisted living (55 percent), retirement communities (48 percent), and small market rate homes (47 percent).

Foreclosure Activity

Due to the recent collapse of the housing market, predatory lending practices, and many job layoffs, mortgage default rates and foreclosure rates have risen nationwide. Ludlow is no exception and the town saw its number of annual foreclosures increase since the early 2000s as did its neighboring communities (Table 21). Ludlow residents in jeopardy of mortgage foreclosure can call HAP Housing to receive free and confidential mortgage counseling. According to HAP Housing, eleven Ludlow households received foreclosure counseling in 2008 and five in 2009.

Table 21: Number of Mortgage Deed Foreclosures (By Year)

Year	Ludlow	Belchertown	Chicopee	Palmer	Wilbraham
2000	6	7	23	11	0
2001	6	8	18	12	4
2002	7	5	19	5	2
2003	1	4	12	1	2
2004	5	3	N/A	N/A	N/A
2005	2	4	N/A	N/A	N/A
2006	5	1	N/A	N/A	N/A
2007	11	13	30	15	9
2008	11	14	49	22	12
2009	10	13	30	14	7

Source: Warren Group

Housing Cost-Burdened Households

The general rule of thumb is that a household should be spending no more than 30 percent of their income on housing-related costs. Households that spend more than this amount are considered "housing cost burdened." In 2006-2008, the median

monthly housing cost for mortgaged owners was \$1,542 and \$509 for non-mortgaged owners.

As housing prices have risen at a greater rate than household income, the affordability gap in Ludlow has widened significantly. In the year 2006-2008, over thirty percent of Ludlow homeowners with a mortgage spent 30 percent or more of their income on housing-related costs. The percentage was much less for homeowners without a mortgage at thirteen percent. As noted earlier, forty-five percent of households renting in Ludlow spent 30 percent or more of household income on housing. This data suggests that in the future, Ludlow may need to examine ways to maintain its current affordability, especially for renting or lower-income populations.

Demand for Subsidized Housing in Ludlow

The waiting list for the elderly/handicapped subsidized housing units managed by the Ludlow Housing Authority (LHA) consisted of 83 applicants for a 1-bedroom unit, zero applicants for a 2-bedroom unit, while the waiting list for family housing consisted of 57 applicants.⁶ Based on the number of elderly/handicapped units within the Ludlow Housing Authority, the average age of a unit occupant is 77. The average monthly rent is \$247 per unit for elderly/disabled units and \$410 for family housing units, which includes heat, hot water and electricity. The Ludlow Housing Authority gives local preference to housing applicants residing in Ludlow before applicants residing elsewhere. Local veterans are also given a preference status in elderly/disabled housing.

The Ludlow Housing Authority's main focus going forward is the stabilization and modernization of its existing housing stock. A Capital Improvement Plan has been put into place to assess and act upon modernization needs. The LHA owns over four acres of vacant land suitable for the development of affordable housing as well as land at its four main developments that could accommodate additional housing units. The Executive Director of the LHA noted that they would like to develop more housing in the future, but dwindling public subsidies make this action extremely difficult.

Ludlow Town Hall Housing Resources

The town lacks a dedicated webpage on the town website that publicizes existing housing resources available to residents in Ludlow. With unemployment and foreclosure rates climbing, residents in town should know of where they can turn for assistance, even if that assistance is not provided by the town.

⁶ Wait list as of December 31, 2009.

Opportunities & Challenges

The Town of Ludlow currently offers housing at varying levels of affordability, which provides residents a choice of housing opportunities to meet changing household and financial needs. However, home value trends point to growing levels of unaffordability in town with the bulk of new housing units being higher-end housing. This housing trend corresponds with demographic trends showing that Ludlow is becoming more affluent as the community grows in population. While Ludlow may have been a community where young singles, couples, and families with children could get started, land and housing values are beginning to price many first-time home buyers out of the market. An associated concern is that long-time residents with reduced incomes may no longer be able to continue to afford to live in Ludlow. It is important to realize that the persons needing other housing choices in Ludlow are people who were born and raised in town. Planning for additional housing is necessary to meet the needs of Ludlow's own people who lack such housing choices now or will be looking for it in the future.

Every effort should be made to maintain Ludlow's existing housing stock, much of which is market-rate affordable by nature of its size, and to encourage new housing opportunities in downtown Ludlow as a way to ensure the continued vitality of this area in town. The town should consider taking advantage of annual Community Development Block Grant (CDBG) funding rounds to create a Housing Rehabilitation Program to assist housing stock in need of repair. Ludlow applied and received CDBG funding for infrastructure improvements along East Street, but has yet to apply for CDBG funds for a housing-related project. One of Ludlow's strengths is that it has the in-house resources through its various departments and town boards to identify suitable areas in town for the development of mixed-income housing, mixed-use housing, subsidized-affordable housing and assisted living housing. Once land is identified, the Board of Selectmen can work with the appropriate local housing organization such as the Ludlow Housing Authority, HAP Housing, Habitat for Humanity, and others to donate land to develop the property. One of Ludlow's challenges to expand local housing opportunities will be its ability to move an affordable housing agenda forward in the absence of an affordable housing-focused organization outside of the Housing Authority. With the support and assistance of the Housing Authority Director and the Board of Selectmen, Ludlow should consider creating a Housing Partnership or similar minded group.

Ludlow also has the ability to increase its supply of affordable housing through the normal course of real estate development by adopting an inclusionary zoning bylaw, which would require residential developments over a certain number of units to include at least one affordable housing unit. The Ludlow Planning Board would determine this threshold as well as other bylaw specifics.⁷ This method would allow Ludlow to increase its affordable housing inventory while integrating homebuyers or renters whose income is below the regional median household income into market-rate residential developments. Amherst and Hadley are two Pioneer Valley communities that have adopted an inclusionary zoning bylaw. Local adoption of the Community Preservation Act (CPA) would also create a dedicated stream of funding that could be used to accomplish Ludlow's affordable housing-related goals, including the creation of a housing rehabilitation program.

Dissatisfaction with unstructured housing development, or suburban sprawl, emerged as a main issue in the stakeholder interviews, community survey, and public visioning event. Around 1,900 acres of land in Ludlow, most of which is in the Agriculture zoning district, have the potential to be developed as new residential uses in the future. If these vacant parcels were to be developed under the town's existing zoning regulations, Ludlow could see a substantial influx of single-family homes on a minimum of one acre lots. Zoning-related strategies that promote smart growth policies can help the town balance residential development with the protection of the town's natural, scenic and historic resources.

The challenge to changing residential development patterns through town zoning revisions will be to educate town residents to see a relationship between zoning and land use. Despite stated dissatisfaction with sprawl, the community stakeholder interviews and survey results showed that residents who participated in this planning process prefer the existing pattern of development of detached single-family homes on existing roads where there is little existing development. The survey, interviews, and visioning workshop all showed support for the idea of zoning regulations that promote residential structures built on smaller lots, and a percentage of the parcel would be protected in perpetuity as open space. The concept of Neighborhood Villages, that promote a dense mix of residential, commercial, and civic uses, was received favorably after much discussion at the community Visioning Workshops. While the community survey results identified limited support (30 percent) for the idea of rezoning portions of the community to accommodate higher density housing development, close to 58 percent of survey

⁷ The number of units required to trigger the applicability of the inclusionary zoning provisions should reflect local real estate development demands. In built-out communities, inclusionary zoning could apply to developments with fewer units. Other Massachusetts communities specify ten (10) as the threshold number of new units required to trigger the application inclusionary zoning bylaws. The Cape Cod Commission regulations specify 30 units, but encourage the member towns to specify a 10-unit minimum.

respondents in the community support higher density housing when partnered with open space protection.

Downtown Ludlow, with its walkable neighborhoods and thriving small businesses, is one of Ludlow's greatest assets. Over half of the respondents in the community survey stated that they would like downtown Ludlow to become a vibrant village center. To encourage desired development at these opportunity locations, the town could adopt a mixed-use commercial/residential zoning overlay district, such as a Chapter 40R Smart Growth District. Ludlow can also selectively invest in infrastructure improvements to direct new residential units to these areas where the community has identified for growth. The town should also support activities in the downtown that encourage participation and involvement of existing downtown residents in their neighborhoods such as neighborhood block parties and annual cleanup events.

The Town of Ludlow will need to decide how it will respond to growth demands as well as demographic changes in the housing market. While Ludlow may have been an affordable community, land and housing values are beginning to price many low to moderate income households out of town. Dissatisfaction with suburban sprawl-type development trends and a growing awareness of the benefits of smart growth points to an opportunity to promote more sustainable forms of development and increase housing variety in town at appropriate locations. Zoning tools mentioned in this chapter will help Ludlow grow in an appropriate manner and promote the revitalization of its downtown.

Goals & Strategies

Immediate	Completion within one year of master plan adoption
Short Term	Completion within five years of master plan adoption
Mid Term	Completion within ten years of master plan adoption
Long Term	Completion within fifteen years of master plan adoption

GOAL 1: Balance residential development with the protection of the town's natural, scenic and historic resources.

Strategy 1: Adopt a mixed-use commercial/residential zoning overlay district, such as Chapter 40R, at appropriate areas. This zoning overlay bylaw should include Design Guidelines for architectural elements and signage.

Responsible Party: Town Planner, Planning Board, Chapter 40R Advisory Committee

Resources Needed: Staff time, Volunteer time, funding for consultants

Target Date for Completion: Immediate

Strategy 2: Selectively invest in infrastructure improvements to direct new residential units to areas the community has identified for growth

Responsible Party: Board of Selectmen, Department of Public Works, Conservation Commission

Resources Needed: CDBG funds, staff time

Target Date for Completion: Ongoing

Strategy 3: Adopt zoning regulations that promote residential structures built on smaller lots, and a percentage of the parcel would be protected in perpetuity as open space. Target this type of development to areas with public sewer and water.

Responsible Party: Planning Board, Town Planner, Department of Public Works, Conservation Commission

Resources Needed: Staff time, Volunteer time, funding for consultant

Target Date for Completion: Mid Term

GOAL 2: Expand safe, high quality housing opportunities in Ludlow for people of all economic means.

Strategy 1: Establish a Housing Partnership to work on housing issues for the town.

Responsible Party: Board of Selectmen, Housing Authority

Resources Needed: Volunteer time, annual appropriation for administration

Target Date for Completion: Long Term

Strategy 2: Identify appropriate parcels of Town-owned and private land that might be available for housing development. Work with Board of Selectmen to donate land to appropriate housing entity such as Ludlow Housing Authority, HAP Housing, Habitat for Humanity, etc.

Responsible Party: Housing Partnership, Town Planner, Planning Board, Board of Selectmen

Resources Needed: Staff time, Volunteer time

Target Date for Completion: Long Term

Strategy 3: Apply for Community Development Block Grant funding for a Housing Rehabilitation Program

Responsible Party: Town Planner, Board of Selectmen

Resources Needed: Staff time, Volunteer time

Target Date for Completion: Short Term

Strategy 4: Re-establish the Community Preservation Act Committee.

The Community Preservation Act is a law passed in September 2000 that enables Massachusetts communities to establish a local Community Preservation Fund, through a ballot referendum, dedicated to open space protection, provision of low and moderate income housing, and historic preservation. Revenue for the fund is generated by a local property tax surcharge of up to 3% and a state match of about \$25 million annually to participating communities.

Responsible Party: Board of Selectmen, Town Administrator, Town Planner, Housing Partnership, Conservation Commission, Historical Commission, Community Volunteers

Resources Needed: Staff time, Volunteer time, outreach and education materials

Target Date for Completion: Immediate

Strategy 5: Promote housing resources by creating a webpage on the Town's website.

Responsible Party: Housing Partnership, Board of Selectmen, IT Department

Resources Needed: Staff time, Volunteer time

Target Date for Completion: Long Term

Strategy 6: Review Ludlow's Zoning Bylaw to determine whether current regulations are too restrictive for building affordable market-rate homes.

Responsible Party: Planning Board, Town Planner, Building Commissioner

Resources Needed: Staff time, Volunteer time

Target Date for Completion: Mid Term

Strategy 7: Adopt a zoning bylaw that provides one or more incentives to developers who choose to include affordable housing units in new housing developments in Ludlow.

Incentives could include density bonuses, reduced dimensional requirements, fee waivers, property tax waivers. If the developer opts for the incentive, the bylaw could allow payments into an affordable housing trust fund in lieu of constructing the affordable housing unit. The specifics of such a bylaw would be determined by the Ludlow Planning Board.

Responsible Party: Planning Board, Town Planner, Housing Partnership

Resources Needed: Staff time, Volunteer time

Target Date for Completion: Long Term

Strategy 8: Determine areas appropriate for Congregate Care, Assisted Living Facilities, and other types of senior housing in town and amend zoning to allow for these uses.

Responsible Party: Planning Board, Town Planner, Housing Partnership, Council on Aging

Resources Needed: Staff time, Volunteer time

Target Date for Completion: Mid Term

GOAL 3: Enhance the quality and character of the Center Street / East Street/ State Street "downtown" area

Strategy 1: Promote neighborhood building by engaging existing residents in their neighborhood or downtown activities.

Responsible Party: Neighborhood groups, Board of Selectmen, Town Administrator, Chamber of Commerce, East Street Revitalization Group
Resources Needed: Staff time, Volunteer time
Target Date for Completion: Ongoing

Strategy 2: Preserve and Protect Downtown's "walkable" neighborhoods by retaining existing housing stock and encourage additional infill housing where opportunities are available. Make infrastructure investments to improve and ensure walkability.

Responsible Party: Planning Board, Town Planner, Department of Public Works
Resources Needed: Staff time, Volunteer time
Target Date for Completion: Ongoing

ECONOMIC DEVELOPMENT

Introduction

The Town of Ludlow has a thriving economic base of small, medium, and large businesses that compete in a global economy. To sustain its healthy economic system, Ludlow must continue to build on strengths while addressing weaknesses. The purpose of this chapter is to review Ludlow's economic activity and then recommend strategies that will enable Ludlow to strengthen itself in this changing global economy. This chapter also incorporates findings from Ludlow's participation in Northeastern University's Economic Development Self-Assessment Tool (EDSAT).¹ This self-assessment questionnaire included about 250 questions, framed within 36 broad themes, relevant to economic growth and development.² The objective of this self-assessment was to help town officials identify the "deal breakers" which might impede private investment in a community.



View of historic "Post office Building" and Ludlow Mills clock tower on the East Street corridor

Economic Profile

Regional Context

Ludlow's economy does not operate in isolation so it is important to first review economic trends confronting the region as a whole. The Pioneer Valley Planning Commission annually reports on the economic condition of the Pioneer Valley Region

¹The Economic Development Self-Assessment Tool (EDSAT) is part of an ongoing collaboration between Northeastern University's Dukakis Center for Urban and Regional Policy (Dukakis Center) and the National League of Cities in our Economic Development Partnership to identify the "deal breakers" impeding private investment in local jurisdictions.

² Responses to these questions came from municipal staff and other community partners. To view Ludlow's responses to these 250 questions, please visit the Ludlow Planning Department. The Assessment compares Ludlow's responses to responses of other municipalities that have completed the Assessment to date. This Assessment is meant to be updated by town officials on a regular basis. As market forces and other factors in the community change, the Ludlow Planning Department has the ability to input new information into the Self-Assessment Survey to update Ludlow's comparative economic development performance.

in the Pioneer Valley Plan for Progress³. The 2010 report shows a regional economy combating the effects of a major national economic recession.

Labor Force & Employment

The size of the region's labor force has been growing since the 1990s. The region's labor force reached its largest size to date in March 2009 (316,655) and it was 311,515 people in January of 2010. While total employment rose throughout the 1990s and early 2000s, the number of employed people has continued to decline since employment rates peaked in 2005. The extreme affects of the recent economic recession have become quite visible in the employment statistics from 2009. Annual data for 2009 shows an unemployment rate of 8.9 percent compared to 3.7% in 2001. This level of unemployment has not been seen in the region since the height of the recession in the early 1990s which peaked at nine percent in 1991. Due to the current economic downturn, it is likely that unemployment rates will continue to stay elevated in the short term at all geographic levels before they begin to move in a more positive direction again.

Industry Employment Trends

The 2010 Pioneer Valley Plan for Progress report shows a regional economy that is in the midst of a major transition from a goods-producing to a service-providing economy. Manufacturing was once the mainstay of the region's economy, employing more than 29 percent of the workforce in 1980. The percentage of the regional workforce employed in the manufacturing sector was down to 10 percent in 2008. Like most of the nation, the Pioneer Valley region is experiencing an increasing shift from manufacturing to service sector jobs in industries like health care and education.



Health South Rehabilitation Hospital,
Sewall Street

In 2008, the four largest industries in the Pioneer Valley region, by total employment, were healthcare and social assistance; educational services; retail trade; and manufacturing. From the years 2000-2010, the fastest growing industries in the Pioneer Valley region were other services; utilities; educational services; and healthcare and social assistance. It is worth noting that the two Pioneer Valley region industries with the largest employment losses between 2003 and 2008 were the information sector and management of

companies and enterprise sectors. Both are "new economy" industries that pay good wages and employ sought-after skilled workers. The prominence of local government cannot be ignored as some municipal governments are among the

³ The annual Pioneer Valley Plan for Progress report is also referred to as the Comprehensive Economic Development Strategy (CED's), which the PVPC is mandated to prepare each year by the U.S. Economic Development Administration due to its designation as an Economic Development District. This annual report can be found at: www.pvpc.org.

largest employers in the region. In total, there are 17 school districts and eight city governments with 250 or more employees. Together these municipal employers have a combined workforce of about 20,000 people.

Industries that yield the highest wages in the Pioneer Valley region include utilities, finance and insurance, with each industry having an average weekly wage in excess of \$1,150. Manufacturing, educational services, and healthcare, three of the region's largest industries by employment, have average weekly wages between \$845 and \$1,006. Unfortunately, several of our region's fastest growing industries-arts and entertainment as well as other services-are among the lowest paying with average weekly wages of \$322 and \$410 respectively.

Table 1: Pioneer Valley Region's Top 10 Employment Centers for 2008

Community	Total Employment	Percent Region's Employment	Average Weekly Wages	Total Wages
Springfield	75,819	29.4%	\$929	\$3,662,467,894
Holyoke	21,672	8.4%	\$696	\$784,507,399
Chicopee	19,727	7.7%	\$761	\$780,396,942
Northampton	18,539	7.2%	\$820	\$790,844,775
West Springfield	17,896	6.9%	\$746	\$694,098,270
Westfield	17,100	6.6%	\$771	\$685,750,685
Amherst	14,651	5.7%	\$858	\$653,396,530
Agawam	12,091	4.7%	\$729	\$458,526,302
East Longmeadow	8,409	3.3%	\$799	\$349,455,511
Ludlow	6,561	2.5%	\$780	\$266,196,175

Source: Massachusetts Department of Workforce Development, 2008

The majority of the region's employment opportunities continue to be centered in the Pioneer Valley's urban core, comprised of the cities of Springfield, Holyoke, and Chicopee, where nearly 120,000 people work (Table 1). The highest average weekly wages are found in the communities of Springfield (\$929), Hatfield (\$865), Amherst (\$858), and Northampton (\$820), which, with the exception of Springfield, are not among the largest employment centers in the region. These communities are, however, the home base for several employers offering relatively high-wage jobs.⁴

Regional Employers

The Pioneer Valley region's economy is rooted in small businesses. According to the U.S. Census Bureau, about 94% of businesses in 2002 and 2007 were firms of fewer than fifty people, and more than 71% were firms with fewer than 10 employees.

⁴ The 2000 Census showed that thirty-five percent of Ludlow residents were employed in Springfield and twenty percent in Ludlow. Other municipalities where a significant number of Ludlow residents worked included Chicopee, East Longmeadow, West Springfield, Holyoke, Wilbraham, Westfield, Palmer, Agawam, and Enfield.

Small businesses are not only important because of the number of firms, but because those businesses accounted for about 48% of all jobs in the Pioneer Valley region in 2007. Mid-size businesses, those with 50 to 250 employees, are also a significant presence in the region and they accounted for about 33% of all jobs in 2007. The Pioneer Valley Planning Commission's 2009 Major Pioneer Valley Employers inventory showed that 342 businesses employed more than 100 people and 24 businesses had more than 500 employees in 2007. Among the region's largest employers are Baystate Medical Center, Holyoke Medical Center, Mercy Medical Center, and Cooley Dickinson Hospital. These large health service sector employers are located in three of the region's top employment centers (Springfield, Holyoke, and Northampton). In addition, six of the region's colleges and universities are also major employers and many of the largest employers in the region are firms with national name recognition, such as Mass Mutual Life Insurance Co., Hasbro Games, Friendly's Ice Cream Corp., Solutia, Inc., and Callaway Golf.

Ludlow Industry Trends and Employment Activity

Employment, Wage, and Industry Trends

Employment and wage trends over the period from 2001 to 2008 show the positive direction of the local economy (Table 2). In summary:

- Ludlow added 53 new businesses between 2001 and 2008, a 12 percent increase.
- The number of employees working in Ludlow rose by 11 percent.
- The average weekly wage in Ludlow was \$780, which was the fifth highest average weekly wage in the region.
- Adjusting for inflation, this average weekly wage also represents a wage increase of about 1% since 2001.
- Total payroll, the sum of all wages paid to Ludlow employees, increased 12% from 2001 to 2008.
- The town had the 10th highest total annual payroll in the region in 2008, and its total payroll accounted for 2% of the region's total annual payroll that year.

Table 2: Ludlow Employment & Wage Trends, 2001 - 2008

Year	Number of Establishments	Average Monthly Employment	Average Weekly Wages*	Total Wages*
2001	453	5,937	\$772	\$238,190,049
2008	506	6,561	\$780	\$266,196,175
% Change	12%	11%	1%	12%

Source: MA Department of Labor, 2010. 2001 Wage data adjusted into 2008 real dollars.

The Construction industry is Ludlow's leading industry sector with 92 businesses and an average monthly employment of 754 workers (Table 3). It sees its peak employment in the summer months when employment almost doubles from the colder months. For example, the construction industry employed 470 workers in February 2008, but this number grew to 888 employees by August 2008. Ludlow's Construction industry sector has grown by seven businesses and 78 jobs since 2001. Of the 92 construction related businesses in 2008, almost 60 were specialty trade contractors.

Table 3: Ludlow Industry Comparative Profile: 2001 & 2008

Description	Establishments			Average Monthly Employment		
	2001	2008	Gain / Loss	2001	2008	Gain / Loss
<i>Total, All Industries</i>	453	506	53	5,937	6,561	624
Construction	85	92	7	676	754	78
Manufacturing	44	38	-6	913	683	-230
Wholesale Trade	19	20	1	204	263	59
Retail Trade	54	49	-5	647	593	-54
Transportation and Warehousing	12	16	4	91	143	52
Information	-	4	4	-	16	16
Finance and Insurance	20	21	1	117	145	28
Real Estate and Rental and Leasing	11	14	3	39	40	1
Professional and Technical Services	24	24	0	119	129	10
Administrative and Waste Services	25	35	10	187	262	75
Health Care and Social Assistance	34	29	-5	472	585	113
Arts, Entertainment, and Recreation	6	8	2	74	87	13
Accommodation and Food Services	33	43	10	397	646	249
Other Services, Ex. Public Admin	64	90	26	269	259	-10

Source: Massachusetts Department of Labor, 2010

The Manufacturing sector is Ludlow's second largest industry sector with 38 businesses and an average monthly employment of 683 workers. The Manufacturing Sector lost six businesses and 230 jobs from 2001 and 2008. The loss in the manufacturing sector was experienced in the Pioneer Valley as a whole between 2001 and 2008. Ludlow ranked tenth in the region in 2008 by employment in the Manufacturing Sector.

While overall business growth in Ludlow is evident, Table 3 also shows that some industry sectors experienced a decrease in the number of establishments, jobs, or

both. Despite losing five businesses, the Health Care and Social Assistance sector grew by 113 employees, suggesting fewer businesses are employing greater numbers of workers. The "Other Services" sector, which includes repair and maintenance services, personal and laundry services, services related to membership organizations and associations, and private household services, added twenty-six businesses but lost ten jobs since 2001. With the exception of repair and maintenance services, which offered an average weekly pay of \$731, this industry sector does not pay well and the average weekly pay was \$399 in 2008.

Ludlow Business Types

Table 4 portrays business types in Ludlow as categorized by the local assessor's office. The business types with the greatest number of parcels include: storage warehouse and distribution facility, small retail and service stores under 10,000 square feet, office condominiums, and buildings for manufacturing operations.

Table 4: Ludlow Commercial & Industrial Parcels, 2010

Parcel Type	Total Acres	Total Parcels
Hotel	5.70	1
Inn	5.92	1
Private Hospital	0.55	1
Tanks holding fuel and oil products for retail distribution	15.40	1
Trucking terminal	0.34	1
Other storage warehouse or distribution facility	185.91	54
Farm buildings	7.29	3
Shopping center	16.54	2
Small retail and service stores under 10,000 sq. feet	38.90	44
Eating & drinking establishments	21.17	18
Automotive vehicle sales & services	0.97	2
Automotive supplies sales & services	2.50	1
Auto repair facility	37.09	19
Fuel service areas	3.21	5
Gasoline service stations with maintenance	18.27	4
Car Wash facilities	1.27	2
Commercial parking lot	4.16	16
General Office Building	14.90	17
Bank building	7.65	9
Medical office building	0.95	2
Office Condominium	-	48
Fraternal organization	7.71	4
Stadium	4.00	1
Arena or field house	0.00	1
Tennis or Racquetball	3.55	1
Golf Course	206.78	1
Fish & game club	80.00	1
Buildings for manufacturing operations	242.44	31
Warehouses for storage of manufactured products	0.42	1
Industrial office buildings	1.53	1
Sand & gravel manufacturing	196.79	4

Source: Ludlow Assessors Office, 2010

Major Employers in Ludlow

Table 5 highlights Ludlow businesses with fifty or more employees (full & part-time). Every five years, the Pioneer Valley Planning Commission produces an inventory to identify the region's largest employers.⁵ Three companies in Ludlow ranked in the region's top 100 companies. These companies were: Hampden County House of Corrections, R & C Floral, and Healthsouth Rehabilitation Center.⁶ Table 5 also highlights the prominence of municipal employment as part of the town's labor force base. Manufacturing also plays a prominent role, employing over 680 people in 38 companies. Over 3,000 people also work at the Westover Air Force Base—a portion of which is located in Ludlow.



Manufacturing-related businesses at the Ludlow Industrial Center

Table 5: Ludlow Employers with 50 or More Employees in 2008

Ludlow	Employees	NAICS Code Description
Hampden County House of Corrections	902	N/A
Ludlow Public Schools	555	N/A
R & C Floral	289	Merchant Wholesalers, Nondurable Goods
Town of Ludlow	220	N/A
Healthsouth Rehabilitation Center	200	Ambulatory Health Care Services
Big Y Foods Inc.	176	Food and Beverage Stores
Kleeberg Sheet Metal Inc.	160	Fabricated Metal Product Manufacturing
Randall's Farm	101	Food and Beverage Stores
City Stamp Works Inc.	100	Merchant Wholesalers, Durable Goods
Mass Municipal Wholesale Electric	93	Utilities
James Austin Co.	68	Chemical Manufacturing
Yankee Technology Inc.	63	Computer & Electronic Product Manufacturing
Baltazar Contractors Inc.	60	Construction of Buildings
Ludlow Construction	55	Construction Company
McKesson Corp.	54	Ambulatory Health Care Services
Accutech Insulation & Contracting	50	Waste Management and Remediation
Citizen Security Services	50	Merchant Wholesalers, Durable Goods
Gekay Sales & Service Co.	50	Machinery Manufacturing

Source: Pioneer Valley Planning Commission, Major Employers Report, 2008

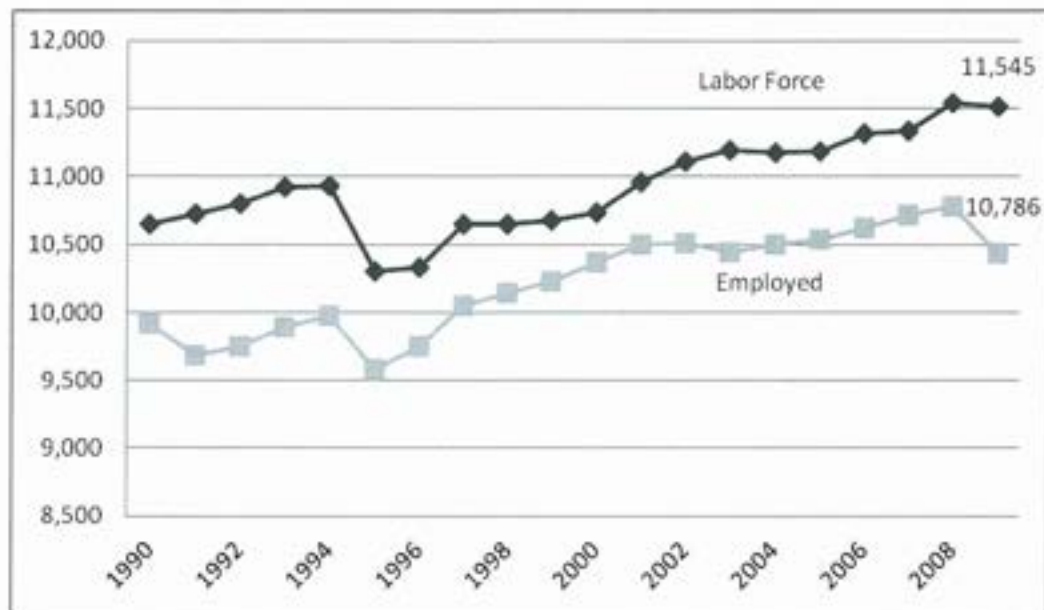
³ The primary data source for this report was an employment list purchased from a private vendor (InfoUSA, Inc.) in January 2008. This data was supplemented by an online version of this database that is maintained by InfoUSA, Inc. While the data from InfoUSA was generally of good quality, calls were made to confirm the employment figures listed within the database.

* Data from the 2000 U.S. Census showed that about 5,750 people worked in the town of Ludlow. Of this number, thirty-four percent lived in town, twenty-three percent in the neighboring communities of Chicopee, Wilbraham, Westfield, Palmer, Belchertown, and the remaining workers lived elsewhere in the Pioneer Valley.

Ludlow Labor Force Participation

Another indicator of Ludlow's growing economy is the growth of its labor force. Ludlow's labor force increased eight percent from 1990 through 2009 from 10,651 residents in 1990 to 11,545 in 2009. Most of this increase occurred during the 2000's (Figure 1).

Figure 1: Labor Force and Employment Trends: 1990-2009

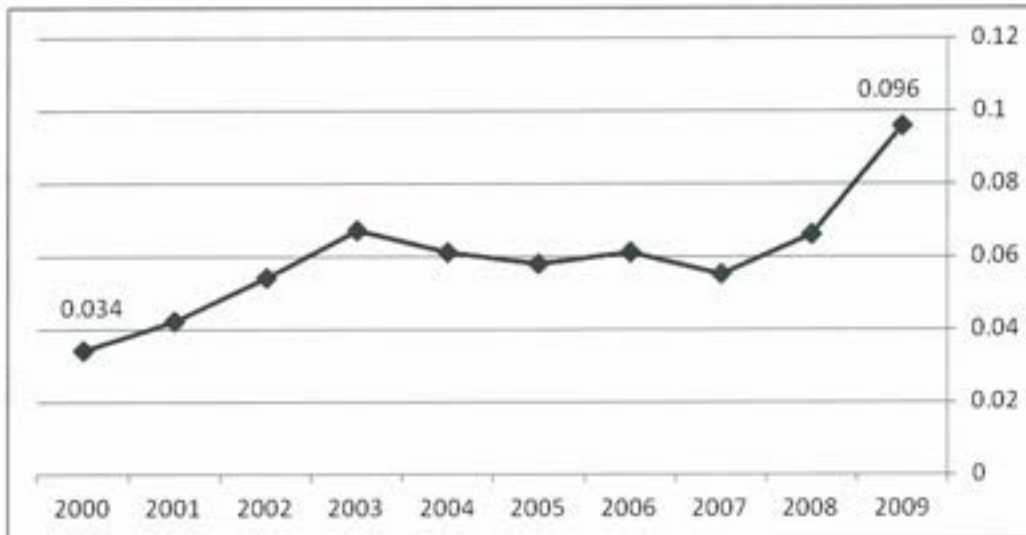


Source: Massachusetts Department of Labor, 2010

Employment numbers tracked by the Massachusetts Department of Labor shows a labor force participation rate lower than the state's average rate over the period from 1990 through 2009 (Figure1). This is likely explained by the predominance of the construction industry in Ludlow's local economy, which typically lays-off some of its work force during the winter months. Over the course of a year the unemployment rate often drops four points. In 2007, for example, the unemployment rate went from 8.7 percent in January to 4.1 percent in August. This annual ebb and flow confirms the industry trends presented in Ludlow's industry profile.

Even with the historically higher than average unemployment rates in Ludlow being partially accounted for by the construction industry, the economic recession that started in late 2007 has affected Ludlow's economy. The percentage of unemployed Ludlow residents increased from 3.4 percent in 2000 to 9.6 percent in 2009, which was higher than the state unemployment rate of 8.2 percent (Figure 2). As Ludlow residents begin to experience difficulties paying for housing-related costs, town staff, community institutions, and local social service providers need to make sure they have a current list of resources for distressed households.

Figure 2: Ludlow Unemployment Rate Trends, 2000 through 2009



Source: Massachusetts Department of Labor, 2010

Education & Job Force Training

The Town of Ludlow has solid results for high school education and associate degrees, but lags the region and state in higher education. While Ludlow has a lower percentage of college graduates, it reports a larger percentage of technically skilled workers than the comparison group. The EDSAT found that Ludlow benefits from being able to offer a larger pool of skilled workers than comparison communities. Available labor that is adequately trained is a very important factor for location decisions among firms. Workforce training resources outside the firm, such as schools, is less important relative to other location decisions, but having a technically trained workforce whose skills align with the industries a town wants to attract is a valuable marketing point.

Ludlow collaborates with many workforce training providers, putting them on the same or better footing than many of the communities in the EDSAT comparison group. Ludlow works with a regional employment board or state employment department, area high schools, area vocational-technical schools or community colleges, and provides adult education programs. Ludlow high school students can also attend Pathfinder Vocational High School to begin gaining necessary technical skills. The town also works with human service or nonprofit career training centers, which the comparison group does not.

Property Tax Base

Ludlow does not have a split tax rate system, which means that the Town of Ludlow does not tax commercial and industrial properties at a higher rate than residential properties⁷. The EDSAT found that Ludlow's tax rate is slightly higher at \$14.28/\$1000 than other municipalities in the comparison group without split rates (Table 6). However, the \$14.28/\$1000 is significantly lower than typical industrial / commercial rates, making Ludlow very competitive in terms of industrial / commercial tax rates.

EDSAT's findings show that local tax rates are important to new or relocating firms in that it is a cost, but it is not one of the first things to be considered. Firms consider factors like access to transportation corridors, access to a highly skilled workforce, and efficiency of the permitting process more important. Town officials and the Executive Director of the East of the River Chamber reported that businesses have come to Ludlow from Springfield and other nearby municipalities with higher tax rates.

Ludlow's property tax base heavily relies on residential property taxes with 13.3 percent of the town's tax-based revenue being generated from commercial, industrial, and personal property taxes (CIP)⁸. In comparison to the 42 other municipalities in the region, Ludlow's tax spread is average, ranking 13th in the region (Table 7). The percentage of tax revenue that Ludlow collects from CIP uses has decreased since 2000, when it accounted for 16.9 percent (Figure 3). If Ludlow were to attract more industrial/commercial based tax revenue sources, it could be more balanced in its sources of tax revenue.

Table 6: Municipal Commercial Tax Rate Comparison

Municipality	Commercial Tax Rate
Springfield*	36.98
Holyoke *	35.15
West Springfield*	33.85
Chicopee*	28.12
Westfield*	27.61
Agawam*	26.04
Longmeadow	17.11
East Longmeadow	16.26
Amherst	15.82
Wilbraham	15.29
Ludlow	14.28
Palmer	14.05
Belchertown	13.96
Granby	13.45
South Hadley	12.56

Source: Massachusetts Department of Revenue

⁷ One-hundred and seven Massachusetts communities have a split rate tax system, including six Pioneer Valley municipalities.

⁸ Personal property generally includes tangible items that are not firmly attached to land or buildings and are not specially designed for or of such a size and bulk to be considered part of the real estate. This includes merchandise, furnishings and effects, machinery, tools, animals and equipment. Such personal property will be taxable unless a specific exemption provision applies (Massachusetts Department of Revenue).

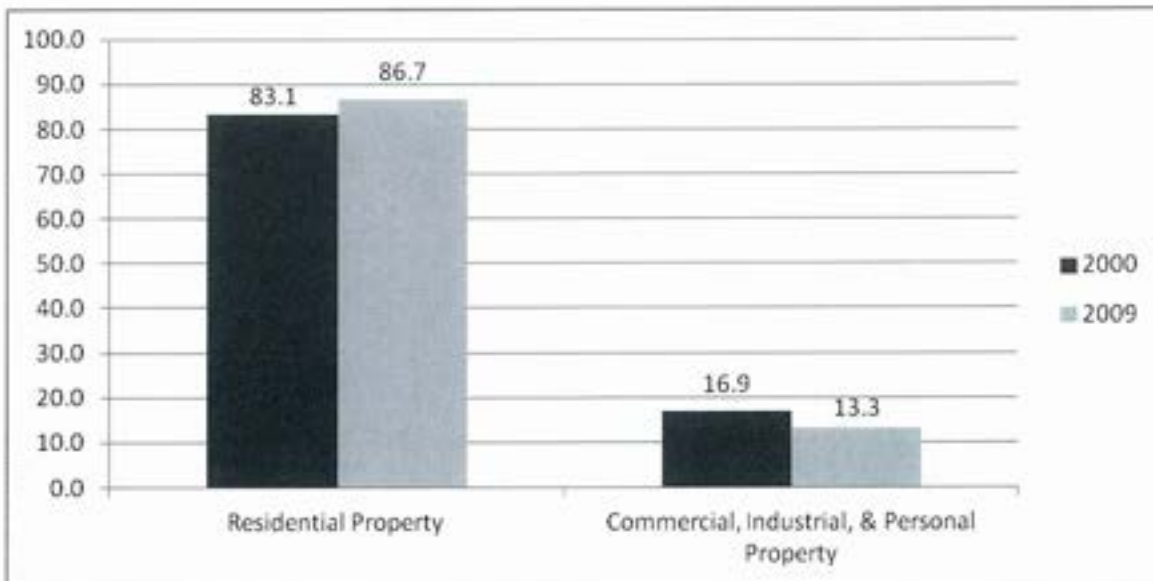
Table 7: Municipal Tax Base Comparison

Municipality	Residential as % of Total	CIP as % of Total
Holyoke*	49.73	50.27
West Springfield*	54.22	45.78
Springfield*	60.17	39.83
Agawam*	64.81	35.19
Hadley	65.21	34.79
Chicopee*	66.34	33.66
Westfield*	72.40	27.60
Hatfield	76.13	23.87
Northampton	80.26	19.74
Palmer	82.92	17.08
East Longmeadow	83.14	16.86
Ware	86.01	13.99
Ludlow	86.66	13.34

Source: : Massachusetts Department of Revenue

* Denotes Split-Rate Tax System

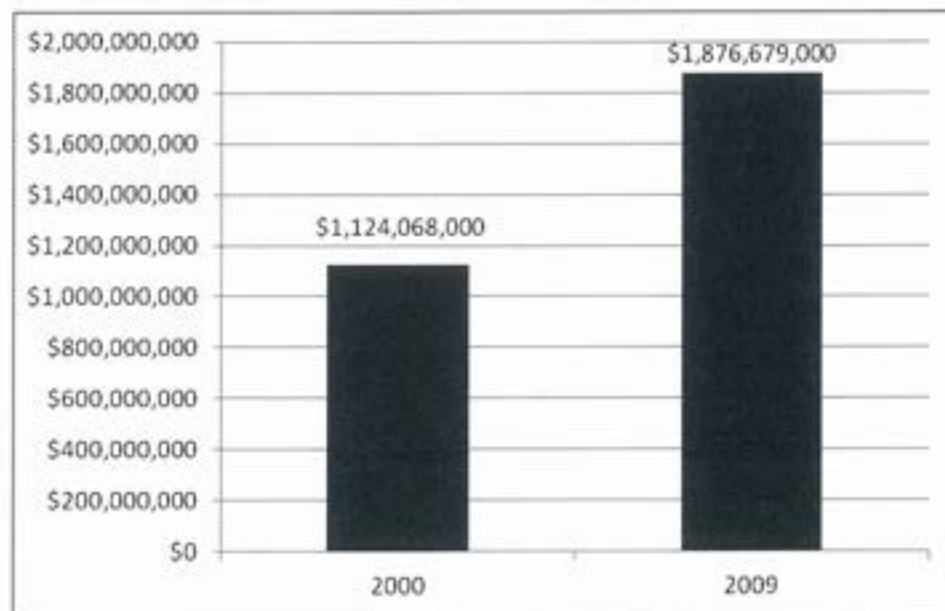
Figure 3: Ludlow's Tax Levy by Class, 2000 & 2009 (in percent)



Source: Massachusetts Department of Revenue, 2010

Ludlow's reliance on residential property taxes for local revenues is unsurprising given current zoning. Residential development far outpaced commercial and industrial development over the last two decades. Nonetheless, the number of commercial and industrial properties has increased over a twenty year period. Since the 1990s, the number of commercial parcels increased by thirteen percent and industrial parcels by eleven percent. From 2000 through 2009, the number of commercial and industrial parcels grew by one parcel each. Ludlow's positive commercial and industrial growth was comparable to Palmer and more robust than Springfield, but was less robust than neighboring Belchertown.

Figure 4: Property Tax Revenues, 2000 & 2009 (adjusted for inflation)



Source: Massachusetts Department of Revenue, 2010

The total number of parcels in Ludlow increased eight percent from 1990 to 2009, and the number of parcels classified as vacant decreased over this same period by 23 percent. This, again, confirms that Ludlow is a growing community. Property values increased a total of 67 percent between 2000 and 2009, from \$1.1 billion to \$1.8 billion (Figure 4). This overall growth further underscores Ludlow's status as a desirable place to live and locate a business.

Physical Infrastructure

Highway

Ludlow businesses are within logistical reach of most of New England's major metropolitan regions due to its Massachusetts Turnpike entrance/exit. The EDSAT showed that Ludlow is similar to many communities in this regard. Both Ludlow and the comparison group have 75 percent or more of its available development sites for retail, manufacturing, and general office space within 2 miles of a limited-access highway. Similar to the comparison group, Ludlow imposes weight restrictions on streets and access roads. While Ludlow is similar to the comparison group in terms of highway access, taken as an individual location alternative, Ludlow has very good access to the major highways. A more detailed discussion of roadway infrastructure can be found in the Transportation Chapter.



Mass Turnpike Overpass at Center Street

Getting from the Turnpike and to one's business destination, however, places people and trucks on Ludlow's main roads, which residents have expressed as a concern during this master planning process. With respect to the comparison group, the EDSAT found Ludlow to be on par for traffic related factors. Congestion was identified as "moderately congested." Ludlow requires a traffic impact analysis for large-scale development projects, but is at a disadvantage in terms of not requiring firms or developers to provide traffic mitigation beyond streets adjacent to the site being developed. Since traffic issues are considered to be very important by location experts, Ludlow could improve its marketability by addressing current and potential future traffic concerns in its master planning process. In addition, Ludlow may need to invest in roadway infrastructure where it would like economic development to occur and review development proposals as they come forward for potential impact on local roads.

Freight Rail

A railroad spur comes from Chicopee into the northwest corner of the Westover Metropolitan Airport property. Otherwise, there are no active rail lines in Ludlow. The nearest active line (CSX) runs along the opposite side of the Chicopee River in Springfield. The possibility of reactivating the spur that once connected this line to the Ludlow Mills site via a bridge over the Chicopee River is a possibility and has been discussed. The EDSAT found that Ludlow is not at a competitive disadvantage due to the lack of existing freight rail lines.

Airport

Ludlow benefits from close proximity to two airports. Westover Metropolitan Airport is mainly located in Chicopee, with a portion of the facility in Ludlow. This airport offers charter service as well as corporate and general aviation services. Bradley International Airport is located in Windsor Locks, CT, approximately 30 miles (30 minutes) from the on ramp to the Massachusetts turnpike in Ludlow. Bradley International has full capabilities for freight cargo movement.

Public Transit

The Pioneer Valley Transit Authority (PVTA) provides bus route service between downtown Springfield and Ludlow via Blue Route 6 and Blue 12 Stonybrook Express. The B6 originates at the Ludlow Big Y store at Center and Cherry Streets and travels south on Center Street to downtown Ludlow before it heads over the bridge into the Indian Orchard neighborhood of Springfield. The route terminates at the Springfield Bus Terminal in downtown Springfield. The trip takes approximately 45 minutes and the route offers day and evening service on weekdays and Saturdays. The B12 bus line originates at the Hampden County Correctional and Pre-release facilities on Randall Road. This is express service; there are no stops between the jail and the downtown bus terminal (travel is via I-291). The B12 is used primarily by families and friends visiting incarcerated persons. Employees do not generally use the bus, as it is not timed conveniently with shift changes.

The EDSAT found Ludlow similar to the comparison group in terms of providing bus service within one quarter mile of a majority of its major retail areas. A potential limitation to the town is that most of Ludlow's manufacturing and general office space sites are not serviced by bus while the comparison group had over 50 percent. Location experts may view this as a weakness, however, it can be very costly for Ludlow to provide additional public transit. The town would have to consider the benefits and costs throughout its municipality of additional transit. A more detailed discussion of public transit and future extensions of service routes can be found in the Mobility Chapter.

Water, Wastewater, Gas, Electric and Telecommunications Infrastructure

Infrastructure availability and cost of service are very important to firms. Updating civil and telecommunications infrastructure can be significant expenses for a firm to incur and therefore, if the town does not have adequate infrastructure in place, a potential firm could decide that the location is not suitable. The EDSAT found all infrastructure (water, waste water, gas, electric, and telecommunications) to be at a sufficient capacity for growth and reliable service in areas suited for economic development in Ludlow, which was consistent with the comparison group. Currently, there are two fiber optic nodes in Ludlow. The first is located underneath the Massachusetts Turnpike eastbound travel plaza, and the second is located at the Ludlow Turnpike exit (westbound).

Ludlow will want to be cognizant of the fact that many of the industries they want to attract such as financial services and information technology companies tend to be very data intensive and plan accordingly for future demands on its telecommunications infrastructure. Every new, existing, or relocating company wants to be located where they can take advantage of telecommunication services. Businesses desire bandwidth technology, either to communicate and transmit information to clients, or to perform their many corporate tasks. Some businesses need to locate in jurisdictions that offer fiber optic cable network capability. Local governments must do all that they can to see that telecommunication infrastructure is in place for existing or future businesses. The role of local government is to provide an environment that encourages the private development of this crucial infrastructure and to maintain a current level of infrastructure that keeps pace with advancements of telecommunication technology.

Existing Areas of Concentrated Commercial & Industrial Activity

The majority of Ludlow's commercial businesses are located along Center Street and East Street, but the southwestern portion of town between Scott Corners and Cady's Corners is also a developing commercial area. Industrial businesses have primarily congregated in three areas of town: the Air Park East business park, the Ludlow Mills, and Carmelina's Circle, which houses several construction companies as well as the Ludlow Tennis club. The Air Park East business park currently has twelve developable acres left for industrial development. Town officials have also stated that there are several non-conforming industrial parcels along West Street between Bruni Avenue and Libby Street. These parcels are currently assessed as residential, and are adjacent to residential neighborhoods.

Participants in the master planning process have expressed concern about the potential conflict between industrial and residential uses being within close proximity.

Several interviewees spoke about Center Street, which has been the center of commercial development in recent years. They were unsatisfied with spot zoning, lack of design standards, and movement toward fast-food type businesses along the corridor. Many interviewees joked about the number of banks in town, especially along Center Street, believing it might be excessive. Residents would prefer more high-end chains and/or better aesthetics along Center Street, and they strongly disapprove of development on Center Street, north of Chapin Street, preferring to look elsewhere for commercial growth.

Existing Commercial & Industrial Space

Location experts consider the quality of available space and amount of available land important factors for development. Rents are very important because they contribute to operating costs. In general, Ludlow is very competitive in terms of rent.



Center Street Commercial Corridor

The town has a lower per square foot rental rate for retail, manufacturing, and Classes B and C office space in its central business district than the comparison group. Rents along the highway business district are also either lower or within the same range as the comparison group. The distribution of Classes A, B, and C office space in Ludlow is worth mentioning. The town does not identify any Class A office space and identifies 75% of their office space as Class B with the remaining 25% as Class C. The comparison group shows that a distribution of 20% of Class A and 40% each for

classes B and C is more typical. This is not necessarily a negative for Ludlow, depending on their objectives for the office space.

The EDSAT found the quality of Ludlow's available development space to be similar to that of the comparison group. Between 0% and 10% of the available sites for development would be considered brownfields and another 0% to 10% of the sites would be considered abandoned or underutilized shopping centers. Ludlow has slightly more sites considered to be greenfield sites, 11% to 20% versus 0% to 10% of the comparison group. The town has a slightly lower percentage of available development sites larger than 5 acres and slightly fewer acres of developable land currently zoned for commercial/industrial than the comparison group.

Ludlow has much more vacant building space than the comparison group due to the inclusion of available space at the former Ludlow Mills in the EDSAT analysis. While an over abundance of vacant industrial, warehouse, or office space can be viewed as a detractor for potential firms, the town can also turn the space into a benefit if it aligns the properties with its development goals and markets them appropriately. The Westmass Area Development Corporation has emerged as a potential buyer and developer of the Ludlow Mills complex. Their proposed plan, when finally built-out, could provide approximately 2,500 jobs to the area along with \$2,000,000 of additional tax revenue to the Town. To date, Westmass has hosted



*Underutilized space at the
Ludlow Mills Complex*

several informational meetings with town residents and town officials in an effort to inform the community about their plans and progress.

Parking Supply

Ludlow currently offers free on-street parking in the downtown, which is an advantage. The town of Ludlow owns two parking lots in the downtown. The first is a small lot located at the library. The second is the lot located behind the former Stevens Memorial Building, which is under a ten-year lease to Health South Rehabilitation Hospital and is therefore unavailable to the general public. If greater development interest occurs in the downtown, the on-street parking may be insufficient to meet growing demand. The EDSAT stated that Ludlow could improve its attractiveness to potential development relative to the comparison group if it began developing a parking strategy for the downtown.

Vacant Land

Analysis of the town's parcel inventory showed that Ludlow has a significant amount of vacant lands assessed as developable or potentially developable. Approximately 2,000 acres of vacant lands could be developed as residential, commercial, or industrial uses in the future (Table 8). About 2,450 acres are assessed as undevelopable by the assessors' office, which means that there are environmental constraints that currently make these lands unbuildable. The greatest concentrations of developable, vacant lands are zoned for residential uses, but the town of Ludlow could rezone areas for mixed use, commercial use, or industrial use after careful consideration. For example, Scotts Corner has several parcels of developable land, but these parcels fall within three different zoning districts (Industrial, Business, and Agricultural). A rezone of this area for mixed-use may give Scotts Corner a more coherent identity.

Table 8: Summary of Vacant Land in Ludlow

	Acres	Parcels
Residential		
Vacant, Developable	1,113	324
Vacant, Potentially Developable	795	152
Vacant, Undevelopable	1,220	670
Commercial		
Vacant, Developable	13.1	18
Vacant, Potentially Developable	1.4	2
Vacant, Undevelopable	2.5	7
Industrial		
Vacant, Developable	135.5	26
Vacant, Undevelopable	12	1
TOTAL	3,292	1,200

Source: Ludlow Assessors Office, February 2010

Municipal Zoning

Ludlow has a total of nine zoning districts, including two business zones and three industrial zones. The East Street Revitalization Overlay District also allows residential uses that are not permitted in the underlying zoning district, as well as specific commercial uses not currently listed in the Table of Uses. The two Business zones represent one percent of Ludlow with approximately 73 percent of the business-zoned land located along the East Street and Center Street corridors. The three Industrial zones represent 7.6 percent of the total land, and include the Ludlow Mills site and two other tracts along the Chicopee River. As mentioned earlier, there is currently no Industrial B zone reflected in the zoning map but use and dimensional regulations are provided in the town's zoning bylaw. The 894-acre Industrial C zone is exclusively the Westover Industrial Airpark in the northwest of town. Ludlow does not have any land under consideration to be rezoned from commercial/industrial to another use. For additional information on zoning in Ludlow, see the Land Use Chapter.

Local Economic Development Resources

Data from the 2000 U.S. Census showed that about 5,750 people worked in the town of Ludlow. Of this number, thirty-four percent lived in town, twenty-three percent in the neighboring communities of Chicopee, Wilbraham, Westfield, Palmer, Belchertown, and the remaining workers lived elsewhere in the Pioneer Valley. The EDSAT found Ludlow to be similar to the comparison group with respect to being able to provide support services to businesses located within its jurisdiction. Examples of complementary or supplemental services are accounting and financial services, law firms, or a local chamber of commerce. The East of the River Five-Town Chamber of Commerce represents Ludlow business interests and supports local business activity. The Five-Town Chamber was established in June of 2008 when the local chambers in East Longmeadow, Hampden, Longmeadow, Ludlow and Wilbraham decided to merge resources. The Five-Town Chamber is also a member of the Affiliated Chambers of Commerce of Greater Springfield, Inc, which expands the level of supportive services that the Chamber can offer to the Ludlow business community.

Ludlow does not currently maintain an active relationship with local commercial real estate brokers and developers. Ludlow also does not have an active volunteer economic development committee or a local nonprofit center for economic development, while the towns in the comparison group do. There is a regional nonprofit center for economic development—the Economic Development Council of Western Massachusetts (EDC)—that provides resources and information to businesses operating in or entering the region by aiding in expansion, relocation and networking, but the Town of Ludlow does not actively engage the services of the EDC. The town of Ludlow has periodically organized volunteer committees around economic development projects or issues such as an Industrial Finance Authority,

Westover Advisory Committee, and East Street Revitalization Committee, but these committees became inactive after projects were completed. The Town of Ludlow at one point had a volunteer economic development coordinator, but this position is also inactive. Also absent is an organization or committee that comprehensively markets businesses located in downtown Ludlow. The EDSAT found that Ludlow may be at a disadvantage because the town is not pursuing these activities, while communities in the comparison group are.

Marketing

When it comes to marketing themselves, jurisdictions that are aggressive and collaborate with firms already located in their town may have an upper hand at attracting investment. Ludlow is similar with the comparison group in terms of not working with industrial or location experts to create a marketing plan, not actively engaging with local spokespersons, and not having plans to market and highlight core strengths, opportunities, and other local/regional features. Ludlow could be ahead of the marketing curve if it were to develop and implement such plans since jurisdictions in the comparison group also do not focus on marketing.

Engaging in more cross marketing could increase Ludlow's visibility to location experts. Currently, the town does not enlist the help of existing firms to assist in attracting new firms. This is on par with the comparison group, but doing so could put Ludlow ahead. Ludlow does not engage local business organizations or state agencies in marketing itself, while the comparison group does both. Again, the town could increase awareness of its opportunities through cross marketing. Ludlow, like the comparison group, does not perform any marketing follow up with existing local firms about their satisfaction or dissatisfaction with being located in the town. Ludlow also does not debrief firms that decided to locate or not to locate in its town. Performing these types of interviews could turn up valuable information about the factors informing the decisions of location experts considering Ludlow.

Municipal Website

A town's website could be the first impression for location experts researching potential candidates. In this information age, a location expert could use a municipality's website to gather initial information and if that information is not available, easy to find, and easy to understand, the researcher may reject the town as a potential location without further research. While a town's website may rank as less important in terms of decision making, it can be that first impression that entices a location expert to seek additional information.

Ludlow's website is similar to most municipal websites, in that it generally is not designed with economic development and marketing in mind. Ludlow can make its website more user friendly and transparent to location experts by providing such information as: listing all local development policies, procedures, and contact information; posting development and permitting flowcharts, applications, and maps

and making site information downloadable; including links to the websites of local, regional, or state agencies and commissions with jurisdiction over the development process; and other key quality of life information highlighting the benefits of working and living in Ludlow. Another factor that Ludlow could address with little cost and that would increase transparency and inform marketing efforts is to develop a complete list of sites available for development in its jurisdiction.

Local & State Business Incentives

Business incentives are important to location experts when they make decisions, however, incentives are not at the highest level of importance. Factors like infrastructure, workforce composition, and the timeliness of permitting are at the highest level of importance. However, providing a broader portfolio of business incentives to offer potential investors is still a very valuable selling point because one of the goals of business is to keep costs low.

Businesses in Ludlow are eligible for state tax incentives but the EDSAT found that Ludlow takes very little advantage of these incentives. Businesses in the comparison group reported higher levels of participation in state programs. The Commonwealth of Massachusetts allows priority funding for distressed economic areas under the Economic Development Incentive Program, and Ludlow should consider applying for state designation as an Economic Target Area under this program.

Ludlow does not provide any additional local tax or other financial incentives to businesses and the jurisdiction does not use Tax Increment Financing or other similar programs. It also does not provide technical assistance to businesses for securing financing through commercial lenders or state industrial finance programs. The EDSAT found Ludlow to be comparable to other municipalities in that Ludlow does not offer incentives such as revolving loan funds, loan guarantees, revenue bonds, equity participation, or business group loans. While the comparison group does not pursue these practices either, Ludlow could pull ahead in marketability if it could offer some of these incentives.

Municipal Process

The timeliness of approvals and a transparent and efficient permitting process is very important to new and expanding businesses. Ludlow, like the comparison group, provides a checklist for permitting requirements, but not a flowchart, handbook, or a single proposal presentation format. A notable strength that Ludlow has is the speed of its permitting processes, which is among one of the most important location factors. Many of Ludlow's permitting processes are faster than the comparison group and two are the same. Permitting, plan reviews, variances, and appeals occur within a few days to 4 weeks, while the average for the comparison group is approximately 5 to 8 weeks. Ludlow does not pre-permit or fast track permitting in any districts or for certain uses in overlay districts.

Opportunities & Challenges

The prior section shows a bright economic future if Ludlow can capitalize on its existing strengths and begin to respond to its weaknesses. Ludlow already has superior highway access, municipal infrastructure in place at areas suited for industrial and commercial activity, an attractive physical setting, comparatively low rents for commercial and industrial space, comparatively low tax rate, a technically skilled workforce, and a streamlined permitting process—all factors identified by economic development experts to be very important to future business growth. A challenge may be maintaining these strengths when faced with future development pressure. For example, traffic congestion is an existing concern. Since traffic issues are considered to be very important by location experts, Ludlow could improve its marketability by addressing current and potential future traffic concerns in its master planning process.

Downtown Ludlow is one of the Town's greatest assets and every effort should be made to encourage additional business and cultural activity here. Some Ludlow residents stated in this master planning process that people no longer visit downtown because there is not enough offered in terms of both retail and culture. Others expressed dissatisfaction with the lack of parking and unfavorable aesthetics. There are relatively few vacant storefronts, an adequate supply of on-street parking, and the East Street corridor just underwent a major streetscape improvement; therefore, the downtown's major issue may be marketing. Many communities have downtown business associations or Business Improvement Districts to promote businesses and activities in the downtown and this is something Ludlow should consider supporting. To remedy parking shortages, the Board of Selectmen should carefully review downtown tax title takings and other downtown property sales for the future creation of one or more parking lots. The Town should also continue its support to local developers interested in redeveloping the former Ludlow Mills and other significant properties in the downtown area as reuse of these properties will significantly help to revitalize the downtown.

One of the main findings from the EDSAT analysis was that Ludlow could be promoting the town more for economic development. These factors are important for firms making location decisions and far less expensive to address than other location factors, such as building new transportation infrastructure. Ludlow also does not take advantage of existing state programs or regional resources that promote economic development. Ludlow has not sought state designation as a Chapter 43D Priority Development site or as an Economic Target Area. The town does not have a local economic development spokesman—a person or committee—and rarely engages the assistance of the Regional Economic Development Council. Ludlow should consider reactivating its economic development coordinator position or establish an economic development board. With this position / board, the town can begin to tackle its marketing issues. This position / board could also conduct

outreach efforts within the business community to ensure that the needs of existing enterprises of all sizes are fully addressed, including collaboration with area educational institutions and other workforce development organizations. The challenge will be identifying volunteers and staff to promote business development and identifying additional funds to update the town website.

Findings from this master planning process support undertaking a comprehensive zoning review of Ludlow's existing zoning bylaw to identify inconsistencies, deficiencies, and to ensure a prompt and predictable permitting process. Many stakeholders spoke about the lack of industrial sites in town and the scattered nature of existing commercial and industrial businesses. The town should use this review as an opportunity to encourage suitable commercial, mixed use and industrial development in identified areas in the community through the adoption of Chapter 40R Smart Growth zoning overlay, the amendment of uses in existing zoning districts, or a complete rezone of areas identified to be suitable for commercial, mixed use or industrial uses. Additional land available for commercial and industrial uses will help to maintain a low residential tax rate and increase the supply of local jobs. Ludlow will want to encourage infrastructure development and physical improvements in identified economic areas and make investments as appropriate. This process should help to facilitate the expansion of Ludlow's tax base. At this time, the town may want to consider developing design guidelines that portray architectural features the Town of Ludlow wishes to promote in its downtown.

A notable strength that Ludlow has is the speed of its permitting processes, which is very important to businesses looking to relocate or expand. In order to maintain this advantage as development opportunities become reality, Ludlow could review its permitting process to identify any additional efficiencies and to ensure that the processes remain streamlined. Ludlow provides a checklist for permitting requirements, but not a flowchart, handbook, or a single proposal presentation format. Presenting a development proposal to all review boards and commissions at a single meeting would save the developer and Ludlow time and money, making Ludlow a more attractive location.

Goals and Strategies

Immediate	Completion within one year of master plan adoption
Short Term	Completion within five years of master plan adoption
Mid Term	Completion within ten years of master plan adoption
Long Term	Completion within fifteen years of master plan adoption

GOAL 1: Promote Economic Development in appropriate areas of Ludlow and support existing business operations.

Strategy 1: Establish a volunteer Economic Development Board to market Ludlow and be responsible for business recruitment.

This board should include local commercial real estate brokers / businesses as well as other members in the development community to assist in the marketing of available commercial and industrial properties in town.

Responsible Party: Board of Selectmen, Planning Board, East of the River Chamber, Economic Development Council of Western MA.

Resources Needed: Staff time, Volunteer Time

Target Date for Completion: Short Term

Strategy 2: Conduct and maintain an inventory of vacant & underutilized properties within the downtown, and market these properties for development.

The inventory could provide information such as parcel size and location, water and sewer infrastructure, environmental constraints, building size and condition, adjacent land uses, and access by car and PVTA.

Responsible Party: Town Planner, Assessor, Town Engineer, Economic Development Board, property owners

Resources Needed: GIS mapping, staff time, funding for consultant

Target Date for Completion: Mid Term

Strategy 3: Encourage infrastructure development and physical improvements in identified economic areas.

Responsible Party: Board of Selectmen, Department of Public Works, Planning Board

Resources Needed: Staff time, Volunteer Time

Target Date for Completion: Ongoing

Strategy 4: Apply for Economic Target Area and Chapter 43D Priority Development Site designation from the state to provide additional incentives to expanding or relocating businesses.

Responsible Party: Board of Selectmen, Planning Board

Resources Needed: Staff time, Volunteer Time

Target Date for Completion: Ongoing

Strategy 5: Provide continued support to local developers for the redevelopment of the Ludlow Mills project and other significant properties in town.

Responsible Party: Board of Selectmen, Town Administrator, Town Planner, Historical Commission, Economic Development Board

Resources Needed: Staff time, Volunteer Time

Target Date for Completion: Ongoing

Strategy 6: Promote local Ludlow businesses by providing a web based link to the East of the River Five Town Chamber of Commerce and other local business organizations.

Responsible Party: Board of Selectmen, IT Department, East of the River Chamber, Economic Development Board.

Resources Needed: Staff time, Volunteer Time

Target Date for Completion: Short Term

Strategy 7: Develop a marketing campaign designed to retain and attract businesses, particularly to the downtown area and increase visibility of Ludlow in regional markets.

Responsible Party: Board of Selectmen, Economic Development Board, East of the River Chamber.

Resources Needed: Staff time, Volunteer time, printed materials

Target Date for Completion: Long Term

Strategy 8: Conduct outreach efforts within the business community to ensure that the needs of existing enterprises of all sizes are fully addressed, including collaboration with area educational institutions and other workforce development organizations.

Responsible Party: Board of Selectmen, Economic Development Board, East of the River Chamber.

Resources Needed: Staff time, Volunteer time, printed materials

Target Date for Completion: Ongoing

Strategy 9: Approve tax and other financial incentives, such as Tax Increment Financing (TIF) district, to promote local economic development.

Responsible Party: Board of Selectmen, Town Meeting

Resources Needed: Staff time, Volunteer time

Target Date for Completion: Ongoing

GOAL 2: Update the town's zoning bylaws to encourage suitable commercial and industrial business development in identified areas in the community.

Strategy 1: Review and amend the Table of Uses in the zoning bylaws to encourage appropriate types of commercial and industrial uses in Ludlow.

Responsible Party: Planning Board, Town Meeting

Resources Needed: Staff time, Volunteer time, funding for consultant

Target Date for Completion: Short Term

Strategy 2: Provide a district on the official zoning map for the Industrial B zone, or remove standards from the existing zoning bylaws.

Responsible Party: Planning Board, Town Planner

Resources Needed: Staff time, Volunteer time, funding for consultant

Target Date for Completion: Immediate

Strategy 3: Amend the current Industrial A zone and include non-conforming parcels along West Street.

Responsible Party: Planning Board, Town Planner

Resources Needed: Staff time, Volunteer time, funding for consultant

Target Date for Completion: Short Term

Strategy 4: Adopt a mixed-use commercial / residential zoning overlay district, such as Chapter 40R, at appropriate areas. This zoning overlay bylaw should include Design Guidelines for architectural elements and signage.

Responsible Party: Town Planner, Planning Board, Chapter 40R Advisory Committee

Resources Needed: Staff time, Volunteer Time, funding for consultant

Target Date for Completion: Immediate

Strategy 5 : Rezone appropriate areas for business and light industrial development to expand the commercial and industrial land inventory and the commercial / industrial tax base.

Responsible Party: Planning Board, East of the River Chamber, Economic Development Board

Resources Needed: Staff time, Volunteer Time

Target Date for Completion: Short Term

Strategy 6: Adopt Downtown Design Guidelines that portray architectural features the Town of Ludlow wishes to promote in its downtown area.

Responsible Party: Planning Board, Historical Commission

Resources Needed: Staff time, Volunteer time

Target Date for Completion: Mid Term

Strategy 7: Amend the East Street Revitalization Overlay District and provide additional design and development standards for pedestrian circulation and amenities, landscaping, parking, lighting, and architectural design.

Responsible Party: Planning Board, Town Planner

Resources Needed: Staff time, Volunteer time

Target Date for Completion: Short Term

GOAL 3: Promote economic and cultural activity in the Center Street / East Street / State Street “downtown” area, where existing public water, sewer and building infrastructure exists.

Strategy 1: Establish a Downtown Ludlow Business Association, Business Improvement District, (or similar type organization) to promote businesses and activities in the downtown.

Responsible Party: Town Administrator, East of the River Chamber of Commerce

Resources Needed: Staff time, Volunteer time, local business support

Target Date for Completion: Short Term

Strategy 2: Market downtown Ludlow by establishing a comprehensive identification and way-finding system that creates a strong identity for Ludlow that uses signature landmarks and gateways, as well as consistent sign design.

Responsible Party: Ludlow Downtown Business Association, Planning Board, East of the River Chamber of Commerce, Department of Public Works

Resources Needed: Staff time, Volunteer time, funding for consultants / printing

Target Date for Completion: Long Term

Strategy 3: Identify downtown’s restaurants, shops, and historic sites for residents and visitors alike on town website and printed media.

Responsible Party: Ludlow Downtown Business Association, East of the River Chamber, IT Department, Historical Commission

Resources Needed: Staff time, Volunteer time, funding for consultants / printing

Target Date for Completion: Mid Term

Strategy 4: Fund public art – murals, sculpture, decorated benches, and trash receptacles.

Responsible Party: Ludlow Downtown Business Association, Board of Selectmen, East of the River Chamber of Commerce, Ludlow Cultural Council

Resources Needed: Staff time, Volunteer time, grant from Mass Cultural Council

Target Date for Completion: Long Term

Strategy 5: Encourage additional cultural and historic events and activities in the downtown to promote use of this historic space.

Responsible Party: Ludlow Downtown Business Association, East of the River Chamber, all Town Departments, all Town Boards & Committees

Resources Needed: Staff time

Target Date for Completion: Ongoing

Strategy 6: Turn riverfront areas into lively public and cultural destinations linked together by pedestrian and bike connections, creating vibrant space for cultural events, activities and public art.

Responsible Party: Board of Selectmen, Planning Board, Conservation Commission, Recreation Commission, Ludlow Downtown Business Association, East of the River Chamber of Commerce, riverfront property owners

Resources Needed: Staff time, Volunteer time, property owner support

Target Date for Completion: Ongoing

Strategy 7: Conduct a parking inventory on a bi-annual basis to assess whether the parking infrastructure is adequate for the downtown business district. Create a parking map and post map online and erect map downtown.

Responsible Party: Department of Public Works, Ludlow Downtown Business Association, Planning Board, East of the River Chamber of Commerce, Pioneer Valley Planning Commission

Resources Needed: Staff time, Volunteer time, funding for consultants

Target Date for Completion: Ongoing

GOAL 4: Establish a streamlined and transparent permitting process in order to improve communication with permit applicants.

Strategy 1: Appoint a single point of contact to work with applicants and be responsible for coordinating the applicant's efforts to apply for the necessary permits in town.

Responsible Party: Planning Board, Town Planner, Building Inspector, IT Department

Resources Needed: Staff time, Volunteer time

Target Date for Completion: Short Term

Strategy 2: Create a "Permitting Guidebook" for the town as a "quick reference" guide to which applicants may refer as they navigate through the permitting process.

The Guidebook will also help new municipal staff, board, and commission members to understand how permitting works and what their responsibilities are in the overall process. The Guidebook should contain practical information such as contact information for relevant boards, a step-by-step process for each permit, fee schedules, and anticipated timeframes for each permit.

Responsible Party: Planning Board, Town Planner

Resources Needed: Staff time, Volunteer time, funds for printing and/or consultants

Target Date for Completion: Short Term

Strategy 3: Develop permitting flowcharts and checklists to guide applicants through the permitting process.

A flow chart illustrates the steps of the permit process and should begin with the submittal of a plan or application, proceed through review by all necessary boards and agencies, outline public participation requirements, and describe the decision process. The lengths of time provided for each step of the process should also be shown. A checklist describes the mandatory steps and can be an integral part of the permit process itself, giving clear guidance to both the applicant and the permitting agency.

Responsible Party: Planning Board, Town Planner

Resources Needed: Staff time, Volunteer time, funding for printing and/or consultants

Target Date for Completion: Short Term

Strategy 4: Encourage "Pre-Application" meetings to promote better communication between the municipal boards and the applicant without determining any substantive issue to be determined by the regulatory board.

The pre-application meetings are an opportunity to explain the permit process, requirements, timetables (the sequence of board approvals) and to discuss additional information, reports, and/or studies that may be required for project review.

Responsible Party: Town Administrator, Planning Board, Board of Appeals, Conservation Commission, Department of Public Works

Resources Needed: Staff time, Volunteer time

Target Date for Completion: Ongoing

OPEN SPACE AND NATURAL RESOURCES

Introduction

Open space includes recreational, agricultural, forested, riparian, scenic, and conservation lands, as well as wetlands and water bodies. It is defined broadly as public or privately owned land that is not used for residential, commercial, industrial or institutional uses.

Throughout the master planning process, Ludlow residents identified open space as a critical issue. While some Ludlow residents believe that the town has sufficient open space, others disagree, perhaps because the open space is concentrated in the northern portion of town (surrounding the Springfield Reservoir), leaving most of Ludlow's residents, who live in the southern portion of town, underserved. These residents require more parks, access to the Chicopee River, and active recreation lands. Even with the large amount of protected open space in Ludlow, it is worth noting that many residents do not know that these resources exist, and community members have expressed concerns about inadequate parking, access and signage.

While Ludlow has a wealth of natural resources for a town of its size, unchecked low-density residential development could slowly devour its unprotected lands, impacting water quality, wildlife habitat, rural character and scenic landscapes. Therefore, farmland and open space protection are a significant issue, and many residents are particularly concerned about loss of farmland as the town continues to develop at a rapid pace. In addition, Ludlow residents have expressed enthusiasm about increased access to existing open space resources, as well as the possibility of developing bike trails and greenways that connect the town's open spaces.



Munsing Street

Trends and Data

Past Planning Efforts

2006 Open Space and Recreation Plan

Ludlow's most recent Open Space and Recreation Plan, completed in 2006, included an inventory of natural and cultural resources; a listing of open space, conservation, and sensitive ecological habitats, wetlands, riverbanks and existing recreational facilities; an assessment of open space, conservation

and recreational needs; and a five-year action plan. The 2006 plan based its recommendations on the results of a community survey and visioning session.

The 2006 Open Space and Recreation Plan identified a number of open space issues in Ludlow. While the town owns a number of open space properties, residents are unaware of many of these areas, and there has been no organized effort to publicize them. The existing public open space lands also lack marked trail systems and are not accessible. The lack of parking is perhaps the most significant access issue for these open space amenities, as there is limited parking at almost all recreational areas in town.

A second major issue identified in the 2006 plan is the absence of a funding source to acquire new open space lands, especially lands that leave the Chapter 61 Program, a tax incentive program that allows the state, town or a combination of the two to purchase the development rights from the farmer or landowner in order to preserve the land's use for agriculture. In addition, the town has not adopted the Community Preservation Act, which provides a regular funding source that can be used for open space acquisition and improvement.

The resident survey conducted as part of the 2006 planning effort revealed a number of specific community needs and preferences. Survey respondents identified protection of drinking water supply and natural resources as a priority. In addition, respondents were asked what areas they would like the town to invest in for the future, and the top three responses were walking trails, paved trails and mountain biking trails.

Some of the town's particularly important open space areas include Haviland Pond, the Westover Wildlife Area, and the Springfield Reservoir. The Reservoir, which is owned by the Springfield Water and Sewer Commission, is a popular passive recreation site, but some issues with access need to be resolved. In addition to existing areas, the 2006 plan recommends that the town continue to look for potential sites for new recreational areas, especially in areas of dense residential growth; these include the old Town center, areas adjacent to the Springfield Reservoir, and the areas along southern Miller and East Streets. Finally, the 2006 plan describes some concerns with the organization of recreational areas in Ludlow because some facilities are managed by more than one board or commission.

The goals listed in the 2006 Open Space and Recreation Plan were:

- Provide complete accessibility to recreational facilities for all residents of the community.
- Develop a set of procedures for acquiring open space.
- Support plant and animal habitats, food sources and corridors.
- Maintain a rural character.
- Protect the rivers, streams, ponds and wetlands of Ludlow and the watersheds that sustain them.
- Ensure that sound management practices are used to implement this open space and recreation plan.

2008 Natural Hazard Mitigation Plan

There are a number of flood hazard areas in the town of Ludlow. The two largest of these are along the Chicopee River, forming the southern boundary of the town, and in the Westover Wildlife Management Area, including several large wetlands and ponds. There are approximately 167 structures in Ludlow that are within or near 100-year floodplain areas, and according to the town's Natural Hazard Mitigation Plan, there are approximately 1,167 acres of land within the FEMA designated 100-year floodplain area. Proportionately, Ludlow has a large amount of floodplain land, and the Mitigation Plan recommends that new construction not be allowed in flood prone areas. The plan also recommends that natural water storage areas such as wetlands, farmland and open space be protected to provide flood storage capacity. Finally, the plan recommends that the town attempt to minimize the amount of impervious surfaces, which contribute to overland runoff and flooding. Other benefits of such a policy include erosion and sedimentation control, water pollution control, and habitat protection.



View from Facing Rock

2009 University of Massachusetts Study

The recent University of Massachusetts study, conducted by Landscape Architecture and Regional Planning graduate students and completed as part of this master planning effort, includes an Inventory and Assessment of natural resources, farmland, open space and recreation.

This study noted that Ludlow lacks pedestrian and bicycle connections between the town's open space resources, and in response, a greenway proposal was developed to link the town's major natural resource areas. The University of Massachusetts recommendations were made based on GIS and data analysis, as well the results from a 2009 community visioning session.

Inventory of Protected Open Space

Ludlow has 4,058 acres of permanently protected open space within its boundaries, which comprises 22 percent of the total land in town (Table 1).

Table 1. Open Space Lands – Level of Protection

	Acres	% of Total
In Perpetuity	4,058	89%
Limited	287	6%
None	238	5%

Source: MassGIS, 2009

However, because the majority of this land is concentrated in the northern portion of town and surrounds the Springfield Reservoir, it is not within a comfortable walking distance (considered for the purposes of this study to be one-half mile) of the majority of Ludlow's residents (Figure 2). Eight-nine percent of Ludlow's open space land¹ is permanently protected, six percent has limited protections and five percent is not protected (Figure 1). As seen in Table 2, much of the town's open space is part of the Springfield Reservoir area and is not readily accessible to the public.

Town-owned land includes the Westover Conservation Area, the Town Forest, Camp White and the public schools. State-owned open space includes Nash Hill Reservoir, Facing Rock, Ludlow State Forest and Red Bridge State Park. Private open space parcels include the Ludlow Country Club and Scout Troop 180 Camp (Table 2).

Table 2. Open Space Lands – Ownership

	Acres	% of Total
City of Springfield Water Department	2,009	44%
Town of Ludlow	905	20%
State	1,431	31%
Private	238	5%

Source: MassGIS, 2009

¹ Open Space is based on MassGIS 2005 Protected and Recreational Open Space data and includes conservation lands, public and private recreation lands, town forests, conservation buffers along roads, agricultural lands protected under the state's APR program, aquifer and watershed protection lands, cemeteries, and forest land if designated as a Forest Legacy area.

Ludlow MA, Open Space - Level of Protection

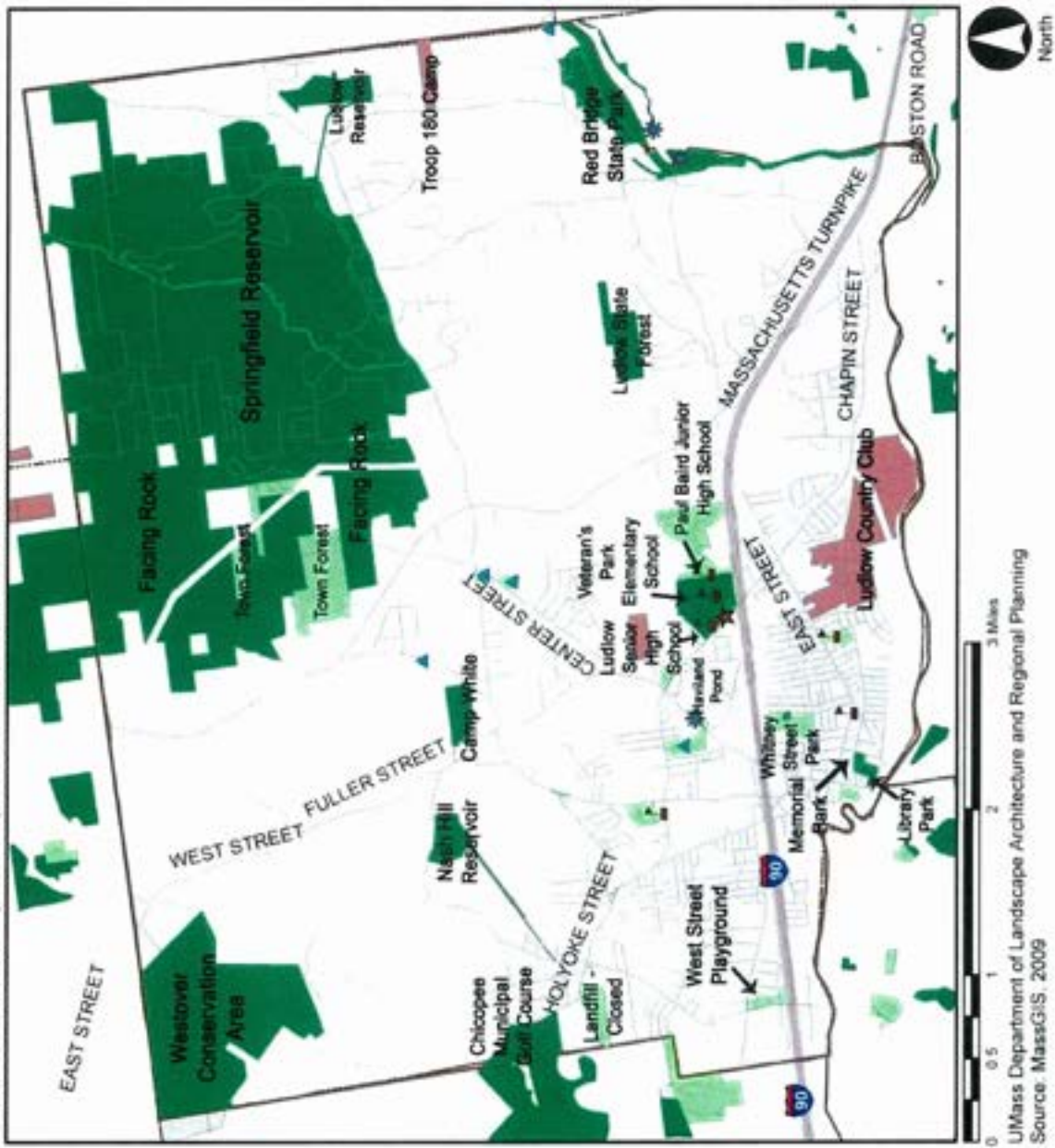


Figure 1: Protected Open Space, 2009

Currently, Ludlow has 2,155 acres of Chapter 61 land, a designation that provides tax incentives and ensures temporary protection while lands are being managed for the purposes of timber production, agriculture or recreation. Of its Chapter 61 land, 24 percent is in forestry use, 42 percent is in agricultural use, and 34 percent is in recreation use.

The University of Massachusetts study conducted an analysis of underserved parts of the town, defined as areas that are not within one-half mile, or comfortable walking distance, of public open space and parkland. The results of this study, shown in the map below, indicate that a significant proportion of Ludlow's residents cannot walk to public open space areas (the service areas, circled in blue, show a one-half mile radius around existing parks). Another metric recommends 10 acres of open space/parkland for every 1,000 people in metropolitan areas (National Recreation and Park Association, 2009). Using this metric, Ludlow's 21,209 residents (2000 Census) would require 212 acres of open space/parkland. Currently, the town owns 67 acres of public parks, and only 37 acres

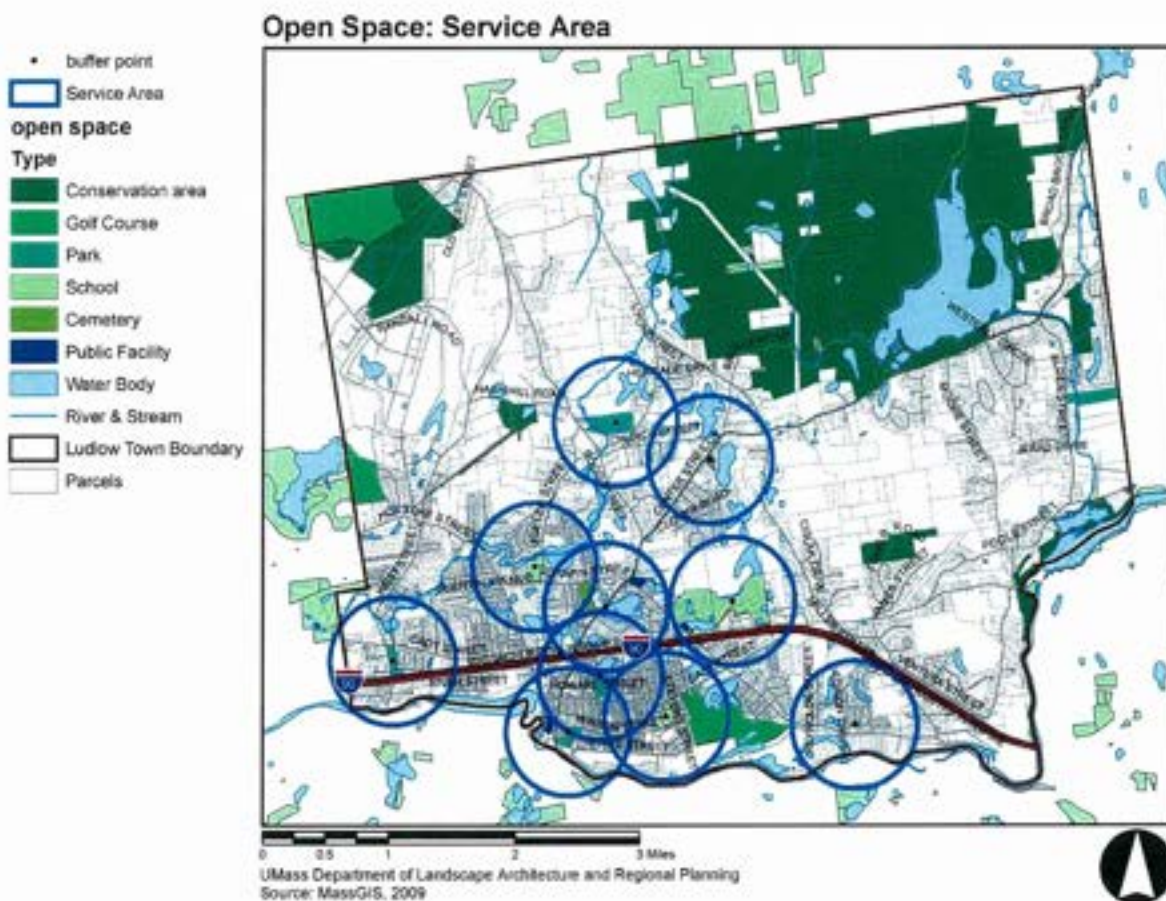


Figure 2: Access to Protected Open Space

within the southern part of town, where most residents live. This indicates a need for an additional 145 acres of parks and playground areas, especially in the southern portion of the town.

Natural Resources

The land that Ludlow occupies provides a critical link between major natural resource areas. It is an important stepping-stone between the Connecticut River Valley, the Quabbin Reservoir, the Holyoke Range and the Chicopee River. The town's natural areas contain a wealth of resources, including water bodies, wetlands, forest, agricultural land, wildlife habitat, and soils. However, these resources face severe development pressures, and low-density residential development is slowly replacing forest, wildlife habitat and agricultural land.

Watershed Resources

Ludlow is within the boundaries of two major watersheds: the Connecticut River Watershed and the Chicopee River Watershed. There are a number of tributaries in Ludlow that join the Chicopee River, which is the largest tributary to the Connecticut River. As a result of Combined Sewer Overflow (CSO) discharges, the Chicopee River's water quality is impaired by harmful pathogens. Four of Ludlow's CSO discharge points have been removed, and its last remaining CSO outfall is scheduled to be removed.

In addition to the Chicopee River, Ludlow's other water resources include Haviland Pond, Lyon Pond, Minnechoag Pond, and the Springfield Reservoir. There are also many wetlands, with particularly large wetlands located in the Westover Wildlife Area and along Second Pond and Minnechoag Brook. The town also has four confirmed vernal pools. In addition to their habitat value, these resources help prevent flooding.



There are two main areas of concern for Ludlow's water resources. First, a large number of them lack adequate riparian vegetated buffers. This is especially true for Haviland Pond, a major recreational resource for the community. The level of development and the amount of impervious surface surrounding the pond signifies a condition that is quite concerning for its long term health. If left unbuffered, stormwater runoff from the surrounding developed parcels and roads could potentially contaminate the pond. A second concern is that many of the water resources within the town lay within unprotected areas that are being threatened by development. Many of the wetlands, ponds, and smaller tributaries within Ludlow are currently within lands that are at risk of future development.

Currently, the town is a member of the Connecticut River Stormwater Committee. This committee comprises of 11 cities and towns in the Pioneer Valley that are regulated under the federal National Pollutant Discharge Elimination System (NPDES) Phase II Stormwater Program. Membership in the Stormwater Committee allows communities to more efficiently and cost effectively meet their NPDES

Public Education and Outreach requirements. Recently, the Committee has launched two public education campaigns designed to provide information to municipal officials and the public on water pollution from stormwater runoff. Ludlow has been a member community of this Committee since 2006; however, more recently the town has been an inactive member.

Trees and Forests

Forests occupy 54 percent of land in Ludlow and provide many ecological attributes to the town, including habitat for flora and fauna, recreational opportunities for residents, improved water quality, and flood prevention. The town's forests, together with its wealth of wetlands and freshwater ponds and streams, support a variety of diverse species, including Birches, Oaks, Maples, Hemlocks, Pines, Bald Eagles, Blue Heron, and Black Bear, and wild cats, among other species. Some of its species, including Four-Toed Salamanders, Blue Spotted Salamanders, Wood Turtles, and Eastern Box Turtles, among others, are listed as "Of Special Concern" by the state's Natural Heritage and Endangered Species Program.

The University of Massachusetts study conducted as part of this master planning process concluded that the town's most valuable habitat areas are in the Facing Rock Wildlife Management Area and the Springfield Reservoir area in the northeastern part of the town, where forested areas are less fragmented by development and are therefore able to support a wide variety of plant and animal species, including top predator species that are highest in the food chain (e.g. eagles, wildcats and bears), wildlife that are foraging for food and migrating for food, and wildlife that are breeding and raising their young. In the northwestern part of town, the Westover Conservation & Wildlife Area is also of high ecological integrity. Protective planning strategies, particularly along Fuller, Lyon and West Streets, can target unprotected lands of high ecological integrity that are located around or connected to these protected core areas. It is particularly important to identify green corridors that link these core areas, which would support and expand the value of these core habitat areas.

Overall, forest lands in Ludlow are mostly unprotected and are susceptible to new development, which removes habitat, disrupts soil, and results in soil erosion and degradation of waterways. Minnechoag Mountain is perhaps the most threatened area of high habitat value in Ludlow. The area contains Priority Habitat for Rare Species, and also supports wildlife that are foraging for food and migrating, as well as breeding and raising their young. However, this area is fragmented and does not link to the nearby core habitats at Facing Rock Wildlife Management Area, the Springfield Reservoir area, and Chicopee River. The area serves as a stepping-stone between these core habitats, yet local plans suggest that the town will continue to develop subdivisions in this area and to eventually bisect the mountaintop to connect both sides by road. This would result in significant fragmentation and loss of high-value habitat.

The ecological and habitat value of the town's forest lands could be improved if its forest areas were connected to each other. In addition, urban areas can enjoy increased ecological quality, providing both urban wildlife and livable spaces for humans, if efforts are made to enhance the town's "urban forest." The town was once committed to urban forestry, obtaining an Urban Forestry Grant in 2003, creating an Urban Forestry Committee, and developing a tree inventory and urban forestry recommendations, including proposed subdivision regulations amendments to preserve trees and

enhance tree cover. In May 2007, the Massachusetts Department of Conservation and Recreation presented Ludlow with a Tree City USA Award, sponsored by the Arbor Day Foundation in cooperation with the USDA Forest Service and the National Association of State Foresters. However, the Urban Forestry Committee is no longer active, and the current tree inventory needs to be updated and expanded.

Agricultural Lands

Although industry later eclipsed agriculture as the mainstay of Ludlow's economy, Ludlow has retained its historic agricultural roots. Agriculture continues to be a vital source of cultural identity in Ludlow, and today this small but thriving farm-based economy includes over thirty-one USDA-registered farming operations and many additional non-registered farms on 1,367 acres of farmland (eight percent of the town's total area). Many of these farms supply fresh produce to town residents through farm stands and markets. Local agriculture also supplies feed for animals at the Lupa Zoo.



Munsing Street

Agricultural operations in Ludlow include corn, alfalfa and hay; pasture for goats, sheep, beef cattle and horses; and several nurseries. Agricultural tourism operations include the Lupa Zoo and Randall's Farm & Greenhouse, which grows vegetables and fruits and operates a large commercial farm market.

Much of the existing farmland in Ludlow is concentrated in the north end of the town, above Church Street in the Lyon-Munsing-Fuller-Rood Streets area northward to the Granby border. Other large farm landscapes are located near the Belchertown border on the east side of town at Poole and Alden Streets. Expansive agricultural vistas are also present at the Granby line on West Street.

Residents are concerned that Ludlow's farmland is fast-disappearing as a result of low-density residential development. Between 1985 and 2006, the town lost 25 percent of its remaining farmland. Because the town's farms are relatively small and marginally profitable, they are particularly susceptible to development pressure. To help address concerns about loss of farmland, in 2006 Ludlow established an Agricultural Commission. In 2008, the town passed a Right to Farm bylaw that establishes farming as a right in town and protects farmers from nuisance claims. Meanwhile, 61 percent of the town's farmland (835 acres) is enrolled under Chapter 61A.

Opportunities and Challenges

As previously discussed, Ludlow provides a critical ecological link between significant regional natural resources (the Connecticut River Valley, the Quabbin Reservoir, the Holyoke Range and the Chicopee River), and the town is blessed with abundant natural resources, productive farmland, and several large permanently protected natural areas of significant ecological value. In the future, the town's challenge is to preserve and enhance these natural resources while augmenting both the

quantity and quality of parks and other public spaces near the more densely populated parts of town. In addition, Ludlow will need to address the limited knowledge of and access to the town's open space resources, the lack of pedestrian and bicycle connections between the town's open space resources, and, of critical importance, the lack of a funding mechanisms for open space acquisition and farmland protection.

Ludlow's zoning regulations have promoted unchecked, low-density residential development. Coupled with a lack of resource protection regulations, this type of development slowly replaces the town's unprotected forests, farmland, and other open space and natural resources, which degrades water quality, wildlife habitat, rural character and scenic landscapes. However, there are many tools available to help towns protect their natural resources and prevent natural disasters such as flooding. These tools include revised dimensional/density requirements within the zoning regulations that reduce residential and commercial growth in outlying areas, Transfer of Development Rights provisions that reduce growth in outlying areas by allowing private developers to purchase development rights in rural areas and use these rights in more developed parts of town, and development regulations that require new developments to concentrate infrastructure and buildings on a smaller portion of a site in order to preserve open space, natural resources or farmland. Resource Protection Overlay Districts are another powerful protection tool for municipalities. These are special zoning districts that are laid over a town's regular zoning districts to impose different regulations that limit development and impacts to floodplain areas, river corridors, wetland buffer areas, prime farmland soils, or other significant natural resources. Finally, Green Development Performance Standards coupled with Site Plan Review provides another tool for protecting the town's natural assets.

As seen throughout the public engagement process of this master plan, protecting natural resources is an important issue to Ludlow residents. In addition to protecting these resources through zoning regulations, the town can also develop targeted strategies to protect and enhance areas with high ecological value. For example, the town could target unprotected lands that are nearby or connect the town's three major natural resource areas: the Facing Rock Wildlife Management Area, the Springfield Reservoir Area and the Westover Conservation and Wildlife Area. Properties along Fuller, Lyon and West Streets might merit special attention. In addition, Minnechoag Mountain, an unprotected area of significant habitat value, is under great threat from development; new developments and roads in this area would result in significant fragmentation and loss of quality habitat. Finally, "green corridors" can be used to create ecological connections between these large natural resource areas – these corridors allow wildlife and people the ability to move between natural areas.

In addition to zoning strategies that reduce development density and protect natural resources, Ludlow can protect and enhance areas of high ecological value by encouraging private conservation restrictions and protection under the state's APR program, and the town can also acquire properties that are of particular importance. Areas that might be considered for priority open space acquisition include the areas of high ecological value that are adjacent to the Springfield Reservoir, the areas along Southern Miller, East and Alden Streets, and properties on Minnechoag Mountain.

Within town-owned properties and easements, Ludlow can take measures to manage open space in ways that enhance their ecological value. For example, Ludlow has a Town Forest that can be managed to enhance habitat value, and properties with water resources, such as Haviland Pond, can be planted with vegetated buffers that enhance water quality. Along road corridors and on town-owned open space parcels, trees and vegetation can be planted to increase urban habitat and enhance people's experience. The town's Urban Forestry Committee could be revived to update and expand the town's tree inventory, to develop a long-range urban forestry program, and to plan and maintain the town's "urban forest."

Farmland is another critical natural resource in Ludlow. As previously mentioned, the town's farmland is being slowly lost to low-density residential development. Because the town's farms are relatively small and marginally profitable, and because they occupy zones that allow for high value residential development, they are particularly susceptible to development pressures. However, despite these development pressures agriculture continues to be a vital source of economic well-being, local food and cultural identity in Ludlow. There are still over thirty-one USDA-registered farms in the town, and many additional non-registered farms, many of which are located on Lyon Street. With an active Agricultural Commission, a concerned citizenry, and an existing agricultural tourism industry, opportunities for farmland preservation and agricultural economic development abound.

Zoning changes, open space preservation development regulations, Transfer of Development Rights provisions, and resource protection zoning districts can reduce development pressure on existing farmland and protect vital and irreplaceable resources such as Prime Farmland Soils². To promote agriculture-based economic development, the town might consider developing a special district where larger agricultural operations are clustered; farmland clustering allows farmers to share equipment and labor, while reducing nuisance-based conflicts with residential neighbors. The University of Massachusetts study conducted as part of this master planning process suggests a farm cluster at the intersection of Munsing, Church and Rood Streets. Increased agricultural tourism could help make farm operations more profitable, and would give residents and visitors more ways to support local agriculture. Finally, the town can support farmland preservation through direct purchase or purchase of development rights on critical parcels in order to keep them in agricultural use, as well as by making efforts to increase participation (currently at 61 percent of all farmland) in the state's Agricultural Preservation Restriction (APR) Program. The town could even provide the 20 percent matching funds required to put parcels into this preservation program (e.g. by using Community Preservation Act Funds). Finally, because not all farmland can be preserved, it is important for the town to prioritize conservation parcels. The map below shows priority conservation parcels resulting from the University of Massachusetts study.

In addition to preservation, providing parks, open space and greenery is critical to the livability of Ludlow's most populated areas. Through careful stewardship, urban areas can provide green space for both residents and wildlife, and can protect and enhance water quality in nearby lakes, streams, rivers and wetlands. Residents of the southern portion of town are underserved with regard to public

² Prime Farmland Soils are defined by the Natural Resources Conservation Service as soils with the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and that are available for these uses.

open space that can be reached within walking distance. These residents require more parks, access to the Chicopee River, and active recreation lands. Based on an analysis of residents' needs, the town should establish an open space acquisition program to provide an additional 145 acres of parks and playground areas, particularly in the southern part of town.

With regard to the town's existing open spaces, efforts need to be made to increase access and to educate the public about the available resources. Many residents are not aware that these resources exist, and community members have repeatedly expressed concerns about inadequate parking, access and signage. Ludlow's abundant natural areas are a resource to the town's residents; to make the most of this resource, the town should develop a program to develop new access points, trails, and signage, and should publicize the location, hours, activities and other critical information about Ludlow's open space resources. Residents have also expressed a desire for more walking trails, paved trails and biking trails. Finally, while the Springfield Reservoir is a popular recreation site, the 2006 Open Space and Recreation Plan notes that some access issues remain that still need to be resolved.

Access to open space resources can also be improved by connecting open space areas to one another. Ludlow residents have expressed enthusiasm for bike trails and greenways that connect the town's open spaces. Developing green corridors that provide multiuse trails and open space enhances both community livability and ecological quality. Figure 3 is a detailed Greenway Plan developed by the University of Massachusetts study that proposes different types of open space connections that link the town's open space resources. Tools for developing greenway corridors include open space acquisition and easements along private properties. New developments that incorporate open space preservation could offer promising opportunities for the town to negotiate greenway easements.

Last, but far from least, it is critical for the town to establish funding mechanisms to purchase priority open space and farmland parcels (e.g. farmland parcels that leave the Chapter 61 APR Program), to provide matching funds to farmers desiring to participate in the state's APR program, and to develop and maintain parks, natural areas, trails and greenways (bike and multiuse paths). Unlike many of its neighboring communities, to date Ludlow has not adopted the Community Preservation Act (CPA), a state-legislated tool that provides municipalities with a regular funding source that can be used for open space acquisition and improvement. This program uses a small percentage of local property taxes, coupled with a state match, to create a funding pool that can be used to preserve and enhance open space and historic sites, and to create affordable housing and recreational facilities. As of April 2010, this tool has been adopted by 143 of the 351 communities in Massachusetts, and has resulted in the preservation, enhancement and development of a vast number of open space and historic assets in Massachusetts communities. In addition to the CPA, the town can research Land Trust organizations that may be interested in acquiring Chapter 61 land in Ludlow, and can pursue grants such as the Massachusetts Department of Conservation and Recreation's Self Help Grant Programs.

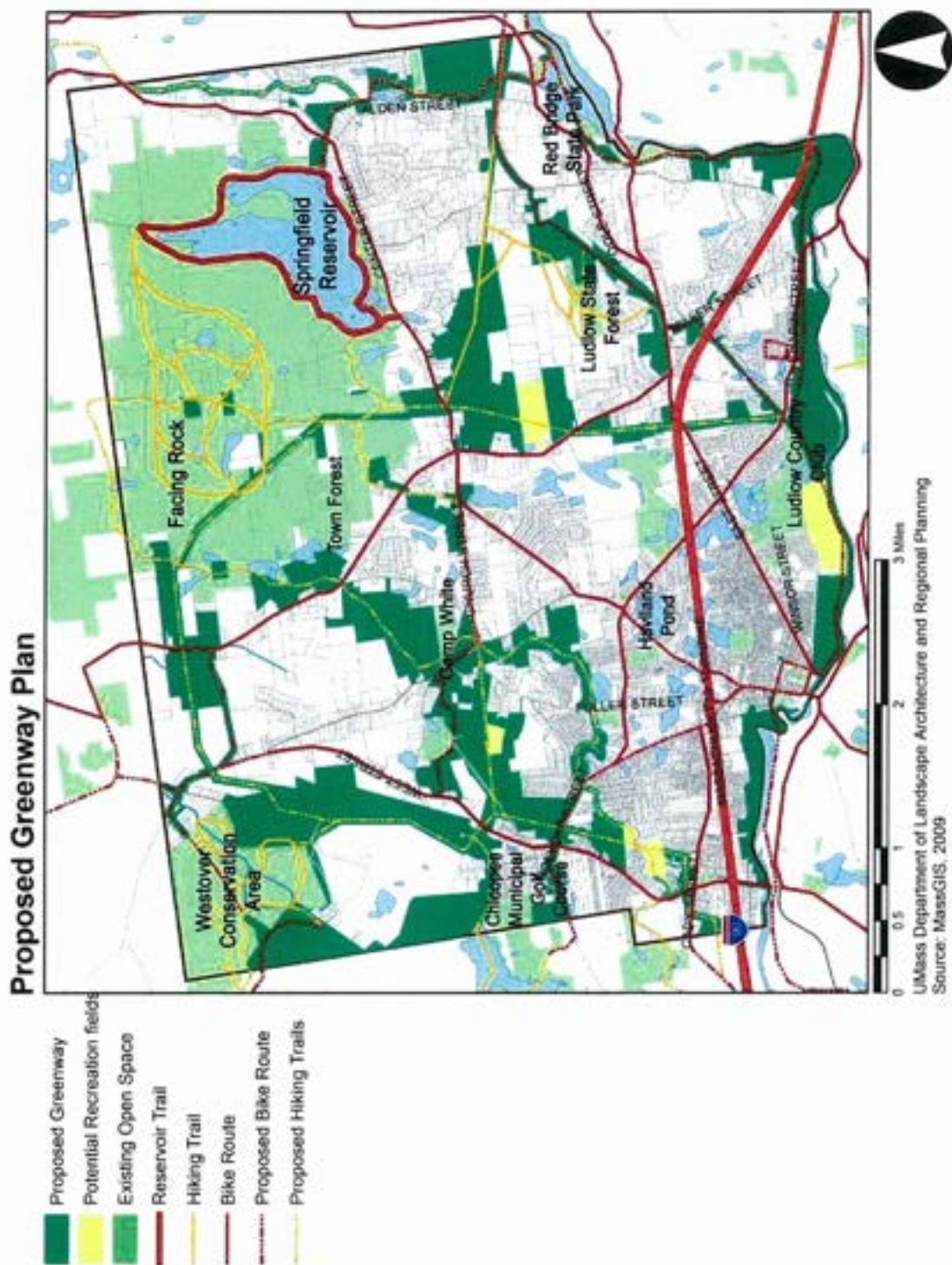


Figure 3: Greenway Plan for Ludlow

Goals and Strategies

Immediate	Completion within one year of master plan adoption
Short Term	Completion within five years of master plan adoption
Mid Term	Completion within ten years of master plan adoption
Long Term	Completion within fifteen years of master plan adoption

GOAL 1: Connect natural areas and other open space resources to each other to enhance community livability and ecological quality, and encourage alternative transportation.

Strategy 1: Compile a list of priority parcels and respective land owners for permanent protection, and work with town boards or local / state conservation groups to acquire and protect lands within these priority areas.

Responsible Party: Conservation Commission, Department of Public Works (Parks Division), Town Planner, Planning Board, Open Space and Recreation Committee, Board of Selectmen, Town Assessor

Resources Needed: Staff Time, Volunteer Time, state LAND grant, federal LWCF grant

Target Date for Completion: Short Term

Strategy 2: Develop a town-wide Greenway Plan that includes multi-use trails and natural corridors that connect and protect recreational, ecological, and cultural / historic resources.

Use the greenway plan developed by the landscape architecture and regional planning graduate students at the University of Massachusetts for this planning document as a base.

Responsible Party: Town Planner, Planning Board, Open Space and Recreation Committee, Department of Public Works

Resources Needed: Staff Time, Volunteer Time, funding for consultant

Target Date for Completion: Long Term

Strategy 3: Re-establish the Community Preservation Act Committee.

The Community Preservation Act is a law passed in September 2000 that enables Massachusetts communities to establish a local Community Preservation Fund, through a ballot referendum, dedicated to open space protection, with a provision for low and moderate income housing, and historic preservation. Revenue for the fund is generated by a local property tax surcharge of up to 3% and a state match of about \$25 million annually to participating communities.

Responsible Party: Board of Selectmen, Town Administrator, Town Planner, Housing Partnership, Conservation Commission, Historical Commission, Community Volunteers
Resources Needed: Staff time, Volunteer time, outreach and education materials
Target Date for Completion: Immediate

Strategy 4: Continue to update the town's Open Space and Recreation Plan (OSRP) every seven years in order to qualify for state and federal grants.

The state Local Acquisitions for Natural Diversity (LAND) grant and federal Land and Water Conservation Fund (LWCF) grants provide funding to communities for acquisition of open space, but the town must have an updated OSRP in order to qualify.

Responsible Party: Town Planner, Conservation Commission, Board of Selectmen
Resources Needed: Staff time, Volunteer time
Target Date for Completion: Ongoing

Strategy 5: Review the zoning bylaws and adopt regulations that will protect priority natural resources and farmland. Zoning bylaw examples include Transfer of Development Rights, Open Space Residential Development, Green Development Performance Standards, and Resource Protection Overlay Districts.

Responsible Party: Planning Board, Town Planner, Conservation Commission, Open Space and Recreation Committee
Resources Needed: Staff Time, funding for consultant
Target Date for Completion: Ongoing

Strategy 6: Reactivate the Urban Forestry Committee in Ludlow and develop a plan for managing and enhancing the town's "urban forest". This plan would describe measures for trees in public ways, town-owned land, public easements, and on private lands. For more information about urban forestry, visit the US Forest Service website at <http://www.fs.fed.us/ucf>.

Responsible Party: Board of Selectmen, Town Planner, Department of Public Works
Resources Needed: Staff Time, Volunteer Time
Target Date for Completion: Long Term

GOAL 2: Protect Ludlow's remaining agricultural lands for their importance to community identity, food production, open space, habitat, and the local economy.

Strategy 1: Update inventory of farmlands with ownership information, protection status, vulnerability, etc. Meet with owners to explain available options / importance to community.

Responsible Party: Agricultural Commission

Resources Needed: Volunteer Time

Target Date for Completion: Ongoing

Strategy 2: Review existing zoning bylaw and subdivision regulations and amend as necessary to ensure the community provides a supportive business environment for farming.

Standards to review include allowing off-site signage to farm stands, simple design standards under Site Plan Review for farming uses, require buffer zones between farmland and residential uses, allow commercial uses related to farming (e.g. farm service providers, veterinarians, equipment and supply dealers).

Responsible Party: Agricultural Commission, Planning Board, Town Planner

Resources Needed: Volunteer Time, Staff Time

Target Date for Completion: Short Term

Strategy 3: Adopt policies that provide incentives for continued agricultural use.

Consider use of tax incentives, zoning tools (special zoning district, Resource Protection Overlay District, Cluster Development, Transfer of Development Rights, etc.), CPA funds, economic and agricultural tourism development tools, and limiting public water and sewer infrastructure.

Responsible Party: Agricultural Commission, Town Planner, Planning Board

Resources Needed: Staff Time, Volunteer Time, funding for consultant

Target Date for Completion: Long Term

GOAL 3: Adopt regulations and policies that minimize impact to and protect Ludlow's water resources.

Strategy 1: Actively participate in the Connecticut River Stormwater Committee meeting and activities.

This committee comprises of 11 cities and towns in the Pioneer Valley, including Ludlow, that are regulated under federal National Pollutant Discharge Elimination System (NPDES) Phase II Stormwater Program. Membership in the Stormwater Committee allows communities to more efficiently and cost effectively meet their NPDES Public Education and Outreach requirements.

Responsible Party: Department of Public Works

Resources Needed: Staff Time

Target Date for Completion: Ongoing

Strategy 2: Conduct a residential outreach and education stormwater / urban runoff campaign that targets the landowners on Haviland Pond.

Educate landowners regarding fertilizer use on lawns and other homeowner actions that could impede the quality of water at this natural and recreational resource.

Responsible Party: Department of Public Works, Conservation Commission, US Department of Fish and Wildlife

Resources Needed: Staff Time, Volunteer Time

Target Date for Completion: Mid Term

Strategy 3: Consider adopting a River and Floodplain Protection Overlay District that minimize development impacts in sensitive river buffer and floodplain areas.

This Overlay District can increase community control over activities on riverfront areas not regulated by the Massachusetts Rivers Protection Act. The district designates a portion of the riverbank from the shoreline landward up to an established distance from each bank. It provides restrictions on uses and structures that will damage the environmental integrity of the river. Uses permitted as a matter of right should be limited to those consistent with the scenic qualities of the river, such as agricultural production, recreational uses, reasonable emergency procedures, conservation measures, and residential development on lots with frontage on an existing way.

Responsible Party: Town Planner, Planning Board

Resources Needed: Staff Time, Volunteer Time, funding for consultant

Target Date for Completion: Long Term

Strategy 4: Review existing local conservation bylaws to assess the possibility of variances to the 25' no disturb zone.

Responsible Party: Conservation Commission

Resources Needed: Staff Time, Volunteer Time

Target Date for Completion: Long Term

GOAL 4: Increase access to parks and open space resources, especially for residents that live within or near the Center Street / East Street / State Street “downtown” area.

Strategy 1: Acquire and develop new park and open space lands, targeting parcels within walking distance of populated and underserved parts of town, as well as enhanced access to the Chicopee River.

Responsible Party: Department of Public Works (Parks Division), Planning Board, Town Planner, Parks and Recreation Committee

Resources Needed: Staff Time, Volunteer Time, state LAND grant, federal LWCF grant

Target Date for Completion: Ongoing

Strategy 2: Develop a comprehensive outreach and education campaign to inform the public about existing open space and recreational resources, to improve and maintain trail networks, and to improve signage and access to these resources.

Responsible Party: Department of Public Works (Parks Division), Planning Board, Town Planner, Open Space and Recreation Committee

Resources Needed: Staff time, Volunteer time, printing costs

Target Date for Completion: Short Term

HISTORIC, CULTURAL & RECREATIONAL RESOURCES

Introduction

Ludlow residents recognize the importance of historic, cultural and recreational resources and support related activities, but specific policies are not in place to ensure that preservation remains a priority in the long term. The purpose of this chapter is to review important cultural, historical and recreational resources as well as efforts to sustain these resources over time. Evaluation of the interrelationship of various community policies as they relate to the preservation of local resources becomes necessary when preservation values are integrated into local planning.



First Meeting House

Trends & Data

History of Ludlow

Ludlow's historical development is well-documented by Karen Pilon's Ludlow (1999), Herbert McChesney's History of Ludlow (1978), Alfred Noon's History of Ludlow (1875), and the Massachusetts Historical Commission's Reconnaissance Survey Town Report: Ludlow (1982). This section of Ludlow's Master Plan offers a brief overview of Ludlow's history with a focus on existing historic and cultural resources over Ludlow's historical development.

Early Ludlow

The Massachusetts Historical Commission suspects that native settlement in Ludlow occurred and predated colonial settlement owing to Ludlow's location along the Chicopee River and its proximity to the nearby Bay Path (the native and early Anglo settler cross-state route that later became the Boston Post Route and then U.S. Route 20), but little is known about this era of Ludlow's history. Local tradition refers to two native period sites. The first is "Indian Leap"—a bluff overlooking the Chicopee River which reputedly served as an overnight refuge for a large native force led by King Philip after they destroyed Springfield during King Philip's War. The second site

was situated in the uplands of northern Ludlow at Facing Rock. At this location, a small band is said to have killed an English captive taken at Longmeadow during King Philip's War or the Indian wars of the early eighteenth century.

The Massachusetts Historical Commission wrote in 1982 that the probability of extant archaeological remains in Ludlow is high, particularly in central and southeastern Ludlow. Special efforts should be made to examine and protect the potentially rich Indian Leap site. Colonial settlement did not take place until the mid-18th century, despite this area's inclusion as part of Springfield's "Outward Commons" that was established in 1685. Ludlow had the latest settlement date of any of the present town's encompassing Old Springfield. Colonial settlement from Springfield was delayed by perceived limited agricultural potential and the barrier of the Chicopee River until the mid-18th century. Colonial settlement first occurred along or slightly north of the Chicopee River and then gradually moved north towards the present-day Ludlow Center. By the early 1770s, a small settlement node had developed in the vicinity of Ludlow Center. Ludlow incorporated as a town in 1775, but its first meetinghouse was not erected until 1783-84 because of limited finances and the outbreak of the Revolution. Ludlow Center was designated as a National Register Historic District in 1988 and the town's focus has been on preserving the historic sites from Ludlow's early history which includes: the Old Meetinghouse, Post Office, First Church, the Common, Cemetery, and old homes. Other extant historic sites from Ludlow's colonial history are scattered elsewhere in town. Few are in original condition and most have been extensively modified.

Agriculture was the mainstay of Ludlow's economy in this early era of the town's history. The vernacular landscape associated with this historic industry is now fragmented along stretches of Munsing Street, Rood Street and Lyon Streets in central Ludlow, and along Poole Street in eastern Ludlow. These roads afford scenic viewsheds of agricultural landscapes and are scenic resources for the town. The farms along upper Lyon Street also bear historical significance as they were purchased by Polish immigrants who left the mills to pursue agriculture.

Industrial Era Ludlow

Ludlow saw relatively slow growth until the establishment of the Jencks cotton mill in what came to be Jencksville in 1812 (now downtown Ludlow). The Jencks cotton mill saw quick success and became incorporated as the Springfield Manufacturing Company in the 1820s. Operations expanded and the company employed over 250 people by the mid 1830s. Surviving historic resources from this early industrial period include components of the mill complex, Put's Bridge area, Union Church of Christ (1845), and the 1811 Jencksville cemetery site on Winsor Street at the present day Masonic Lodge.

As industry and population grew, the area known as Jenksville became a village center equal in significance to Ludlow Center, and surpassed it by 1881. Ludlow's civic focus began to shift to this area of town. The Hubbard Library was built in 1889 on Center Street followed by Town Hall on Center Street in 1893. The mill went through a series of owners eventually becoming the Ludlow Manufacturing Associates. In its heyday (1870's - 1920's), the Ludlow Manufacturing Associates built, contributed land, or provided financing for a host of downtown buildings as well as additional mill and factory buildings, worker housing located in the neighborhoods adjacent to the mill complex, and parks. Most of these buildings have survived to the present, many repurposed for other uses, and they demonstrate a variety of architectural styles. The buildings and landscapes associated with the mill industry are a unique asset to Ludlow, being of local, regional and national importance. The greater Ludlow Mills area is also important for its association with the many waves of immigrants who first settled in this area of Ludlow. Workers came successively from Canada, Ireland, Scotland, Poland, Italy, Portugal and the Ukraine. For all these reasons, this area of Ludlow was recognized as a National Register Historic District in 1993.



Stevens Memorial Building on Chestnut Street, built by Ludlow Manufacturing Associates as a recreation center for their employees



Alden Street railroad abutment

Two railroad companies built lines through Ludlow during its major period of industrial growth. The Boston & Albany Athol Branch line was completed in 1873 and extended from Athol to Three Rivers to Springfield. From Three Rivers it followed the course of the Chicopee River (southwest) and at the River's bend near North Wilbraham, it turned east and headed into downtown Ludlow. The line included a spur to the Mills area. The main Boston & Albany line ran along the

southern side of the Chicopee River and included a spur over the Chicopee River into the Ludlow Mills area by 1900. The Boston & Albany Athol branch crossed East Street at its present day intersection with Hubbard Street and then continued to run east parallel with Hubbard Street until it crossed the Chicopee River just west of the downtown. The majority of the line was closed in the 1930s due to the formation of the Quabbin Reservoir. Sections of this former rail line is still visible on topographic maps. Most of the line's railroad easements have been sold to the public. The town of Ludlow initiated another round of easement sales in early summer 2010. The Boston & Albany main line (now CSX) along the southern side of the Chicopee River is still an

active freight rail line and maintains ownership of the railroad spur over the Chicopee River and into the Ludlow Mills area.

The Hampden Railroad Line was completed in 1912. This line ran east-west between Bondsville and Springfield through Ludlow. It was built to be an inland connector between the New Haven line and 3 miles off the usual trip from Springfield to Boston. This line never experienced a single train on its tracks and was sold for scrap metal by the early 1920s. The Mass Turnpike acquired a large portion of this railroad bed for the construction of Interstate 90 in the 1950s. The northern extension of this rail line bed is also visible on a topographic map of East Street. In addition several remaining bridge abutments can be viewed while tracing the route between East Street in Ludlow and the junction with the Central Mass Railroad Branch of the Boston & Main line in Palmer near Forest Lake. Although privately owned, unused sections of these two rail lines exist in some areas in town and could lend to the future development of walking or biking trails.

20th Century Ludlow

Three key events occurred in the 20th century that altered the course of development. The first was the construction of the Westover Air Force base in 1939, which initially limited development activity in the northwestern part of town. Later the town re-zoned land adjacent to the air force base for industrial uses, and, as a result, saw the creation of new businesses and jobs in this area of town.

The second major event was the construction of the Massachusetts Turnpike in 1957 through the southern half of Ludlow. Appropriating the former Hampden Railroad line in the western and central portions of Ludlow, the interstate highway divided the commercial and civic center from the rest of town and limited access to this area of Ludlow from Fuller Street, Center Street, and Chapin Street—two developments that are keenly felt today. The completion of the Interstate and subsequent on-ramp to the Turnpike from Ludlow helped to usher in a new period of growth. Ludlow's population doubled between 1950 and 1970, from approximately 8,600 residents to 17,500 residents. New residential, commercial, and industrial development occurred on both sides of the Turnpike, a pattern of development that has continued to the present.

The third major event was the decline and eventual closing of the Ludlow Manufacturing Associates mill operations. Ludlow's economy in the early 20th century continued to be dominated by manufacturing at the Ludlow Mills. During Ludlow Manufacturing Associates' peak business years (1920s), the work force at Ludlow numbered more than 4,000 employees. Despite a program of product diversification, their operations never regained its former size and by the mid 1940s, the number of employees had shrunk to 1,200 and by the 2000s it was 100. A North

Carolina company purchased the company in 2005 and moved its operations to North Carolina. The historic mill complex is now in the process of being redeveloped for a mix of light industrial, commercial, and residential uses.

Local Historic, Cultural and Recreational Resources

Historic Resources

There are two National Register Historic Districts in Ludlow. The Ludlow Center Historic District, along Center, Church, and Booth Streets, includes seventeen properties. The Ludlow Village Historic District, located in downtown Ludlow and includes the Red Bridge Power House and Dam property, contains 93 properties. There are no properties outside those in the two historic districts individually listed on the National Register of Historic Places.



*Ludlow Center Historic
District sign*

Listing on National Register of Historic Places signifies that the area or property is important to the history of the community, state, or nation. Owners of income-producing properties listed on the National Register of Historic Places (such as a rental residential structure or commercial building) are eligible for a 20% investment tax credit for certified historic rehabilitation of their property. Listing a property on the National Register or establishing a National Register Historic District does not ensure that the area or property will be protected from incompatible changes. Communities interested in protecting and promoting local historic resources

typically establish local historic districts, adopt demolition delay bylaws, and adopt sign guidelines. Local historic districts are established by local ordinance and usually include a set of design requirements to prevent inappropriate changes to existing buildings and guide the design of new buildings. The Ludlow Historical Commission created a local historic district study committee several years ago, but this project fell by the wayside due to a lack of volunteers.

The Ludlow Historical Commission is a five member appointed board charged with preserving, protecting, and developing the historical and archeological assets of the Town of Ludlow. The Historical Commission works cooperatively with other town boards and represents Ludlow's historic interests at development meetings. They host small programs such as tours of the Ludlow Center Historic District and the Ludlow Senior Center (old Ludlow High School) for girl scouts, high school reunion classes, and other interested groups or "quilt documentation days." The Historical Commission makes available four publications on Ludlow history, which are available at the Town Clerk's Office. The books are as follows: *A History of Ludlow,*

Massachusetts 1774-1974, Images of America: Ludlow, Remembering World War II, and Color the ABC's of Ludlow. The Commission's primary focus over the last several years has been the preservation and restoration of the First Meeting House, which has received support from the Board of Selectmen, the Department of Public Works, the First Meeting House Committee and its companion non-profit the Friends of the First Meeting House.

The town's historic resource inventory has not been updated in over twenty years, which means that there are likely many more historically significant properties in town that need to be identified. Historic inventory forms are the foundation of municipal historic preservation efforts and the basis for future district or property nominations to the National Register of Historic Places. Graduate students in the Regional Planning and Landscape Architecture Department at the University of Massachusetts Amherst conducted a preliminary town-wide historic and cultural resources inventory in the fall of 2009. Maps portraying these resources are located in this chapter, and they can be used as a basis for the Ludlow Historical Commission to undertake a more comprehensive historic resources inventory. Ludlow lacks a municipal historic preservation plan to guide future activities and would benefit from town funding to create one.

Several important historic preservation projects were initiated in the 2000s:

- East Street Streetscape Project: The Town of Ludlow applied for a grant from the Community Development Block Grant (CDBG) program in 2002 to reconstruct a section of East Street, including water line replacement and installation of new sidewalks, benches, street trees, light fixtures, trash receptacles, and planters, as part of an effort to revitalize this historic business corridor. Work occurred from 2003 through 2006.
- Sign & Façade Program: The Town of Ludlow received a \$300,000 Ready Resource grant in 2002 to provide financial assistance to businesses along East Street for work on signs, facades, and awnings. The program required a private match from participating businesses to qualify for a grant. The program resulted in 12 new signs along East Street, 10 facades, and 4 new awnings. Work on these projects is completed.
- First Meeting House: The First Meeting House, located in the Ludlow Center Historic District, has been an ongoing renovation project since 2000. The Board of Selectmen appointed a nine-member First Meeting House Committee to oversee the maintenance of the building and premises. Through the support of the Board of Selectmen, the Department of Public Works, and the Historical Commission as well as funds raised by the Friends of the First Meeting House (a private non-

profit group), the building is now available for meetings and other reserved functions.

- Stevens Memorial Building: HAP Housing, a regional affordable housing non-profit agency out of Springfield, is working with the town of Ludlow to convert this former Boys and Girls Club that was originally built by the Ludlow Mill Company into approximately 28 units of rental housing for seniors. HAP Housing is currently assembling financing from various sources for this project.
- Ludlow Mills Complex: The Westmass Area Development Corporation unveiled a redevelopment proposal for this historic mill complex in 2008, which includes repurposing many of the complex's sixty-six buildings and new construction on the property's 170 acres. At this writing, Westmass has yet to purchase the property.

Cultural Resources

Present day cultural resources include the many churches, ethnic centers, clubs and restaurants that serve Ludlow's residents, representing and preserving their heritage. Several of these sites lie within or adjacent to the Ludlow Village Historic District. Other culturally important places for the town are the Ludlow Fish and Game Club where the town's annual celebration takes place, Lusitano Stadium, the town Gazebo, Lupa Zoo, Randall's Farm, Senior Center, Exit 7 Theater, the Indian Leap Christmas tree bonfire site, Indian Leap rowboat launch site and Minechoag fire tower. Major annual cultural events include:

- Celebrate Ludlow: An annual free summer celebration with food, music, activities, and fireworks held at the Ludlow Fish & Game Club since 1999. An appointed sixteen member town committee coordinates this popular event.
- Memorial Day Celebration: An annual Memorial Day parade is held in downtown Ludlow.
- Our Lady of Fatima Festival: Our Lady of Fatima Festa is an annual four day celebration held in honor of the Virgin Mary and is noted for being one of the most significant Portuguese-American cultural events in the country. It draws thousands of visitors to activities such as the outdoor Mass, candlelight procession and musical performances.

The Ludlow Cultural Council functions as the local subset of the Massachusetts Cultural Council. Each year the Ludlow Cultural Council offers small local grants to support programs in the arts, humanities, and interpretive sciences in Ludlow. The Council received \$7,270 in funding to award locally in FY 2010 and, with this funding the Council awarded seventeen grants to local organizations ranging in funding from \$250 to \$1,500. Nine of these programs were music-related events. In addition to the usual programs the council supports, in 2010 it hopes to continue sponsorship for summer concerts at the Ludlow Gazebo. Council members work with approved applicants and the Ludlow Parks Department to schedule dates. Massachusetts Cultural Council grant applications can be found at www.massculturalcouncil.org.

Recreational Resources

Recreational resources consist of existing open space as well as buildings and sites where recreational activities occur. Many Ludlow residents participate in active recreation activities. Soccer, in particular, is a major sport in Ludlow. Lusitano Stadium, a 3,000 seat arena in downtown Ludlow, is home to the Western Mass Pioneers semi-professional team as well as private youth and adult leagues.

The Ludlow Recreation Department offers a few recreational and cultural programs for Ludlow residents such as an Afterschool Program for grades K-5, a Summer Program for ages 4-12, and an Easter Egg Hunt for ages 3-8. The Recreation Department also hires Lifeguards for Haviland Pond and the State Pool (starting in 2010). The day to day operations of the Recreation Department are managed by a part-time office assistant out of the Whitney Park office. Executive authority rests with the Recreation Commission which meets the second and fourth Tuesday of every month. Due to a limited municipal budget, all sports are organized through associations formed by parents. The Recreation Department assists youth sports by maintaining the practice and game schedule for all playing fields. The Town of Ludlow also charges the Recreation Department with renting the Gazebo for events and publicizing municipal activities that occur at the Gazebo such as free concerts.

The Ludlow Community Center/Randall Boys & Girls Club provides the majority of year round youth and family services, programs and activities through an effective partnership between the public and private sector. This organization has been in existence for over 100 years. It started at the Stevens Memorial Building, also known as the "Rec," owned by the Ludlow Mills, then as the Ludlow Community Center and then as the Boys & Girls Club.

Overall, the master planning process showed a concern about the quality and quantity of playing fields in town. Ludlow residents also expressed need for additional leisure activities for young people outside of organized sports and cited activities such as a skate park, community center, and small music venues with open

mic nights and local band performances. Residents also stated that they would like more adult recreation opportunities, especially for seniors. The idea of providing recreational access to the Chicopee River through the redevelopment of the Ludlow Mills property has been a popular concept among residents. Residents also expressed a high level of interest in the future development of trails and bike paths.

The Open Space and Natural Resources Chapter discussed recreation as it related to open space and it noted that Ludlow lacks a comprehensive means of publicizing these resources, connections between existing resources are absent; existing public open space lands lack marked trail systems, and there is limited parking at almost all recreational areas in town. The Chapter also suggested that the southern portion of town is underserved and would benefit from additional parks and playgrounds as well as established connections from the downtown to existing recreation areas through on street and off street trails. There is also the potential route for a bike path that connects various historic, cultural, and recreational resources to each other.

Opportunities & Challenges

The town of Ludlow has many historic and cultural assets dating from before the town's incorporation in 1774 to the present day that add beauty and vitality to the town, making Ludlow a special place to live. Ludlow residents recognize the importance of historic preservation, as demonstrated by the support of such activities in the community survey, stakeholder interviews, and visioning workshop, but specific policies are not in place to ensure that preservation remains a priority in the long term. Ludlow lacks a municipal historic preservation plan to guide future activities and would benefit from town funding to create one. If protected and preserved, Ludlow's historic and cultural resources represent an opportunity for the town of Ludlow to define itself as a tourist destination even as the town grows and develops.

Many cultural and historic resources associated with Ludlow's history are in existence, but they are not protected by local regulation such as a local historic district bylaw, demolition delay bylaw, or sign guidelines. The Ludlow Historical Commission cited lack of volunteers as its main challenge to creating a municipal preservation plan, updating its historic resource inventory, and identifying potential local historic districts. The Ludlow Historical Commission hopes that this master planning process elicits a revived interest in historic preservation activities. The Ludlow Historical Commission shines in its efforts to educate school children. They should be encouraged to continue working with the schools to create classroom history projects, produce multi-media historic documentaries, hold field trips to historic sites, buildings, and locations. Adoption of the Community Preservation Act would allow a dedicated stream of funding for historic preservation activities, including the development of preservation plans, historic inventories, guidebooks

and walking tours as well as the money for the stabilization and preservation of important historic resources, including buildings and documents.

Ludlow residents acknowledge the existence of the traditional village center as well as historic downtown, and many share memories of it, but most seem to not have much interaction with it today. Downtown Ludlow is one of the Town's greatest assets and every effort should be made to encourage additional cultural, historical, and recreational events and activities in the downtown to promote use of this significant area. Some Ludlow residents stated in this master planning process that people no longer visit downtown because there is not enough offered in terms of both retail and culture. Others expressed dissatisfaction with the lack of parking and unfavorable aesthetics.

The Town of Ludlow had a sign and façade program in the early 2000s that was funded through Community Development Block Grant (CDBG) funding and the town believed this program was successful in enhancing the aesthetics of the East Street corridor. Community Development Block Grant (CDBG) funds are federal dollars that are distributed annually by the state to complete housing and economic development projects. The challenge to obtaining future CDBG funds is Ludlow's high median household income, as funding is typically awarded to communities that can demonstrate a high level of need. However, the amount of available funding and application requirements for the CDBG program do vary from year to year. For this reason, the town should continue to identify potential projects and apply for these funds. To remedy parking shortages, the Board of Selectmen should carefully review downtown tax title takings and other downtown property sales for the future creation of one or more parking lots. Other strategies to enhance the downtown include creating a brochure or website that identifies existing restaurants, shops, and historic sights; developing a comprehensive marketing scheme that "brands" the downtown with a distinct image; and funding public art (murals, sculpture, decorated benches, and trash receptacles) that corresponds to the downtown image.

Residents indicated that they would like more cultural activities to occur downtown. The town gazebo, Exit 7 Theater, Senior Center, downtown restaurants, and Lusitano stadium are existing places where people gather, but residents expressed that the downtown needs additional public places to sit down and relax aside from Memorial Park, which is poorly maintained and has unusable picnic tables. The idea of providing recreational access to the Chicopee River through the redevelopment of the Ludlow Mills property has been a popular concept during the public outreach process. Town residents and municipal officials should continue to support the provision of open space and access to the Chicopee River as this project moves forward. Many interviewees mentioned the potential for a river walk, canoe or kayak launch.

Ludlow strongly identifies itself as a soccer town and it hosts a semi-professional team, the Western Mass Pioneers. Some Ludlow community members believe the town lacks enough facilities for other sports due to the demonstrated strong interest and participation in soccer. To strike a balance between competing needs, the Town should create fields that can accommodate a variety of uses. The Town of Ludlow, as well as private groups, have added fields and facilities over the years but the demand has managed to outpace the supply. As a result, existing fields are heavily used and many are unable to completely rejuvenate between seasons leading to annual maintenance issues. Ludlow residents cited the need for additional fields during the master plan's public outreach phase as a way to create more playing opportunities and to remedy persistent maintenance issues. The challenge will be identifying property for additional fields and then identifying funding for ongoing maintenance of new fields.

Ludlow residents also expressed a need for additional leisure activities for young people outside of organized sports and cited activities such as a skate park, community center, and small music venues with open mic nights and local band performances. Residents also stated that they would like more adult recreational opportunities, especially for seniors. The town's challenge to creating additional passive and active recreational opportunities is that a variety of groups offer programs and maintain facilities in Ludlow. The Ludlow Recreation Commission could consider hosting a forum that brings various public and private entities together to outline a comprehensive recreation strategy.

The opportunity in this discussion is that town residents clearly want more recreational and cultural facilities, as well as knowledge of existing facilities. For example, over sixty percent (60%) of survey respondents stated that they would utilize existing facilities more often if the town provided information regarding location and access. Ludlow would benefit from an enhanced town website that publicizes existing historical, cultural, and recreational resources as well as local businesses. This would entail the expenditure of town funds, but would result in a measurable economic and community benefit if such resources and businesses are frequented more often. Ludlow may benefit from creating a part-time town staff position to bring all of these disparate historical, cultural, and recreational elements together and act as a staff liaison to existing entities in town.

Goals and Strategies

Immediate	Completion within one year of master plan adoption
Short Term	Completion within five years of master plan adoption
Mid Term	Completion within ten years of master plan adoption
Long Term	Completion within fifteen years of master plan adoption

GOAL 1: Preserve and protect Ludlow's historic and cultural resources.

Strategy 1: Update Ludlow's historic resources inventory and list appropriate resources on the National Register of Historic Places, as identified by the Historic Commission.

The Massachusetts Historical Commission offers a 60/40 matching grant program to support historic preservation planning activities in communities throughout the state. This grant is extremely competitive. For Fiscal Year 2009, MHC anticipated awarding five project grants to qualified Certified Local Government (CLG) applicants and five project grants to non-CLG applicants.

Responsible Party: Historical Commission, Board of Selectmen

Resources Needed: Volunteer time, funding for consultants, property owner involvement

Target Date for Completion: Ongoing

Strategy 2: Develop a municipal historic preservation plan.

Responsible Party: Historical Commission, Planning Board, Board of Selectmen

Resources Needed: Volunteer time, funding for consultants

Target Date for Completion: Long Term

Strategy 3: Adopt Downtown Design Guidelines that portray architectural features the Town of Ludlow wishes to promote in its downtown area.

Responsible Party: Planning Board, Historical Commission

Resources Needed: Staff time, Volunteer time

Target Date for Completion: Mid Term

Strategy 4: Encourage schools to create classroom history projects and produce multi-media historic documentaries (including written works)

Responsible Party: Historical Commission, Ludlow Public Schools, Ludlow Community Television

Resources Needed: Volunteer time

Target Date for Completion: Ongoing

Strategy 5: Develop oral histories that document resident memories of Ludlow's past.

Responsible Party: Historical Commission, Ludlow Public Schools, Ludlow Community Television

Resources Needed: Volunteer time

Target Date for Completion: Short Term

Strategy 6: Provide continued support to local developers for the redevelopment of the Ludlow Mills project and other significant properties in town.

Responsible Party: Board of Selectmen, Town Administrator, Town Planner, Historical Commission, Economic Development Board

Resources Needed: Staff time, Volunteer time

Target Date for Completion: Ongoing

Strategy 7: Re-establish the Community Preservation Act Committee.

The Community Preservation Act is a law passed in September 2000 that enables Massachusetts communities to establish a local Community Preservation Fund, through a ballot referendum, dedicated to open space protection, provision of low and moderate income housing, and historic preservation. Revenue for the fund is generated by a local property tax surcharge of up to 3% and a state match of about \$25 million annually to participating communities.

Responsible Party: Board of Selectmen, Town Administrator, Town Planner, Housing Partnership, Conservation Commission, Historical Commission, Community Volunteers

Resources Needed: Staff time, Volunteer time, outreach and education materials

Target Date for Completion: Immediate

GOAL 2: Promote Ludlow's unique cultural, historical and recreational assets.

Strategy 1: Encourage town residents to serve on town committees and boards, such as the Historical Commission and Cultural Council.

Responsible Party: Town Administrator, Board of Selectmen

Resources Needed: Staff time, Volunteer time

Target Date for Completion: Ongoing

Strategy 2: Establish a "history and culture" webpage on the town website and link to town-based organizations and calendars.

Responsible Party: Board of Selectmen, Town Administrator, IT Department, Historical Commission

Resources Needed: Staff time, Volunteer time

Target Date for Completion: Short Term

Strategy 3: Encourage the Historic Commission to continue to hold field trips to historic sites, buildings, and locations.

Responsible Party: Historical Commission, Board of Selectmen, Town Administrator, Town Historian

Resources Needed: Staff time, Volunteer time

Target Date for Completion: Ongoing

GOAL 3: Promote the historical and cultural assets of the Center Street / East Street / State Street "Downtown" area.

Strategy 1: Establish a Downtown Ludlow Business Association, Business Improvement District, (or similar type organization) to promote businesses and activities in the downtown.

Responsible Party: Town Administrator, East of the River Chamber of Commerce

Resources Needed: Staff time, Volunteer time, local business support

Target Date for Completion: Short Term

Strategy 2: Market downtown Ludlow by establishing a comprehensive identification and way-finding system that creates a strong identity for Ludlow that uses signature landmarks and gateways as well as consistent sign design.

Responsible Party: Ludlow Downtown Business Association, Planning Board, East of the River Chamber of Commerce, Department of Public Works

Resources Needed: Staff time, Volunteer time, funding for consultants/printing

Target Date for Completion: Long Term

Strategy 3: Identify downtown's restaurants, shops, and historic sights for residents and visitors alike on town website and printed media.

Responsible Party: Ludlow Downtown Business Association, East of the River Chamber, IT Department, Historical Commission

Resources Needed: Staff time, Volunteer time, funding for consultants/printing

Target Date for Completion: Mid Term

Strategy 4: Fund public art such as murals, sculpture, decorated benches, and trash receptacles.

Responsible Party: Ludlow Downtown Business Association, Board of Selectmen, East of the River Chamber of Commerce, Ludlow Cultural Council

Resources Needed: Staff time, Volunteer time, grant from Mass Cultural Council

Target Date for Completion: Long Term

Strategy 5: Encourage additional cultural and historic events and activities in the downtown to promote use of this historic space.

Responsible Party: Ludlow Downtown Business Association, East of the River Chamber, all Town Departments, all Town Boards & Committees

Resources Needed: Staff time

Target Date for Completion: Ongoing

Strategy 6: Turn riverfront areas into lively public and cultural destinations linked together by pedestrian and bike connections, creating vibrant space for cultural events, activities and public art.

Responsible Party: Board of Selectmen, Planning Board, Conservation Commission, Recreation Commission, Ludlow Downtown Business Association, East of the River Chamber of Commerce, riverfront property owners

Resources Needed: Staff time, Volunteer time, Property owner support

Target Date for Completion: Ongoing

GOAL 4: Develop Additional Recreation Opportunities

Strategy 1: Establish an annual recreation forum that brings together the various public and private entities that offer recreational activities.

Responsible Party: Recreation Commission, Board of Selectmen, Planning Board, Department of Public Works, Ludlow Boys & Girls Club, Springfield Water Department

Resources Needed: Staff Time, Volunteer Time, funding for consultant

Target Date for Completion: Mid Term

Strategy 2: Conduct a study to determine the feasibility of reinstating the Ludlow Parks and Recreation Department to oversee all parks and recreation activities in town.

Responsible Party: Board of Selectmen, Recreation Commission, Recreation Department, Department of Public Works, Public Works Commission

Resources Needed: Staff Time / Volunteer Time

Target Date for Completion: Long Term

Strategy 3: Continue to update the town's Open Space and Recreation Plan (OSRP) every seven years in order to qualify for state and federal grants.

Responsible Party: Town Planner, Conservation Commission, Board of Selectmen

Resources Needed: Staff time, Volunteer time

Target Date for Completion: Ongoing

Strategy 4: Develop a town-wide Greenway Plan that includes multi-use trails and natural corridors that connect and protect recreational, ecological, and cultural/historic resources. Use the greenway plan developed by the landscape architecture and regional planning graduate students at the University of Massachusetts for this planning document as a base.

Responsible Party: Town Planner, Planning Board, Open Space and Recreation Committee, Department of Public Works

Resources Needed: Staff Time, Volunteer Time, Consultant

Target Date for Completion: Long Term

Strategy 5: Develop a comprehensive outreach and education campaign to inform the public about existing open space and recreational resources, to improve and maintain trail networks, and to improve signage and access to these resources.

Responsible Party: Department of Public Works (Parks Division), Planning Board, Town Planner, Open Space and Recreation Committee,

Resources Needed: Staff time, Volunteer time, printing costs

Target Date for Completion: Short Term

Strategy 6: Increase access to the Springfield Reservoir by extending open hours and publishing Reservoir information on the web

Responsible Party: Department of Public Works, Springfield Water and Sewer Commission, Open Space and Recreation Committee

Resources Needed: Staff Time, Volunteer Time

Target Date for Completion: Immediate

Strategy 7: Identify land where Ludlow residents can walk and play with their dogs (dog park) and then publicize information about this resource.

Responsible Party: Community Volunteers, Recreation Commission, Department of Public Works, Planning Board, Board of Selectmen, IT Department

Resources Needed: Staff Time, Volunteer Time

Target Date for Completion: Short Term

TRANSPORTATION

Introduction

Transportation concerns comprised some of the major issues identified by Ludlow residents as part of the Master Plan development process. This is not surprising as the Town of Ludlow provides convenient access to Interstate 90 via Exit 7 as well as Interstate 291 via Burnett Road in the City of Chicopee. Ludlow also provides many alternate routes to the Cities of Chicopee and Springfield for the surrounding communities of Belchertown, Granby, Palmer and Wilbraham. High volumes of traffic, excessive travel speeds, bicycle and pedestrian safety, and congestion along major roads and bridges were all identified as contributing factors that can have an

adverse impact on mobility in the town.



Center Street/Route 21 at Putts Bridge

This chapter includes a brief outline of the existing transportation conditions in the Town of Ludlow. The current travel patterns and trends are analyzed and major routes were identified. A review of planned roadway improvements and development projects was completed to identify transportation needs that may be

addressed in the near future. The extent of the existing transit service and need for expanding the same was also examined. An inventory of all the signalized and multi-way stop intersections was completed to examine the capacity and efficiency of the existing control measures. All sidewalks in Town were inventoried to identify gaps in the existing pedestrian system. This chapter also provides an outlook of the existing congestion and safety concerns and takes into consideration public input provided during the master plan survey process to shape goals and strategies that improve future transportation conditions in the Town of Ludlow. Figure 1 highlights the transportation network in Ludlow and summarizes traffic volumes collected at different locations in October 2009.

Trends and Data

Transportation Network in Ludlow

Ludlow is a mostly urban community with a roadway network of approximately 132 miles. Nearly 68 percent (90.2 miles) of all roadway miles are locally maintained by the Ludlow Department of Public Works. The Massachusetts Department of Transportation's Highway Division maintains Interstate 90, a total of 6.63 miles within Ludlow. Approximately 36 miles are eligible for federal aid. The transportation system is more densely developed in the southwestern region of the Town particularly south of Interstate 90.

The Town by itself has few major trip generators but traffic volumes are comparatively higher on some major roads because of commuter traffic which uses the local roadway network in Ludlow to access Interstate 90, Interstate 291 and the cities of Chicopee and Springfield. In the transportation visioning session during the master plan development process, residents expressed concerns related to high commuter traffic volume, limited capacity of intersections, high speeds and other safety related issues for local bikers and pedestrians. PVPC identified the routes used by commuter traffic from neighboring towns for the purpose of studying the through traffic flow and any issues arising from it. These routes are referred to as 'Corridors of Concern' and it is essential that these roads are well maintained and regularly monitored to ensure safe and efficient movement of traffic through the Town. The commuter traffic pattern and volume also influences commercial development and the evolving trends in land use and zoning.

From North (Granby, South Hadley): Commuter traffic from Granby and other communities to the north of Ludlow uses *West Street* or *Fuller Street-Road Street-Center Street* corridors to access Interstate 90, Interstate 291, and Springfield.

From East (Belchertown, Wilbraham): Commuters from Belchertown use *Center Street (Route 21)* to travel across Ludlow for accessing Interstate 90 and use *Center Street (Route 21)-Church Street-Fuller Street-Kendall Street-Holyoke Street* for traveling to and from Chicopee and Springfield. Commuters from Wilbraham use *Red Bridge-East Street-Center Street* to reach Interstate 90. Commuters from Wilbraham and Springfield also use the *Cottage Avenue Bridge-Chapin Street* corridor to get to Interstate 90.

From South (Springfield): The *Ludlow Avenue (Putts Bridge)-Center Street* corridor is one of the most congested corridors in the Town which caters to high volumes of traffic traveling in both directions and also has dense residential and commercial development. A high volume of passenger cars and trucks use the Putts Bridge to travel to and from Springfield throughout the day.

From West (Chicopee): Traffic to and from the exits of Interstates 90 and 291 in Chicopee uses *Holyoke Street-West Street* and *Holyoke Street-Kendall Street-Church Street-Center Street* corridors to travel across Ludlow to access Granby and Belchertown. This traffic also uses *Shawinigan Drive- West Street* to access the Indian Orchard neighborhood in Springfield or via *Shawinigan Drive-West Avenue- Center Street*.

Most of the local trips in the town are destined for major commercial developments along Center Street and East Street in the southwest part of the Town. Residential clusters have developed along the side streets of East Street creating a high density of mixed land use. These commercial centers and residences attract automobile, pedestrian and bike trips which are generated by the local business in this section. Center Street and the Putts Bridge are two of the top congested locations in Ludlow.

Existing Traffic and Transportation Conditions

Traffic in a neighborhood is greatly influenced by the type of development and density. Ludlow has dense residential and commercial development in the southern part of the Town along the Springfield city line and in the vicinity of Interstate 90/Exit 7. The traffic conditions in this area differ than those in the northern region of the Town and in rural areas of Town along the border with Granby and Belchertown. The following presents more information on existing transportation conditions in the Town of Ludlow.

Volume: Traffic Volumes collected at different locations in Ludlow in October 2009 are summarized in Table 1 and depicted on a map in Figure 1. Average Daily Traffic (ADT) volumes were compiled for a typical weekday. All ADT volumes were factored to represent Average Annual Daily Traffic (AADT) levels. As traffic volumes tend to fluctuate over the course of the year, the Massachusetts Department of Transportation (MassDOT) develops traffic volume adjustment factors to reflect monthly variations. These factors were examined to determine how traffic conditions in the study area compared to average monthly conditions in accordance with the month in which the traffic counts were conducted.

Center Street, East Street, Chapin Street and Holyoke Street are the streets with higher traffic volume in the Town. As mentioned earlier these streets carry high volumes of commuter traffic. East Street and Center Street also have dense commercial development. Appendix G depicts the history of traffic volumes at locations in the town where two or more traffic volume counts were collected. This information is useful to compare with the existing traffic volumes to determine the

extent of traffic growth over time. The lack of consistent data collection schedules however precludes the development of trends for this data.

Congestion: To determine the level of congestion on a roadway, the actual automobile travel time experienced in the field is used versus the hypothetical free flow travel time along the roadway. A perfect value of 1 for this factor indicates no congestion. As the value increases above 1, the congestion along the roadway increases.

Three corridors in Ludlow are included as a part of the regional Congestion Management Process. The description of these corridors and their travel time indices are summarized in Table 2. The latest travel time runs for the corridors show travel time index values greater than 1. This indicates that there is some level of congestion along these roadways. The Center Street (Route 21) corridor was included in the analysis of top congested corridors conducted by PVPC in 2010 and it ranked amongst the moderately congested corridors in the region. As mentioned earlier, Center Street is used by commuter traffic and is also the street with the most commercial businesses in Ludlow. The Town of Ludlow has initiated the Center Street reconstruction project which aims to reduce congestion along this corridor.

Table 1: Traffic Volumes at different locations

Location	Average Weekday Volume
West Street south of Nash Hill Road	9,361
West Street south of Shawinigan Drive	8,735
Holyoke Street at the Chicopee City Line	13,457
Cady Street at the Chicopee City Line	2,884
Kendall Street east of Holy Cross Circle	3,803
Fuller Street south of Pine Cone Lane	3,304
Center Street at the Belchertown Town Line	4,363
Center Street north of Stivens Terrace	14,570
Center Street south of Winsor Street	14,510
Church Street between Center Street and Munsing Street	3,566
Miller Street south of Chapin Street	7,297
East Street west of Sewall Street	11,295
Cherry Street between Fuller and Center Street	5,761
Chapin Street east of Chapin Circle	11,023
Moore Street south of Center Street	909
Poole Street east of Alden Street	1,448
Winsor Street east of Center Street	3,188

Source: PVPC

Travel Speed: Travel speed data was collected at all traffic count locations to establish bins of data to summarize the ranges in which vehicles were measured to be traveling. Speed data was also used to calculate the '85th percentile' speed for each direction of roadway. The '85th percentile' speed is defined as the speed that 85 percent of all vehicles are traveling at or below. By comparing the 85th percentile speed with the posted speed limit, a community can determine how well the traffic is complying with the current posted speed limits and whether or not an increase in the enforcement of the posted speed limit is required. Travel speed data is summarized in the Table 3.

During the stake holders' interview sessions some participants voiced their concern over high travel speeds on Center Street (Route 21) traveling towards Belchertown and on Fuller Street traveling towards Granby. The 85th percentile travel speeds of the vehicles on these streets are higher than the posted speed limits. Appendix G summarizes the break-up of the percentages of vehicles traveling within different speed ranges on a typical week day at these locations. This can give an idea of the exact percentage of vehicles traveling above the speed limit. It was observed that nearly 90% of vehicles were traveling above posted speed limits on streets such as Holyoke Street, Cady Street, and Center Street. More than 90% of vehicles were also observed traveling above 35 mph along Church Street and Poole Street. Traffic calming measures such as enhanced enforcement, narrowing down travel lanes or posting spot speed measuring devices such as 'Speed Trailers', may be suitable for some of these streets.

Table 2: Travel Time Index for determining congestion along different roadways in Ludlow

Corridor Descriptions	Travel Time Index
1. Beginning at the intersection of Center Street (Route 21) and Road Street traveling southbound on Center Street (Route 21) eastbound on East Street and ending at the intersection of East Street and Owens Way.	1.43
2. Fuller Street from Route 33 (Chicopee) to Shawinigan Drive to West Ave ending at Center Street	1.94
3. Chapin Street from Holyoke Street to Boston Road via Cottage Street (Wilbraham)	1.41

Table 3: Travel Speeds at different locations

Location	Northbound/Eastbound		Southbound/Westbound	
	Posted Speed Limit	85th Percentile Speed	Posted Speed Limit	85th Percentile Speed
West Street south of Nash Hill Road	45 mph	43 mph	35 mph	44 mph
West Street south of Shawinigan Drive	30 mph	33 mph	Not Posted	36 mph
Holyoke Street at the Chicopee City Line	35 mph	45 mph	30 mph	45 mph
Cady Street at the Chicopee City Line	Not Posted	40 mph	30 mph	44 mph
Kendall Street east of Holy Cross Circle	30 mph	40 mph	30 mph	39 mph
Fuller Street south of Pine Cone Lane	25 mph	48 mph	Not Posted	45 mph
Center Street at the Belchertown Town Line	35 mph	47 mph	40 mph	49 mph
Center Street north of Stevens Terrace	Not Posted	39 mph	Not Posted	40 mph
Center Street south of Windsor Street	30 mph	32 mph	Not Posted	31 mph
Church Street between Center Street and Munising Street	Not Posted	44 mph	Not Posted	43 mph
Miller Street south of Chapin Street	35 mph	40 mph	25 mph	39 mph
East Street west of Sewall Street	Not Posted	30 mph	Not Posted	28 mph
Cherry Street between Cady and Center Street	Not Posted	32 mph	Not Posted	31 mph
Chapin Street east of Chapin Circle	Not Posted	36 mph	Not Posted	36 mph
Moore Street south of Center Street	Not Posted	37 mph	Not Posted	34 mph
Poole Street east of Alden Street	Not Posted	43 mph	Not Posted	43 mph
Windsor Street east of Center Street	20 mph	31 mph	20 mph	32 mph

Source: PVPC

Vehicle Classification: Determining the composition of traffic is an important aspect in pavement and intersection design. During the stakeholders' interviews, complaints about the high truck volumes in Ludlow were noted. The traffic counters used by PVPC provided a footprint of the vehicle classification depending upon the axle length and number of wheels on each vehicle. From that data, the traffic composition on different roads of the Town can be analyzed to determine heavy vehicle volumes by percentage of total traffic volume. This classification is summarized in Appendix G. Table 4 summarizes the percentage of all the heavy vehicle traffic at each location. It is observed that Holyoke Street, Center Street and Moore Street have a high percentage of heavy vehicles compared to other locations. One reason for higher truck traffic could also be the presence of several construction companies in the vicinity of these streets. This will be an important factor in the future redesign of the roadways.

Table 4: Percentage of heavy vehicles at different locations

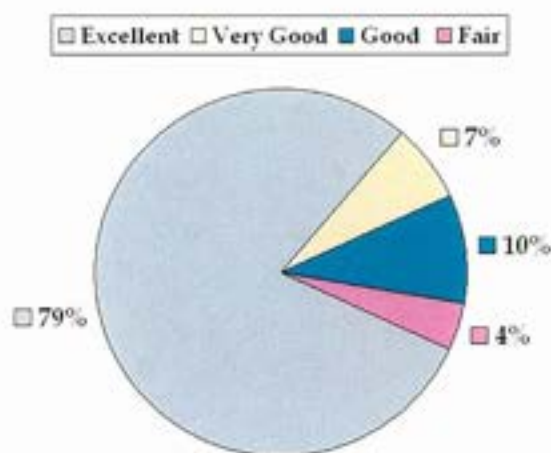
Location	Percentage of Heavy Vehicles
West Street south of Nash Hill Road	5.30%
West Street south of Shawinigan Drive	4.89%
Holyoke Street at the Chicopee City Line	8.19%
Cady Street at the Chicopee City Line	2.07%
Kendall Street east of Holy Cross Circle	4.80%
Fuller Street south of Pine Cone Lane	6.49%
Center Street at the Belchertown Town Line	7.43%
Center Street north of Stivens Terrace	6.81%
Center Street south of Winsor Street	4.14%
Church Street between Center Street and Munsing Street	4.91%
Miller Street south of Chapin Street	6.86%
East Street west of Sewall Street	5.80%
Cherry Street between Cady and Center Street	2.60%
Chapin Street east of Chapin Circle	5.54%
Moore Street south of Center Street	7.16%
Poole Street east of Alden Street	6.37%
Winsor Street east of Center Street	2.65%

Source: PVPC

Pavement: Pavement inventory and distress data was collected for all the federal aid eligible roadways in Ludlow in August 2010, and analyzed using the Cartograph

software. The data was collected by a windshield survey. The Overall Condition Index (OCI) was derived to measure the serviceability of the road. OCI ranges from 0 – 100; an OCI value approaching 100 indicates excellent pavement conditions where no improvements are warranted. A value in the range of 65 to 80 indicates very good pavement conditions that may only require preventive maintenance treatments such as crack sealing. A “good” pavement condition is indicated by an OCI with a value greater than 48 and “fair” condition in the range of 27 to 48. Roadways in this range begin to require more substantial improvements such as resurfacing to improve the roadway. An OCI below 27 indicates “poor” pavement conditions that will likely require the complete reconstruction of the roadway. The overall condition indices for different segments of federal aid eligible roadways are summarized in Appendix G.

Figure 2: Pavement Condition of federal aid eligible roadways



Nearly 80% of federal aid eligible roadway miles in Ludlow are in excellent condition and require no immediate repair measures (Figure 2). None of the surveyed federal aid eligible roadway segments were found to be in poor condition in the Town.

The Ludlow Department of Public Works (DPW) also utilizes the principles of pavement management for all roadways. This data was not included as a part of this document as it was not in the format that could be analyzed using PVPC's pavement management software, CarteGraph. The PVPC last prepared a complete pavement management report for the Town in April 2000 in cooperation with the DPW. The report provided a tool to the Town for prioritizing the roadway improvement projects and allocating the available pavement management funds. The Town of Ludlow should continue to seek further opportunities that can advance its pavement management program and update the pavement condition inventory on a regular basis in order to achieve the goals of an efficient pavement management system.

Safety: Safe movement of traffic and goods is one of the main characteristics of an efficient transportation network. Safety of the transportation system can be examined by referring to the historic crash data of a community. Type, severity, and frequency or numbers of crashes are some of the factors that can assist in analyzing the safety conditions at any location along a roadway or at an intersection. Crash data for Ludlow is summarized in Table 5. This compiled crash data is derived from crash information collected from the Registry of Motor Vehicles (RMV) by the Massachusetts Department of Transportation (MassDOT) and also archived by the Ludlow Police Department. This data is useful in studying the efficiency of traffic operations along corridors (lane departure crashes) and effectiveness of control measures at different intersections (intersection crashes).

On average the Town of Ludlow had more than 448 reported crashes per year between the time period of 2006 – 2008 (Table 6). Most crashes reported angle type collisions and occurred in clear weather and dry road conditions. MassDOT also prepares crash clusters of the collisions in close proximity to each other on the basis of the coordinates of reported crashes. These clusters were used to determine the top high crash intersections in the Town. The top high crash intersections were ranked on the basis of the Equivalent Property Damage Only (EPDO) index which is based on the number of crashes weighted by the severity of each crash (fatal crashes are weighted by 10, injury crashes are weighted by 5 and property damage only or non-reported are weighted by 1). This data was compiled using the reported crashes for calendar years 2006- 2008; therefore some of the locations listed in the tables may have experienced transportation improvements that could improve safety.

The intersections of Center Street with Harding Avenue and the Interstate 90 ramp and Center Street with Cherry Street are the top 2 intersections with safety concerns in the Town. A total of 7 intersections out of 15 top high crash intersections are located along the Center Street corridor while another 4 intersections are located along the East Street corridor. As mentioned earlier, these streets have high traffic volumes and dense commercial and residential development in the vicinity which increases the potential for conflict. West Street corridor has a total of two of the top high crash locations. Most crashes reported at these intersections were property damage crashes only. No fatal injury crashes were reported at these locations. Figure 3 highlights these intersections on the map of the Town.

The Ludlow Master Plan Committee expressed concerns regarding the transportation and safety conditions at the intersections of East Street with Winsor Street and Hampden Street and West Avenue with Fuller Street. The committee also stressed the strategic importance of these intersections in the view of future development and traffic growth. The traffic and transportation conditions at these locations were studied by PVPC and individual study reports were drafted to recommend several short and long term measures to alleviate the problems.

Table 5: Crash Data Summary

Year	Total	Type	Severity	Road Conditions	Weather Conditions			
2006	417	Angle	Fatal Injury	1	Dry	248	Clear	245
		Head-on	Non-fatal Injury	107	Wet	82	Cloudy	109
		Rear End	Property Damage	294	Ice	4	Snow	16
		Side Sw ipe	Unknown n	15	Sand, Mud	3	Rain	38
		Single Vehicle			Slush	2	Fog	7
		Unknown n			Snow	12	Unknown n	2
					Unknown n	66		
2007	479	Angle	Fatal Injury	1	Dry	314	Clear	300
		Head-on	Non-fatal Injury	114	Wet	87	Cloudy	95
		Rear End	Property Damage	337	Ice	18	Snow	27
		Side Sw ipe	Unknown n	27	Sand, Mud	8	Rain	41
		Single Vehicle			Slush	3	Fog	4
		Unknown n			Snow	19	Unknown n	12
					Unknown n	30		
2008	449	Angle	Fatal Injury	1	Dry	268	Clear	264
		Head-on	Non-fatal Injury	102	Wet	113	Cloudy	104
		Rear End	Property Damage	317	Ice	8	Snow	25
		Side Sw ipe	Unknown n	29	Sand, Mud	2	Rain	51
		Single Vehicle			Slush	3	Fog	1
		Unknown n			Snow	34	Unknown n	4
					Unknown n	21		
TOTAL	1345			1345		1345		1345

Table 6: Top 15 High Crash Intersections (2006-2008)

Rank	Intersection	EPDO	Crash Count	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes
1	Center Street/Harding Avenue/Massachusetts Turnpike Ramp	100	52	0	12	40
2	Center Street/Cherry Street	90	46	0	11	35
3	Holyoke Street/West Street	44	16	0	7	9
4	East Street/Chapin Street	40	20	0	5	15
5	East Street/Miller Street	40	10	0	6	10
6	Center Street/Howard Street/West Avenue	38	14	0	6	8
7	East Street/Winsor Street/Hampden Street	36	12	0	6	6
8	Center Street/Miller Street	36	20	0	4	15
9	Center Street/Chapin Street	34	14	0	5	9
10	Fuller Street/Chapin Street	32	16	0	4	12
11	Center Street/Sewall Street	30	10	0	5	5
12	Center Street/Winsor Street	28	12	0	4	8
13	Howard Street/Sewall Street	26	14	0	3	11
14	West Street/Brook Street	26	14	0	3	11
15	East Street/Sewall Street	26	10	0	4	6

Transit: Ludlow is served by two different fixed Pioneer Valley Transit Authority (PVTA) bus routes, the Blue 6 and Blue 12. Figure 4 shows the PVTA transit routes serving Ludlow. The Blue 6 (Ludlow via Bay) route begins at the Springfield Bus terminal, proceeds northeast along State Street (Springfield) and follows Bay Street (Springfield) to Berkshire Avenue (Springfield) to Main Street (Indian Orchard, Springfield) and then Center Street (Ludlow) and terminates at the Big Y in Ludlow. It follows the Sewall Street-East Street route in Ludlow on the way back to Springfield. It also takes an alternate route via Pasco Road-Goodwin Street in Springfield every other run beginning at 7:20 am. The bus operates on a 15 to 20 minute frequency throughout the day from 5:20 am to 9:20 pm. The average monthly ridership along this route for year 2009-2010 was 35,936 passengers. This figure estimates the average ridership along the route and does not give the break up at each bus stop.

The Blue 12 (Stoneybrook Express) is a route that caters solely to the Hampden County Correctional Facility visitors and staff. It begins at the Springfield bus terminal located at Main Street and transports people to and from the correctional facility in Ludlow via I - 291 (Springfield), Burnett Road (Chicopee), Holyoke Street (Ludlow), and West Street (Ludlow). This route is an express route on which no stops are made in between the origin and destination. The bus makes four trips per day. The average monthly ridership along this route for year 2009-2010 was 981 passengers.

In addition to the fixed route bus service, PVTA provides Paratransit Van Service in Ludlow. PVTA has two types of van service for Ludlow, ADA (American's with Disabilities Act) complementary paratransit service and Dial-a-Ride for senior citizens. The senior service is available to all seniors over 60 years of age on a space available basis, Monday - Friday, from 8:00 a.m. to 4:30 p.m. The ADA service is available for people with disabilities that limit them from being able to use the fixed route bus service. The hours of operation of ADA service follow the fixed route bus service hours of operation. Residents located within a three quarters of a mile radius around the PVTA fixed route service can utilize this service.

The Ludlow Senior Center also has its own paratransit service for senior citizens. The Senior Center has 3 vans that operate within Ludlow, Monday to Friday, between 8:00 a.m. to 4:00 p.m., by appointment made at least 24 hours in advance. Senior citizens over 60 years of age and disabled residents (ADA certification required) are eligible for the service based on a first come first serve basis. In addition, the Senior Center also conducts out of town trips to certain locations such as shopping malls, recreational places and other places of interest once a month. These trips are identified in their newsletter. The Ludlow Senior Center provides approximately 15,000 rides per year to eligible residents in the Town.



Figure 4: Transit Routes

Intersections and Sidewalks: Figure 5 and Table 7 highlight all the signalized and multi way stop intersections and different types of sidewalks in Ludlow. In total there are nine signalized intersections, seven 4-way stop intersections, three 3-way stop intersections and one flashing warning beacon in Ludlow. PVPC conducted a sidewalk inventory for the Town. This inventory included the length, location, and the type of construction of the sidewalks. The condition of the sidewalks was not inventoried as a part of this survey. There are nearly 43 miles of sidewalks in the Town. The roadways located in the vicinity of the Center Street/ East Street/ State Street "downtown" have concrete sidewalks with or without a grass buffer on both sides of the pavement for a majority of the streets. State Street and sections of Chapin Street towards the southwest of its intersection with East Street, also have concrete sidewalks with a grass buffer along one side of the pavement. Asphalt sidewalks are provided along many other streets in the Town as shown in Figure 5. Table 8 summarizes the total length of the different types of sidewalks in Ludlow.

Table 7: Signalized and Multi Way 'Stop' Intersections

No.	Intersection Name	Type of Control
1	Holyoke Street and West Street	Traffic Signal
2	Shawinigan Drive and West Street	Traffic Signal
3	Center Street and Chapin Street	Traffic Signal
4	MassPike Interchange 7, Center Street and Harding Avenue	Traffic Signal
5	Center Street and Cherry Street	Traffic Signal
6	Center Street, Ludlow Avenue and East Street	Traffic Signal
7	East Street and State Street	Traffic Signal
8	East Street and Chapin Street	Traffic Signal
9	East Street and Miller Street	Traffic Signal
10	Cady Street and Grimes Street	Flashing Warning Beacon
11	Blanchard Avenue and Swan Avenue	Three-Way Stop
12	Howard Street and Oak Street	Three-Way Stop
13	Chapin Street, Miller Street and Cottage Avenue	Three-Way Stop
14	West Street and Cady Street	Four-Way Stop
15	Fuller Street and Chapin Street	Four-Way Stop
16	Blanchard Avenue and Loopley Street	Four-Way Stop
17	Sewall Street and Winsor Street	Four-Way Stop
18	Sewall Street and Hubbard Street	Four-Way Stop
19	Sewall Street and Howard Street	Four-Way Stop
20	Howard Street and Highland Avenue	Four-Way Stop

Source: PVPC

Table 8: Lengths of Different types of Sidewalks

Type of Sidewalks	Length in miles
Asphalt	3.35
Asphalt with Buffer	15.98
Concrete	12.48
Concrete with Buffer	11.09
Total	42.90

Source: PVPC

Roadway Reconstruction and New Residential Development Projects

Any major roadway reconstruction project is aimed at improving the traffic conditions and takes into consideration the existing traffic demand, safety and congestion issues. Currently Ludlow has two major ongoing construction projects: the East Street roadway improvement project which also includes an upgrade to the signal at East Street and Chapin Street, and the Red Bridge rehabilitation project; which will improve the travel conditions along the East Street corridor and have a direct impact on the local and commuter traffic traveling east-west through the Town from Wilbraham and Palmer. Two other major projects presently in design for Ludlow include the Center Street reconstruction project and the Ludlow Mills Preservation and Redevelopment project

Center Street Reconstruction Project: This proposed reconstruction project is currently at the 25% design completion stage. The project limits include Center Street from Sewall Street to Beachside Drive as well as upgrades to its intersections with Sewall Street, Cherry Street, and Harding Avenue. The purpose of the project is to alleviate the congestion and safety issues along Center Street by creating a refuge area for left turning traffic by adding a center two way left turn lane between Beachside Drive and Harding Avenue. Delays experienced by the through moving traffic will also be reduced through lane widening, shoulder improvements and access management measures for different curb openings. A number of improvements are also proposed for the intersection of Center Street with Cherry Street to upgrade the existing traffic signal and to improve intersection geometry by adding a left turn lane. The intersection of Sewall Street is proposed to be realigned to improve the safety and capacity at that location. Harding Avenue is also proposed to be widened to accommodate shoulders on both sides of the street. This project will improve the traffic flow along one of the major 'Corridors of Concern' for the Town and will also improve safety conditions at the three top high crash intersections in Ludlow.

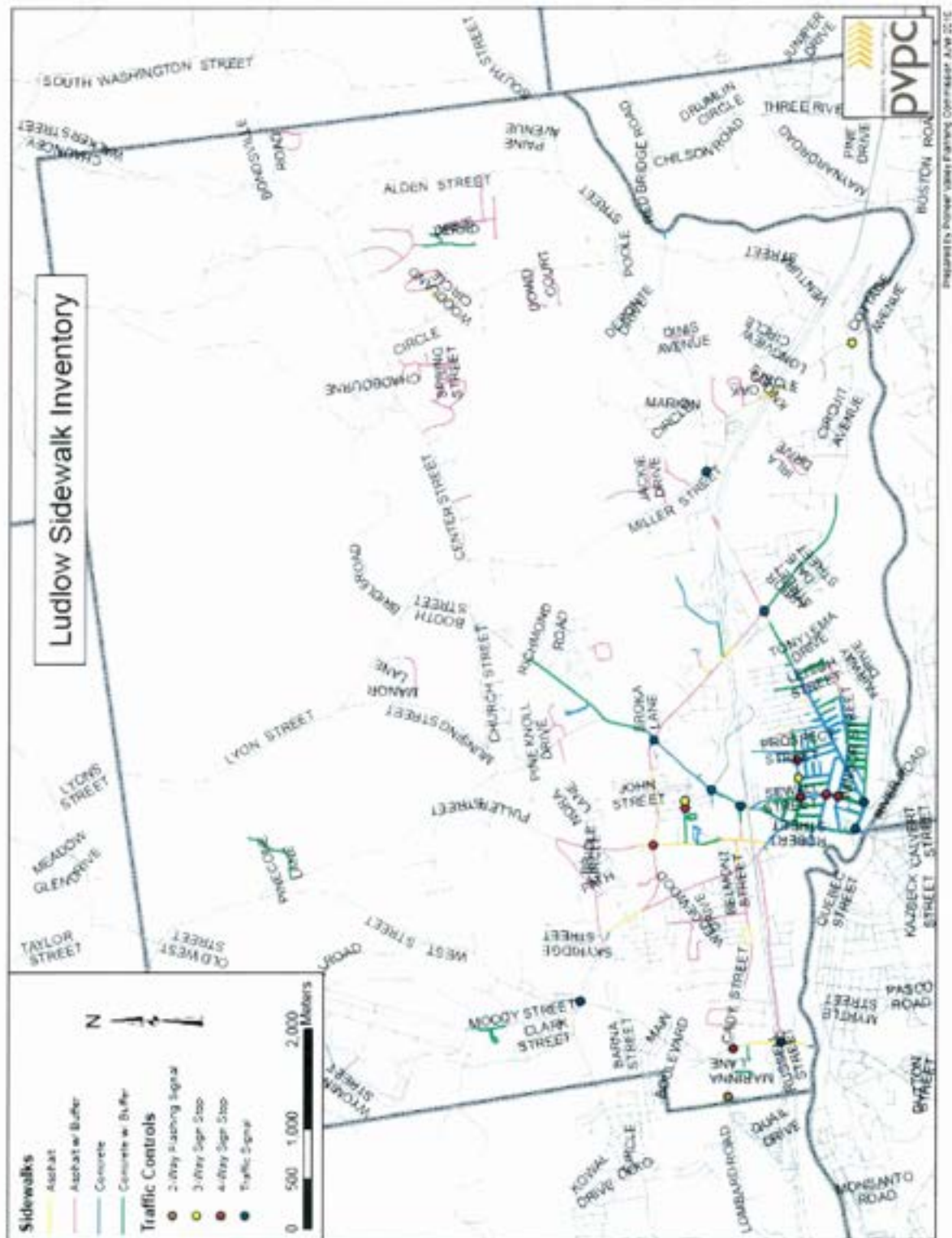


Figure 5: Intersections and Sidewalks

Ludlow Mills Preservation and Redevelopment Project: This project consists of the redevelopment and preservation of the historic site of the Ludlow Mills along the Chicopee River. Viewed as a long term development, the project is proposed to occur over a 20-year period and consists of a mix of residential, commercial and industrial development for the 174 acre site at 1 State Street in close proximity to Center Street/ East Street/ State Street “downtown” Ludlow. The Environmental Notification Form (ENF) estimates that the project has a potential to generate 10,335 daily trips on an average weekday. This could change the traffic footprint of the Town and generate more pressure on the existing roadway network.

The direct transportation impacts would likely be observed along the State Street, East Street and Center Street corridors and on the Putts Bridge. There is a need to connect the new residential units proposed as a part of this project with the commercial areas in the vicinity by a network of sidewalks and bicycle lanes. Transit service also has good potential to provide another alternative mode of transportation to the project. The new project also has the potential to create more parking alternatives for the commercial businesses in the area.

Opportunities and Challenges

Traffic along many roadways in Ludlow is a mix of local and commuter traffic that is influenced by not only the development within the Town but also by growth and development in neighboring communities. The combination of high volumes and high speeds has resulted in an apprehension to alternative modes of transportation like bicycle lanes and concerns regarding pedestrian safety. The limitations in use of transit have also increased the number of passenger car trips. Despite these challenges, the compact development in the southern section of town and mix of residential and commercial uses along Center Street, East Street and other streets in the vicinity provide opportunities to encourage pedestrian and bike trips by providing sidewalks, and bicycle lanes, to encourage greater use of transit, and to develop park and ride lots for commuters. Other measures such as improved access management, safety measures, and exploring options to create auxiliary parking facilities will assist in managing existing traffic while creating opportunities for local business.

Alternative Modes of Transportation

Bike Lanes: Ludlow does not have any designated on-street bike lanes but Center Street (from the Belchertown line to the Chapin Street intersection), Chapin Street, Lyons Street, and West Street have wide shoulders that are used occasionally by bicyclists for recreational purposes. A designated bicycle/pedestrian path is provided along the border of the Springfield Reservoir for the residents of the Town and visitors to enjoy the scenic beauty and other recreational options available at the

reservoir. This bike path connects to the old canal way inside the forest land in Ludlow which allows visitors to go up to the Belchertown town line.

Although most of the participants in the focus groups for transportation supported encouraging bicycle and pedestrian modes, they in general felt unsafe biking on local streets. They voiced concerns regarding the safety of the bicyclists along roadways with high traffic volumes and high travel speeds. While there was not unanimous support for designated on-street bike lanes on major roadways, there was a consensus that additional opportunities should be created by providing safe and secure options for bicyclists. The challenge will be to establish safe bicycling conditions on local roads which can support bike lanes and have the support of Ludlow residents. There are many local streets in Ludlow for which a bike lane designation could be explored. It is recommended that the Town survey existing roadways for bicycle compatibility and develop a public participation process to identify potential locations for new bike paths and bike lanes.

Pedestrian Sidewalks: Pedestrian safety was one of the chief priorities in the redesign of high pedestrian traffic corridors such as East Street and Center Street. Ludlow has a well defined and well maintained network of sidewalks connecting residential neighborhoods with local businesses. As new development occurs in the Town, the development of sidewalks and other pedestrian friendly street design features for safety should also be promoted. Maintenance of the existing sidewalks is a high priority task for Ludlow.

Enhanced Transit Facilities: Transit services in Ludlow are limited to the southern part of the Town. Currently PVRTA route B6 serves the commuters in the vicinity of Center Street and East Street. As new development occurs, new opportunities to enhance transit services may be available to encourage people to switch from the automobile to transit. Measures such as extending the existing routes to other areas which can generate potential ridership, increasing the number of sheltered bus stops which are equipped with bus schedules, and providing safe and convenient turn around areas for buses would greatly help in encouraging more people to use transit facilities. The Ludlow Mills redevelopment site is located in close vicinity to the existing transit route. The developers of the site, Town of Ludlow and the PVRTA should work in cooperation with each other to incorporate transit amenities such as bus stops, and turn around areas for buses, in the proposed redevelopment plans. The Town of Ludlow should also consider initiating a regular process of cooperation between the developers of different projects and the PVRTA, to assess the suitability of providing transit service to the site.

Park and Ride Lots

Park and Ride lots such as the Interstate 90 lot in the rear of McDonald's provide opportunities for the commuters to carpool. It is recommended that the Town of

Ludlow consider alternative Park and Ride locations to satisfy the high demand for parking at the Interstate 90 lot. The Town could consider under utilized parking areas and work on the development of a mutual agreement with the owners of such lots to allow public parking. All park and ride lots should be well signed to encourage ride sharing and to reduce the traffic volume and congestion on local roadways.

Parking Facilities

Traffic studies completed in the past to examine parking facilities in Ludlow have revealed that parking is not evenly distributed along many streets in the Center Street/ East Street/ State Street "downtown area". Comments received during the master plan development process reveal that many residents believe on-street and off-street parking facilities are not addressing current demands. In addition there is interest in establishing well developed and evenly spread out parking areas to facilitate local businesses and their patrons. The Town should undertake a parking study at locations such as the Springfield Reservoir, East Street corridor, and the Memorial Park neighborhood to quantify existing parking demand and the need for additional parking supply.

Access Management

Access management helps in improving safety and alleviating congestion by removing unnecessary delays to through traffic on streets with high commercial development like Center Street and East Street. Access control measures and design standards restrict access points on high volume roadways to limit vehicle conflict points, improve traffic flow, and balance the movement of traffic over the length of the corridor. The Center Street reconstruction project design includes many principles for access management. There are a number of other locations in Ludlow that could benefit from improvements to their existing access driveways along other major roadways. The Center Street design format could serve as a model for improving the definition of existing driveways. Long, undefined curb cuts should be defined with curbing to clearly identify the entrance and exit points from the parcel. Land uses with more than one driveway should have all driveways clearly marked. When practical, consideration should be given to limit turns to right turn in/right turn out only when there is a high potential for conflict.

Congestion Mitigation

Congestion has an adverse effect on traffic flow and the environment. Roads with high traffic volumes in Ludlow can be affected by minimal to moderate congestion which could intensify, if not addressed in a timely manner. Center Street is currently a corridor with moderate congestion; however the Center Street reconstruction project could mitigate this problem in the near future. The design proposes to widen traffic lanes, provide additional shoulder widths, provide turn lanes, improve access

management, improve intersection geometries and provide a center two way left turn lane. All of these measures will help in improving traffic flow, enhancing safety, and reducing overall delay. Ludlow should continue to monitor traffic flow on other roadways and initiate the necessary measures for congestion mitigation as required.

Traffic Calming

The residents of Ludlow, who participated in the public engagement phase of the master plan, expressed serious concerns regarding excessive travel speeds along major roadways. The 85th percentile travel speeds recorded by the PVPC were much higher than the posted speed limits for many of the streets along which travel speed data was collected. Some of the local streets also registered more than 90% of the total traffic traveling above 35 mph. The Town of Ludlow should consider traffic calming measures such as enhanced enforcement of speed limits, narrowing down travel lanes, or increasing the frequency of signs. The Town could also develop a Neighborhood Speed Watch Program. A Speed Watch Program trains residents how to collect speed data by using 'Speed Trailers'. The residents can submit license plate information for vehicles recorded to exceed the posted speed limit. Warning letters are then issued to the offenders by the Ludlow Police Department. It is also recommended that the Town of Ludlow consider developing a local policy on traffic calming. This would utilize input from local officials, emergency personnel, and residents on the types of traffic calming measures that could be supported and the thresholds required for their implementation.

Bridges

The maintenance of bridges is based on two principles: maintaining the structural integrity of the bridge and maintaining the functional capacity of the pavement and travel lanes of the bridge. As traffic volumes rise, there is a proportionate increase in demand for capacity. If any bridge becomes functionally obsolete in catering to this rising demand, a bottleneck is generated at that location which obstructs the smooth flow of traffic and increases congestion. Ludlow has eight major bridges across different water bodies. Appendix G summarizes the bridge information and gives a brief overview of the AASHTO (American Association of State Highway and Transportation Official) rating system for bridges. This data was obtained from MassDOT Bridge Listing 2009 and does not reflect the recent changes in conditions of the East Street Bridge and the Center Street Bridge which are not structurally deficient anymore. There are four bridges across the Chicopee River connecting Ludlow to the neighboring communities. The Red Bridge is currently being restored as part of a rehabilitation project which includes repainting, replacing the pavement, replacing the sidewalks, resetting of curb, concrete repairs, refurbishing, and asphaltic plug joint installation. The Miller Street/Cottage Avenue Bridge was rebuilt in the year 2006. The Putts Bridge was rehabilitated recently to improve the structural strength and the pavement condition of the bridge. This bridge is currently

operating at its optimum capacity and a need to increase the capacity of this bridge might come up in near future. MassDOT has long term plans to increase the capacity of this bridge. West Street Bridge is rated as functionally obsolete and may require some improvements in future. All bridges are maintained by MassDOT. It will be important to keep all bridges in good repair to maximize the connectivity of Ludlow with surrounding communities.

Roadway Maintenance

More than 90 miles of roadway in Ludlow are maintained by the Department of Public Works using state and local funds. The Town needs to monitor and maintain the condition of these roadway miles at regular intervals to ensure efficient movement of traffic. A local pavement management system can achieve this through a regular process of data collection and analysis which can prioritize the needs of different segments of roads by using the calculated OCI number. The objective of a pavement management system is to provide guidance for directing the available funds to initiate necessary measures that stop the further deterioration of a roadway and increase the longevity of the pavement surface through proper and timely maintenance and repair strategies.

Goals and Strategies

Immediate	Completion within one year of master plan adoption
Short Term	Completion within five years of master plan adoption
Mid Term	Completion within ten years of master plan adoption
Long Term	Completion within fifteen years of master plan adoption

GOAL 1: Monitor and maintain the 'Corridors of Concern' and other major roadways in the Town to reduce congestion and provide for the safe and efficient movement of traffic.

Strategy 1: Work with the Ludlow Department of Public Works and Pioneer Valley Planning Commission to develop a systematic process to monitor traffic counts and observe the change in traffic volume on a regular basis to detail the true impacts of growth in the Town and in surrounding communities.

Responsible Party: Department of Public Works, Police Department, PVPC, MassDOT

Resources Needed: Necessary equipment, trained staff, volunteer time

Target Date for Completion: Ongoing

Strategy 2: Continue to utilize a local pavement management system to determine pavement condition of all local and federal aid eligible roadways, to prioritize and initiate new projects and new cost effective repair measures to maintain the quality of the pavement and prevent further deterioration.

Responsible Party: Department of Public Works, PVPC, MassDOT

Resources Needed: Necessary equipment and materials, trained staff, volunteer time

Target Date for Completion: Ongoing

Strategy 3: Perform review of existing traffic control devices annually to ensure their condition and conformity with the recent Manual on Uniform Traffic Control Devices (MUTCD)

Responsible Party: Department of Public Works, Safety Committee, MassDOT

Resources Needed: Necessary equipment and materials, trained staff

Target Date for Completion: Ongoing

Strategy 4: Review local crash data annually for all the intersections and lane departure crashes along key corridors. Initiate studies and analyses at locations with safety and capacity related issues, to determine the cause and undertake corrective measures to improve safety.

Responsible Party: Police Department, Department of Public Works, Safety Committee, and MassDOT

Resources Needed: Good crash records, trained staff

Target Date for Completion: Ongoing

Strategy 5: Adopt access management strategies like clearly marked driveways and curb openings, well identified entrance and exit points, and right turn in/right turn out only restrictions where there is a high potential for conflict, in order to reduce congestion and improve safety.

Responsible Party: Department of Public Works, Safety Committee, MassDOT, local business owners, and affected residents

Resources Needed: Local Access Management Policy

Target Date for Completion: Ongoing

Strategy 6: Implement traffic calming measures as appropriate for roads that have high travel speed and safety concerns.

Responsible Party: Police Department, Fire Department, Safety Committee, Department of Public Works, MassDOT, affected residents

Resources Needed: Local Traffic Calming Policy

Target Date for Completion: Ongoing

Strategy 7: Advance the preferred recommendations as appropriate from the East Street/Winsor Street/ Hampden Street and West Avenue/Fuller Street intersections safety studies completed as a part of master plan process.

Responsible Party: Department of Public Works, Safety Committee, MassDOT

Resources Needed: Design Plans as appropriate, Cost estimates for each improvement alternative

Target Date for Completion: Mid Term (design); Long Term (implement)

Strategy 8: Advance transportation and safety studies as appropriate to determine the influence of future growth at key transportation points in the Town.

This could be achieved in cooperation with MassDOT, Ludlow Department of Public Works, local emergency responders and other appropriate agencies. One potential task could be a future build out analysis to examine the capacity of the Putts Bridge to accommodate additional traffic.

Responsible Party: Department of Public Works, MassDOT, related project developers

Resources Needed: Future Build Out Analysis

Target Date for Completion: Ongoing

Strategy 9: Maintain safe and efficient access to Interstate 90, Exit 7, and Ludlow Avenue (Putts Bridge)

Responsible Party: Board of Selectmen, Department of Public Works, Safety Committee, MassDOT

Resources Needed: Necessary equipment and materials, trained staff

Target Date for Completion: Ongoing

Goal 2: Explore opportunities to promote alternative modes of transportation and encourage ridesharing/carpooling.

Strategy 1: Work with local students and special interest groups to develop a local public awareness campaign on the financial and environmental benefits of alternative forms of transportation.

Responsible Party: Energy Committee, Town Planner, special interest groups, community service organizations, and School Department

Resources Needed: Trained staff, Volunteer time

Target Date for Completion: Mid Term

Strategy 2: Maintain the existing sidewalks and crosswalks to ensure pedestrian safety and promote walking.

Promote and encourage pedestrian travel in highly commercialized areas by implementing traffic calming measures. Work with planners and developers of the Town to ensure the construction of well connected sidewalks with pedestrian safe street designs for all the major development projects.

Responsible Party: Town Planner, ADA Coordinator, Department of Public Works, MassDOT, and land developers

Resources Needed: Survey of existing sidewalks conditions, necessary equipment and materials, trained staff

Target Date for Completion: Ongoing

Strategy 3: Work with Ludlow Police Department, School Department and the town residents to evaluate and address pedestrian travel routes to local schools.

Responsible Party: Police Department, Department of Public Works, School Department, Town Planner, Safety Committee

Resources Needed: Safe Routes to School Study

Target Date for Completion: Mid Term

Strategy 4: Identify locations and opportunities to develop/extend the off-road bicycle/pedestrian network.

Responsible Party: Town Planner, ADA Coordinator, Department of Public Works, Parks and Recreation Department

Resources Needed: Feasibility Study of potential bicycle/pedestrian routes

Target Date for Completion: Mid Term

Strategy 5: Work with PVPC and MassDOT to conduct bicycle compatibility analysis for all the roads in the Town to determine which streets are suitable for bicyclists and to explore the opportunities to develop new bike lanes along some of roadways which have the potential to generate bike trips.

Responsible Party: Department of Public Works, PVPC, MassDOT

Resources Needed: Bicycle Compatibility Analysis, trained staff/volunteer time, public participation process

Target Date for Completion: Long Term

Strategy 6: Work with the Pioneer Valley Transit Authority and other transit support groups to increase awareness in the Town regarding available bus service and to promote transit services provided for the elderly and disabled.

Responsible Party: Board of Selectmen, ADA Coordinator, PVTa, Senior Center, local organizations, community service groups

Resources Needed: Trained staff, Volunteer time

Target Date for Completion: Ongoing

Strategy 7: In cooperation with PVTa, explore opportunities to extend/enhance existing fixed route transit service to serve new development in the Town.

Responsible Party: Board of Selectmen, PVTa, and local developers

Resources Needed: Feasibility Study of anticipated operating costs of new transit service

Target Date for Completion: Long Term

Strategy 8: Develop partnerships with the property owners of underutilized parking areas to increase carpooling opportunities with Park and Ride lots.

Responsible Party: Town Planner, Department of Public Works, MassDOT, local business owners, and affected residents

Resources Needed: Survey of potential parking areas

Target Date for Completion: Long Term

GOAL 3: Examine the existing parking supply and explore opportunities to develop auxiliary parking facilities.

Strategy 1: Initiate studies and analyses to determine adequacy, distribution and efficiency of the existing public parking facilities in the Center Street/ East Street/ State Street "downtown area" and other areas of public interest.

Responsible Party: Department of Public Works, Town Planner, Chamber of Commerce, Board of Selectmen, local business owners

Resources Needed: Trained staff, Volunteer time

Target Date for Completion: Mid Term

Strategy 2: Identify existing vacant parcels and underutilized private parking lots that could be developed as potential public parking areas. Consider opportunities to purchase available property for the purpose of enhancing the supply of public parking.

Responsible Party: Department of Public Works, Board of Selectmen, and affected residents

Resources Needed: Inventory of underutilized parking areas

Target Date for Completion: Ongoing

PUBLIC SERVICES AND INFRASTRUCTURE

Introduction

Since the establishment of the nearby Westover Air Force Base in 1940 and the construction of the Massachusetts Turnpike in the 1950s, suburban development patterns have caused Ludlow to develop into a bedroom community. This dispersed residential growth has placed new demands on the town. New subdivision developments have been constructed across all parts of town, and many areas that have experienced significant residential growth do not have sewer and water infrastructure. Since 1971, residential growth has resulted in almost 500 acres of new large lot residential development. Between the years 2000 and 2007, 73 percent of single family residential building permits issued were located outside Ludlow's public sewer area. There are currently just over 4,000 homes using public sewer, while about 2,100 homes rely on septic systems. In addition, many homes in Ludlow's rural areas rely on wells for their drinking water. Co-location of septic systems and drinking water wells in older installations is an ongoing health concern. However, if properly constructed, septic systems are a good way to manage wastes in areas with low density development, as they recharge groundwater supplies and maintain groundwater levels, minimizing "out of water basin transfers" and helping to maintain the level of the Chicopee River.



Ludlow Public Safety Complex

While the Springfield Water and Sewer Commission treats Ludlow's wastewater, Ludlow's Department of Public Works (DPW) is responsible for the sanitary sewer collection system. The DPW has made efforts to extend sewer services to older, small lot development areas where septic systems were located in proximity to drinking water wells, prior to today's statewide regulation governing on-site wastewater disposal (Title V of the State Environmental Code, 310 CMR 15.000). However, many of these older systems continue to operate in areas without public water or sewer service, so co-location of these septic systems and drinking water wells in proximity

to each other continues to pose a potential public health concern. In addition, depending on soil and water table conditions, septic systems in general have the potential to contaminate groundwater supplies, which can contaminate the well water used in rural areas, and can also affect water quality in surface water bodies. Much of the town is close to or abutting wetland areas connected to the Chicopee River Watershed, so potential water contamination should be assessed.

In addition to maintaining the sewer collection infrastructure, DPW services include stormwater management, road maintenance, and rubbish and recycling services. Meanwhile, other town services include public education, police and emergency services, library services, senior services, parks and recreation, and veterans services. Water services are provided by the Springfield Water and Sewer Commission, and energy services are provided by the Western Massachusetts Electric Company (electricity) and other private suppliers (for natural gas, oil, etc.). Telecommunications services are provided by private suppliers, including Verizon, Comcast, Cox, RCN and Charter.

Ludlow's police and emergency services are widely regarded by residents as overextended, and the public safety complex is near capacity. However, despite these constraints, Ludlow residents applaud the job these servicemen and women are doing. In the Community Survey, more than 90 percent of all respondents rated Ludlow's fire protection and police services as "good". Meanwhile, some Ludlow residents are passionate advocates of the public library, and many have remarked that the library needs greater financial support from the town, and that the current library building is full. In the Community Survey, over 73 percent of all respondents rated Ludlow's library services as "good", and over 18 percent rated these services as "fair." Residents able to speak to senior services are happy that the Senior Center offers comprehensive services and has enthusiastic, dedicated staff. However, while the senior center building is large, public input and conversations with staff suggest that it needs maintenance and upgrades, as well as more parking.

Trends and Data

Past Planning Efforts

Comprehensive Wastewater Management Plan, 2003 Interim Report

The Comprehensive Wastewater Management Plan will update the 1968/1969 Sanitary Sewerage Report and will address the wastewater management needs of the town for a 20-year period. The Interim Report identifies areas in Ludlow that have problems with on-site disposal systems, as well as locations where future problems with on-site systems are anticipated. It also identifies areas of the existing sewage collection system where capacity or physical condition issues exist. The final plan

will offer alternatives and recommendations for addressing the town's future wastewater needs.

2008 Local Natural Hazard Mitigation Plan

Local Natural Hazard Mitigation Plans seek to minimize the impacts of natural hazards such as flooding, storms, hurricanes, wildfires, earthquakes, dam failure, etc. to people, buildings and infrastructure, including water supplies, sewers, and utility transmission lines. In the process of creating its Local Natural Hazard Mitigation Plan, the town identified and mapped past hazards; conducted a Vulnerability/Risk Assessment to identify infrastructure at the highest risk of being damaged by natural hazards; identified existing critical infrastructure such as emergency response services, evacuation routes, and bridges along these routes; identified facilities and populations to protect; and assessed existing policies, programs and regulations that protect against future damages. Finally, the plan makes recommendations and lays out a prioritized action plan to update the town's hazard mitigation activities.

2009 University of Massachusetts Study

The recent University of Massachusetts study, conducted by Landscape Architecture and Regional Planning graduate students and completed as part of this master planning effort, includes a history and assessment of Ludlow's services and facilities. As part of this analysis, the University of Massachusetts study conducted interviews with several departments, outside service providers, and individuals affiliated with the town of Ludlow.

2010 Comprehensive Emergency Management Plan

Ludlow has a fully certified Local Emergency Planning Committee, which updates the Comprehensive Emergency Management Plan annually. The Comprehensive Emergency Management Plan outlines an emergency management program for planning and responding to potential emergency or disaster situations. It assigns responsibilities and functions in order to provide for the safety and welfare of citizens in the event of natural or man-made hazards. The plan addresses Mitigation, Preparedness, Response, and Recovery aspects of emergency management and guides responding agencies and organizations through specific hazards; including associated programs, training, and protective actions.

Capital Improvements List

Ludlow's Town Accountant keeps a current, comprehensive Capital Purchase List for items that cost over \$25,000. Prior to Town Meeting each year, town departments send a list of items they need to the Capital Improvement Planning Committee. Based on the available budget that year, the Capital Improvement Planning Committee selects items to purchase, and these purchases are approved at Town Meeting as part of the Annual Budget. Items funded through this process include equipment, such as air conditioners, or facilities work, such as roof repairs.

Infrastructure

Much of Ludlow's current infrastructure, including its water and sewer facilities, was built in the early 1900s by the Ludlow Manufacturing Company in order to meet the needs of its facilities and growing employment base. The Ludlow Manufacturing company, a global manufacturer of jute yarn and twine, owned the mill surrounded by factory housing neighborhoods. Through the 1930s and 1940s, the Mill's productivity declined, and in the 1950s, the mill began to sell off pieces of Ludlow's infrastructure, including the water supply and the electric infrastructure. Since the 1950s, Ludlow has transitioned to a bedroom community, and as a result, many of the town's services were established or expanded from that time to the present.

Water Supply

The Springfield Reservoir, located in the northeastern portion of Ludlow, was once the source of the town's public water. The reservoir was constructed in 1875 and holds a total of 1.71 billion gallons of water. However, since 1994, the reservoir has been used for backup and emergency purposes only, and in 2001, the Springfield Water and Sewer Commission and state agencies worked together to protect the Springfield Reservoir's surrounding lands, which are currently held under a state conservation restriction and managed according to a land management plan, to preserve the water quality of the reservoir. Ludlow's town water is now provided by the Springfield Water and Sewer Commission and comes from the Borden Brook and Cobble Mountain Reservoirs 30 miles to the west. In addition, there are three Massachusetts Water Resources Authority (MWRA) emergency connections in Ludlow.



Cobble Mountain Reservoir

Ludlow's water originates from the Little River and is stored at the Borden Brook and Cobble Mountain Reservoirs in the towns of Blandford and Granville. The water is filtered and disinfected at the West Parish Filters Treatment Plant in Westfield. It then flows through 37 miles of water main, to be stored at a distribution reservoir on Provin Mountain in Agawam, which supplies Ludlow, as well as Springfield, Agawam, East Longmeadow, and Longmeadow. In addition to the Springfield Reservoir, Ludlow's emergency water supply also

includes the Quabbin Reservoir to the east. Miller Street is the only street in Ludlow where water is supplied by the Town of Wilbraham public water service, in which water comes directly from the Quabbin Reservoir.

In recent years, the Springfield Water and Sewer Commission made significant infrastructure improvements, and several projects are also currently underway to help update and maintain the reliability of the region's water supply. The Ludlow

Transmission Main Project, completed in 2007, installed over 6,600 feet of 16 inch pipe along East Street and Chapin Street. Also in 2008, approximately 3,100 feet of asbestos cement pipe were removed and 800 feet of new water mains were installed in the Karen Drive area of town. Twenty-five to thirty percent of town residents are not connected to the public water supply and instead use well water (Figure 1). This is largely a result of residential development in the rural areas of town where it has not been cost effective to extend water service.

For those residents who use well water, the Board of Health encourages annual monitoring if the well is located too close to a septic system (i.e. was installed prior to present-day siting requirements). In addition, in order to obtain a permit to install a new well, residents must first test for volatile organic compounds (VOCs), nitrates, bacteria and sodium. Sodium is an especially important concern when household members are on a low sodium diet. The Board of Health also strongly encourages owners to monitor all septic systems annually for bacteria and VOCs.

Wastewater Management

The Department of Public Works (DPW) is responsible for the town's stormwater management system and its sanitary sewer collection system, while wastewater treatment services are provided by the Springfield Water and Sewer Commission at the Bondi's Island Treatment Plant. When stormwater and sanitary systems were first built, it was typical to comingle stormwater runoff with sewage. These combined sewer systems were built to quickly collect and convey sewage, industrial wastewater and stormwater directly to nearby receiving water bodies, which in turn created sanitary living conditions in populated areas. As time passed, however, pollution in U.S. waterways increased, so Wastewater Treatment Plants (WWTPs) were constructed to provide treatment prior to discharging wastes to a waterway. However, during larger storm events, because the sewer and stormwater systems continued to be combined, Wastewater Treatment Plants would receive a larger volume of wastewater than they could treat. To handle this, it became common practice to discharge untreated wastewater directly to waterways during these storm events.

Today, construction of new combined sewer systems is no longer permitted, and state legislation requires municipalities to separate their sewage and stormwater systems and remove their Combined Sewer Overflows (CSO), points in the combined system where stormwater and untreated sewage are discharged into a water body. In compliance with state legislation, the town has been systematically separating the sewer and stormwater systems and removing its CSOs. Ludlow originally had 11 CSO outfalls, and all 11 of these have now been removed. The last remaining CSO, located on Hubbard Street, was removed in July 2010 as part of the Hubbard Street Sewer Separation Project. This brings the town into full compliance with state as well as federal environmental standards pertaining to stormwater management (National

Pollution Discharge Environmental Standards - NPDES). This will also help the town avoid costly fees that can result from noncompliance, which Ludlow has been subject to in the past. Other than its CSO discharges, Ludlow has continuously maintained compliance with new NPDES standards, a task that requires substantial review of local conditions and regulations, as well as filing on an annual basis. Further, Ludlow was one of seven communities to sign the Memorandum of Agreement for the Connecticut River Clean-Up. By signing the Agreement, Ludlow committed itself to work cooperatively on regional applications for wastewater treatment grants, as well as to undertake combined sewer overflow mitigation projects. Since Ludlow eliminated its last CSO, the town is no longer participating in the Connecticut River Clean-Up Committee. Upstream of Ludlow, in Palmer, there are currently 6 remaining CSOs, some of which discharge to the Chicopee River; all of these are scheduled to be eliminated in 2011.

In the Community Survey administered as part of this master planning process, almost 48 percent of respondents rated the quality of Ludlow's water and sewer services as "good". Thirty-one percent of respondents rated these services as "fair", and nine percent rated these services as "poor". In addition to its efforts to remove CSOs, Ludlow recently purchased a vacuum truck for sewer and stormwater system cleaning. This work was previously completed by an outside contractor. The DPW has developed a sanitary sewer line maintenance program to flush and clean the sewer collection lines, and the division responds on a 24-hour basis to sewer line obstruction emergencies and other problems with the sewer. Continued efficiency, however, will be largely dependent upon the level of future demands posed by residential development. The current sewer infrastructure is old and aging, as noted as early as the 1963 Sewer Master Plan. While improvements have been made over the years, replacement and maintenance needs will increase in the future. A plan for upgrading the town's sewage collection infrastructure is being developed as part of the new Comprehensive Wastewater Management Plan.

The DPW maintains the town's stormwater system. The system is primarily located in the southern portion of the community (Figure2). In 2008, the Department began cleaning storm drain catch basins using its new vacuum cleaning vehicle. It is hoped that the proactive catch basin cleaning regime will increase efficiency and capacity of the stormwater system. In addition, the DPW regularly installs new storm drains as needed, and it addresses drainage or flow problems that impact public roads. The 2008 Local Natural Hazards Mitigation plan notes one problem culvert at Randall Road, which is impacted by beavers. Finally, the DPW also issues permits to administer the town's stormwater bylaw, and it provides information to the public about best practices in stormwater management, including how to properly dispose of pet wastes, wash your car, fertilize your lawn, etc. Stormwater management is also discussed within the context of water resource quality in the Open Space and Natural Resources Chapter.

Existing Public Water Services

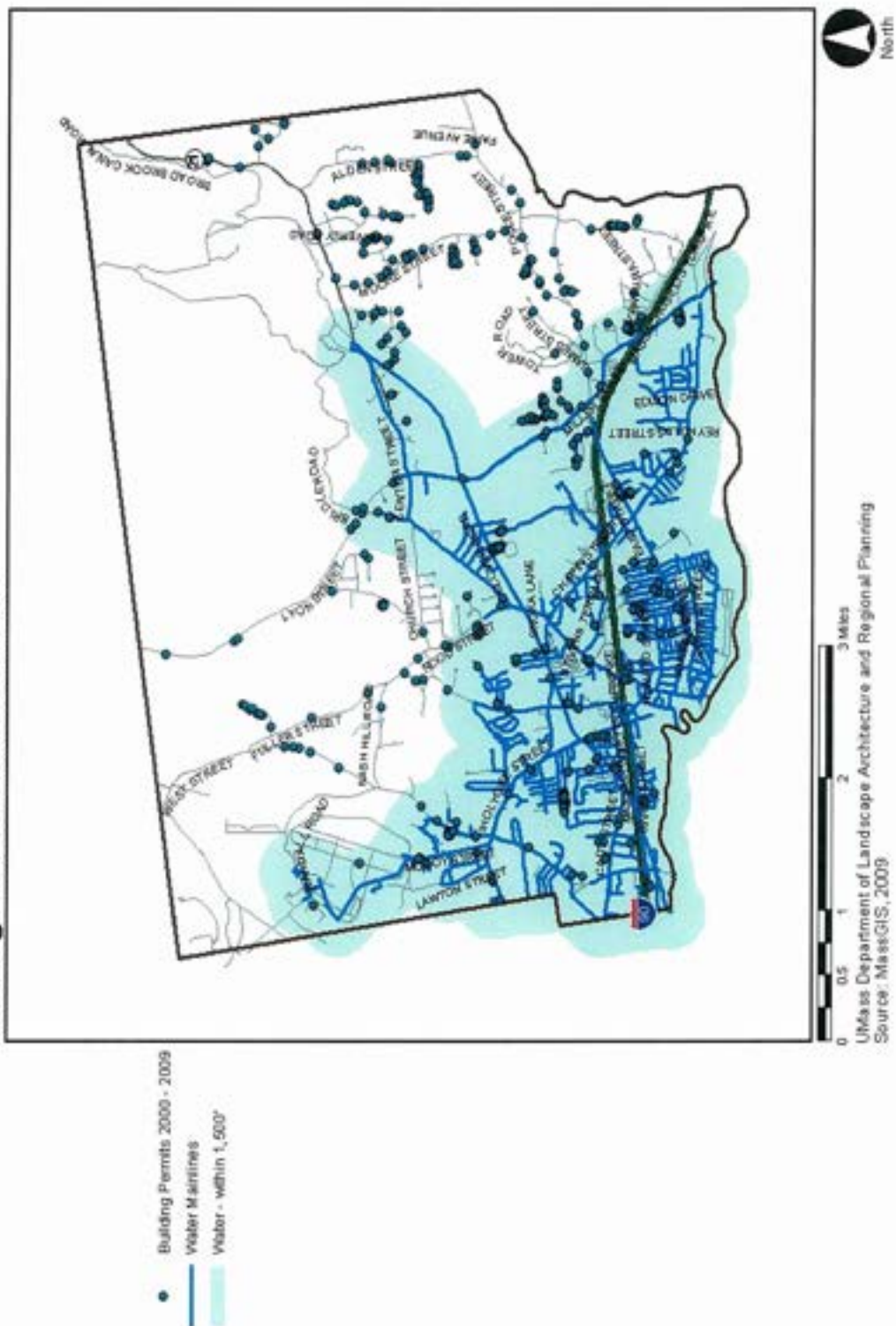


Figure 1: Public Water Services

Existing Public Sewer Services

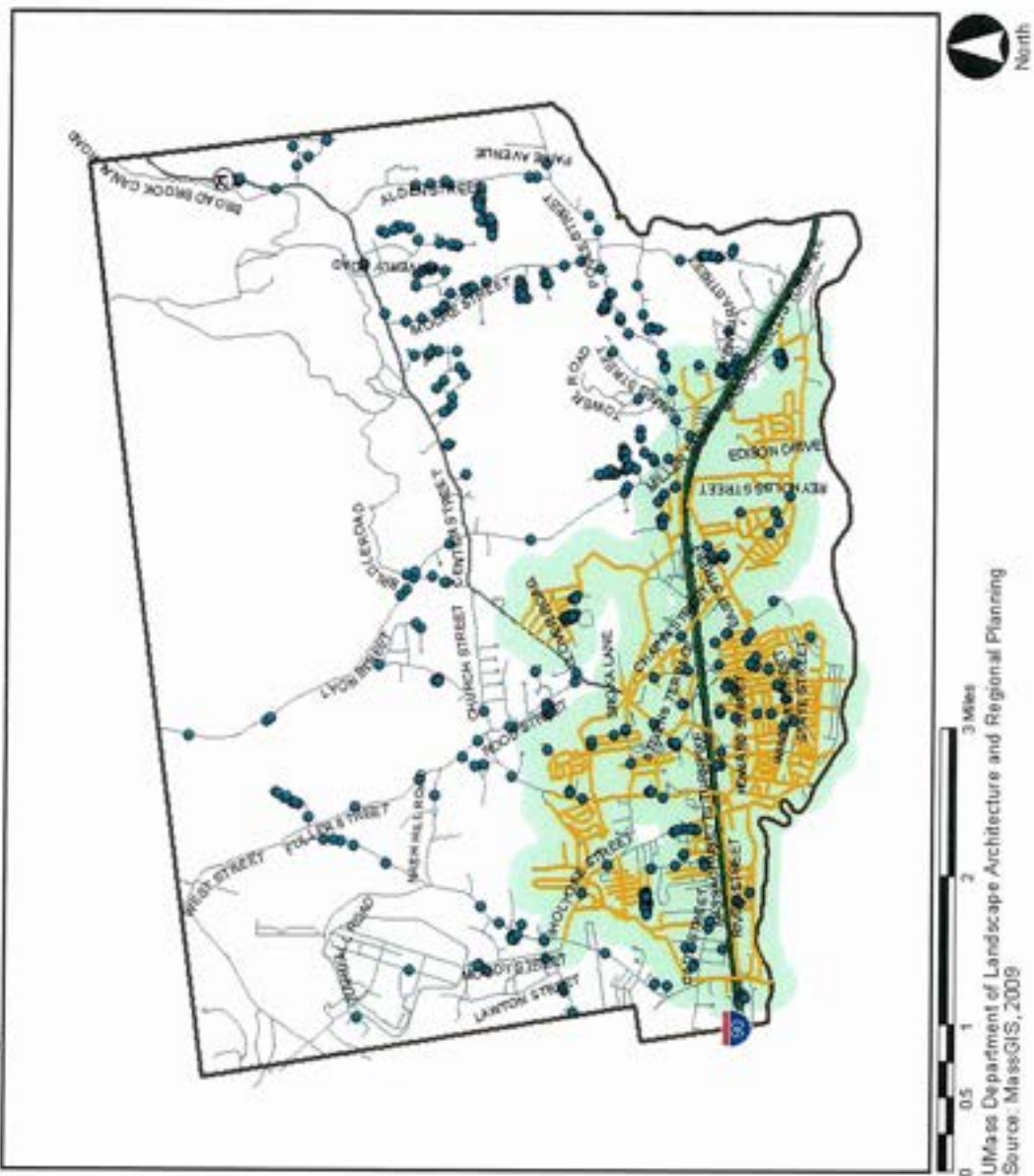


Figure 2: Public Sewer Services

Services

Police and Emergency Services

Ludlow residents express satisfaction with the performance of Ludlow's police and emergency services, and the Police and Fire Departments report that these services are running smoothly. However, residential development over the past decade and budgetary limitations have placed significant strains on these services. From 1997 to 2007, emergency 911 calls increased by 20 percent, from 2,732 calls in 1997 to 3,291 calls in 2007 (Table 1). In this same time period, emergency fire trips increased by nearly 50 and emergency ambulance trips increased by over 96 percent (Table 2). The total number of calls for fire and ambulance service was slightly higher than the number of trips because some trips responded to more than one call, and also because some mutual aid trips were made to other municipalities; these responses are included within the "Other" category in Table 2. Table 3 shows the breakdown of fire and ambulance incidents by precinct between November 2009 and October 2010. Finally, police incidents increased by 20 percent during this time period, from 8,999 calls in 1997 to 10,795 incidents in 2007 (Table 4). Table 5 shows the 2007 breakdown of police incidents by areas tracked by the Police Department. Note that the police incident counts in Tables 4 and 5 are significantly higher than the total number of fire, ambulance and police emergency 911 calls show in Table 1 for this time period, as most police incident reports are received by other means than 911 calls.

Table 1: Comparison of 911 Calls, 1997 and 2007

	1997	2007	Change
Total 911 Calls	2,732	3,291	559

Source: Ludlow Police Department

Table 2: 1997 and 2007 Medical and Fire Response Comparison

	1997 # of Trips / Calls	2007 # of Trips/ Calls	Change in # of Trips / Calls
Medical Trips	1,002	1,965	963
Fire Trips	633	945	312
Other Trips and Calls*	254	198	-56
Total	1,889	3,108	1,219

Source: Ludlow Fire Department

**Includes mutual aid responses, as well as occurrences in which emergency calls were received but did not generate their own trip, but were instead coupled with another trip*

**Table 3: Fire and Ambulance Emergency Incidents
by Precinct**

	Incident Count	Percent
Precinct 1	302	13
Precinct 2	524	22
Precinct 3	196	8
Precinct 4	370	16
Precinct 5	302	13
Precinct 6	530	22
Other	141	6
Total	2365	100

*Source: Ludlow Fire Department,
Incidents between November 2009 and October 2010*

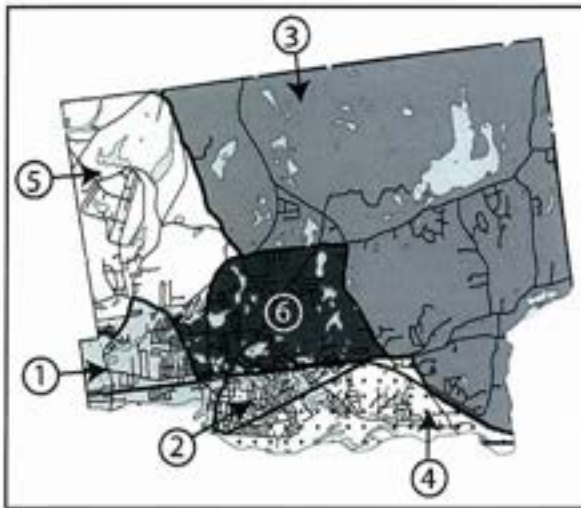


Table 4: 1997 and 2007 Police Incidents

	1997	2007	Change
Number of Police Incidents	8,999	10,795	1,796

Source: Ludlow Police Department

Table 5: 2007 Police Incidents by Area

	Incident Count	Percent
Downtown	4,075	38
East Side	1,695	16
Industrial	200	2
North	1,036	9
Police Dept	42	<1
West Side	3,747	35
Total	10,795	100

Source: Ludlow Police Department

Despite the town's substantial growth, emergency personnel have worked to meet the challenge, and fire and ambulance response times, or the time it takes to travel from the station to the location of the call, have slightly improved to an average of less than 3.5 minutes per call. This compares well compared to the National Fire Protection Association (NFPA) standard of 4 minutes per call. However, some

residents have expressed concerns about response times for subdivisions in the northeast corner of town, near Belchertown. In addition, because many new subdivisions do not have public water, they also do not have fire hydrants. Several years ago, the town began to address this problem by requiring new subdivisions with more than three homes to install underground water cisterns if they do not have access to public water.

A 2008 Ludlow Fire Department study found that, based on building permits granted between 1997 and 2007, nearly 45 percent of all new construction took place in Precinct 3, the largest and most rural area of town, and all but one of the new structures in that area was residential. Precinct 6 experienced nearly 25 percent of the total development during this time, followed by Precinct 1, which experienced nearly 16 percent of the new development. Precincts 2, 4 and 5 combined accounted for 16 percent of total development. However, although some precincts experienced more development than others, and although there was a 60 percent increase in the total number of emergency runs, the percentage of emergency calls in each precinct remained consistent.

A number of years ago, a study was conducted to consider the construction of an emergency substation by the Springfield Reservoir (Precinct 3). Based on this study, it was determined that this would not be a good location for a substation. However, the town's safety complex, which houses fire, police and emergency services, is near capacity, so if the population continues to grow, another station may be needed in the future. If this becomes necessary, a study should be conducted in the future, possibly looking at the area between Center Street and East Street, an area that has and is expected to experience significant development.

Overall, the Police and Fire Departments report that the greatest current need is for additional personnel. The Fire Department has been granted 32 emergency response positions (all firefighters are EMT's, 17 of which are full paramedics, trained to respond to both ambulance and fire calls), but currently only 30 of these positions are funded. As a result of an aging population and new senior housing facilities this has resulted in a significant increase in ambulance calls, where there is now a growing need for additional emergency response personnel. However, although users are billed for ambulance services, these payments are not directly available to the Fire Department to increase staff levels because they are deposited into the town's general fund, not into a dedicated ambulance account. As a result, the Fire Department does not have the flexibility to use these funds to hire new personnel to meet the increased demand. Instead, the Department has responded to increased demand by requiring overtime of existing staff.

Meanwhile, the Police Department has 33 budgeted Police staff, including 4 positions that are currently unfilled, with 2 currently attending the Police Academy and 2

waiting to attend the Police Academy in the near future. Based on a current assessment of need, there is a need for three to four new police staff. For both departments, additional full-time personnel would reduce demand for current staff to work overtime.

Overall, due to continued population growth, including development in the rural areas of town (particularly in Precinct Three) and increases in the elderly population, Ludlow must continue to increase equipment supplies and the number of emergency personnel. In addition to personnel, the town currently owns 12 police vehicles, 3 fire engines, 1 aerial platform, 1 tanker, 1 chemical truck, 3 ambulances, 2 forestry trucks, and 1 boat. With regard to equipment needs, four wheel drive police vehicles are needed to be able to respond in flood situations, and radio and phone communications equipment upgrades are needed. In the past two years, the Fire Department has added two vehicles to its fleet: an ambulance, to address the increasing occurrences of multiple calls at the same time; and a tanker truck to serve development outside the water district. Due to storage constraints at the town's safety complex, a small utility trailer had to be sold in order to accommodate these new vehicles. The Department's 3 engines are 10, 19 and 21 years old and with increasing reliability and maintenance issues they will need to be considered for replacement. Also, despite the addition of the new tanker truck, the Fire Department hopes that consideration will be given to expanding the municipal water system. Each year, the Emergency Planning Committee updates the town's Emergency Management Plan, so the committee continues to plan new measures to augment supplies and personnel as the town needs increase.

Library Services

The Hubbard Memorial Library has been serving Ludlow residents for over a century. The library's mission is to enable people to explore library resources, to enrich their lives with information, knowledge and enjoyment. The library also seeks to provide free and equal access to information and service to people of all ages and abilities.

The original 1890 building is one of Ludlow's landmark historic buildings. The library hosts a collection of books, magazines, videos, CDs, books on tape, and other media resources for both adults and children. The library provides computers with free internet access to the public, as well as research databases, youth services and children's events, and other events. The library is also used as a community meeting spot, and is used by local clubs and organizations to hold meetings.

The library building was renovated about 20 years ago, but the library and some residents have noted that even with creative strategies for displaying and storing media, the library faces significant space constraints. New categories of media and

the increasing use of the internet to access information require the library to find space for additional computers, DVDs and CDs. As a result, there may eventually be a need for expansion.

Library parking is also a significant issue, especially in the summer and when children's programs are scheduled. Currently, there are two 15 minute parking spots and two disabled parking spots at the library. There is a town lot on the adjacent property, but it is often full and is also shared by those who use the senior center. In order to provide parking for some library programs, it has been necessary to park up to 10 cars on the lawn, so one solution may be to create more lawn spaces for occasional use. Recently, the town purchased a property on Park Place to help alleviate parking problems at the library and other town buildings. This new lot is expected to result in additional new parking spaces.

Table 6: Library Services Comparison

	2007 Population	Total Operating Expenditures Per Capita	Materials Expenditures Per Capita	Total Staff (Full Time Equivalent) Per 10,000 People	Computers with Internet Access	Total Holdings
Granby	6,347	\$19.15	\$4.26	3.94	4	29,568
Palmer	12,926	\$58.23	\$10.16	9.83	46	67,803
Wilbraham	14,044	\$49.33	\$8.37	8.97	11	74,936
Belchertown	14,103	\$27.17	\$4.22	4.68	7	29,375
South Hadley	15,331	\$33.49	\$7.55	6.39	13	49,272
Ludlow	21,951	\$15.78	\$2.71	3.33	10	57,654
Agawam	28,510	\$36.17	\$6.09	6.94	23	156,602

Source: FY2008 Public Library Services at a Glance, Massachusetts Board of Library Commissioners

The library and some residents would like the town to offer greater financial support to the library. In addition to books and other materials, the library reports that additional staff is needed. While volunteers can help to shelve books and keep things in order, there is a need for professional circulation and reference staff. As shown in Table 6, the Library Services Comparison, Ludlow spends significantly less per capita than other towns of a similar size, including Wilbraham, Belchertown, South Hadley and Agawam. To help raise additional funds, the library has established a Memorial Fund to accept contributions and memorials to enhance library services and provide books and other much-needed resources.

Senior Services

Fifteen percent of Ludlow's population, or 3,167 residents, are age 65 years or older, compared with 12.4 percent nationally (Census 2000). Ludlow's Council on Aging is responsible for senior services and the Ludlow Senior Center. Its programs include a Senior Center van service, a fuel assistance program, and services to help seniors

access federal prescription drug programs, as well as other services and programs. The Ludlow Senior Center runs an extensive Nutrition Program that serves lunch on weekdays, and it facilitates access to other food programs, including Meals on Wheels, Food Stamps, food and clothing programs offered through the Survival Center in Indian Orchard, and a Brown Bag Program that supplements the food budgets of low income seniors. The Senior Center's Outreach Coordinator fills a significant role in educating seniors about the many services and benefits that are available to them.

The Ludlow Senior Center hosts a wide array of additional activities that serve seniors, from organizing shopping trips to stores to hosting clubs, classes, and entertainment events. Classes held at the Senior Center include art, crafts, dance and yoga. Entertainment includes movies, bingo, speakers, luncheons and a host of other events, from local garden tours to golf outings. Club and organizational meetings include book clubs, discussion events, and meetings of various organizations. Finally, the Senior Center organizes a variety of health clinics, including blood pressure checks, Alzheimer's support, hearing clinics and massage therapy.

In the face of growth in the elderly population and a combination of budget cuts, it is challenging for the Senior Center to continue to provide a high level of service. The population served by the Senior Center is increasing by three percent each year, and recent budget cuts have resulted in a loss of staff. This has put a significant strain on the Senior Center's ability to continue to provide existing services.

In addition to operating budget constraints, the Senior Center facility is in need of building upgrades, including exterior repairs, interior updates and energy efficiency retrofits, including possible replacement of windows, lighting and the mechanical equipment for heating, ventilation and air conditioning. Because the town is considering the possibility of contracting an energy savings company (ESCO) to pursue energy efficiency upgrades to town facilities, there may be an opportunity to wrap in additional upgrades to the exterior and interior of the senior facility as well.

Finally, although the Senior Center is well-located and has a generous amount of facility space, limited parking at the facility has emerged as a significant issue. Because there are no opportunities for new surface parking lots near the Senior Center, the town might consider a solution that couples a new Park & Ride lot with a shuttle service. However, prior to implementing any parking solutions, it is recommended that the town examine parking issues at the Senior Center within a larger parking study of the East Street Corridor.

Although it is desirable to be able to expand programming, currently the main focus of the Senior Center is to continue to provide existing services in the face of a growing elderly population. In order to meet this challenge, the Senior Center will

need continued funding that increases as needed, to accommodate this growing population.

Rubbish and Recycling Services

Many municipalities in Western Massachusetts do not provide curbside pickup, so Ludlow residents are lucky to enjoy town-wide rubbish and recycling pickup. In Ludlow, rubbish is collected every week, and recycling is collected every other week. The town also operates a Transfer Station and Compost Facility. In addition to residential household trash, the Transfer Station accepts auto and truck batteries, auto tires, fluorescent tubes and mercury bearing devices, waste oil, microwaves, and recyclable materials, including glass, metal, steel, newspaper, cans, cardboard, and single polymer plastic containers. Other appliances and electronic devices are accepted with a special permit (purchased at the DPW office). The compost facility accepts branches, grass and leaves. The Department of Public Works website provides comprehensive information about the town's rubbish and recycling services, as well as what materials can be recycled.

Table 7: Recycling Rates Comparison

	2005 Recycling Rate	2006 Recycling Rate	2007 Recycling Rate	2008 Recycling Rate	Curbside Pickup
Granby	20%	18%	21%	18%	No ¹
Palmer	3%	8%	20%	22%	Yes
Wilbraham	49%	33%	33%	43%	No
Belchertown	23%	32%	23%	18%	No
South Hadley	49%	40%	26%	36%	Yes
Ludlow	20%	23%	27%	27%	Yes
Agawam	27%	33%	25%	30%	Yes

Source: Massachusetts Municipal Residential Recycling Rates, Calendar Years 2002 – 2008, Massachusetts Department of Environmental Protection (MassDEP); Curbside pickup data collected from Municipal Websites

Table 7 provides a summary of the residential recycling rate in Ludlow and other nearby municipalities. Residential recycling rates indicate the proportion of residential waste diverted from the total waste stream (measured in tons). These figures are based on data reported annually by municipalities. As shown in Table 7, Ludlow's residential recycling rate in 2008 was 27 percent, which is comparable to many municipalities in the region, but there is always room for improvement. The town was able to increase its recycling rates in 2006 by conducting a significant public relations campaign, and the town has realized operational savings for its

¹ However, a new curbside pick-up program began in 2009.

rubbish collection services by increasing the proportion of wastes diverted for recycling. In the near future, the Department of Public Works is planning to conduct another education campaign.

Telecommunications

Telecommunications services are not provided by the Town of Ludlow, but are provided by private suppliers, including Verizon, Comcast, Cox, RCN and Charter. Ludlow's first telephone infrastructure was installed by the Springfield Telephone company in 1880 and provided service to five telephones in town. In 1892, the American Telephone and Telegraph Company requested permission to extend its service into Ludlow. Construction of the American Telephone and Telegraph Company lines commenced in 1904, and a switchboard telephone service was formally inaugurated in 1904. By 1911, lines and poles were installed throughout the village, and lines were being extended into rural areas. The 1911 school report noted that wiring and phone connections had been completed from the school office to the old and new high schools. By 1917, the local telephone company was now the New England Telephone and Telegraph Company. Between 1924 and 1930, there were two switchboard upgrades, and in 1940 the town switched to a direct dial service. After 1940, regular upgrades were made to this system, and in 1973, the New England Telephone company reported more than 7,700 phones in Ludlow.

The New England Telephone Company was part of the Bell Operating Company of the original AT&T. In 1984, AT&T was divested of its local operating companies, which became NYNEX, Bell Atlantic and Verizon. Verizon continues to operate land-based telephone and internet services in Ludlow today, and there are a number of other private cellular and cable providers as well.

Recently, with the increasing ubiquity of internet use, there has been a growing movement for publicly provided broadband services that provide internet access to the public. Proponents argue that there is a need for all people to have access to the internet, and many municipalities are taking action to meet this need. In Ludlow, some participants at the recent Master Plan Visioning Workshops expressed a desire for municipally-provided, town-wide broadband services.

Opportunities and Challenges

In Ludlow, continued low density residential development is likely to increase the costs of town infrastructure and services. Widespread national data support the finding that providing services, including water and sewer services, is significantly more expensive per household in less dense areas. Studies in California and Florida

have shown these extra costs to be on the order of \$20,000 per residential unit.² Similarly, a study by Rutgers University comparing a low density development in New Jersey with a more compact infill development found a differential of about \$25,000 per residence.³ Low density development increases the costs of services in other ways as well. For example, it increases the number of roads that must be maintained, and it makes it more time consuming and expensive for a town's police and emergency services to provide coverage. Studies continue to substantiate and refine these observations. The lower density of individual consumers has been found to undermine economies of scale in the provision of refuse collection, police and fire protection, public transport, road cleaning services, and expansion of roadways, sewerage, water and electricity, resulting in inefficient cost increases.⁴ These are many challenges, but Ludlow has an opportunity to address them holistically by coordinating its land use and development policies with its capabilities and plans for providing public services and facilities. As the town does this, it also has an opportunity to coordinate its development and infrastructure plans with other service providers, particularly the Springfield Water and Sewer Commission. For areas that will not be served by public infrastructure, the town must continue to encourage private land owners to test well water quality for safety. At the same time, in addition to its monitoring efforts at Haviland Pond, the town could expand water quality monitoring to other water bodies that are used for recreational boating or informal swimming.

Along with water and sewer services, the town must accommodate and balance additional public services as well, including senior services and emergency management services. The Ludlow Senior Center requires maintenance and upgrades, and parking is a significant issue. The recent purchase of the property on Park Street to provide additional municipal parking will help to alleviate parking pressures. In addition, it is recommended that the town examine parking issues at the Senior Center within a larger parking study of the East Street Corridor. In the long-term, parking pressures at the Senior Center might be mitigated further by planning for more senior housing options within walking distance of the Center. As previously discussed, the town's emergency services are under increasing strain. Future town budgeting may need to address the needs of these departments, possibly providing funds to hire more personnel, purchase additional equipment, augment existing facilities, or establish additional facilities. Some residents have suggested the possibility of developing a substation that would serve part of the town where emergency response times are slower. At the same time, to ensure

² Nicholas, J.C., Nelson, A.C., and Juergensmeyer, J.C. (1991) *A Practitioner's Guide to Development Impact Fees*. Chicago, IL: Planners Press (APA).

³ Bragado, N., Corbett, J., and Sprowls, S. (1995) *Building Livable Communities: A Policymaker's Guide to Infill Development*. Prepared by the Center for Livable Communities A Local Government Commission Initiative.

⁴ Carruthers, J.I. (2002) *The impacts of state growth management programmes: a comparative analysis*, *Urban Studies*, 39 (11), pp. 1956-1982

continued high level of service in the future, the town should make efforts to coordinate land use and development permitting with emergency response capacity.

On the whole, this master planning process provides a new opportunity for Ludlow to assess, streamline and augment its public services in response to current and future needs, as well as current best practices and the experiences of other communities. For example, with regard to rubbish and recycling collection, many communities across the nation are cutting costs by switching to biweekly trash pickup. Coupled with an organics collection and composting program that picks up weekly, some communities have been able to achieve significant reductions to the solid waste stream. Further, the addition of new public services, such as town-provided broadband, which enjoys some public support in Ludlow, might be considered in the future.

The areas of town that are best suited for future economic development initiatives and job creation, including the Westover Industrial Park, the Ludlow Mills and the town center, have sufficient infrastructure capacity to accommodate future growth. However, like many industrial towns in the northeastern United States, Ludlow's infrastructure is aging, so the challenge will lie in maintaining and, as necessary, upgrading this existing infrastructure.

Providing adequate public services and facilities is always a balancing act, and even in flush times, tradeoffs must be made. However, Ludlow can help meet its long-term public services and infrastructure needs by setting goals and priorities, and by developing a Public Services and Capital Improvements Plan to establish a long term plan for service and infrastructure improvements, including facilities and equipment upgrades that require substantial capital investment. This effort can build off the current Capital Purchase List for items that cost over \$25,000, and can help Ludlow to balance many challenges and opportunities, from maintenance of aging infrastructure and emergency services to expansion and creation of new services to meet the needs of the 21st Century. In addition, the planning process will help the town to respond to changing demographics, particularly its aging population. With appropriate services and infrastructure planning, the town will help ensure a safe, reliable, and healthy future for its children and future residents.

Goals and Strategies

Immediate	Completion within one year of master plan adoption
Short Term	Completion within five years of master plan adoption
Mid Term	Completion within ten years of master plan adoption
Long Term	Completion within fifteen years of master plan adoption

GOAL 1: Monitor Water Quality to Protect Public Health

Strategy 1: Continue to encourage residents on well water to regularly test water quality. Develop materials to educate residents about how to test their well water, what to test for, what wastes can be put in septic systems, and common problems relating to septic system contamination of well water.

Responsible Party: Board of Health

Resources Needed: Staff and Volunteer Time

Target Date for Completion: Ongoing

Strategy 2: Continue to monitor water quality in Haviland Pond, and expand the monitoring program to include any other surface water bodies in which recreational boating or swimming occur. In addition, work to reactivate the Chicopee River Watershed Council in order to establish a water quality monitoring program.

Responsible Party: Board of Health, Pond Management Committee, Conservation Commission, Planning Department, Friends of the Chicopee River

Resources Needed: Staff Time

Target Date for Completion: Ongoing

GOAL 2: Establish Land Use and Development Policies that Respond to Infrastructure Capacity

Strategy 1: Develop zoning regulations that allow for greater development densities where water and sewer infrastructure is available, and to reduce development densities where water and sewer infrastructure is not available.

Responsible Party: Planning Board, Town Planner, Department of Public Works, Springfield Water and Sewer Commission

Resources Needed: Staff Time, Volunteer Time, funding for consultant

Target Date for Completion: Immediate

Strategy 2: Selectively invest in infrastructure improvements to direct new residential units to areas the community has identified for growth.

Responsible Party: Board of Selectmen, Department of Public Works, Conservation Commission

Resources Needed: CDBG funds, staff time

Target Date for Completion: Ongoing

Strategy 3: Develop a process to evaluate sewer system extensions based on land use goals, water quality impacts, inter-basin flows, and the available budget.

Responsible Party: Department of Public Works, Planning Department, Board of Health, Springfield Water and Sewer Commission

Resources Needed: Staff Time

Target Date for Completion: Ongoing

GOAL 3: Realize Cost Savings on Infrastructure and Services

Strategy 1: Identify and assess potential areas in which regional services may help the Town of Ludlow or its residents achieve cost savings.

For example, consider possible equipment sharing and shared service contracts for health services and Department of Public Works services (snow plowing, catch basin cleaning, street sweeping, paving, line painting, etc.)

Responsible Party: Select Board, Town Administrator, DPW

Resources Needed: Staff Time

Target Date for Completion: Immediate

Strategy 2: Identify and evaluate potential areas to reduce the cost of services or infrastructure by either developing the capacity to provide services in-house that are currently contracted out, or by contracting out services that are currently inefficient for the town to provide itself.

Responsible Party: Department of Public Works, affected bargaining units

Resources Needed: Staff Time

Target Date for Completion: Ongoing

GOAL 4: Plan for Future Services and Facility Needs

Strategy 1: Update Ludlow's Local Disaster Mitigation Plan as necessary, targeting greater integration among town departments.

The town developed a Local Natural Hazard Mitigation plan in 2008 which identifies natural hazards that might impact the community, conducts a vulnerability/risk assessment to identify the infrastructure at the highest risk for being damaged, and identified the policies, programs, and regulations a community is currently implementing to protect against future disaster damages. Plans should be updated every five years, and funding is frequently available for FEMA to update the plans.

Responsible Party: Emergency Management Director (EMD), Police Department, Fire Department, Ambulance Service, Department of Public Works, Town Administrator, Board of Selectmen, Department Heads

Resources Needed: Staff Time

Target Date for Completion: Ongoing

Strategy 2: Encourage Town Departments to propose specific service, infrastructure and facility needs and develop a Public Services and Capital Improvements Plan.

This plan should address water and sewer infrastructure, stormwater services, police and emergency services, library services, senior services, etc.

Responsible Party: Capital Improvement Planning Committee, all municipal departments and boards, Finance Committee, Town Accountant

Resources Needed: Staff Time

Target Date for Completion: Long Term

Strategy 3: Identify and evaluate actions to reduce solid waste disposal costs and to recover additional materials from the waste stream, including reducing rubbish collection to every other week, developing an organic waste collection and composting program, and taking additional measures to increase recycling rates and reduce waste generation. Evaluate the possibility of installing public recycling bins next to public trash bins.

Responsible Party: Department of Public Works, Energy Committee

Resources Needed: Staff Time, Volunteer Time

Target Date for Completion: Ongoing

ENERGY AND SUSTAINABILITY

Introduction

Environmental sustainability is the now widely used term to describe a future human society that is structured to maintain long-term well-being, which requires maintaining the health and function of the natural systems that support us. Energy is a sustainability issue that has received a great deal of attention in recent years because the main fuels used to power human society – including coal, natural gas, and petroleum – are both non-renewable resources, meaning that they will eventually run out, and their use also releases carbon dioxide and other emissions that are causing global climate change. In addition to energy, this chapter addresses waste, water efficiency, and local agriculture.

With regard to energy, there are two main strategies for moving towards environmental sustainability: increase energy efficiency (reduce use of energy) and increase use of renewable energy sources (replace use of fossil fuels with solar energy, wind energy, etc.). As detailed in this chapter, Ludlow is working on both of these strategies. The town recently established an Energy Committee, and significant work is underway to meet the requirements of the state's new Green Communities Program.

During the Stakeholder Interviews and the Visioning Workshop held as part of this comprehensive planning process, Ludlow residents expressed considerable enthusiasm for renewable energy. Residents supported the idea of using the capped former town landfill site for solar photovoltaics (solar panels), and there was also mention of solar photovoltaic (solar panel) installations at the schools. In addition, a number of residents expressed a strong interest in small, residential scale wind turbines.

Solid waste reduction, another key sustainability topic, minimizes the resources required to handle, treat and dispose of waste. Meanwhile, waste diversion is the process of redirecting waste away from landfills or other final disposal. When wastes are diverted, they are either reused or recycled. Recycling of cans, glass, and plastics saves energy and reduces extraction of virgin materials. Similarly, composting

organic wastes recycles organic materials into finished compost that can be used for a variety of gardening and farming applications.

Water is a limited resource that must be managed with a long-term view. Even in Massachusetts, a state with abundant water resources, there are places that experience water stress as a result of droughts combined with high demand. Therefore, this chapter addresses water efficiency and demand management. In addition to water use efficiency, water quality is a key concern as well. In the Public Services and Facilities Chapter, there is a detailed discussion of Combined Sewer Overflow (CSO) points, stormwater runoff management, and septic systems. Stormwater management is also discussed within the context of water resource quality in the Open Space and Natural Resources Chapter.

Although sustainable agriculture involves a number of components, including food production methods that are healthy, do not harm the environment, respect workers, are humane to animals, etc., buying food as locally as possible helps support a sustainable food system. Supporting local agriculture not only supports the local economy and helps make farming a locally viable occupation, but it also reduces the carbon emissions associated with shipping food.

Finally, other areas of sustainability address efficient use of developed land, preservation of natural resources and ecological functions, and availability of alternative transportation options. These topics are addressed briefly in this chapter within the context of energy, and are also addressed in detail in the Land Use, Open Space and Natural Resources, and Transportation Chapters.

Trends and Data

History

In many ways, Ludlow enjoys a past legacy of sustainability as an agricultural and mill town that produced food, goods, energy and jobs that supported local residents. Between 1675 and 1775, the area was settled and used largely for agricultural production, as well as limited industrial production, including ironworks at early mills. Between 1775 and 1830, cotton production, sawmills and other manufacturing activities became established, and principal agricultural products included corn and rye. Later, between 1830 and 1870, gun barrels, jute, wool, and lumber were manufactured in town, and there was minor home production of boots, shoes and hats. Even as the town fully industrialized, it harnessed hydropower from 11 dams on the Chicopee River.

Prior to modern times, the town relied on water to power its mills, and there were densely built centers that allowed for walking from home to work. Food was

produced locally, and the legacy of this remains today, as agriculture remains an important part of the local economy and town identity. In addition, the densely built areas of town remain walkable, with residents connected by a network of sidewalks to nearby civic and commercial services, and with three hydroelectric facilities remaining, some power is still generated by water today.

Past Planning Efforts

Regional Plans

The Valley Vision 2 Regional Land Use Plan includes significant discussion of smart growth principles, which help promote environmental sustainability. The Plan discusses the significant costs of unplanned growth in the Pioneer Valley, and provides goals, objectives and strategies to implement smart growth in the region. This plan, completed in 2007, was accompanied by a Memorandum of Agreement, and this agreement was endorsed by many Pioneer Valley communities, including Ludlow.

The Pioneer Valley Clean Energy Plan sets out goals for the region for energy efficiency and renewable energy production. The Plan includes detailed smart growth recommendations for the Town of Ludlow in its "Valley Vision Toolbox", including a Smart Growth Community Checklist and a Valley Vision Community Map for Ludlow. This plan, completed in 2008, was accompanied by a Memorandum of Agreement for Promoting and Implementing the Pioneer Valley Clean Energy Plan, and this agreement was endorsed by many Pioneer Valley communities, including Ludlow.

Additional plans that address sustainability issues include the Pioneer Valley Plan for Progress, the Regional Transportation Plan for the Pioneer Valley Metropolitan Planning Organization, and the Bicycle and Pedestrian Plan for the Pioneer Valley Metropolitan Planning Organization. All regional plans can be viewed at www.pvpc.org.

Green Communities Action Plan (2010)

Ludlow's Energy Committee recently adopted and implemented a Green Communities Action Plan, a plan that laid out how the town will achieve Green Community status by meeting the five required criteria. These criteria are as follows: 1) Provide for the as-of-right siting of renewable energy generating facilities, research and development facilities, or manufacturing facilities; 2) Adopt an expedited permitting process for these facilities that does not exceed 1 year from the date of initial application to final approval; 3) Establish an energy use baseline inventory for municipal buildings, vehicles and street lights, and put in place a

comprehensive program design to reduce this baseline by 20 percent within 5 years; 4) Adopt a policy to purchase only fuel-efficient vehicles for municipal use whenever such vehicles are commercially available and practicable; and 5) Adopt the Stretch Code, which requires new construction and additions to be more energy efficient than is required by the base building code. Four of the five criteria were met, but the proposal to adopt the Stretch Code failed at the Spring 2010 Town Meeting vote.

Twenty Percent Energy Reduction Plan (2010)

Ludlow's Energy Committee, Board of Selectmen, and School Committee recently adopted an Energy Reduction Plan, a plan to reduce municipal energy use for buildings, vehicles and lighting by 20 percent by 2015.

Energy

Energy services are provided to the town and its residents by private suppliers. The Western Massachusetts Electric Company (WMECO) provides electricity. The Bay State Gas Company builds and maintains Ludlow's central gas lines, and also provides natural gas through these lines. Because Ludlow has only low pressure gas lines, there may be a need to extend intermediate pressure gas lines across the river from Chicopee to downtown Ludlow in order to support the more intensive energy needs of commercial development. In addition to central gas services, natural gas, oil and other energy fuels are purchased from various private companies. The Commonwealth's Mass Save energy efficiency programs are available to residents, businesses and the Town of Ludlow through the Western Massachusetts Electric Company and the Bay State Gas Company.

Ludlow owns and maintains seventeen municipal buildings, including five public schools, as well as street lights and vehicles. In 2009, the town inventoried its energy use. The summary results of this inventory are shown below (Figure 1). Some of the town's school buildings, particularly the Ludlow High School and the Paul R. Baird Middle School, consume a large quantity of energy compared to town facilities (e.g. DPW, Town Hall, Hubbard Library). However, other large users of energy include the Boys and Girls Club, town vehicles, the Senior Center, and street and traffic lights. When considering energy efficiency upgrades to building facilities, it is important to weigh not only the total quantity of energy consumed, but also how energy efficient a given facility is. Figure 2 compares energy use per square foot (on the horizontal axis) to total energy use (on the vertical axis). Building facilities that both use a lot of energy and are also less efficient may be good candidates for priority upgrades. Thus, Figure 2 reveals that priority facilities include the Ludlow High School and Paul R. Baird Middle School, which are both large energy users and are at about the median level of energy efficiency. In addition, significant reductions might be realized by also targeting the East Street and Chapin Street Elementary Schools, as the total energy use for these buildings is near the median, and both facilities have room for significant efficiency improvements.

Ludlow's 20% Energy Reduction Plan sets a goal of reducing municipal energy use from a baseline of about 46,000 MMBtu in fiscal year 2009 to 37,000 MMBtu in 2014, achieving an annual energy use reduction of around 93,000 MMBtu. In addition to energy savings, reaching these targets will also allow the Town of Ludlow to save an estimated \$154,000 a year in energy costs. The Town is working with Siemens Technology (an Energy Savings Company, or ESCO) and Beacon Integrated Solutions to explore the feasibility of a performance contract to fund energy efficiency improvements in all municipal buildings, including schools. Performance contracting is a procurement process that enables customers to use energy savings within their existing buildings to fund necessary building upgrades, retrofits, and other improvements without having to budget additional funds. To date, Siemens Technology has completed its Preliminary Energy Audit for Ludlow. This audit analyzes municipal energy use and reviews potential building upgrades to determine whether the projected energy savings could support a bond for capital improvements upgrades. The next step will be to determine whether to move forward with an Investment Grade Energy Audit, a more detailed process that determines the precise costs and benefits of proposed energy efficiency improvements and establishes the energy savings that would be guaranteed by the ESCO. Once Siemens completes the Investment Grade Energy Audit, the town will receive a report that provides the town with a capital improvements plan for recommended energy efficiency upgrades. Finally, if Ludlow then determines that it makes sense to move forward with an energy efficiency capital improvements project, the next step, if financing is available, is to enter into an Energy Management Services Agreement with the ESCO to implement the work. The Investment Grade Energy Audit is free of charge to Ludlow, if the town enters an Energy Management Services Agreement with Siemens Technology. If the town decides not to enter an Energy Management Services Agreement with Siemens Technology, the town will be charged 6.5 cents per square foot for the municipal and school buildings that were included in the Investment Grade Energy Audit, totaling \$42,478.

In addition to municipal energy efficiency, Ludlow has been selected as one of four communities to take part in a Smart Power residential energy conservation pilot program. In the first phase of this program, daily energy use will be monitored. If a target number of residents sign up for this program, Ludlow could receive a municipal solar panel free of charge.

Figure 1: Municipal Facilities Energy Use

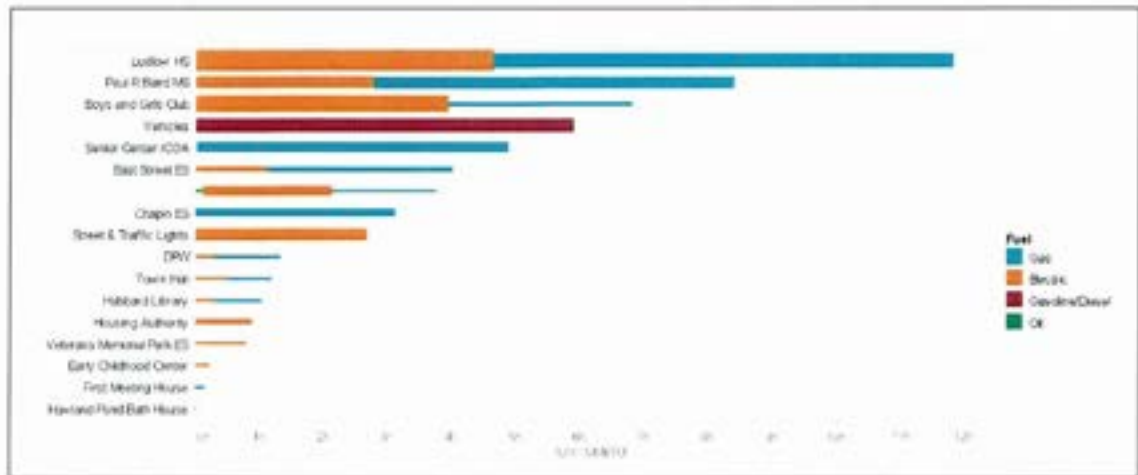
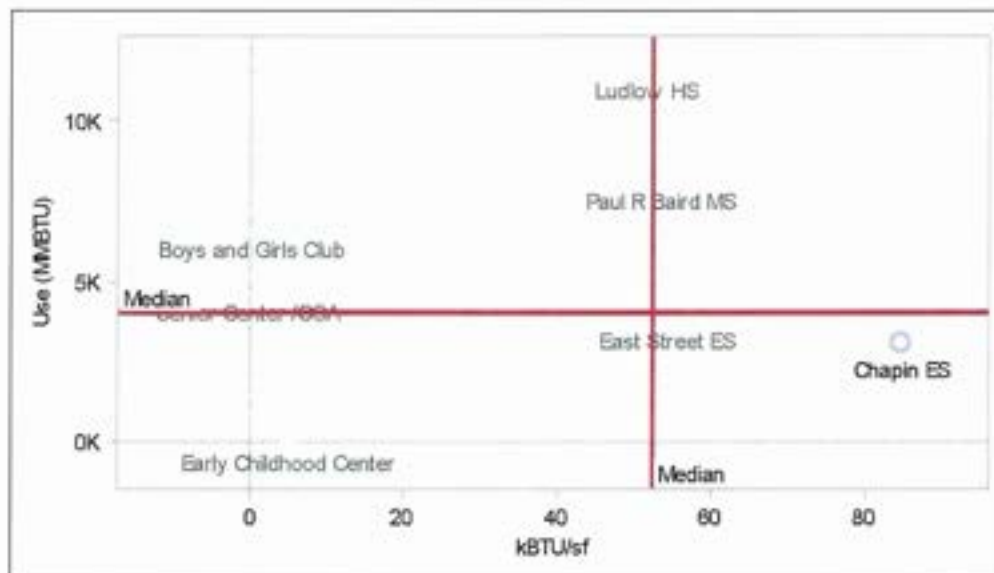


Figure 2: Municipal Facilities Energy Use and Efficiency



The town is also considering the possibility of having solar energy produced at its closed landfill site, something that could help to meet the 2008 Pioneer Valley Clean Energy Plan goal of siting sufficient new capacity to generate 615 million kilowatt hours of clean energy annually in the Pioneer Valley by 2020. According to the U.S. Department of Energy, the solar energy potential throughout Massachusetts is sufficient to support photovoltaic installations, at between 4 and 5 kilowatt hours per square meter per day. To move forward with this project, the Energy Committee is in the process of developing a Request for Proposals (RFP) for a 2 MW solar

photovoltaic (PV) array on the landfill site. Ludlow already has one commercial PV installation (less than 25 kW). Currently, the Town of Ludlow Planning Board is considering a new bylaw to encourage and regulate large-scale, ground-mounted, solar photovoltaic installations.

Figure 3 represents wind energy potential in Ludlow. According to this map, there are no parts of the town that could support commercial scale wind power that would qualify under the state's Green Communities Program (these areas would be pink, representing average wind speeds of 6 meters per second at 50 meters high). However, there is some wind power potential in town, and some residents have expressed interest in installing small-scale systems; therefore the Planning Board has drafted a bylaw to encourage and regulate these small-scale systems, and this bylaw will be considered at Spring Town Meeting in 2011.

Figure 3: Wind Energy Potential in Ludlow



In addition to the Town's efforts to encourage renewable energy, it is worth noting that Consolidated Edison, Inc. operates two hydropower plants on the Chicopee River, and there is an additional hydropower plant operated in town by the Center for Environmental Education and Information.

Finally, in addition to municipal energy efficiency and renewable energy production, this Master Planning process is considering how Smart Growth development, development that creates dense residential neighborhoods within proximity of goods and services, can be implemented in Ludlow to reduce municipal infrastructure and services costs (e.g. sewer infrastructure, emergency services, etc.), to increase overall livability and standard of living, and to reduce total vehicle miles traveled by residents in Ludlow.

Waste

In Ludlow, the town provides curbside residential pickup for rubbish and recycling. Because the town currently invests time and money to collect waste, reducing waste through composting and additional recycling can save the town money, while also saving energy, minimizing use of landfill space, and reducing the need for extraction and shipping of raw materials. In addition to rubbish and recycling, Ludlow also accepts computers, televisions and other electronics at the Transfer Station for a fee, and the town works with other communities to host a hazardous waste collection day once each year. The Compost Facility at the Transfer Station accepts branches, grass and leaves free of charge.

As of 2008, Ludlow's municipal recycling rate, or the percentage of total residential waste that is diverted through recycling, composting and hazardous waste collection, was 27 percent. In the past, the town has implemented education programs, as well as recycling programs in the schools, saving thousands of dollars in collection costs. However, there is still much room for improvement, as some communities in Massachusetts have been able to achieve rates above 50 percent. Looking at Ludlow's neighboring communities, in 2008 Wilbraham and Chicopee both reported achieving a 33 percent recycle rate, just slightly higher than Ludlow's rate. If Ludlow is able to substantially increase its residential recycling rate, the town may be able to reduce the cost of its waste hauling services. Meanwhile, in addition to traditional recycling, collection of organics is becoming an increasingly popular idea, and some municipalities in Massachusetts are already collecting organics or are considering organics collection.

In addition to residential waste diversion, recycling can also be improved within Ludlow's municipal buildings and schools. There are currently some recycling containers in some municipal buildings, but there is considerable room for improvement. Meanwhile, the Energy Committee and DPW are working with Ludlow's schools to increase school recycling rates. If Ludlow is able to increase its school recycling rates, the town is eligible to receive a credit from its waste hauling company.

Water

Between July 1, 2009 and June 30, 2010, about 572 million gallons of public water were supplied by the Springfield Water and Sewer Commission to Ludlow residents, businesses and institutions. Commercial customers used about 110 million gallons of water, industrial customers used 84 million gallons of water, residential customers used 363 million gallons of water, and municipal facilities used 13 million gallons of water.

At 363 million gallons per year, residential customers in Ludlow use more water than commercial, industrial and municipal facilities use together. Since many households are on private wells and therefore do not use public water, it is not possible to accurately calculate a per capita residential consumption rate. However, based on the number of existing residential water accounts, which may be taken to roughly represent household customers, the household water consumption rate in Ludlow is estimated to be 213 gallons per household per day. Based on the town's average 2.55 people per household size (Census 2000), this translates to an estimated residential water consumption rate of 83.5 gallons per person per day. This is within the range given by the Massachusetts Water Works Association, which estimates that state residents consume between 75 and 167 gallons of water per person per day. Similarly, American Water Works Association data show that daily per capita indoor water consumption in the U.S. is about 69 gallons, and outdoor water consumption (i.e. for landscaping) is about 32 gallons per person per day.

Relatively new Massachusetts state regulations have targeted a water consumption rate of 65 gallons of water per person per day by 2014. To achieve this, based on the estimated consumption rate of 83.5 gallons per person per day, Ludlow residents would need to reduce their water consumption over 20 percent, or by nearly 20 gallons per day. Water use can be reduced significantly through water conservation efforts. The American Water Works Association provides water conservation data showing that indoor use can be reduced by about 35 percent by regularly checking for leaks and by installing water efficient fixtures, including water efficient shower heads, clothes washers, toilets, dishwashers, baths and faucets. In addition, behavioral changes can lead to further reductions. Landscaping is another area in which significant reductions can be realized through both water efficient irrigation devices as well as landscape management changes. At the same time, use of native and other plants that do not require as much water has become an increasingly popular way to reduce water use.

In addition to residential water use, commercial, industrial and municipal water users are responsible for about 36 percent of public water use in Ludlow. Most of this is commercial and industrial water use, as the Town of Ludlow is responsible for about 2.5 percent of the town's public water consumption. However, about 13

million gallons of water consumed annually is still significant, and there may be room for the town to reduce water use and set an example to private water users through use of efficient fixtures, alternative landscape management practices, and other water use reduction strategies.

The Springfield Water and Sewer Commission offers educational materials about water efficiency to its customers, and it also established a Rain Barrel Program that offers rain barrels at a low cost to customers, including Ludlow customers. The Commission also has several educational programs, including school trips to Bondi's Island Wastewater Treatment Plant, but these programs have to date been targeted to Springfield Schools and have not been offered in Ludlow. Finally, the Commission undertakes various additional watershed protection and management efforts to maintain water quality for its customers.

In addition to water use efficiency, water quality is a key sustainability concern as well. In the Public Services and Facilities Chapter, there is a detailed discussion of Combined Sewer Overflow (CSO) points, stormwater runoff management, and septic systems. Stormwater management is also discussed within the context of water resource quality in the Open Space and Natural Resources Chapter.

Local Agriculture

Agriculture was the mainstay of Ludlow's economy early in its history, and the town once had many dairy and vegetable farms. While the agricultural landscape is now fragmented, Ludlow still has significant agricultural assets, with farms dotting the landscape along stretches of Munsing Street, along Rood Street and Lyon Street in central Ludlow, and along Poole Street in eastern Ludlow. There are remaining farms along Lyon Street that were originally purchased by Polish immigrants who left the mills to pursue agriculture.

Today, Ludlow has many horse farms, as well as some hay and corn feed operations. Several farms grow vegetables, including Berry Knoll Gardens, Wind Mill Farms, and Randall's Farm. There are also approximately half a dozen honey bee farms, as well as a few Christmas tree farms. Although Ludlow does not have its own farmer's market, there are markets in nearby communities, such as Belchertown and Longmeadow, and some farmers take their products to these neighboring farmer's markets. Finally, Randall's Farm is both a farm and a market that in many ways is the current cultural center of Ludlow's agricultural identity.



Hayfield in Ludlow

In addition to the town's Right to Farm Bylaw, Ludlow's Agricultural Commission was established in 2008 to support the operations of local farmers. The Commission provides information to farmers when questions arise, and it helps to mediate conflicts between farming and residential uses. The Commission also helps farms to navigate environmental issues and Conservation Commission regulations.

Other than Randall's Market, some farm stands, and the farmer's markets of nearby communities, residents in Ludlow have few opportunities to support local agriculture. Some residents have begun to discuss the possibility of establishing a farmer's market, and the Agricultural Commission will consider organizing a farmer's market if there is significant local interest. Another significant tool that enables residents to support local agriculture is the CSA (Community Supported Agriculture) farm. Some Ludlow residents are members of Red Fire Farm in Granby, but there are not yet any CSA farms in Ludlow. If any local farmer is interested in establishing a CSA operation, the Ludlow Agricultural Commission is available to assist in that endeavor.

Opportunities and Challenges

While sustainability presents a host of new challenges, it also offers an enormous opportunity to increase the livability of our developed areas, to preserve agriculture and open space resources, to live more healthy lifestyles, to enhance our connections to our environment, and to save money, use resources wisely, and support local economic development. In order to move towards this future, a comprehensive set of goals and strategies are needed. It is also important to recognize that competing viewpoints will challenge us as we articulate and implement a vision for a sustainable future.

Regarding energy, there is an enormous opportunity for Ludlow to upgrade its facilities, particularly its school facilities, and to save money through energy efficiency. In addition to schools, the older town buildings, including the Hubbard Memorial Library, Town Hall and Senior Center, were built in the late 1800s and early 1900s and are in need of improvements in the future. As previously mentioned, Ludlow is working with Siemens Technology to implement the town's 20 Percent Energy Use Reduction Plan. Through a regional procurement process, the Pioneer Valley Planning Commission (PVPC) recently worked with cities and towns in the region, including Ludlow, to select an experienced Energy Services Company (ESCO). ESCOs work with municipalities to develop a package of infrastructure improvements, and then the ESCO guarantees that the resulting energy savings will pay for these improvements. If a town wants to move forward with the package, it issues a bond to pay for the improvements, and the guaranteed energy savings are then used to make the bond payments. Once the bond is paid off, energy savings

revert to the town. As part of its regional contracting process, PVPC hired an owner's agent, issued a Request for Proposals, reviewed proposals and selected Siemens Technology as the winning bidder, and negotiated a contract with Siemens on behalf of the region's municipalities.

As noted, there are also opportunities for renewable energy production in Ludlow, especially solar energy, which are being pursued. Land use and transportation strategies discussed in other chapters, including smart growth development, a well-maintained sidewalk network, and bike paths, all represent major opportunities to reduce driving miles while increasing livability. Ludlow's Subdivision Regulations require sidewalks in all new subdivisions, and public investments can be made to expand the sidewalk system in areas of town that are already developed.

With regard to waste and water, there is potential for the town to use resources more wisely and to realize additional savings by encouraging waste reduction, diverting a greater proportion of materials from the waste stream, and minimizing water use. Although water efficiency educational materials and programs are offered by the Springfield Water and Sewer Commission, the Town of Ludlow can work with the Commission to make these programs more locally available. For example, the DPW could post the Commissions water efficiency educational materials on its website, and it could serve as a local point where residents can purchase rain barrels or get advice on purchasing water efficient appliances.

Finally, there are opportunities to support local agriculture by establishing a farmer's market and developing other programs to help farmers market their products locally. Promoting local agriculture helps reduce the miles that food must be shipped, reducing the use of fossil fuels and the carbon emissions associated with shipping food. Further, by supporting farming as an economically viable activity, agricultural lands are more likely to stay in agricultural use, rather than being converted for development. By increasing access to locally produced goods, residents can become more connected to the land and to farmers while gaining access to nutritious and healthy foods.

Of course, change can create tension, and there will be competing viewpoints within our town that challenge us as we articulate and implement a vision for a sustainable future. This plan commits the Town of Ludlow to working through these differences in order to promote economic growth that is in balance with the lands and resources that support us.

Goals and Strategies

Immediate	Completion within one year of master plan adoption
Short Term	Completion within five years of master plan adoption
Mid Term	Completion within ten years of master plan adoption
Long Term	Completion within fifteen years of master plan adoption

GOAL 1: Reduce Public Sector Energy Use by 20 Percent by 2015, and Minimize the Lifecycle Impacts of All New Town Facilities.

Strategy 1: Implement the Ludlow Twenty Percent Municipal Energy Use Reduction Plan recommendations to reduce municipal energy use by buildings, street lights and vehicles.

- a) Proceed from the Preliminary Energy Audit to the Investment Grade Audit phase to determine the precise costs and benefits of potential energy efficiency improvements; and
- b) If financing is available, enter into an Energy Management Services Agreement with an Energy Savings Company (ESCO) to implement the work.

Responsible Party: Energy Committee, School Committee, Town Administrator, Board of Selectmen

Resources Needed: Staff time, Volunteer time, funding for projects

Target Date for Completion: Ongoing

GOAL 2: Minimize private sector energy use

Strategy 1: Adopt a mixed-use commercial / residential zoning overlay district, such as Chapter 40R, at appropriate areas. This zoning overlay bylaw should include Design Guidelines for architectural elements and signage.

Responsible Party: Town Planner, Planning Board, Chapter 40R Advisory Committee

Resources Needed: Staff time, Volunteer time, funding for consultant

Target Date for Completion: Immediate

Strategy 2: Maintain the existing sidewalks and crosswalks to ensure pedestrian safety and promote walking.

Promote and encourage pedestrian travel in highly commercialized areas by implementing traffic calming measures. Work with planners and developers of the Town to ensure the construction of well connected sidewalks with pedestrian safe street designs for all the major development projects.

Responsible Party: Town Planner, ADA Coordinator, Department of Public Works, MassDOT, and land developers

Resources Needed: Survey of existing sidewalks conditions, necessary equipment and materials, trained staff

Target Date for Completion: Ongoing

Strategy 3: Acquire and develop new park and open space lands, targeting parcels within walking distance of populated and underserved parts of town, as well as enhanced access to the Chicopee River.

Responsible Party: Department of Public Works (Parks Division), Planning Board, Town Planner, Parks and Recreation Committee

Resources Needed: Staff Time, Volunteer Time, state LAND grant, federal LWCF grant

Target Date for Completion: Ongoing

Strategy 4: Establish a local program to help Ludlow residents and businesses use the state's Mass Save energy efficiency incentives.

Mass Save provides a wide range of services, incentives, trainings and information designed to promote energy efficiency. A local program would encourage participation in Mass Save programs, and would help residents and businesses understand what to expect and how to get the most out of the Mass Save programs.

Responsible Party: Energy Committee, Department of Public Works

Resources Needed: Staff Time, Volunteer Time

Target Date for Completion: Immediate

GOAL 3: Promote renewable energy production

Strategy 1: Adopt a bylaw to encourage and regulate large-scale ground-mounted solar photovoltaic installations. Consider establishing as-of-right siting with site plan review for large scale solar energy facilities in appropriate locations.

Responsible Party: Planning Board, Board of Selectmen

Resources Needed: Staff Time, Volunteer Time

Target Date for Completion: Immediate

Strategy 2: Adopt a bylaw to encourage and regulate small-scale wind energy facilities.

Responsible Party: Planning Board, Board of Selectmen

Resources Needed: Staff Time, Volunteer Time

Target Date for Completion: Immediate

GOAL 4: Pursue recycling and waste reduction activities, and increase the town's residential recycling rate to 40 percent by 2015 and to 60 percent by 2020.

Strategy 1: Launch a public education program to increase recycling of paper, cardboard, and glass, plastic, aluminum and other recyclable containers.

Responsible Party: Department of Public Works, Energy Committee, LCTV, School Committee

Resources Needed: Staff time, Volunteer time, printing costs

Target Date for Completion: Short Term

Strategy 2: Educate the public about waste reduction and home composting.

Responsible Party: Department of Public Works, Energy Committee, LCTV

Resources Needed: Staff Time

Target Date for Completion: Short Term

Strategy 3: Increase recycling in municipal buildings and schools.

Responsible Party: Energy Committee, Department of Public Works, School Buildings Director, School Committee

Resources Needed: Staff time, Volunteer time

Target Date for Completion: Ongoing

Strategy 4: Provide composting barrels and composting workshops to Ludlow residents.

Responsible Party: Department of Public Works, Energy Committee

Resources Needed: Staff time

Target Date for Completion: Ongoing

Strategy 5: Quantify municipal hauling cost savings resulting from new waste reduction, composting and recycling efforts.

Responsible Party: Department of Public Works

Resources Needed: Staff time, funding for consultant

Target Date for Completion: Ongoing

Strategy 6: Assess the success of composting collection programs in other municipalities, and estimate residential and commercial participation rates if a food waste composting program were to be established in Ludlow. A food waste collection program would divert materials from Ludlow to existing composting facilities in the region.

Communities with composting programs include Hamilton/Wenham, Cambridge, New Salem, Whately and Northfield.

Responsible Party: Department of Public Works, Energy Committee

Resources Needed: Staff time, Volunteer time

Target Date for Completion: Ongoing

GOAL 5: Establish a water efficiency program to reduce municipal and private water use by 20 percent.

Strategy 1: Ensure that maintenance staff regularly check for leaks in municipal and school buildings, and determine the costs and savings that would result from a program to install water-efficient fixtures, including low-flow faucets, low-flush toilets, and, where applicable, water-efficient shower heads, laundry facilities and dishwashers.

Responsible Party: Department of Public Works, Town Administrator, School Committee, Facilities Director for Schools, Board of Selectmen

Resources Needed: Staff Time, funds for maintenance / repairs

Target Date for Completion: Ongoing

Strategy 2: Work with the Springfield Water and Sewer Commission to ensure that Ludlow residents, schools, and businesses have access to the Commission's water efficiency information and programs.

Provide links to the Commission's water efficiency information on the Ludlow Department of Public Works website. Distribute the Springfield Water and Sewer Commission's rain barrels at-cost through the Ludlow Department of Public Works.

Responsible Party: Department of Public Works

Resources Needed: Staff time, LCTV

Target Date for Completion: Ongoing

GOAL 6: Protect Ludlow's remaining agricultural lands for their importance to community identity, food production, open space, habitat, and the local economy.

Strategy 1: Work with staff at Community Involved in Sustaining Agriculture (CISA) to establish a regular farmer's market in an area within the "Downtown" district.

Responsible Party: Agricultural Commission

Resources Needed: Volunteer time

Target Date for Completion: Long Term

Strategy 2: Review existing zoning bylaw and subdivision regulations and amend as necessary to ensure the community provides a supportive business environment for farming.

Standards to review include allowing off-site signage to farm stands, simple design standards under Site Plan Review for farming uses, require buffer zones between farmland and residential uses, allow commercial uses related to farming (e.g. farm service providers, veterinarians, equipment and supply dealers).

Responsible Party: Agricultural Commission, Planning Board, Town Planner

Resources Needed: Volunteer Time, Staff Time

Target Date for Completion: Short Term

Strategy 3: Adopt policies that provide incentives for continued agricultural use.

Consider use of tax incentives, zoning tools (special zoning district, Resource Protection Overlay District, Cluster Development, Transfer of Development Rights, etc.), CPA funds, economic and agricultural tourism development tools, and limiting public water and sewer infrastructure.

Responsible Party: Agricultural Commission, Town Planner, Planning Board

Resources Needed: Staff Time, Volunteer Time, funding for consultant

Target Date for Completion: Long Term

EDUCATION

Introduction

The quality of a town's public school system reflects a community's social and economic well-being. The purpose of this chapter is to review factors that have an effect on a public school system. The Town of Ludlow has two institutions that provide quality education to Ludlow children—Ludlow Public School System and St. John the Baptist School. The Ludlow Public School (LPS) System educates approximately 3,100 students in its six public schools and St. John the Baptist educates approximately 230 students.

The Public School system issues a Strategic Plan bi-annually that outlines how LPS will address its main issues and challenges. The Strategic Plan first reviews the District's strengths as well as performance indicators for certain grade levels and subject areas. Based on these findings, the Strategic Plan outlines five district goals and student learning outcomes to insure continued student progress. This document is publically available on LPS's website.

Trends & Data

Student Enrollment

Approximately 3,100 school age children attended one of the six Ludlow public grade schools during the 2009-2010 school year (Table 1). Despite the level of building activity in town, total district enrollment increased four percent over a ten year period from the 1999/2000 school year to the 2009/2010 school year. Ludlow, like many school districts in Massachusetts, is witnessing negative enrollment trends at the elementary levels. Education professionals attribute this enrollment decrease to the fact that people are having fewer children as well as having children later in life. Enrollment in the tuition-based pre-kindergarten program has almost doubled since the 1990s. The Ludlow School Committee stated that they would like to increase enrollment in this program, but LPS will eventually be hampered by a lack of classroom space.

Table 1: Ludlow Public School System Enrollment Trends

	1999-2000	2009-2010	Percent Change
Pre-Kindergarten*	40	86	115%
Kindergarten through Fifth Grade	1,293	1,271	-2%
Sixth through Eighth Grade	730	708	-3%
Ninth through Twelfth Grade	913	985	8%
District Total	2,936	3,050	4%

Source: Massachusetts Department of Education

*Pre-Kindergarten Enrollment for the 1999/2000 school year was not collected by the Mass. Department of Education, but there were approximately 40 students enrolled in the program according to historic enrollment trends.

Enrollment projections developed by the Mount Vernon Group Architects for the 2008 Ludlow School Facility Needs Study anticipated a 1.7 percent growth in the student population or 51 students by the 2017/2018 school year. The School Committee stated that the school system could accommodate this small increase; however, they expressed concern that future growth rates may prove higher due to continued residential development. A greater number of students will place a strain on existing school facilities.

School Choice Program

The School Choice program allows parents to send their children to schools in communities other than the city or town in which they reside. Tuition is paid by the sending district to the receiving district. Tuition for a school choice student typically costs the sending school district \$5,000; however, the tuition for a school choice student receiving special education costs the sending district more money. Ludlow receives a higher number of School Choice students than sends to other communities, which reflects the strength of the school system in comparison to its neighboring communities. Ludlow received 106 students for the 2009 / 2010 school year, collecting almost \$697,000. Most of these students came from Springfield, Chicopee, and Belchertown. The Ludlow School District sent fifteen students to school districts in Springfield, Wilbraham, and Belchertown that year, paying out about \$81,000.

Each year, the school committee considers whether the district should be in the school choice program during the upcoming school year. They may also choose to accept new pupils but only in certain grades. The Ludlow School Committee, over the last several years, has voted to decrease the number of slots available to new school choice students, which will have financial implications for LPS. The School Committee approved 97 School Choice slots for the 2010-2011 school year.

Student Demographics & Special Populations

LPS district administrators, including the school principals, reported that the LPS is seeing the demographics of its student population vary more than in the past, which has necessitated additional resources to ensure that “no child gets left behind”. The MA Department of Education maintains some information regarding special populations of student enrollment. Special populations are defined as students from economically disadvantaged families, including foster children; with disabilities; and with other barriers to educational achievement, including individuals with limited English proficiency.

Over a fifteen year period, from the 1994/1995 to the 2009/2010 school year, the percentage of special population students in the Ludlow School System has slightly decreased, except for the percentage of low-income students which has increased significantly (Table 2). Ludlow had lower percentages of these student populations in the 2009/2010 school year than the state average.

Table 2: Student Enrollment by Special Population Trends

School Year	First Language not English		Limited English Proficient		Low-income		Special Education	
	Ludlow	State	Ludlow	State	Ludlow	State	Ludlow	State
1994/1995	9%	12%	2%	5%	10%	25%	19%	17%
1999/2000	6%	13%	1%	5%	12%	25%	22%	17%
2004/2005	8%	14%	1%	5%	17%	28%	15%	16%
2009/2010	8%	16%	1%	6%	25%	33%	17%	17%

Source: Massachusetts Department of Education

Data from the Massachusetts Department of Education shows that the number of students whose first language is not English or who have limited English proficiency comprise a very small percentage of the total Ludlow student population, however Ludlow School principals believe more students fall into this category than reported by the state. The Principals believe that some students will not take advantage of the support available to them because they have been raised to see acceptance of help as a sign of weakness. The principals also reported that there are now fifteen languages represented in the school system, which is a significant increase from a decade ago. This diversity is good for the school system, but necessitates additional resources to ensure all students obtain a proper education.

Low income students are defined by the Department of Education as students that receive free or reduced lunch. The Superintendent stated that there is no correlation

between the number of school of choice students and the number of low income students. As discussed in the Housing Chapter, the Office of the Superintendent attributes the local increase in enrollment in the free and reduced lunch program to a variety of factors, including:

- improved reporting mechanism to the Department of Elementary and Secondary Education;
- implementation of the Point-of-Sale (POS) system, which provided anonymity and thus made it more comfortable for families to identify their financial situation;
- changing demographics of the Ludlow population; and
- changing economy.

The District Health Care Coordinator reported that the percentage of students with life-threatening allergies, as well as with asthma, have increased over the last two decades and noted that the rise in asthma incidence bears a correlation to the increase in the number of students in poverty¹. School principals also noted the rise in single parent households.

Special Education

The percentage of students enrolled in special education programs has remained about the same over the last fifteen years. During the 2009/2010 school year, there were approximately 500 special education students. Detailed special education data is not available yet for the 2009/2010 school year; however, the following information shows the level of special education instruction for the 493 special education students in the 2008/2009 school year:

- Twenty-five percent spent the majority of their time in general education classrooms (full-inclusion),
- Forty-six percent spent up to half of their time in special education classes (partial-inclusion),
- Twenty-four percent spent the majority of their time in special education classes (substantially separate), and
- Five percent of special education students left the district for education at specialized schools.

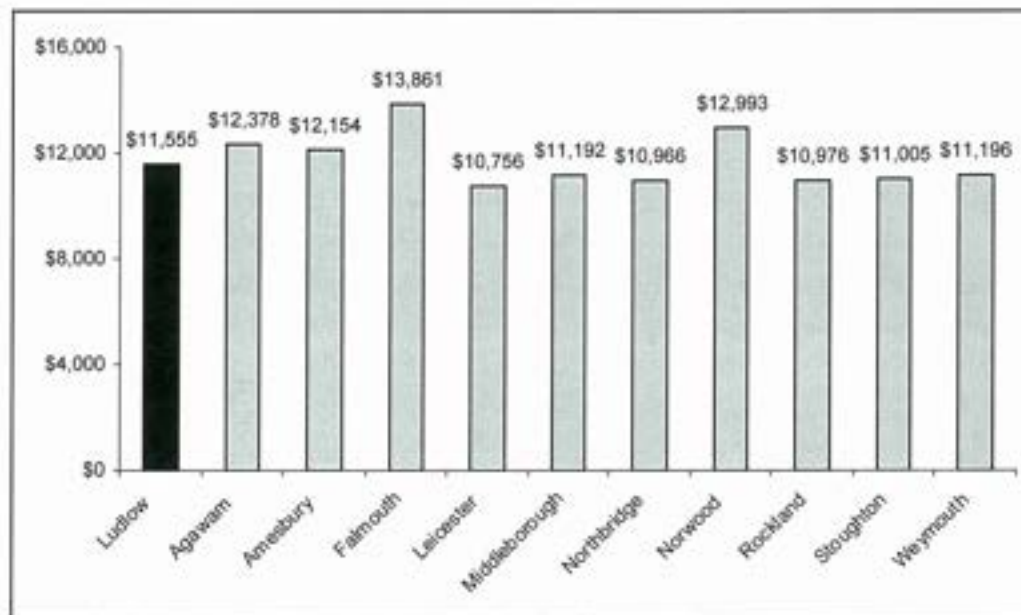
LPS administrators noted that Ludlow public schools were constructed before special education programs were developed. LPS has been challenged to adapt existing school space to meet needs of special education students such as small instruction rooms.

¹ Poverty can exacerbate disease severity in asthma because of increased risk of exposure to factors that stimulate asthma such as substandard home environments where mold may be present, a lack of air conditioning, cigarette smoking and second-hand smoke exposure.

Expenditures Per-Pupil

According to the Massachusetts Department of Education, Ludlow's expenditure per-pupil is approximately \$11,500, which places the district in the middle of its comparison group as shown by Figure 1. LPS administrators utilize this comparison tool to evaluate district curriculum and programming. They reported that curriculum could certainly be enhanced with a greater infusion of local and state funding. This would positively affect student achievement.

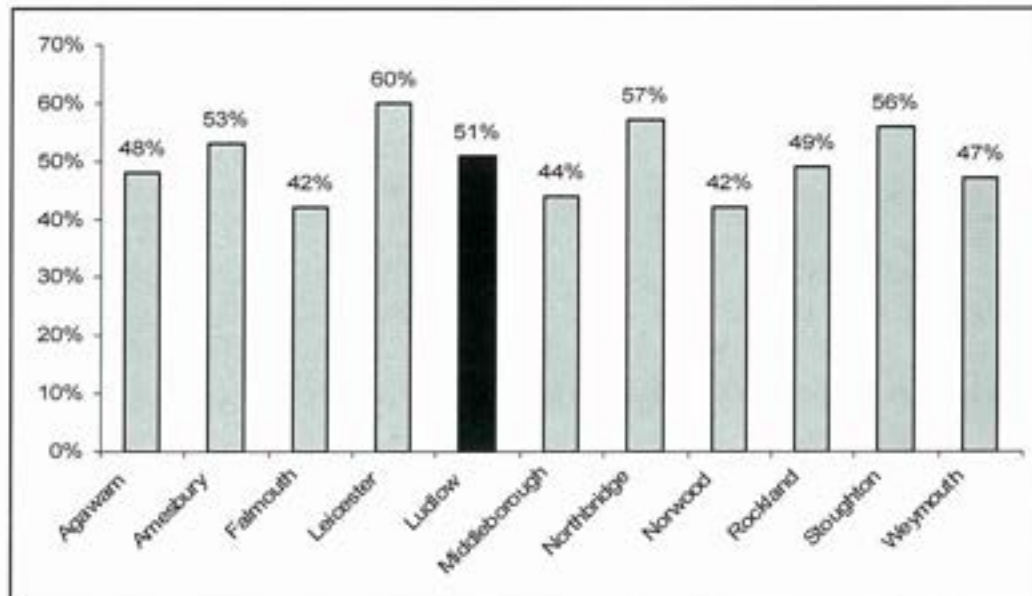
Figure 1: Per Pupil Expenditure Comparison for Similar School Districts (2008-2009)



Source: Massachusetts Department of Education, District Analysis and Review Tool. See Figure 2 for notes on methodology.

Total expenditures for Ludlow schools are a little over \$36 million dollars with 35 percent of the expenditures for Classroom and Specialist Teachers. About 84 percent of overall spending is appropriated from the general fund with the remainder coming from grants, revolving account, or other funds. Education expenditures made up almost fifty percent of the town's budget in fiscal year 2010. Statewide data for fiscal year 2010 is not yet available, but fiscal year 2009 data shows that the percentage of Ludlow's town budget that is dedicated toward education is comparable to the state average of forty-nine percent and is in the middle of what Ludlow's comparison municipalities spend on education (Figure 2). During the stakeholder interviews, town residents expressed dissatisfaction with the fact that the school district budget is a one-line item on the town budget. Residents are largely unaware that state law mandates this, so more education on this law may be needed.

Figure 2: Percent of Total Town Budget Dedicated Toward Education



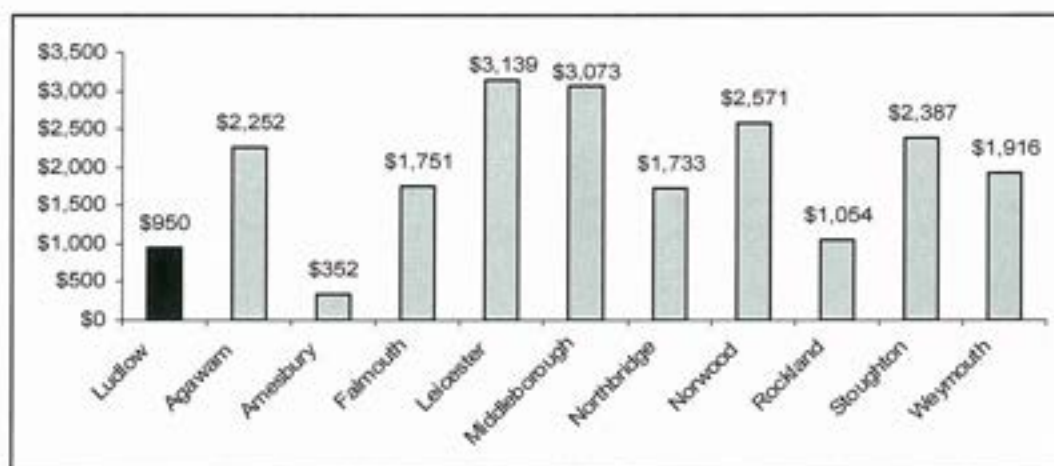
Source: Massachusetts Department of Revenue. The above identified school districts are ones that the State Department of Education determined to be most comparable to Ludlow in terms of grade span, enrollment, and special populations. The LPS is required to report this information to the Department of Education at the end of each year.

Teachers

There were a total of 216 Full Time Equivalent (FTE) teachers in the Ludlow School District in 2009-2010 school year, with 169 of these teachers in the general education program area and 44 teachers in special education. Approximately 97 percent of core academic classes are taught by teachers who are deemed highly qualified by the Massachusetts Department of Education, which is consistent with the state average. In terms of teacher experience, most teachers are over the age of forty. The average salary in 2009 was \$56,957, which was lower than the average salaries of most school districts in the surrounding area.

LPS also has certified teachers called academic coaches who work with class room teachers throughout the day to provide feedback on classroom instruction. In addition, LPS makes available tutors, who are certified teachers, to provide extra assistance to students in the primary schools for language arts and mathematics. LPS administrators reported the continual need for professional development funding to ensure the ability of LPS staff to meet the demands of a changing student population and technological advances. Data from the Massachusetts Department of Education shows that Ludlow per teacher expenditures for professional development has been significantly lower than expenditures within its comparison group (Figure 3). This data does not include academic coaches in the professional development expenditures total.

Figure 3: Per Teacher Expenditure for Professional Development Comparison



Source: Massachusetts Department of Education, District Analysis and Review Tool.

Class Size

Numerous studies have been done to assess the impact of class size and student achievement. Although most studies do show a relationship between small class size and increased student achievement, researchers disagree on how to interpret the results, due to other variables in the classroom - the quality of the teacher, the home environment of the students, the quality of the curriculum, the leadership of the school. Therefore, it is difficult to draw definitive conclusions about student achievement based on class size alone. According to the principals of the six Ludlow schools, the average class size is approximately 22 to 23 students in grades kindergarten through eight, and approximately 25 students at the high school.

Curriculum

A total of 850 core courses are taught in the Ludlow School District. Strengthening school curriculum to respond to changing student needs is at the heart of LPS's mission. The LPS Strategic Plan tasks each school with establishing an instructional focus designed to motivate and engage all students. Academic performance is to be "supported by clear ways of measuring progress, teachers sharing best practices, curricula that is delivered creatively, and development of sensitive assessment modalities." A Learning Outcome in the Strategic Plan is for all eighth grade students to be enrolled in algebra. In the past three years, LPS has already witnessed a marked increase in the percentage of students enrolled in Algebra from 56 percent in 2007/2008 to 97 percent in 2009/2010.

Ludlow High School requires students to enroll in five, five-credit courses, plus Physical Education. The school offers four levels of college preparatory curriculum: advanced placement, honors, standard college preparatory and essential college

preparatory². The percentage of students enrolled in these levels during the 2009-2010 school year were: Advanced Placement, 2 percent; Honors, 14 percent; Standard, 61 percent; Essentials, 22 percent.

The High School offers eight Advanced Placement classes in the following subjects: Art, Biology, Calculus AB, Chemistry, English Literature and Composition, Spanish Language, US Government & Politics, and US History. About 70 students were enrolled in AP classes in the 2008-2009 school year. Ludlow High School's Early Entrance program permits qualified students to enroll at Holyoke Community College, Springfield Technical Community College, or Elms College while taking courses at the high school.

Technology

It is the goal of the Ludlow Public School system to use current and future technologies to increase student achievement and enhance professional development in order for students and staff to develop true 21st century literacy. LPS annually updates their Technology Plan (2009-2012), using the state's recommended benchmarks, to set district goals and guide district performance. LPS school administrators reported that there is great enthusiasm for its students and teachers to embrace technology, but district funding has not kept pace with current needs. The Director of Technology for the LPS noted that the District struggles with technology improvements because it does not have an annual replacement cycle budget. School administrators also noted that greater funding for technology would positively affect student and teacher achievement. They expressed concern that LPS may be far behind other students once they graduated high school placing them at a competitive disadvantage.

Student Performance Indicators

Massachusetts Comprehensive Assessment System (MCAS)

The Massachusetts Comprehensive Assessment System is designed to meet the requirements of the Education Reform Law of 1993 and tests and measures performance of all public school students. There is no state-wide ranking of communities based on the results of the MCAS scores, but the state does provide the performance levels of district students at each of the required test levels and grades. Ludlow students are behind the state levels for the percentage advanced or above proficient students in almost all grades and subject areas (Table 3). The percentage of tenth-grade students who tested advanced or above proficient in science and technology was the only instance that Ludlow performed better than state levels. One of the Student Learning Outcomes in the 2010 Strategic Plan is for Ludlow Public

² Essential level courses are offered to students who struggle with the Standard high school course. Most 4 year colleges do not accept credits from Essentials courses so students who take these classes are limited to a 2 year college track.

Schools to meet or exceed the state average on all MCAS assessments in the upcoming year.

Table 3: Percentage of Students Who Tested Advanced or Proficient on 2010 MCAS Tests, by Grade & Subject Area

Grade and Subject	District	State
Grade 03 – Reading	55%	63%
Grade 03 – Mathematics	56%	65%
Grade 05 – English Language Arts	58%	63%
Grade 05 – Mathematics	48%	55%
Grade 05 – Science and Technology	36%	53%
Grade 08 – English Language Arts	70%	78%
Grade 08 – Mathematics	32%	51%
Grade 08 – Science and Technology	23%	40%
Grade 10 – English Language Arts	70%	78%
Grade 10 – Mathematics	75%	75%
Grade 10 – Science and Technology	67%	65%

Source: Massachusetts Department of Education

SAT Results

Ludlow students tested on par with the state average in critical reading and writing, but Ludlow students tested lower than the state average in math (Table 4). The LPS Strategic Plan noted this as an important issue and outlines several tasks under the goal “Academic Performance” to increase student achievement.

Table 4: SAT Results for Class of 2010

	Critical Reading Mean	Mathematics Mean	Writing Mean
Ludlow HS	510	512	507
Massachusetts	512	526	509

Source: Ludlow Public Schools

Drop-out Rate, Graduation Rate, and Graduation Plans

Other indicators show that Ludlow students are performing at a higher level than other students across the state (Table 5). Dropout rates were lower and graduation rates were higher when compared to the state average for the 2008/2009 school year. Majority of students plan on attending a four-year or two-year college after high school graduation. School officials expressed concern about the low numbers of graduating high school seniors who go on to attend four year college. Only 35 percent of graduating seniors planned on attending a four year college at the end of the 2008 / 2009 school year, which is lower than the state-wide averages of 57 percent. The percentage of high school seniors who planned on attending a four year public or private college decreased over the last ten years from roughly 48 percent in 1999 to 35 percent in 2009. However, the percentage of students planning to attend a two-year college increased from 37 percent to 47 percent over this same time period. More students may be choosing to attend a two-year program for financial reasons. LPS administrators noted that district curriculum is college preparatory to ensure that students have the choice to attend a four-year college if they chose to go. A benchmark for the Ludlow Public Schools Strategic Plan is for the district to match or exceed the state average for entry into a four year college.

Table 5: Graduation Rates & Plans of Ludlow High School Students (2008/2009)

	% in District	% of State
Grade 9-12 dropout rate	0.8%	2.9%
Graduation rate	86%	82%
Graduates plan to attend a four year college	35%	57%
Graduates plan to attend a two year college	47%	23%
Graduates plan to attend other Post Secondary	4%	3%
Graduates plan to Work	5%	8%
Graduates plan to join Military	2%	2%

Source: Massachusetts Department of Education

School Facilities

Ludlow Public Schools retained Mount Vernon Group Architects to conduct a feasibility study of the District's three elementary schools, Early Childhood Center, and Central Administration Office in 2008. The purpose of the study was to provide a comprehensive assessment of existing conditions, including the development of enrollment projections of the next ten years, a physical plant analysis of these

buildings, preparation of itemized cost estimates for implementation of recommendations and development of options designed to fulfill the educational requirements of LPS.

Table 6: Ludlow Public School System School Facilities

Building	Year Built	Year Renovated
Ludlow Early Childhood Center	1900	1960
East Street	1921	1989
Chapin Street	1959	1964
Veterans Park	1967	N/A
Paul Baird Middle School	1973	2000
Ludlow Senior High School	1961	2000

Source: Massachusetts School Building Authority

The study found that the buildings vary in condition from good to poor and are in need of complete renovation or replacement (Table 6). The Chapin Street School is in the greatest need of updating followed by the Veteran's Park School. LPS has a statement of interest out with the Massachusetts School Building Authority for the Chapin Street School, which means that the MSBA will review the school facility and determine whether they will fund a renovation or construction of a new school. The study also noted that significant changes to the educational infrastructure will be required for LPS to address the need for MSBA recommended educational space and to provide educational equity to all LPS students.

LPS undertook a controversial elementary school reorganization in 2009 and placed all students in the same grade at the same school versus the previous approach where each of the three elementary schools hosted grades kindergarten through fifth grade.

School Transportation

LPS provides transportation to students who live further than 1.5 miles from school, which is lower than the state minimum of 2 miles. The in-district per pupil transportation cost was \$490 in 2009, which was higher than the state average of \$466. Approximately fifteen percent of LPS student population lives within the 1.5 mile radius around schools they attend. The LPS Superintendent noted that many of the students who live within this 1.5 mile radius take the bus to school under LPS's Pay-to-Ride program. Participation in the Safe Routes to School program is currently not a priority. Safe Routes to School is a federally supported program, administered in Massachusetts by the Massachusetts Department of Transportation, which offers technical assistance, implementation, marketing, and evaluation to community

leaders, schools and parents to improve safety and encourage more children, including children with disabilities, to safely walk and bicycle to school.

After-School Programming

The Ludlow Boys and Girls club offers after school programming, which is privately funded by parents. The PTO's at the elementary school level and school councils at the middle school and high school levels also occasionally offer before and after school activities that are privately funded through fundraising efforts. LPS administrators would like to see more programs offered if funding were to become available. They also noted that the lack of an "early" or "late" bus acted as a deterrent to participation in before or after school programming.

Extracurricular Activities

The Ludlow Public School system offers a variety of extracurricular activities such as band, drama, year book, and special interest clubs for students at all levels. At the high school level, many Ludlow students participate in the High School's athletic program. Student athletes pay a fee to subsidize a portion of the total cost of participation in an athletic program.

Vocational High School Attendance

Ludlow students can attend high school at any one of the vocational high schools in the region. The LPS superintendant reported that eighteen students attended Pathfinder Vocational Technical High School in Palmer, one student attended Smith Vocational High School in Northampton, and forty-three students attended classes at the Lower Pioneer Valley Educational Collaborative in Agawam. Students who attend LPVEC spend half their school day at Ludlow High School.

Charter School Attendance

Nine students attended charter schools outside of Ludlow during the 2009/2010 school year. Six of these students attended the Hampden Charter School of Science in Chicopee, two students attend the Pioneer Valley Performing Arts School in South Hadley, and one student attended the Sabis International School in Springfield.

Home Schooled Students

A total of fifteen Ludlow children are home schooled. Parents who choose to home school their children need LPS to approve their chosen curriculum.

Private Schools in Ludlow

St. John the Baptist is a private, Catholic day school offering classes for grades Kindergarten through eighth grade. Total student enrollment for the 2009/2010 school year was 227 students. Student enrollment has been stable over the last decade. St. John's also has 31 children enrolled in their nursery school program. St. John's has a staff of thirty-four, including teachers, administration, nursing, and custodial. All grades have a home-room teacher and many have a teacher's assistant.

Annual tuition is based on sliding scale that is dependent on the number of children enrolled per family. Annual tuition for the 2009/2010 school year for grades Kindergarten through eighth grades starts at \$2,630 for students sponsored by a Catholic Church and \$3,280 for non-sponsored students. Parents are also expected to fundraise.

The curriculum at St. John's is based on both state requirements and diocesan policies. It consists of religion, language arts, mathematics, social studies, science, music, art, and physical education. In addition, St. John's offers programs in computers, library, health and family life. Graduating students attend public and private high schools throughout the region. St. John's receives a portion of all state and federal grants received by the Ludlow Public School system and offers Title One and remedial services for grades one through four through this grant³. St. John's also contracts LPS to provide food and health services to their students.

Opportunities & Challenges

The quality of Ludlow Public schools received a high level of satisfaction in the community survey. Ludlow is fortunate to have a well-regarded after school program offered by the Boys and Girls Club and robust after school activities that are financially supported by the PTO's and school councils. LPS also has an excellent longstanding relationship with St. John the Baptist School.

A great concern is that student achievement levels are below state averages in almost all grades and subject areas. LPS Staff meet biannually to update the District Strategic Plan to respond to changing student needs by strengthening school curriculum. Each school also has its own Improvement Plan modeled on the District Strategic Plan. Per pupil expenditures and per teacher expenditures for professional development are lower than half of the districts in Ludlow's comparison, which LPS staff believes affect student and teacher achievement. LPS administrators stated that they would like to see Ludlow listed as the top-performing school in its comparison group. School Administrators and the School Committee also expressed great concern over the low numbers of graduating high school seniors who go on to attend four year college. The District is responding by making sure their core curriculum is geared toward college prep to ensure that all students have the choice to attend a four-year college if they chose to go.

³ Through Title I, the federal government disburses money to school districts based on the number of low-income families in each district as determined by census data. Each district uses its Title I money to supplement and improve regular education programs offered to help students meet state standards. Students served by Title I funds include migrant children and youth; children and youth with limited English proficiency; children and youth who are homeless; children and youth who have disabilities; children and youth who are neglected, delinquent or at-risk; children in preschool activities; and any child or youth who is in academic need.

Technology is a related concern since it affects student achievement and teacher performance. LPS school administrators reported that there is great enthusiasm for the district to keep pace with advancements in the field of education, including technology, facilities, curriculum, and professional development; however the challenge will be to increase the level of funding necessary to make these district improvements.

Student enrollment trends have remained stable for the moment, but LPS Administrators and the School Committee believe the district will be severely challenged if enrollment were to significantly increase. This concern is compounded by the fact that two of the district schools—Chapin Street School and Veteran's Park School—are in need of renovation or replacement. The increasing number of students with health and emotional needs is also a district concern, which continues to necessitate additional resources. Pre-kindergarten education has become more important to long-term student achievement, and the Ludlow School Committee believes the district will be challenged to fund necessary investments to this level of schooling. District administrators acknowledged that they would like to work with town officials to consider joint-use school facilities if new buildings are needed. Although the recent school reorganization may make participation in the Safe-Routes-To-School program more challenging, this program offers funding opportunities to improve student and environmental health.

The District's main challenge will be to keep up with advances in curriculum, professional development, technology and programming, which affect student achievement. Almost all of these challenges relate directly to funding. Support for the school system was apparent in the Community Survey, particularly with the question: When asked "If every resident of Ludlow could choose to spend \$100 of town money on the following, how would you spend yours? Ludlow public schools received the most votes. School Committee members noted that they would like to see the LPS forge a better relationship with town residents and town officials so the public can have a better understanding of why additional funds are critical to the future success of Ludlow as a whole. The Town of Ludlow has an opportunity to instill a culture of life-long learning with continued investment in its education system.

Goals & Strategies

Immediate	Completion within one year of master plan adoption
Short Term	Completion within five years of master plan adoption
Mid Term	Completion within ten years of master plan adoption
Long Term	Completion within fifteen years of master plan adoption

GOAL 1: Improve student achievement levels at all grades and subject areas to prepare students for the workforce and post-secondary education.

Strategy 1: Develop an information campaign to educate town residents on the role of the public schools so town residents can have a better understanding of why additional funds are critical to the future success of Ludlow as a whole.

Responsible Party: School Committee, District Administrators

Resources Needed: Staff time, volunteer time, funding for outreach materials

Target Date for Completion: Ongoing

Strategy 2: Explore creative ways to increase the level of funding for the LPS to support curriculum enhancements, professional development for teachers, technology investments and training, and student programming.

Responsible Party: School Committee, District Administrators, Board of Selectmen, Chamber of Commerce

Resources Needed: Staff time, volunteer time

Target Date for Completion: Ongoing

Strategy 3: Review programming and services available to students from economically disadvantaged families; with disabilities; and with other barriers to educational achievement, including individuals with limited English proficiency to make sure that LPS has the resources it needs to ensure student achievement levels comparable to the general student population.

Responsible Party: District Administrators, School Staff, School Committee

Resources Needed: Staff time, Volunteer time

Target Date for Completion: Ongoing

Strategy 4: Bolster career service counseling and career forums to assist students contemplating future careers.

Responsible Party: School Committee, District Administrators, Chamber of Commerce

Resources Needed: Staff time, funding for implementation of additional services and resources.

Target Date for Completion: Ongoing

Strategy 5: Investigate the costs and benefits of establishing a universal preschool program to strengthen the educational foundation of Ludlow's population.

Responsible Party: School Committee, District Administrators

Resources Needed: Staff time, volunteer time, funding for a consultant

Target Date for Completion: Ongoing

GOAL 2: Bolster before and after school programming and access to allow schools to fully realize their potential to become education centers for children as well as adults.

Strategy 1: Investigate feasibility of establishing an early or late bus to allow more students to attend existing and future programs.

Responsible Party: School Committee, District Administrators

Resources Needed: Staff time, volunteer time, funding for materials, funding for a consultant

Target Date for Completion: Ongoing

Strategy 2: Increase the level of funding to support the development of new programs to help with student achievement.

Responsible Party: School Committee, District Administrators

Resources Needed: Staff time, funding for implementation of additional programs

Target Date for Completion: Ongoing

Strategy 3: Establish ongoing opportunities for increased community dialogue about school events, policies, and programming.

Responsible Party: School Committee, District Administrators, LCTV

Resources Needed: Staff time, volunteer time, funding for materials

Target Date for Completion: Ongoing

GOAL 3: Renovate, update or replace existing school buildings and facilities to assist with ongoing student achievement.

Strategy 1: Hold public meetings to gain public input from community members regarding the costs and benefits of renovating the schools.

Responsible Party: School Committee, District Administrators, LCTV

Resources Needed: Staff time, volunteer time, outreach materials

Target Date for Completion: Ongoing

Strategy 2: Utilize the Town Capital Planning Committee to comprehensively review long-term needs of other Town buildings in order to determine if a new school building could double for other community purposes.

Responsible Party: School Committee, District Administrators, Capital Planning Committee, Board of Selectmen

Resources Needed: Staff time, volunteer time, funding for materials

Target Date for Completion: Ongoing

Strategy 3: Find creative reuses for existing elementary schools if new schools are constructed.

Responsible Party: School Committee, District Administrators

Resources Needed: Staff time, volunteer time, funding for consultant

Target Date for Completion: Ongoing

Strategy 4: Work with Ludlow Police Department, School Department and the town residents to evaluate and address pedestrian travel routes to local schools.

Responsible Party: Police Department, DPW, School Department, Town Planner, Safety Committee

Resources Needed: Safe Routes to School Study

Target Date for Completion: Mid Term

IMPLEMENTATION

