

POWERING FORWARD

A VISION FOR THE TURNERS FALLS CANAL DISTRICT



UMassAmherst
LA&RP Landscape Architecture
& Regional Planning

NEWLEAF CONSULTANTS

Desiree Demski-Hamelin
Kellie Fenton
Brett Gallagher
Kenneth Kirkland
Jeremy Price

UNIVERSITY OF MASSACHUSETTS AMHERST

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TABLE OF ACRONYMS & COMMON PHRASES

Acronym	Full Text
ACBM	Asbestos-containing Building Material
ACS	American Community Survey
AST	Above-Ground Storage Tank
ADA	Americans With Disabilities Act
CDBG	Community Development Block Grant
CDP	Census Designated Place
CMR	Code of Massachusetts Regulations
CNECTA	Combined New England city and town area
DIF	District Improvement Financing
DPW	Montague Department of Public Works
EOEEA	MA Executive Office of Energy and Environmental Affairs
EPA	U.S. Environmental Protection Agency
ESA	Environmental Site Assessment
FCHRA	Franklin County Regional Housing & Redevelopment Authority
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FRCOG	Franklin County Regional Council of Governments
FRTA	Franklin Regional Transit Authority
GMRSD	Gill-Montague Regional School District
HI	Historic Industrial
HUD	U.S. Department of Housing and Urban Development
LARP	University of Massachusetts Amherst Department of Landscape Architecture and Regional Planning
LEED	Leadership in Energy and Environmental Design
Livability Plan	Downtown Turners Falls Livability Plan (2013)

MA	Massachusetts
MA DCR	MA Department of Conservation and Recreation
MA DESE	MA Department of Elementary and Secondary Education
MassDEP	Massachusetts Department of Environmental Protection
MassDOT	Massachusetts Department of Transportation
MCP	Massachusetts Contingency Plan
MGL	Massachusetts General Law
MHC	Massachusetts Historic Commission
NECTA	New England City and Town Area
PAH	Polynuclear aromatic hydrocarbons
PUD	Planned-Unit Development
PV	Photovoltaic
PVPC	Pioneer Valley Planning Commission
RFP	Request for Proposals
ROW	Right of Way
TFP	Turners Falls Paper
TYPA	Tax Yield Per Acre
ULI	Urban Land Institute
UST	Under-Ground Storage Tank

HOW TO READ THIS REPORT

This section clarifies terminology used throughout this report. This report also utilizes a number of acronyms. A list of acronyms and their associated full text can be found in the Table of Acronyms and Common Phrases on Page xiii.

NewLeaf Consultants shall be referred to as “NewLeaf.” NewLeaf is a studio team in the Masters of Regional Planning program at the University of Massachusetts Amherst. NewLeaf has been hired by the Town of Montague to perform work regarding the Turners Falls Canal District. Regarding material relating to NewLeaf’s consultant work products, the term “Client” shall refer to the Town of Montague. In regards to ownership or location, “Town” shall also be a reference to the Town of Montague.

The Town is comprised of five distinct villages that possess no administrative functions. The Turners Falls Canal District is located within the Village of Turners Falls. “Turners Falls” shall be a reference to the Village of Turners Falls. The District is an island bounded by the Connecticut River to the West, and the Power Canal to the East. The term “District” shall be a reference to the entire 11-acre Turners Falls Canal District. “River” shall be a reference to the Connecticut River, and “Canal” shall be a reference to the Power Canal. The District is adjacent to Downtown Turners Falls, which shall be referred to as “Downtown.”

The acronyms CDP, NECTA, and CNECTA are used as they relate to census data. Turners Falls is a CDP, or census-designated place. A CDP is a concentration of population defined by the United States Census Bureau for statistical purposes only. Because of this designation, NewLeaf was able to gather census data that depicts Turners Falls more accurately than data for the entire Town would. Turners Falls is part of the Greenfield, MA Micropolitan NECTA. A NECTA, or New England city and town area, is a geographic and statistical entity defined by the federal government on the basis of towns instead of entire counties. NECTAs are classified as either metropolitan or micropolitan; metropolitan has an urban core of at least fifty thousand people, whereas micropolitan has an urban core between ten and fifty thousand people. Adjacent NECTAs that have a high degree of employment interchange may also be combined to form a Combined NECTA (CNECTA) Turners Falls is part of the Springfield-Amherst Center-Greenfield, MA-CT CNECTA. (U.S. Census Bureau, 2016).

EXECUTIVE SUMMARY



Figure 1. Strathmore Mill Complex as seen from IP Bridge

PURPOSE

The following conceptual district vision plan, *Powering Forward: A Vision for the Turners Falls Canal District*, aims to reintegrate the District with Downtown Turners Falls, to connect people with the Connecticut River, and to honor the history of the mills. The Town of Montague's Department of Planning and Conservation (the Client) has given NewLeaf six directives related to drafting a redevelopment strategy for the District. The directives are as follows:

1. Conduct interviews with property owners, abutters, and developers;
2. Recommend a brand/identity for the District;
3. Develop elements of a draft district plan;
4. Identify key public infrastructure and investments;
5. Create inspiring plan view and perspective visuals; and
6. Provide recommendations and an implementation plan.

The goal of this conceptual district vision plan is to serve as draft for the Client to modify as necessary to use to attract public and private investment to the District in a manner that aligns with the community's values.

OVERVIEW

Turners Falls is the largest of five villages that comprise the Town of Montague, Massachusetts. Nearly fifty-three percent of the Town's 8,437 residents live in Turners Falls. Montague is located near the geographic center of Franklin County in the upper Pioneer Valley region of Western Massachusetts. Montague is part of the Greenfield, MA Micropolitan New England City and Town Area (NECTA), which abuts both the Amherst Center, MA Micropolitan and Springfield, MA Metropolitan NECTAs. As of 2012, the population of the Springfield-Amherst Center-Greenfield, MA-CT Combined NECTA was 772,900 persons (U.S. Census Bureau, 2012).

The area that is present day Turners Falls was inhabited by Native American tribes for more than 10,000 years due to the abundance of migrating salmon and shad at the Great Falls on the Connecticut River.¹ Turners Falls was founded in 1868 as a planned industrial village by Alvah Crocker, a prominent businessman from Fitchburg, Massachusetts. Mr. Crocker envisioned a thriving industrial community powered by harnessing the power of the Great Falls through the construction of a dam and canal. A flood of Irish, French Canadian, Polish, and German immigrant mill workers fueled business development along Avenue A and dense residential development along the adjacent grid of streets. At the turn of the 20th century, Turners Falls was a vibrant place with direct rail service from New York City, and a trolley line from Downtown to neighboring Greenfield and Millers Falls (Turners Falls RiverCulture, 2016).

The post-industrial decline of the 1950s to the 1980s had mixed effects on Turners Falls. While the stagnation preserved Downtown's historic architectural design through a lack of substantial economic development, it also led to the structural demise of the District (Town of Montague, 2016). The Connecticut River and Power Canal bound the 11-acre District on the west and east, respectively, essentially making the area an island. Access to the District is dependent on a number of bridges that vary widely in

¹ The Great Falls are located at the site of the present day Turners Falls Dam on the Connecticut River.

condition. This isolation from the Downtown has proved to be a roadblock for redevelopment in an auto-centric age. The Client has asked NewLeaf to draft a conceptual vision plan that will lay the foundation for reintegrating the District with Downtown.

FINDINGS

NewLeaf has conducted a thorough study of the existing conditions in the region, Town, Turners Falls, and District. This included many site visits to mill redevelopment projects. NewLeaf also conducted a Fiscal Impact Analysis (FIA), Pro Forma, and Tax Yield per Acre (TYPA) analysis on several vacant properties within Turners Falls, and conducted in-depth interviews with stakeholders. Through this research, site visits, and interviews, NewLeaf learned a great deal about the issues and priorities for the revitalization of the mills and establishment of a Turners Falls Canal District. There is a need to upgrade infrastructure in order to facilitate development in the District. Access is another issue, both to the District itself and to the Connecticut River. Due to the nature of the District being a sliver of land between two bodies of water, there are circulation issues, which limits vehicular traffic. Establishing gateways to the District with a sense of arrival is an effective way to define the District. The historic character of the mills is an asset, and will help to define the district and complement downtown. The large amount of square footage in the buildings would allow for a diverse mix of uses. Stakeholders are interested in seeing increased recreation and commercial activity in the District, retaining the historic character of the mills, and creating jobs in the community.

RECOMMENDATIONS

In order to fulfill the Client's directives, NewLeaf recommends that the Town follow the recommendations outlined in three main chapters of this Vision Plan: 1) District Vision, 2) District Plan, and 3) Key Public Infrastructure and Investments. The District Vision proposes branding concepts for the District that align with the existing Downtown and surrounding neighborhoods. The District Plan illustrates specific land-use elements of the District, and incorporates new zoning elements. The Key Public

Infrastructure and Investments chapter examines and addresses District-specific reinvestment strategies focusing on inadequate and aging infrastructure including, but not limited to bridges, energy sources, and municipally supplied utilities. NewLeaf recommends the following to the Town of Montague:

1. Adopt Planned-Unit Development (PUD) as a redevelopment strategy;
2. Target non or less historic structures for selective demolition to open up space for circulation, parking, and emergency vehicle access;
3. Establish a mixture of uses including recreational, commercial, light industrial, and live-work space;
4. Create three gateways to attract visitors to the District;
5. Redesign and reconstruct the Strathmore Pedestrian Bridge;
6. Extend the existing Canalside Rail Trail across the Canal and onto the District for an alternative bicycle/pedestrian;
7. Seek federal, state, and local funding to supplement renovation costs;
8. Update and replace aging utilities and bridge infrastructure; and
9. Implement sustainable energy sources, where applicable, within the district.

CONCLUSION

NewLeaf has been pleased to work with the Town of Montague to develop a conceptual vision plan for the Turners Falls Canal District. Through a thoughtful analysis, NewLeaf is providing strategic recommendations for how to leverage the assets of Turners Falls and the District to facilitate successful redevelopment. One of the greatest assets of Turners Falls is the people who live there. The Town can use this report to advance the goals of the Town and strengthen the community.

Note Bene: All photographs in this report were taken by NewLeaf team members during site visits, unless otherwise noted. In addition, all figures, maps, and tables in the report were created by team members, unless otherwise noted.

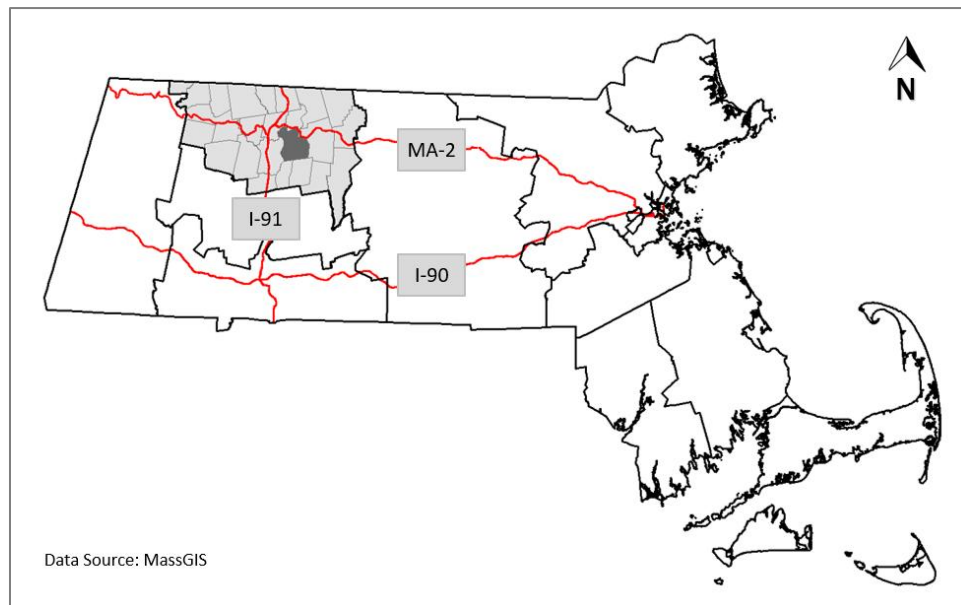
CHAPTER 1: INTRODUCTION TO TURNERS FALLS



Figure 2. Sign at the intersection of the Mohawk Trail and the Turners Falls-Gill Bridge

The following chapter provides geographical, historical, and socioeconomic context needed to describe Turners Falls. Additionally, the introduction explores land-use patterns and transportation networks in the village.

GEOGRAPHY



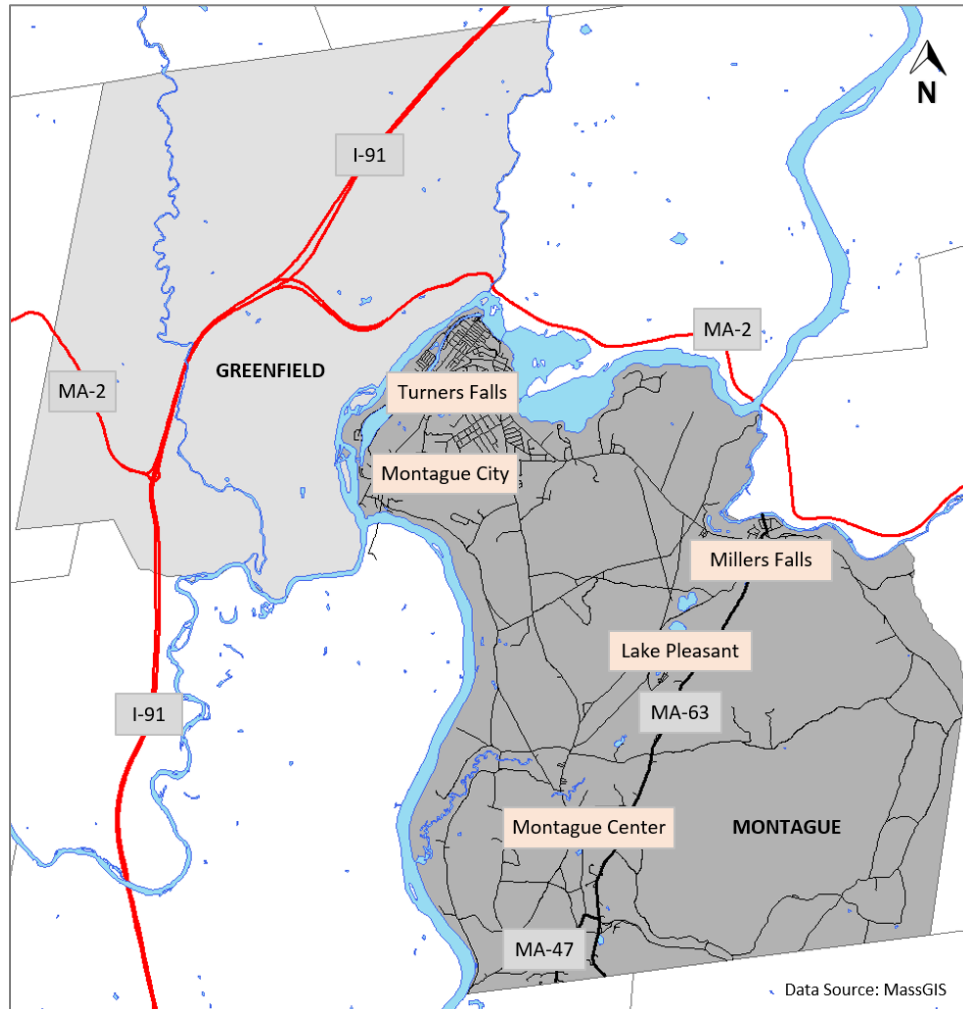
Map 1. Montague is located in Franklin County in Western Massachusetts

Turners Falls is the largest of five villages that comprise the Town of Montague; the other four are Lake Pleasant, Millers Falls, Montague Center, and Montague City. Montague is located in Franklin County, the most rural county in Massachusetts. The Connecticut River bounds Turners Falls to the north and west as it flows south through Franklin, Hampshire, and Hampden Counties. This region, colloquially termed the Pioneer Valley, is known for its natural beauty, vibrant arts and cultural scene, fertile agricultural land, and higher education institutions. The Pioneer Valley and the Berkshires define Western Massachusetts, a popular year-round tourist destination for New Englanders and New Yorkers alike.

Situated at the crossroads of Interstate 91 and the Mohawk Trail², Turners Falls is connected to many population centers. New York City is a three-hour drive, and is accessible via bus and Amtrak from neighboring Greenfield. The capital regions of Albany (NY), Boston, Concord (NH), Hartford (CT), Montpelier (VT), and Providence (RI) are all within a two-hour drive. Keene (NH), North Adams (MA), and Springfield

² The Mohawk Trail began as a Native American trade route, and officially opened as the first scenic road in New England in 1914. Today it stretches sixty-nine miles along Routes 2 and 2A, between Athol, MA and Williamstown, MA.

(MA) are popular destinations within an hour's drive. Locally, Turners Falls is only twenty-five minutes from the cultural hubs of Amherst, Northampton, Shelburne Falls, and Brattleboro, VT.



Map 2. Turners Falls is the largest of five villages that comprise the Town of Montague

While Franklin County is primarily composed of farmland, forests, and small village centers, Turners Falls is less than ten minutes from Greenfield, the only city in the county. Together, Turners Falls and Greenfield are the economic hub of the region. Downtown is flat and easy to navigate by foot and by those with mobility issues. Key civic buildings such as the Town Hall, U.S. Post Office, and Carnegie Library, and social services such as The United Arc, the Gill-Montague Senior Center, Rite Aid Pharmacy) are all within quarter-mile of each other. Downtown Turners Falls has an urban flavor with the familiarity of small town living.

HISTORY



Figure 3. Historic map of the planned industrial village of Turners Falls

The 2013 Downtown Turners Falls Livability Plan included the following summarization of the historical background of Turners Falls:

Although the Turners Falls area was inhabited continuously for more than 10,000 years by Native American tribes, the village took shape primarily from an 1868 plan by Alvah Crocker, an industrial entrepreneur from Fitchburg who envisioned a thriving industrial community powered by the waterfalls and planned the construction of a dam and canal in order to sell mill sites.

The abundant hydropower available at Turners Falls attracted several early mills: the John Russell Cutlery Company (1868), the Montague Paper Company (1871), the Keith Paper Company (1871) and the Turners Falls Cotton Mill (1874). A flood of immigrant workers accompanied the construction of the mills, fueling business development along Avenue A and

dense residential development along the adjacent grid of streets.

At the turn of the century, the village was a vibrant place, supporting four hotels, numerous taverns, the Colle Opera House (a Vaudeville theatre), direct rail service from New York City, and a trolley line connecting the village to Greenfield and Millers Falls. Most of the patterns established in this turn-of-the century boom are evident in the village today (Dodson & Flinkler; Howard/Stein-Hudson Associates, 2013).



Figure 4. AfterGlo performs on the 4th Street stage at Pumpkin Fest 2016

As industry dwindled in the mid-twentieth century, Turners Falls was hit hard economically. Over the past decade, the Town, local business people, and community members have been working hard to rebuild a sustainable economy. Turners Falls hosts events such as the annual Franklin County Pumpkin Fest that draws visitors from across the region. The Town has also invested in rehabilitating public amenities and

recreational opportunities to cater to families with children. In recent years, Turners Falls has become an attractive option for young adults who have been priced out of Northampton's rental market.

SOCIOECONOMIC CONDITIONS

The following Socioeconomic Conditions section includes any analysis of demographic data which places Turners Falls in the context of Franklin County and Massachusetts. Specifically, this section looks at population change, age distribution, median household income, housing, median home value, educational attainment, and school enrollment.

POPULATION

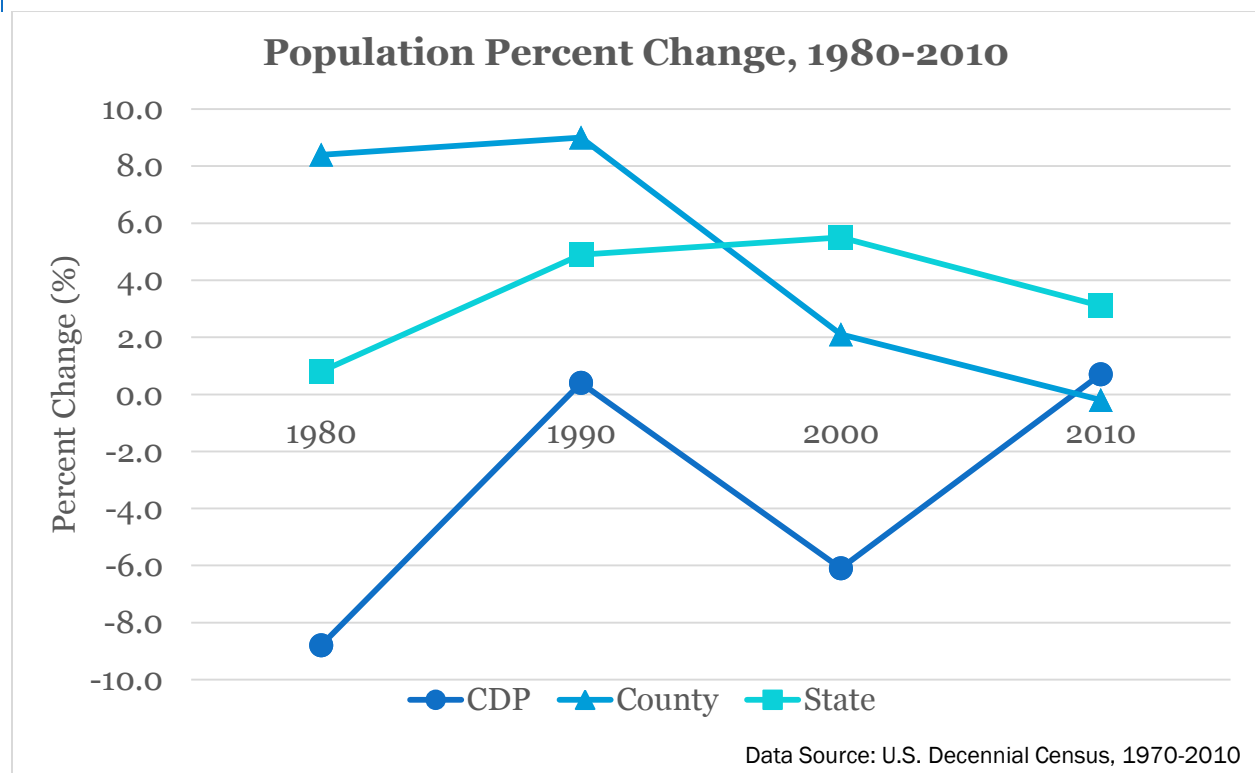


Figure 5. Percent change in population per decade

While the rates of population growth in Franklin County and Massachusetts declined from 2000-2010, the rate of population growth in Turners Falls during that time period (0.7%) was the highest it has been since 1990 (Figure 5). In 2010 there were 4,470 people living in the Turners Falls CDP, compared to 5,125 in 1970. The decline in

the manufacturing industry, coupled with the growth of the tech industry in other parts of the state may have contributed to the population shift during this time period.

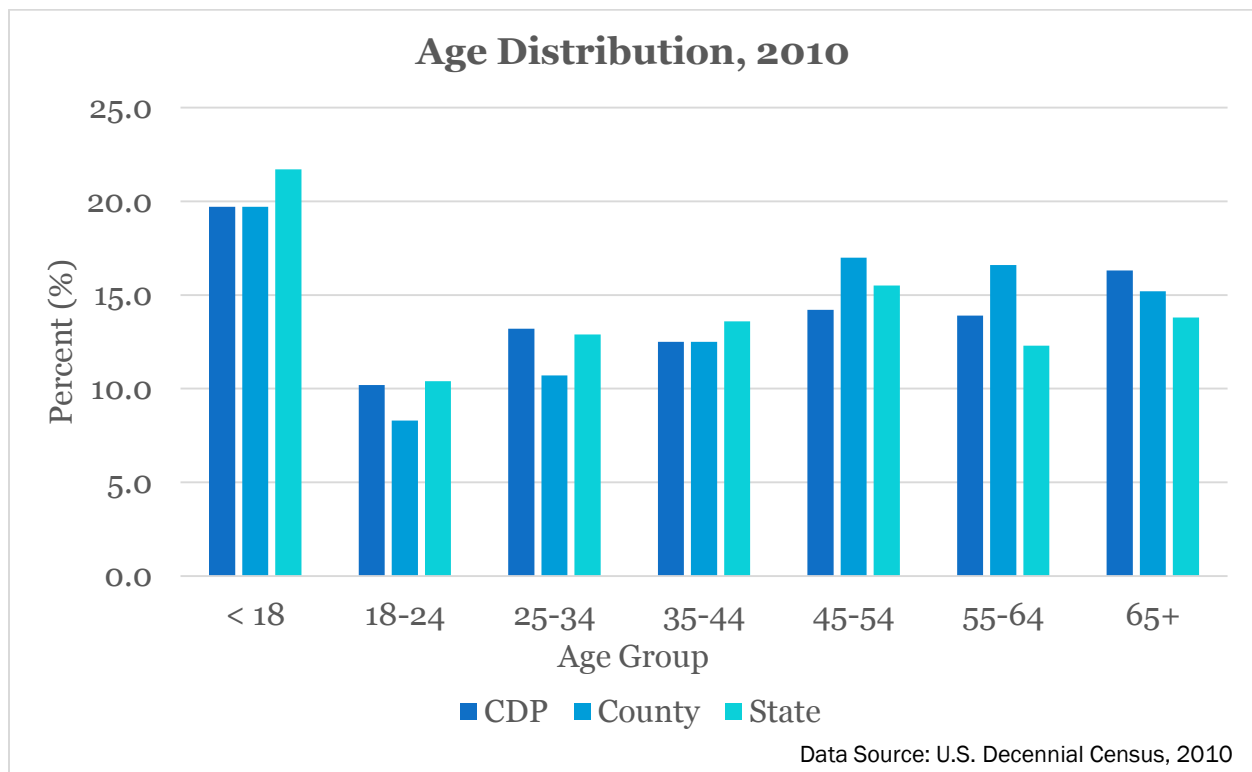


Figure 6. Age distribution of population in 2010

As of 2010, the Turners Falls CDP had a relatively similar age distribution as Franklin County and Massachusetts. Perhaps the most notable difference is in the 65+ age group that contains 16.3% of the Turners Falls CDP population, compared to 13.8% of the State's. An aging population is also reflected in the Under 18 age group where 19.7% of the CDP and County's populations fall compared to 21.7% of the State's because the children of people in the older age groups are presumably over the age of 18.

Another notable difference can be seen in the 18-24 and 25-34 age groups when comparing the Turners Falls CDP with Franklin County. The County has lower percentages of these groups (8.3% and 10.7%, respectively), than Turners Falls CDP (10.2% and 13.2%, respectively). This data could be interpreted to mean that the people in these age groups who live in Franklin County, are living in areas such as the Turners Falls CDP, perhaps because of the availability of rental units, whereas much of the county is comprised of single family homes.

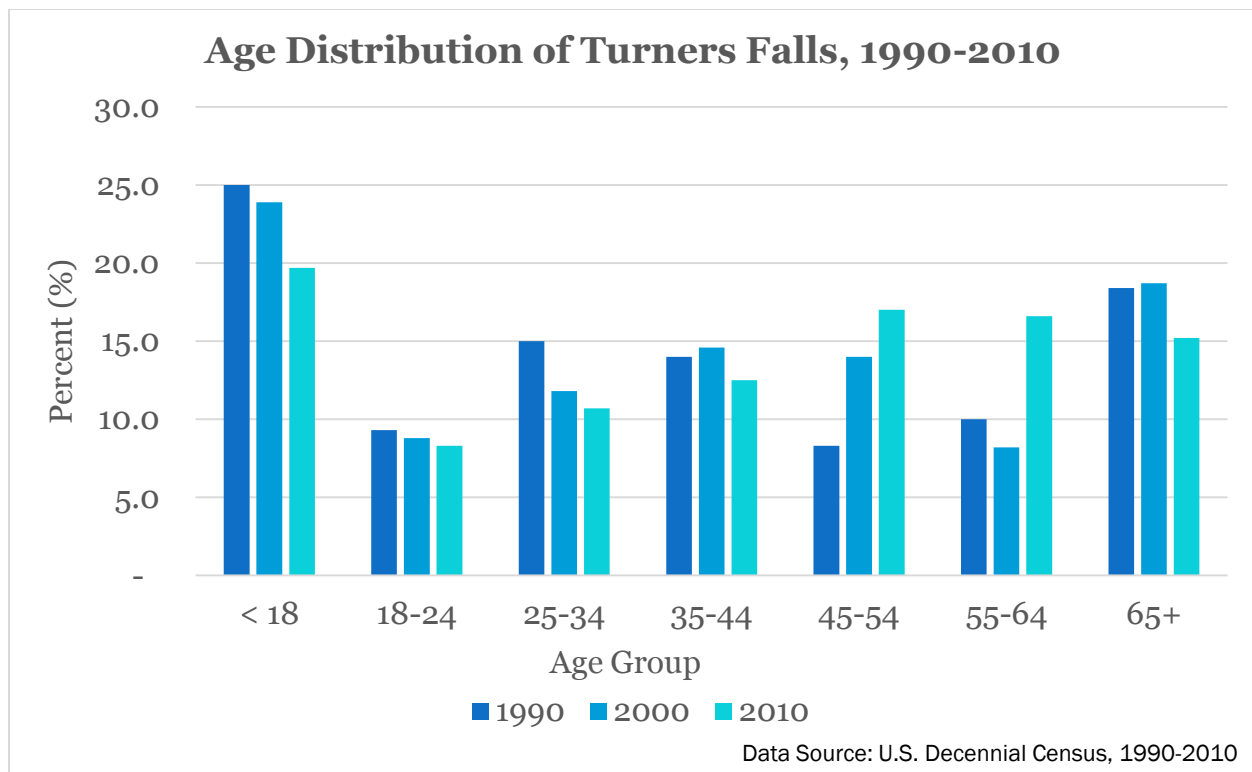


Figure 7. Age distribution of Turners Falls, 1990-2010

From 1990 to 2010, the percentage of people aged 45-54 living in the Turners Falls CDP has more than doubled from 8.3% to 17.0% (Figure 7). This age group is considered to be a part of Generation X; the generation following the Baby Boomers. The influx of people in this age group may be attributed to the growth of entrepreneurial opportunities in the Turners Falls CDP. Lower property values may make purchasing a first home more attainable, and cheaper rent for commercial spaces may make opening a business more realistic. This age group, which often has disposable income, must be recognized as an important niche that the Town should continue to market toward in order to sustain the local economy. The same applies to the 55-64 age group (Baby Boomers).

Another notable trend is the decrease in percentage of children under the age of 18. This data is reflected in the school enrollment numbers for the Gill-Montague Regional School District, which have been declining over the past decade (Figure 13). This may be an indication that there is an increase in singles or couples opting not to have children moving to the Turners Falls CDP.

EMPLOYMENT

Table 1. Employment percentage by industry for CDP, County, and State in 2010

INDUSTRY	CDP	COUNTY	STATE
Educational services, and health care and social assistance	19.8	30.7	26.7
Manufacturing	12.4	12.6	9.9
Information	11.9	3.3	2.7
Arts, entertainment, and recreation, and accommodation and food services	11.4	7.5	8.0
Retail trade	11.2	11.1	10.7
Other services, except public administration	7.2	4.3	4.5
Transportation and warehousing, and utilities	6.6	4.6	3.8
Finance and insurance, and real estate and rental and leasing	6.2	4.0	8.1
Wholesale trade	4.6	2.2	2.7
Professional, scientific, and management, and administrative and waste management services	4.3	7.0	12.7
Public administration	2.0	3.9	4.1
Construction	1.5	6.8	5.9
Agriculture, forestry, fishing and hunting, and mining	0.9	2.0	0.4

Data Source: Bureau of Labor Statistics

The Educational services sector employs the largest percentage of people who live in the Turners Falls CDP (Table 1). As Turners Falls and Greenfield are the geographic and economic center of Franklin County, there are many institutions such as Greenfield Community College, Baystate Franklin Medical Center, The Community Health Center of Franklin County, and Community Action that employ residents in those fields.

Two industries that have notably higher percentages of employment in the Turners Falls CDP than the County or State are Information and Arts sectors. It should be noted that Manufacturing, while a smaller employment sector than in previous decades, is still prevalent in the Turners Falls CDP, as well as in the County as a whole. The employment percentages for the professional, scientific, and management, and administrative and waste management services and construction industries are noticeably lower than they are for the County and State.

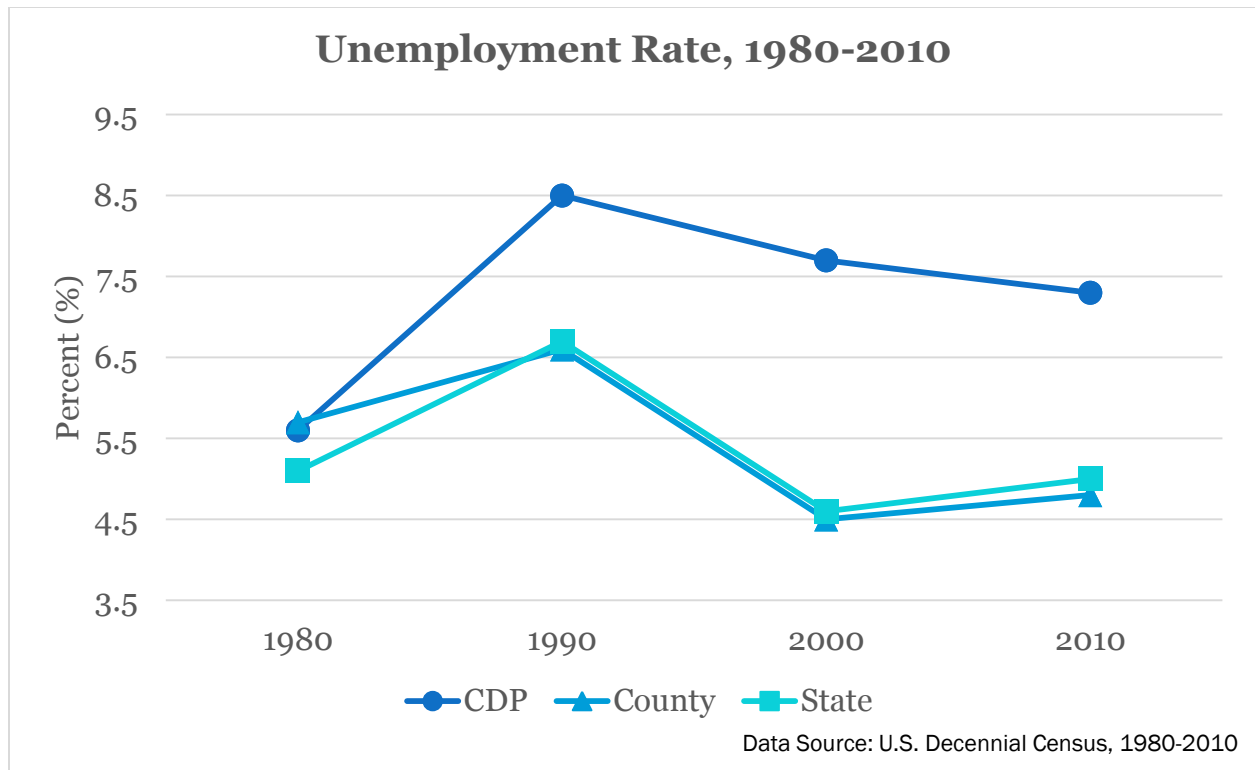


Figure 8. Unemployment rates, 1980-2010

Beginning in the 1990s, there has been a consistently higher rate of unemployment in the Turners Falls CDP than in the County and the State (Figure 8). The unemployment rate for the Turners Falls CDP peaked at 8.5% in 1990, but has since declined to 7.3% in 2010. To the contrary, unemployment rates in the County and State has seen an uptick in recent years.

MEDIAN HOUSEHOLD INCOME

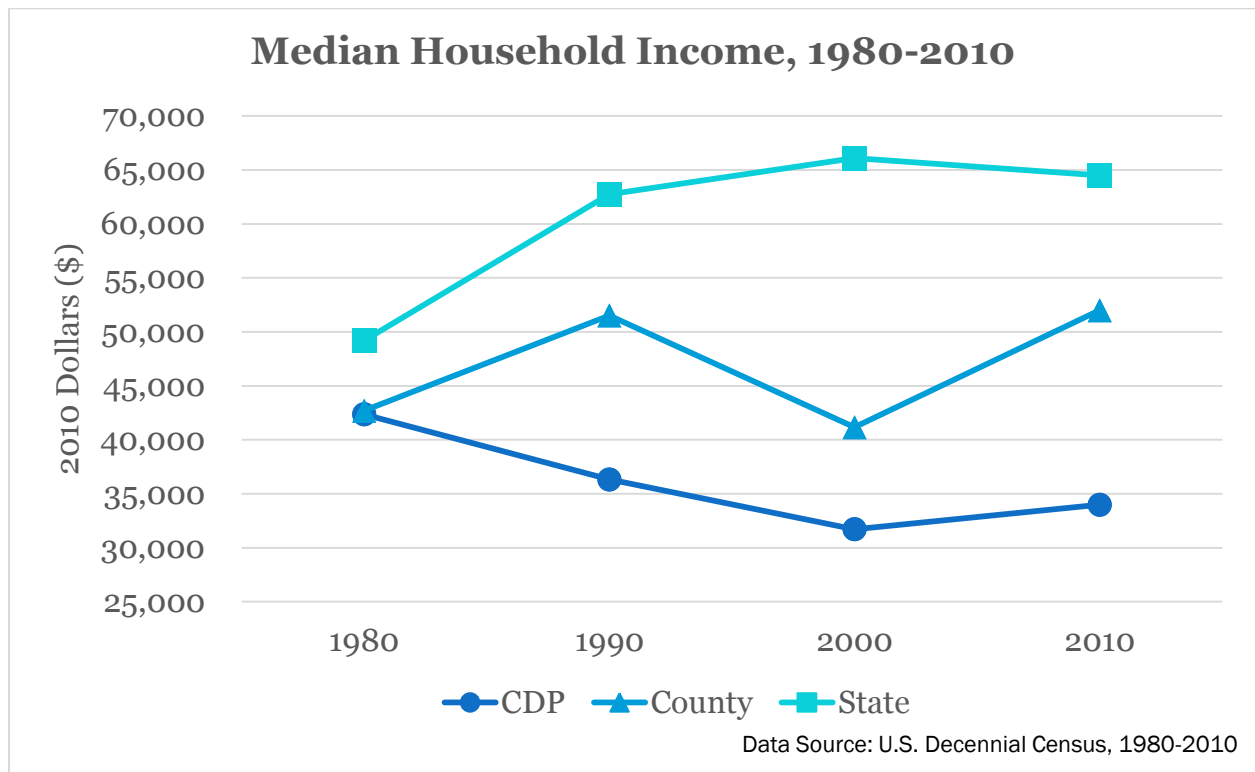


Figure 9. Median Household Income from 1980-2010 in 2010 constant dollars

While the Median Household Income (MHI) of the Turners Falls CDP is nearly half of that for the State, the CDP has seen MHI rise between 2000-2010. While Franklin County has had significant income volatility since 1980, the Turners Falls CDP and the State are relatively stable (steady decreases for the former and increases for the latter). While any loss in income is not satisfactory, the lack of significant fluctuation is a sign of some stability.

HOUSING



Figure 10. Colorful three-deckers provide multi-family housing options on 3rd Street

As of 2010, the Turners Falls CDP had a housing density of 1,139 housing units per square mile. This was a 5.4% increase from 1,081 units per square mile in 2000 (ACS, GCT-PH1). As of 2014, there were 2,032 occupied housing units in Turners Falls, which is a 3.1% decrease from 2,097 in 2010 (ACS, S2504).

The housing inventory in Turners Falls accounts for 55.9% of total housing inventory for the Town of Montague (ACS, S2504). Turners Falls housing units are 47% rental occupied and 73% of units were built before 1960 (ACS, S2504). In Turners Falls, 46% of residents living in rental units moved in after 2009 and 91% moved in after 1999 (ACS, B25026).

MEDIAN HOME VALUE

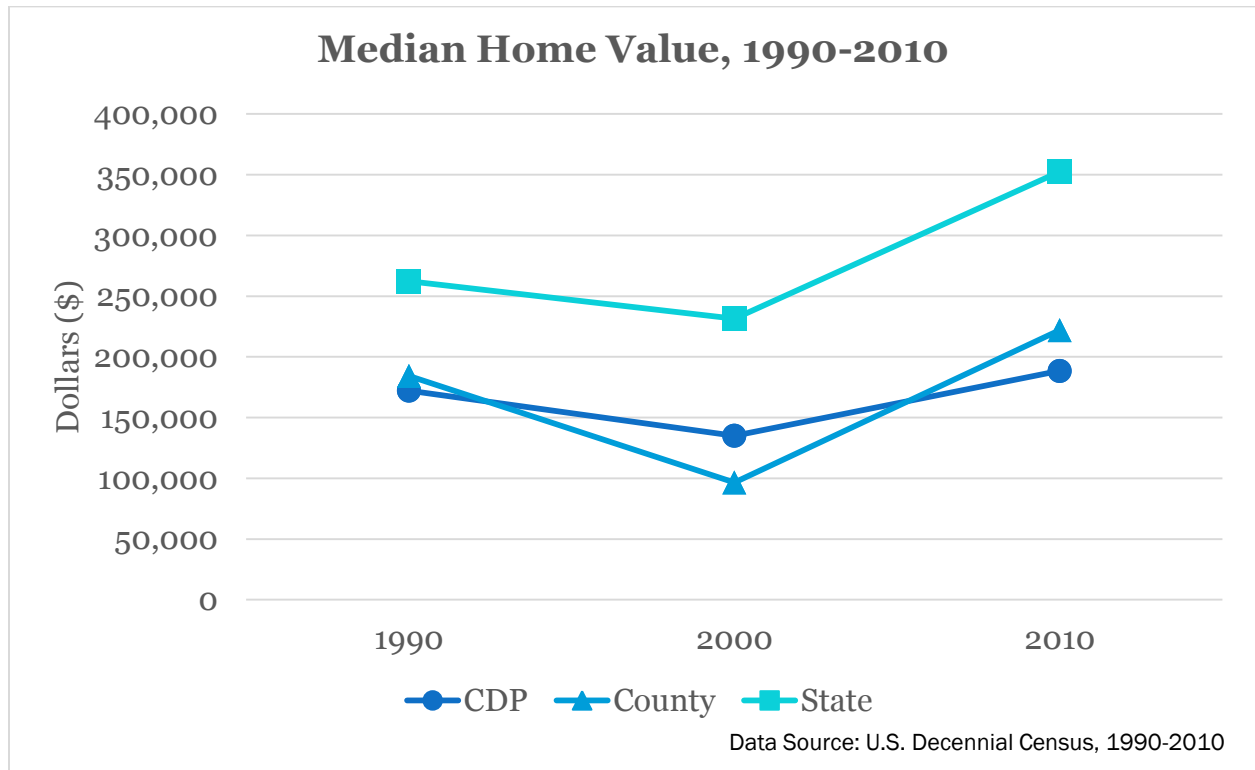


Figure 11. Median Home Values, 1990-2010 in 2010 constant dollars

Median Home Value (MHV) in constant 2010 Dollars was less volatile in the Turners Falls CDP than in Franklin County and the State between 1990-2010 (Figure 10). On average, homes in the Turners Falls CDP are valued at approximately \$100,000 less than the rest of the State. Turners Falls may be an attractive location for first time home buyers to enter the market.

EDUCATIONAL ATTAINMENT

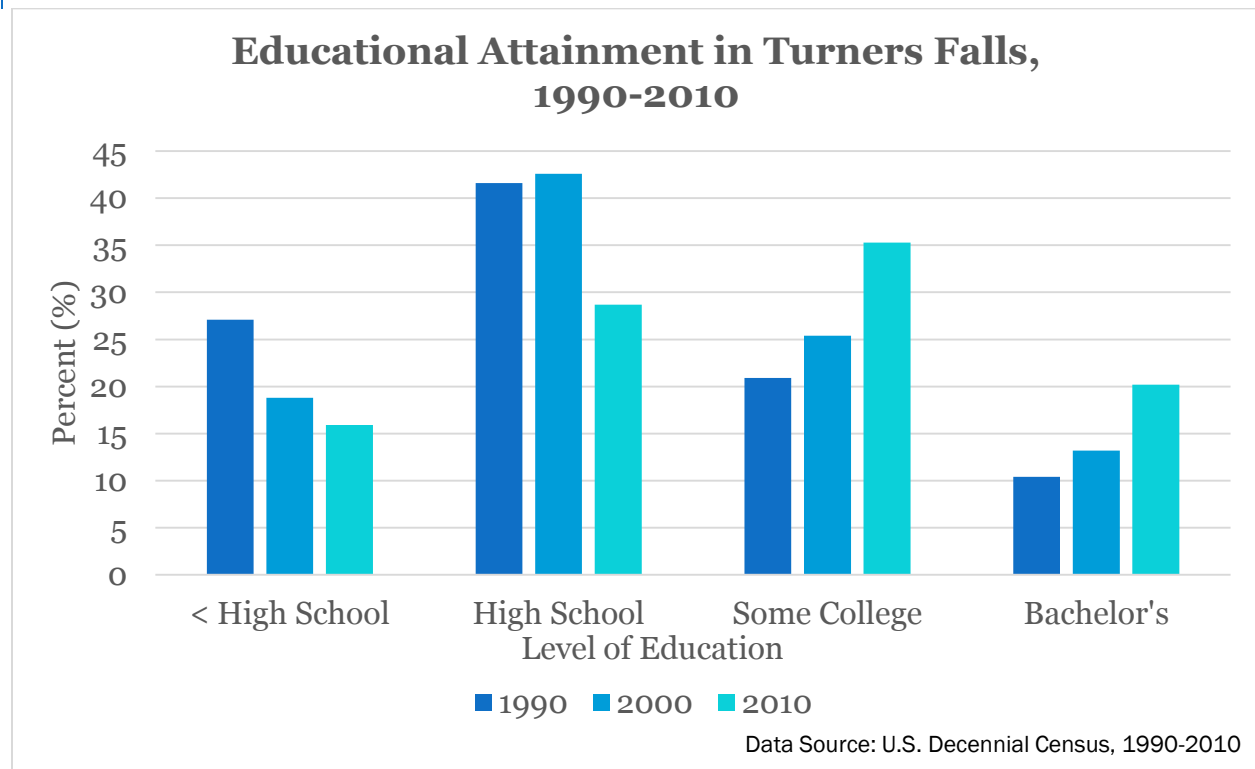


Figure 12. Educational attainment of Turners Falls from 1990-2010

A major change in the educational attainment levels of adults over the age of twenty-five occurred in the Turners Falls CDP between 1990-2010. As of 1990, the vast majority of adults living in the Turners Falls CDP had a high school diploma or less (Figure 12). In 2000, a trend of increasing educational attainment becomes noticeable; a smaller percentage of the population had less than a high school diploma, while a greater percentage had completed high school, some college, or a Bachelor's degree. By 2010, the percentage of the population with a Bachelor's degree was about twice what it was in 1990. The same can be said for those completing some college. Educational attainment has implications on the economic development of an area. This data can help determine best options for types of industry and employers that can utilize the skills and education background of those that live in Turners Falls.

SCHOOL ENROLLMENT

Table 2. Inventory of grade schools in the Gill-Montague Regional School District

SCHOOL	ADDRESS	GRADES OFFERED
HILLCREST ELEMENTARY	30 Griswold Street, Turners Falls	PK-1
GILL ELEMENTARY	48 Boyle Rd, Gill	K-6
SHEFFIELD ELEMENTARY	43 Crocker Avenue, Turners Falls	2-5
GREAT FALLS MIDDLE	224 Turnpike Road, Montague	6-8
FRANKLIN COUNTY TECHNICAL HIGH*	82 Industrial Blvd, Turners Falls	9-12
TURNERS FALLS HIGH	222 Turnpike Road, Montague	9-12

** Technical schools are their own districts in Massachusetts.*

Source: MA Department of Elementary and Secondary Education (DESE)

Turners Falls is served by the Gill-Montague Regional School District (GMRSD) and Franklin County Technical High School. There are five schools in the GMRSD: three primary, one middle, and one secondary. Three of these schools are located in Turners Falls (Table 2). Franklin County Tech, which trains students in academics and technical trades, is a great resource for the Town and the County. Nearby post-secondary educational institutions include Greenfield Community College and the Five College Consortium based in Amherst.

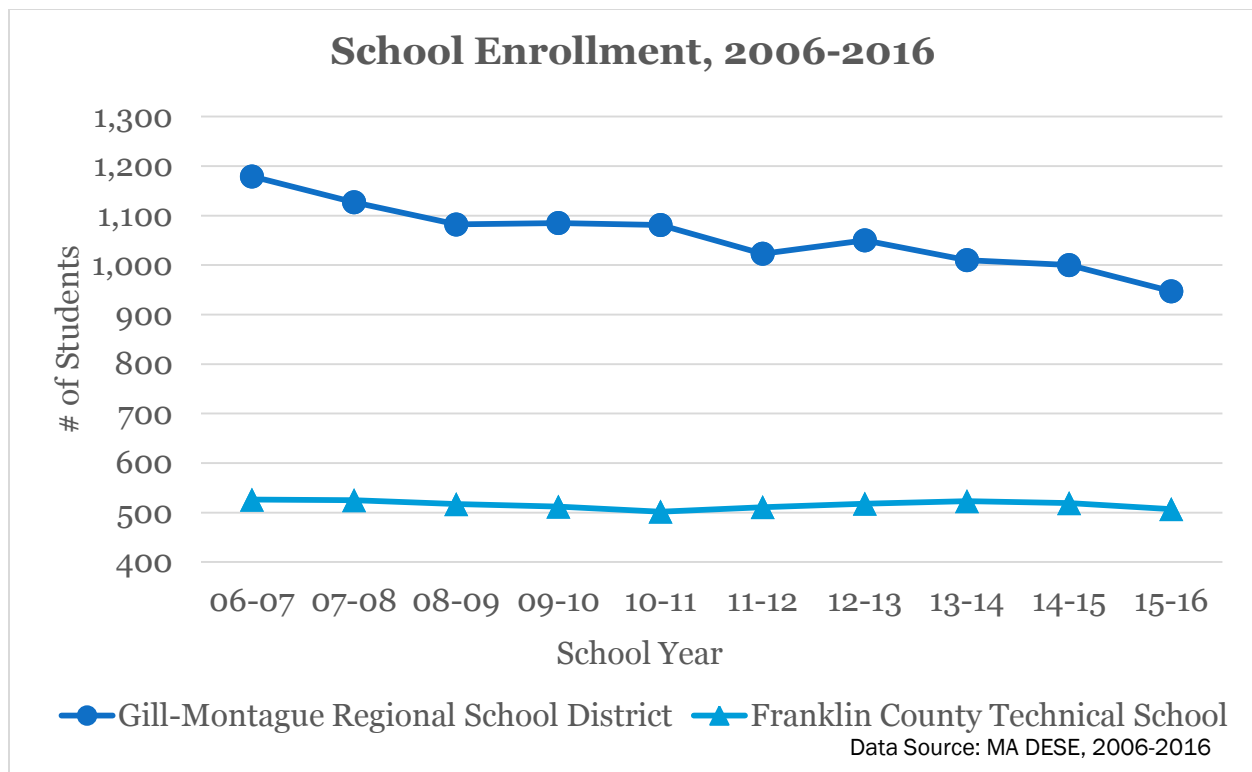
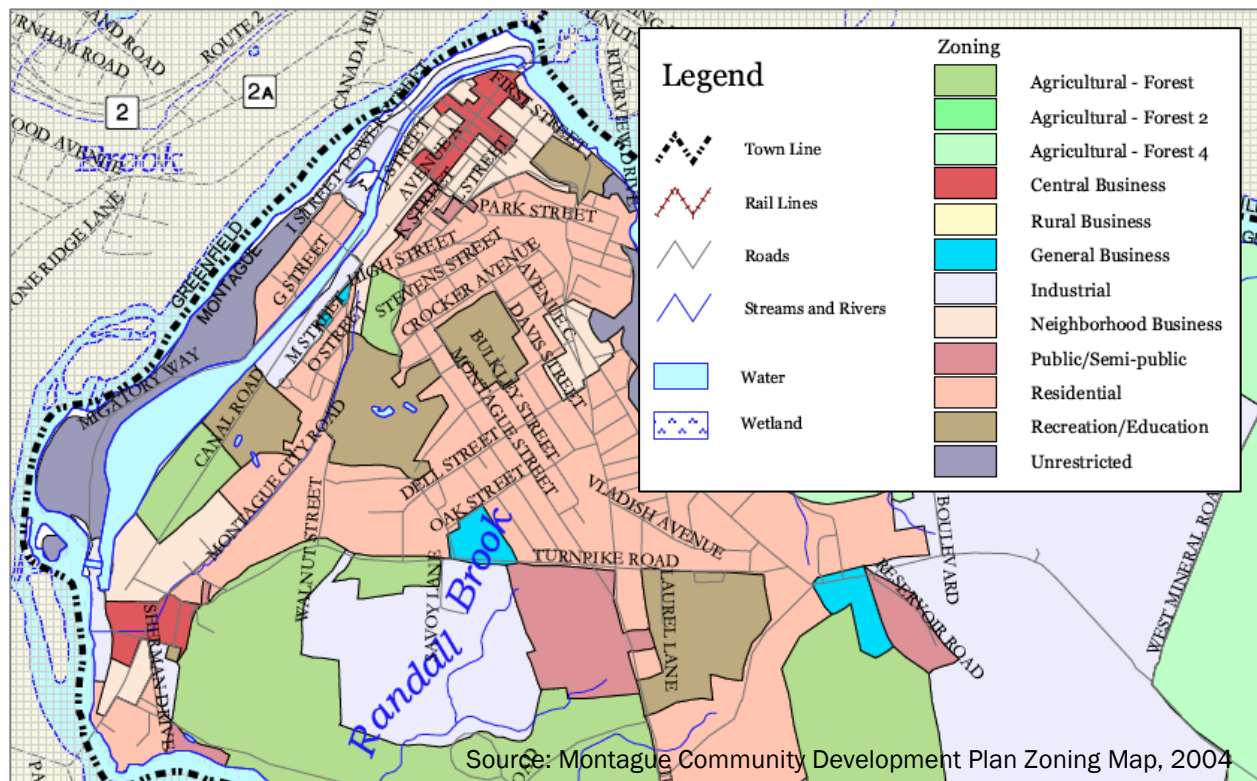


Figure 13. School enrollment numbers, 2006-2016

Enrollment numbers for the GMRSD have declined over the past ten years (Figure 13). There are now fewer than 1,000 students in the school system. Enrollment numbers for Franklin County Tech have remained consistent at just over 500 students. In 2009, GMRSD decided to close the Montague Center School, which served students in kindergarten through third grade, due to declining enrollment. Declining school enrollment numbers can signify that a district has an aging population that isn't being replaced by young families.

LAND-USE



Map 3. Zoning map of Turners Falls

In its Comprehensive Plan, the Town of Montague identifies Turners Falls as one of its two “urban centers,” the other being Millers Falls. Most of the village is zoned residential and is largely characterized by its post-World War II suburban housing stock. Downtown is listed on the National Register of Historic Places as the Turners Falls Historic District. As a planned industrial village, Downtown supports mixed-use due to presence of many older structures built prior to the enactment of zoning in 1973. The District is also part of the Downtown area, but is separated from it by the Canal.

Avenue A begins at the Turners Falls-Gill Bridge and is the main thoroughfare through Downtown. 3rd Street is a busy corridor for traffic from Greenfield. Areas along Avenue A and 3rd Street are zoned Central Business, leaving the rest of the Downtown core zoned Neighborhood Business.

Since the early 2000s, the Town has undertaken a number of adaptive reuse projects in historic buildings, notably the Colle Opera House (Figure 15), Crocker Building (Figure 16), Cutlery Block (Figure 10), Great Falls Discovery Center (Figure 17,

and Shea Theater (Figure 18). The Comprehensive Plan declares the Town's commitment to honoring the community's industrial heritage by preserving historic buildings through adaptive reuse (Town of Montague, 1999). The Downtown Turners Falls Livability Plan (Livability Plan) points to public support for adaptive reuse redevelopment of the historic mill buildings in the District (Dodson & Flinkler; Howard/Stein-Hudson Associates, 2013).



Figure 14. Today the Colle Opera House provides office space for the non-profit Center for Responsive Schools



Figure 15. The Crocker Building is managed by FCHRA, and includes low income units and commercial spaces



Figure 16. The Great Falls Discovery Center is owned and operated by MA DCR and serves as a Visitors Center



Figure 17. The Shea Theater is a popular destination for concerts and performances



Figure 18. The Cutlery Apartments are two-story low income row houses managed by the FCHRA

There are three parks in the Downtown area: Peskeomskut (Figure 19), Spinner, and Unity (Figure 19), which includes a recently completed skate park. Peskeomskut Park has a bandstand, which hosts seasonal band concerts and other community events. Spinner Park is a very small area on Avenue A and has a statue and public seating. Unity Park runs along the River before the dam and is the northern terminus of the Canalside Rail Trail. This large park has two ball fields, a playground, a pavilion, and exercise stations. Despite its location on the River, the public cannot access the water here due to its proximity to the dam.

Table 3. Recreation areas in Downtown Turners Falls

RECREATION AREA	ADDRESS	AMENITIES	RESTORED
CANALSIDE RAIL TRAIL	N/A	3.8 mile paved bicycle and pedestrian trail	2008
PESKEOMSKUT PARK	Avenue A & 6 th	Band shell, picnic area, small playground	2013
SPINNER PARK	Avenue A & 4 th	Pocket park, seating, sculpture, landscaping	2014
UNITY PARK	1 st & Unity	Ball fields, basketball court, covered pavilion, fitness stations, large playground, paved walking track, picnic areas, pollinator garden	2015



Figure 19. Community concerts are played in Peskeomskut Park during the summer



Figure 20. Spinner Park on Avenue A

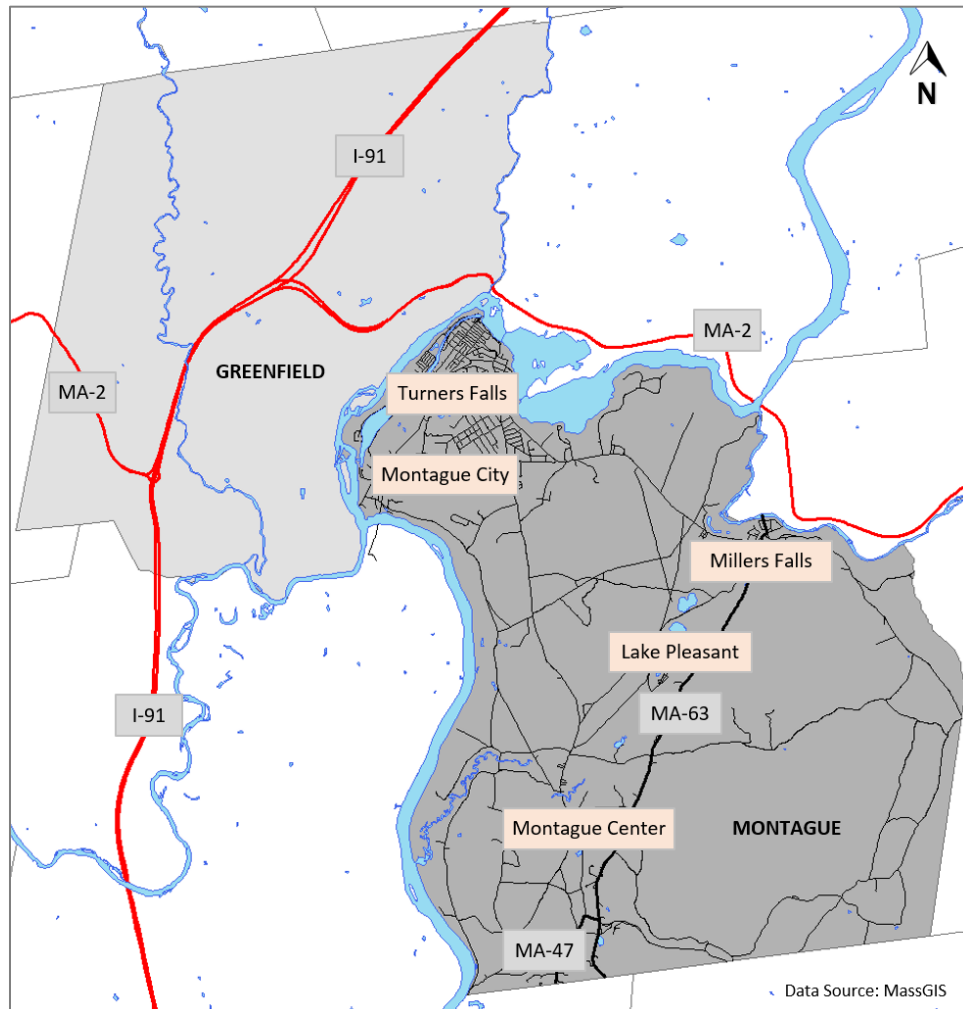


Figure 21. Unity Park underwent a facility-wide rehabilitation project in 2015

TRANSPORTATION

The following section provides information related to elements of transportation such as major highways and roads, bridges, public transit, and bicycle networks that connect Turners Falls to the region.

MAJOR HIGHWAYS & ROADS



Map 4. Major highways and roads

Turners Falls is conveniently located at the crossroads of Interstate-91 (I-91) and Route 2 (Map 4). I-91 runs north to locations such as Brattleboro and Bellows Falls, VT and south to Springfield, MA and Hartford, CT. Route 2 runs east to Boston, and west to North Adams. Avenue A is the “Main Street” of Turners Falls,” and an arterial connector

to Route 2 via the Turners Falls-Gill Bridge. Other State roads that run through Montague include Routes 47 and 63, which both run north to south.

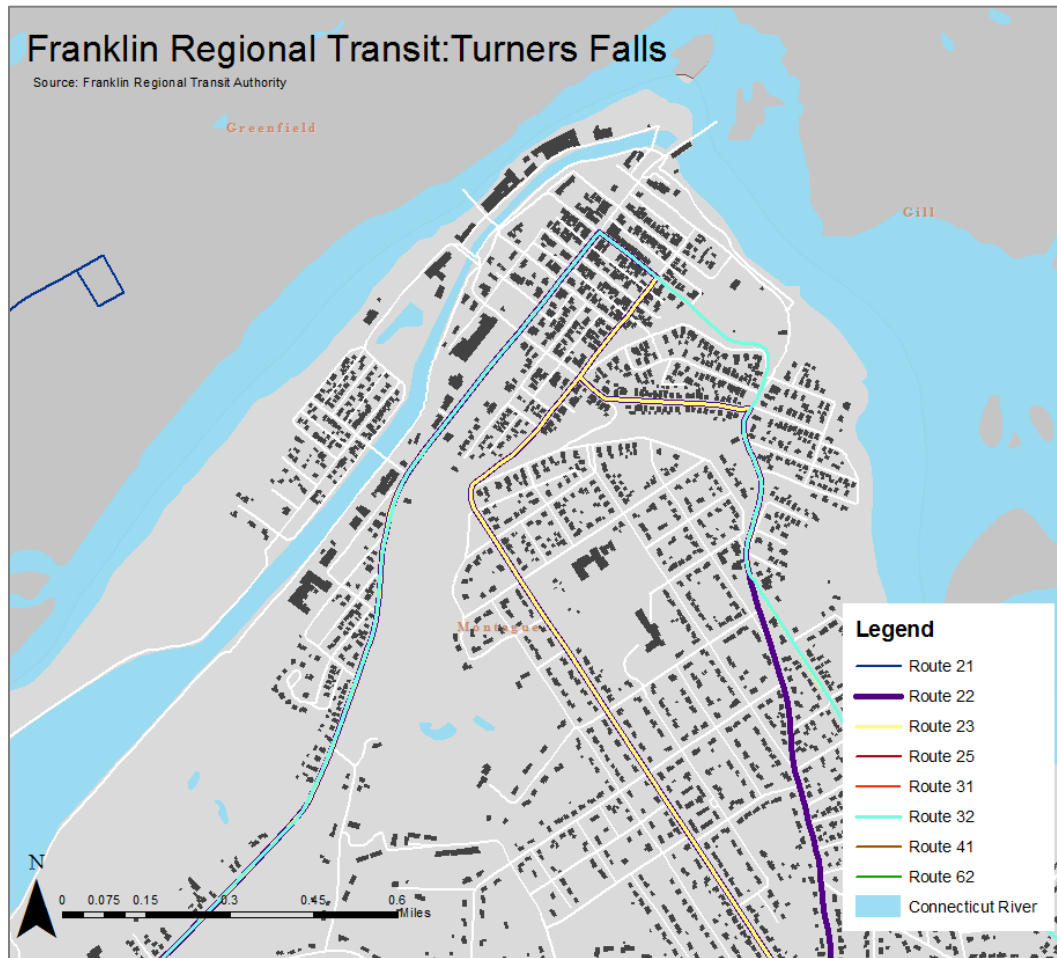
BRIDGES



Figure 22. Turners Falls-Gill Bridge

The Connecticut River bounds Turners Falls on the north and west, requiring bridges to cross to either side. To the north, the Turners Falls-Gill Bridge connects Route 2 in the Town of Gill with Downtown (Figure 22). To the west, the White Bridge connects Greenfield with Downtown. Further south and outside of the scope of this project is the General Pierce Bridge which connects the Cheapside area of Greenfield with Montague City. Additionally, there are nine bridges that connect to the District. These bridges will be discussed in detail in Chapter 2.

PUBLIC TRANSIT



Map 5. Franklin Regional Transit Authority bus service to Turners Falls

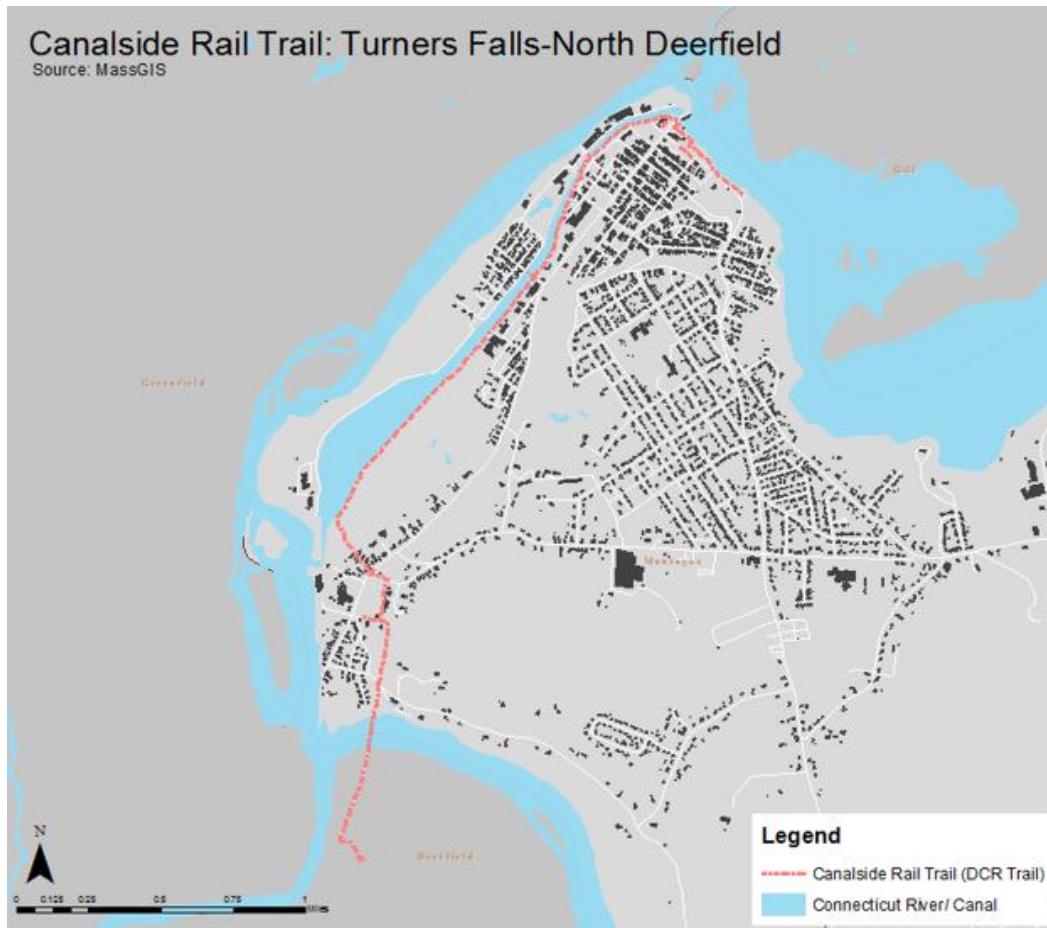
The Franklin Regional Transit Authority (FRTA) operates six regional bus routes, three of which serve Turners Falls (Map 5). Routes 22, 23, and 32 experienced a decline in ridership from 2012-2014 (Table 4). The drop in ridership on Route 32 is attributed to a reduction in service when the Town of Athol left FRTA to join Montachusett Area Regional Transit (MART) (Franklin Regional Transit Authority, 2015).

Table 4. Ridership data for FRTA bus routes serving Turners Falls (FRTA, 2015)

ROUTE	DESTINATION-ORIGIN	OPERATES ON	WEEKLY RIDERSHIP	WEEKLY RIDERSHIP PERCENT CHANGE (2012-2014)
22	Montague-Greenfield	Weekdays	104	-1%
23	Amherst-Greenfield	Weekdays	18	-47%
32	Orange-Greenfield	Weekdays	107	-36%

Data source: FRTA, 2015

BICYCLE NETWORK



Map 6. The Canalside Rail Trail runs 3.7 miles from Downtown to North Deerfield

The Canalside Rail Trail is a 3.7-mile paved trail owned and operated by MA DCR. Construction of the trail was completed in Spring 2008. The northern terminus is in Unity Park in Turners Falls. The trail runs south along the Canal to a parking lot near the Deerfield Rail Yard in Deerfield. The trail hooks into the Franklin County Bikeway at multiple locations. The Franklin County Bikeway consists of approximately 240 miles of routes along low traffic roads throughout Franklin County.

CHAPTER 2: EXISTING CONDITIONS OF THE DISTRICT



Figure 23. An art installation on Strathmore Building 11

The following chapter provides a detailed report of the existing conditions of the District. It begins with an inventory of the properties, before summarizing any environmental assessments that have been conducted. The chapter then discusses current land uses, access, circulation, parking, and infrastructure. The chapter closes by providing summaries of existing plans and reports that were referenced while writing this Plan.

DISTRICT INVENTORY

Table 5. District inventory of properties and buildings

	PROPERTY NAME	LOT SIZE (ACRES)	BUILDING FOOTPRINT (SF)	OWNER	CURRENT USE	CONDITION
1	FirstLight Open Space	3.00	--	FirstLight	Recreational	Maintained
2	Indeck Property	3.19	--	Town of Montague	Vacant	Advanced Ruin
3	Strathmore Mill Complex Strathmore Building 9	1.90	177,017	Town of Montague (Turners Falls Hydro LLC)	Vacant Industrial	Limited hazardous materials; fire damage; mold.
4	Strathmore Building 11	0.42*	~5,500	Town of Montague	Vacant	Limited hazardous materials; fire damage; mold.
5	Turners Falls Paper	1.40	146,143	Turners Falls Paper	Industrial	Structurally Sound
6	FCHRA	0.80	6,080	FCHRA	Institutional	Structurally Sound
7	Railroad Salvage	2.16*	~56,090	Private	Vacant	Advanced Ruin
8	Railroad Salvage Annex	0.75	5,300	Town of Montague	Vacant	Structurally Sound
	TOTAL	11.04	~396,130			

* These properties were not included in the total acreage because Building 11 has not yet been subdivided from the Strathmore Mill Complex and the Railroad Salvage is currently owned by a private party

The District Vision Plan considers seven parcels in an approximately eleven-acre District (Table 5). The Town owns three of these parcels. The remaining parcels are owned by four separate entities. Turners Falls Hydro, LLC owns Strathmore Building 9 as a condominium where it operates a historic water turbine that generates power which is sold into the grid. NewLeaf conducted a site visit on September 28, 2016 with the Montague Town Planner, Mr. Walter Ramsey. The following sections will discuss each of these properties with respect to redevelopment feasibility, utility service, access, and circulation.



Map 7. Existing Conditions of the Turners Falls Canal District

1) FIRSTLIGHT OPEN SPACE

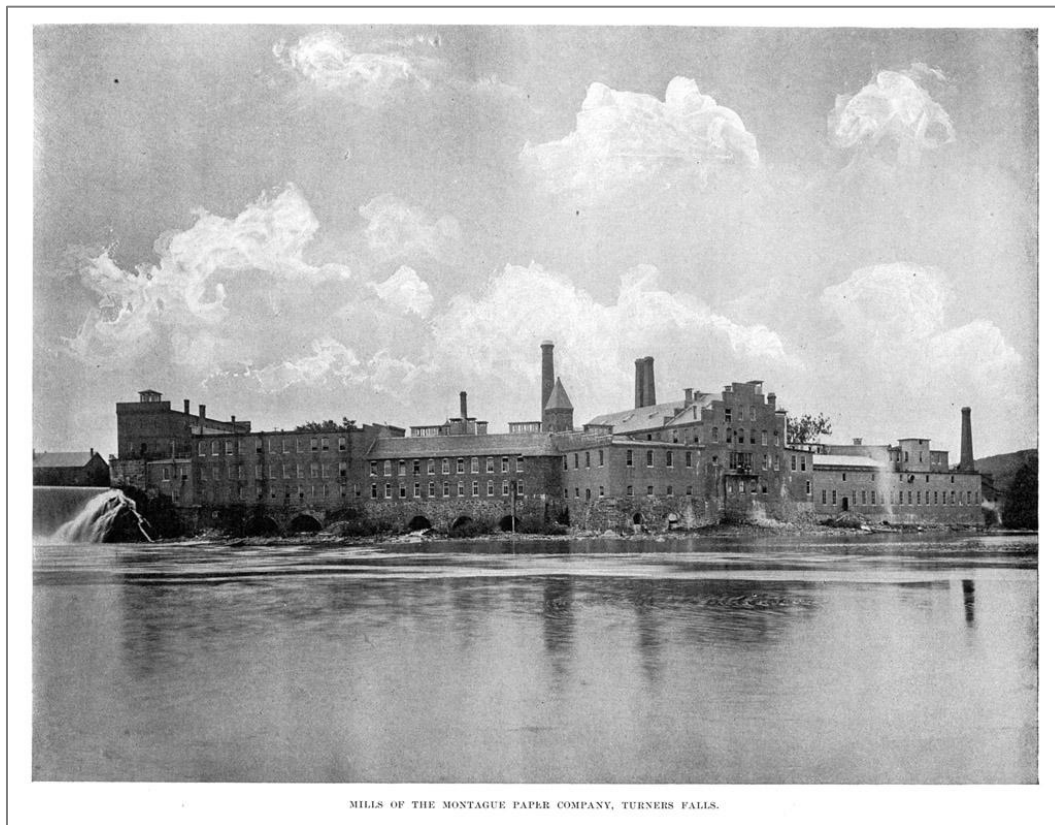


Figure 24. Mills of the Montague Paper Company c. 1891 (Museum of Our Industrial Heritage, n.d.)

The FirstLight Open Space property is a three-acre parcel located at the northern-most tip of the District. The property is privately owned by FirstLight Power Resources, a hydroelectric company who owns and operates the Turners Falls Dam and Power Canal. Currently, Firstlight is under negotiations with a Canadian Company, PSP Investments, a potential buyer of the Hydroelectric facility. As a large energy producer, Firstlight is subject to the Federal Energy Regulatory Commission (FERC) licensing process; the existing license expires in April 2018.

Historically, this property was significant to the Native American populations who inhabited the area due to its proximity to the “Great Falls,” a popular fishing spot. In 1871, Colonel Alvah Crocker of Fitchburg, MA and Edwin Bulkley of New York constructed the first building of the Montague Paper Company on this site (Figure 25). By 1891, the mill had more than quadrupled in size. In 1937, the mill was razed to make

way for the Turners Falls-Gill bridge; it has since existed as open space. (Museum of Our Industrial Heritage, n.d.).



Figure 25. Maintained landing of FirstLight Open Space property

FirstLight was unresponsive during NewLeaf’s initial stakeholder interview outreach process. The spectacular views and access to the Connecticut River are vital amenities that will hopefully draw the community and visitors to the property. The FirstLight Open Space could be used to honor the Native Americans through a cultural park. Connecting the past, with future uses of fishing, landscape plantings, boating, and interpretive signage could be an effective way to increase a sense of place.



Figure 26. River access path on FirstLight Open Space property



Figure 27. River access below the Dam on FirstLight Open Space property

2) INDECK PROPERTY

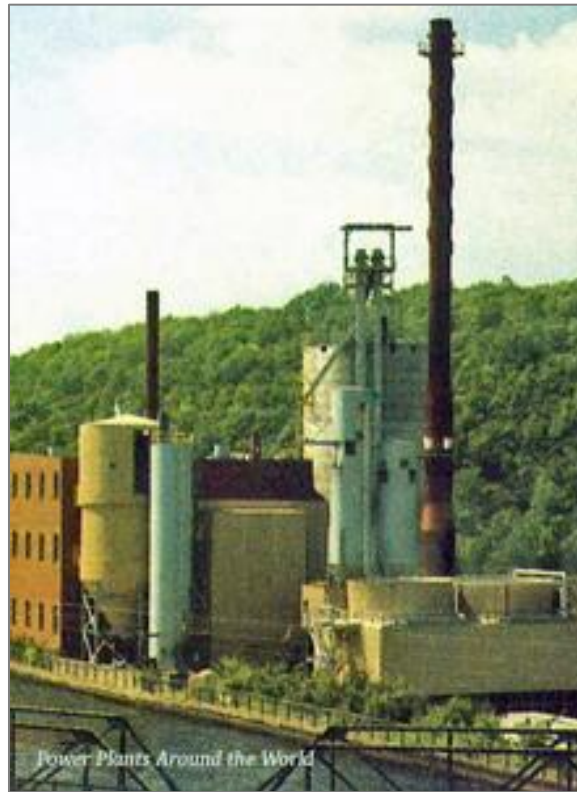


Figure 28. The Indeck coal cogeneration power plant was in operation from 1989 to 1996

The Indeck Property is a 3.19-acre parcel located at the northern end of the District, adjacent to the FirstLight Open Space. The property, owned by the Town, retains some of the original foundation, an important factor for potential future development. The foundation remains once supported Indeck Power Plant (1989) that provided electricity and thermal energy for the Strathmore Mill complex and the southern end of the District. When the Strathmore Mill closed, the power plant was no longer needed and in 2006, its energy producing machinery was deconstructed and sold (Livability Plan, 2013). The decommissioned coal silo is also a part of this property, and serves as an important landmark and historical remnant in the District.

The Indeck Property is ideal for short term implementation of tactical urbanism. While part of the allure of the property arise from the historic footprint, if the property is going to facilitate increased visits, further structural evaluation must occur to reduce dangerous conditions. As touched upon in the Livability Plan (2013), NewLeaf shares the vision that this is an ideal location for the creation of an amphitheater, with

potential collaboration with the Shea Theater. Furthermore, the over the course of time the existing coal silo has the potential to be used as an observation deck. In the meantime, lights or artwork could really accentuate the prominence of silo and attract positive attention.



Figure 29. Indeek Property coal silo and remaining wall from across the Canal



Figure 30. Indeek Property coal silo and remaining wall from on-site

3) STRATHMORE MILL COMPLEX

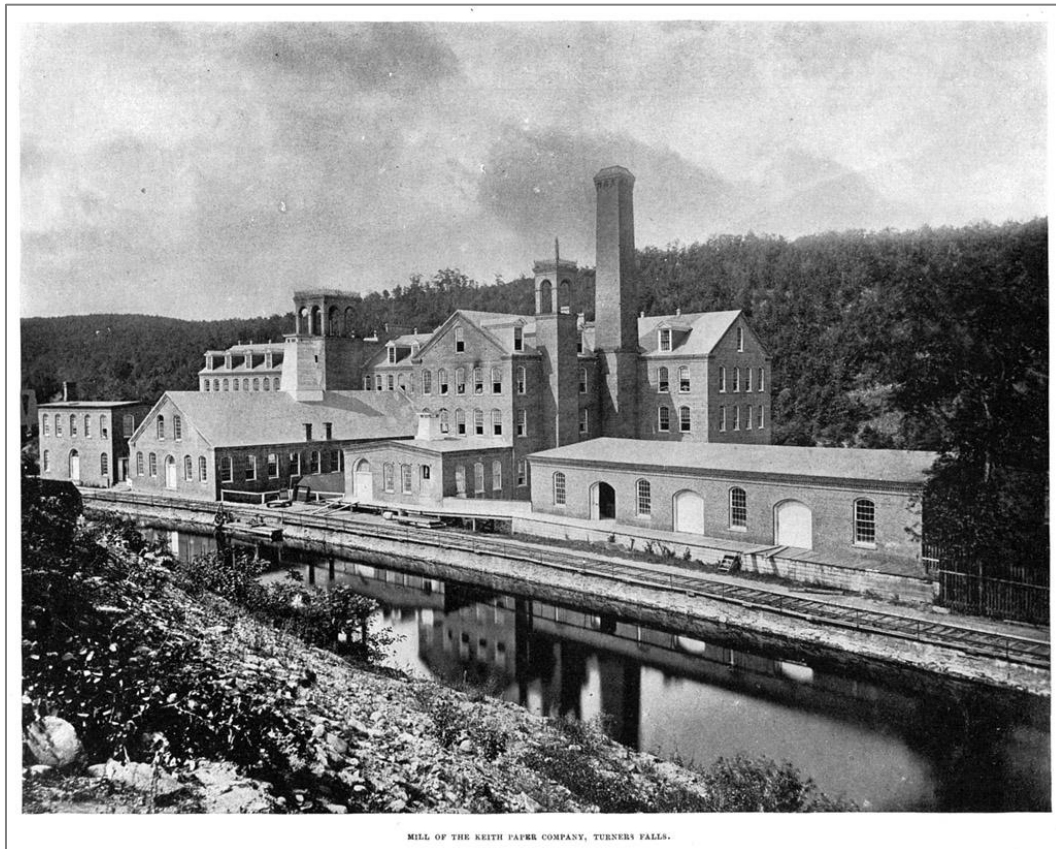


Figure 31. Mills of the Keith Paper Company c. 1891 (Museum of Our Industrial Heritage, n.d.)

The Strathmore Mill Complex is a 1.9 acre parcel located in the geographic and figurative heart of the District. With the exception of Building 9 (Turners Falls Hydro, LLC) the entire property is owned by the Town. The Town became the lawful owner of the Strathmore Mill Complex in 2010, resultant of the previous owner's nonpayment of taxes; the property has been vacant since 2007. In total, the Strathmore Mill Complex contains ten buildings ranging in from two to seven stories, with a total floor area of approximately 224,000 square feet on 55,000 sq. ft. footprint. Historically, the Strathmore Mill Complex was originally built by the Keith Paper Company in 1871 and later became the Strathmore Paper Company. The mill was damaged in a fire in 1877, but continued production until 1994. Since then, the mill has had several owners and has been used for a range of purposes. In 2007, an arson fire destroyed Building 10 and damaged two other buildings in the complex (Strathmore Redevelopment Strategy (ULI), 2011). The property is listed on the National Register of Historic Places and was

on the 2007 list of the ten more endangered historic resources by Preservation Massachusetts. The Complex has been extensively studied by engineering and design consultants. Furthermore, any environmental contamination has been remediated.



Figure 32. Strathmore Mill Complex from IP Bridge

The stakeholder engagement process indicates that many property owners and potential developers within the District and Town have mixed feelings about the Strathmore Mill Complex. Some have alluded to the fact that the buildings are in total disrepair and a complete demolition of the complex is a realistic scenario. Others think more holistically, explaining that preserving the historic integrity of the buildings are important and would like to see them used accordingly in the future. The following uses and desires have been identified by stakeholders: light manufacturing, retail, agricultural, and residential. Based on the property's constraints, light residential, and smaller industry (no need for tractor trailers).

NewLeaf has assessed the Strathmore Complex both for future uses and selective demolition. The future uses should reflect the gradient of floor levels: lower floors have light industrial uses; higher floors have office, retail, event space, and live/work uses.

Without the restoration/replacement of the Strathmore Pedestrian Bridge and provision of new utilities and infrastructure, the complex will not be capable of supporting future reuse. Our proposed selective demolition of less-historical buildings will decrease the overall building footprint and open up the space for other opportunities including parking infrastructure and recreation. With limited accessibility, handicap and small delivery vehicles can be allowed to access the site. Providing a loading dock area that connects to Building 3 should be considered so the site can adequately serve delivery vehicles. Ideally, the Strathmore complex is a prime candidate for renewable energy resources such as geothermal and photovoltaic.



Figure 33. Strathmore Building 1 from Building 10 Footprint



Figure 34. Inside Building # of the Strathmore Mill Complex

4) STRATHMORE BUILDING 11

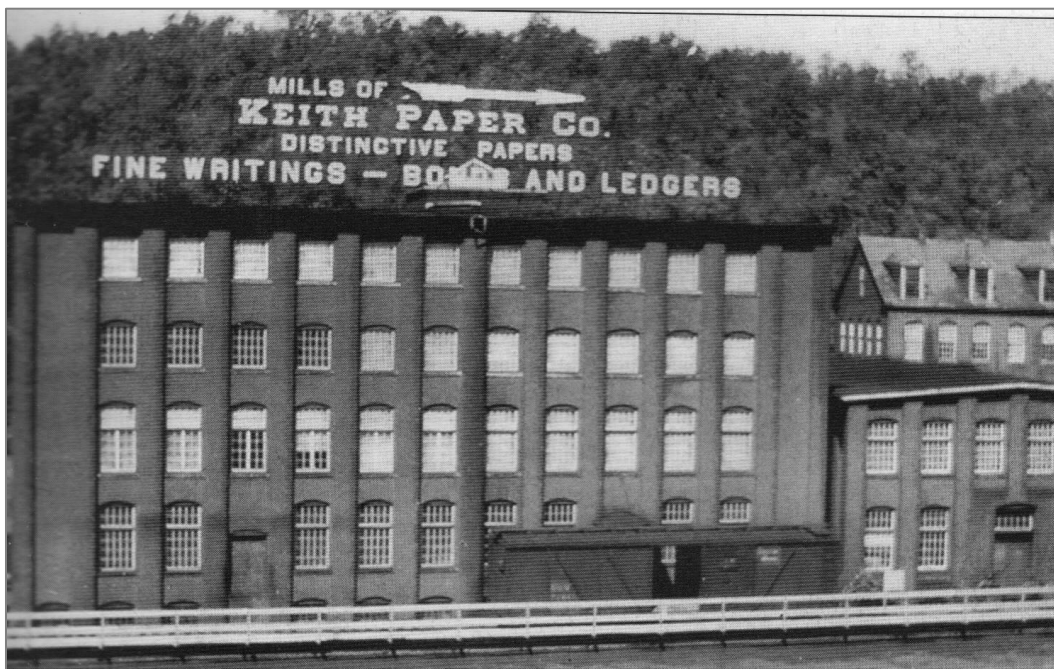


Figure 35. Strathmore Building 11 in 1915 when owned by Keith Paper Co.

Strathmore Building 11 sits on 0.42-acres located between the Turners Falls Paper Company and the rest of the Strathmore Mill Complex. The footprint of the

building is 32,280 square feet and it is owned by the Town. Building 11 was originally part of the Keith Paper Company. Today the building stands alone as the arson fire in 2007 destroyed the building's connection (Building 10) to the Strathmore Mill Complex. The building is seven stories tall. An art installation has been attached to the facade of the building. The building lacks critical connections to key infrastructure and the east wall is in need of significant repairs as it was damaged during the fire.

An RFP, submitted by Obear Construction has been accepted by the Town. NewLeaf is in agreement with Obear's vision for the property live/work spaces. During the stakeholder interviews, discussion of the Strathmore Pedestrian Bridges' necessary replacement and innate relationship to attracting redevelopment was reiterated. Overall, Building 11 is a critical element in the overall redevelopment of the District. Much like the Railroad Salvage Annex, Building 11 could serve as the "poster-child" for the northern end of the District.



Figure 36. Exterior of Strathmore Building 11 from Canalside Rail Trail



Figure 37. Rear view of the exterior of Strathmore Building 11



Figure 38. Interior of Building 11 of the Strathmore Mill Complex



Figure 39. Interior of Building 11 of the Strathmore Mill Complex

5) TURNERS FALLS PAPER

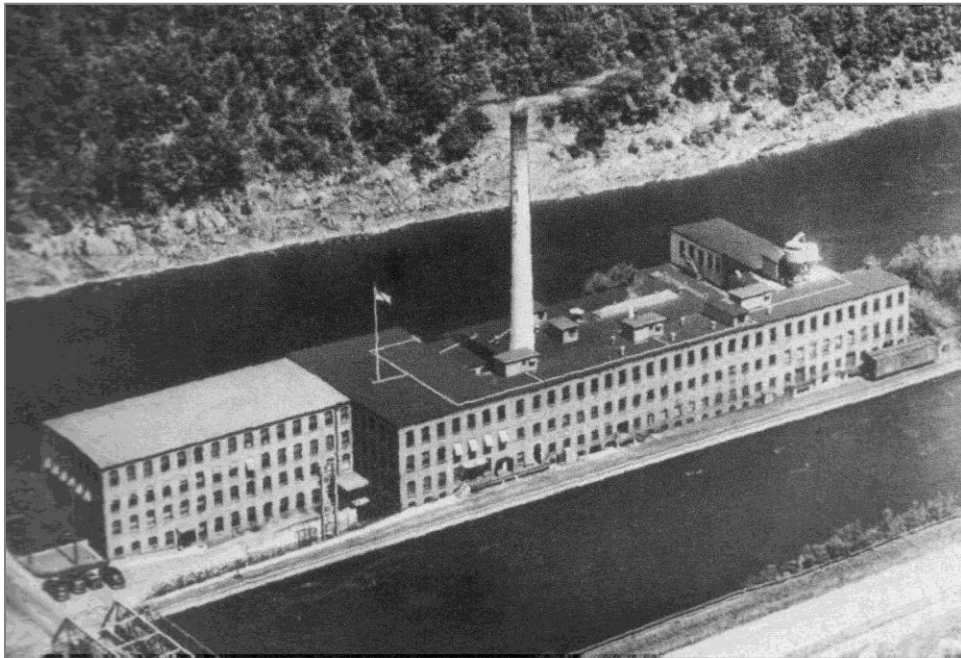


Figure 40. Esleeck Paper Manufacturing mill

Turners Falls Paper, is an active specialty paper company situated on a 1.4-acre parcel on the northern end of the District, between Building 11 of the Strathmore Mill Complex and the 5th Street/White Bridge corridor. Turners Falls Paper is a privately owned company that has undergone a few name changes in the past couple of years (e.g. Southworth and PaperLogic). The 146,143 sq.ft building has remained active in the manufacturing industry since the establishment of the site. Turners Falls Paper has always remained a private company and depends on the Town's municipal services. Based on discussion with Turners Falls Paper management in 2016, the company's name recent name change signifies their desire to remain in Turners Falls for the foreseeable future. Furthermore, as their ability to grow as a company is related to their overall sewage output, Turners Falls Paper is willing to make financial contributions towards the separation of their four-inch main that currently passes through Building 4.

NewLeaf supports the existence of Turners Falls Paper as it is emblematic of the District's rich history; however, the establishment creates logistical issues for the future redevelopment of the District. Based on the nature of the business, Turners Falls Paper depends on tractor trailers to deliver and distribute finished goods. Canal Road is the only access point to their loading dock, for the trucks to adequately back into the dock, the trucks must cut off the flow of traffic from both White and the 5th Street Bridges. This process creates potentially dangerous situations for pedestrians and/or cyclists and exacerbates congestion in the center of the District. Furthermore, due to the narrow width of the road (10ft) when trucks are in the loading bay, large emergency vehicles would be unable to pass by.



Figure 41. Turners Falls Paper from the Canalside Rail Trail



Figure 42. Turners Falls Paper from the White Bridge

6) FRANKLIN COUNTY REGIONAL HOUSING & REDEVELOPMENT AUTHORITY



Figure 43. View of present day FCHRA site from across the Canal

The Franklin County Housing and Redevelopment and Housing Authority (56,090 Sq. Ft.) sits on .08 acre parcel adjacent to Turners Falls Paper, however it is separated by Turners Falls Road. The FCHRA building once served as a storehouse for the Keith Paper Company which commanded the northern end of the Site in the late 1800's to the early 1900's. Since the building's initial construction, an addition on the northernmost face of the building has been erected to accommodate additional demands for space. Currently, as a public entity, FCHRA property does not generate the same revenue for the Town as would a commercial or residential use. As the building falls within the District, it is zoned for Historic industrial (as with all properties). The property has been examined for environmental contamination, and has received a clean bill of health.

During NewLeaf's stakeholder interview in 2016, the FCHRA has disclosed they were running out of space in their current location and would consider moving. The FCHRA uses the majority of the building to store maintenance equipment for the properties that they manage. NewLeaf has identified this parcel as important property

due to its central location within the District, ample amount of parking, and historic character that overlooks the Connecticut River. Furthermore, the site is accessible by both Turners Falls Road, and Power Street; however, the addition of concrete median barriers constrains this connection. If the FCHRA relocated, the removal of the non-historic addition and restoration of the storehouse would be an important asset to the District.



Figure 44. Franklin County Regional Housing and Redevelopment Authority



Figure 45. West side of Franklin County Regional Housing and Redevelopment Authority

7) RAILROAD SALVAGE



Figure 46. Griswold Cotton Mill (Museum of Our Industrial Heritage, n.d.)

On the southern end of the Site, The Railroad Salvage sits on a 2.16-acre parcel, while the existing footprint assumes roughly 56,090 Sq. Ft. In 1874, Joseph Griswold and his three sons established the Griswold Cotton Mill, which is now referred to as the Railroad Salvage. The mill was sold in the 1940s and has changed hands and uses several times since, the buildings most current name was derived from its uses as a railroad salvage store. The Building has been vacant for over a decade and is now in a state of advanced ruin as the roof has fallen in and the walls have lost their structural integrity. The Railroad Salvage is currently under private ownership; however, the Town should investigate the potential obtainment of this property through the tax title process. The Railroad Salvage has been analyzed under FRCOG's Slum and Blight Inventory. Additionally, a Phase I Environmental Site Assessment was conducted in 2005, no released contaminants were identified. Similarly, a Phase II investigation in 2007 illustrated that there was no further environmental contamination.

As per the Client's Directive, NewLeaf did not contact the landowner for an interview. Overall, significant investment will be significant investment will be needed for site improvement, building renovations or removal, and utility and access upgrades. Based on the historic significance of this property NewLeaf would propose the structure

be rebuilt to its original historic design, as it would nicely complement the still intact Railroad Salvage Yard Annex. The property is easily accessible, and would have an adequate amount of parking that could be dedicated for its tenants. NewLeaf has identified that this site could be an ideal candidate for the potential relocation of the FCHRA. Acquisition of this property at the time of the construction of the Railroad Salvage Annex would be ideal, as property boundary between the two may cause some logistical issues for the developer of the Annex (Obear Construction).



Figure 47. Railroad Salvage Yard remnants from Power Street



Figure 48. Railroad Salvage Yard remnants from in front of the Annex

8) RAILROAD SALVAGE ANNEX

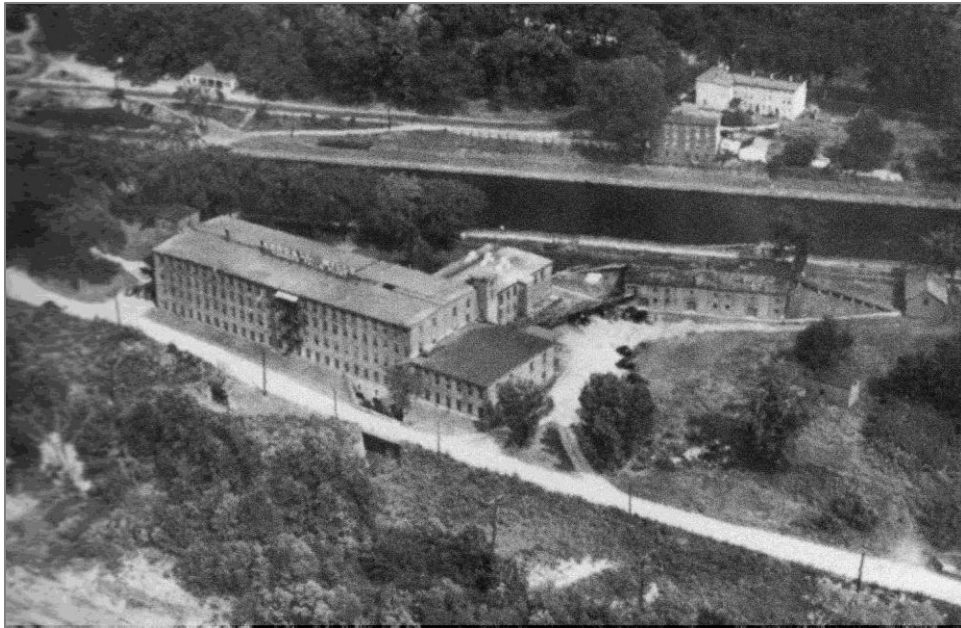


Figure 49. Griswold Cotton Mill site, presently referred to as "Railroad Salvage area"

Adjacent to the Railroad Salvage property, the 5,300 Sq. Ft. Railroad Annex sits on a three quarter of an acre parcel. During the District's heyday, the buildings served as a storehouse for the Griswold Cotton Mill. Currently, the town owns the property and utilizes the space for town property storage. Following the closing of the mill in 1959, both the Railroad Salvage and Annex were utilized as a discount good store. In 2016, the Town of Montague had solicited responses for a Request For Proposals for the restoration of the Salvage Annex. In October 2016, the sole applicant, Obear Construction, was approved by the Town. Obear had also submitted an RFP for Strathmore Building 11 on the northern end of the site. Obear Construction has demonstrated his commitment for enhancing communities within Franklin County. As stated in the RFP the developer intends to create a maximum of two new live-work spaces in conjunction with an additional seventeen artist/business incubator spaces. The Environmental Site Assessment discussed (2005, 2007) applies to this parcel as well.

NewLeaf discussion with Robert Obear in 2016 illustrated an overall hopeful vision for the southern end of the District. NewLeaf has identified that both the Railroad Salvage and Annex are ideal locations for which a proposed rail trail connection could travel behind these properties on the eastern side of the power canal. As indicated in the RFP, Obear's incorporation of a photovoltaic system is in line with NewLeaf's overall vision for sustainable energy production. NewLeaf would hope that Obear would further investigate the feasibility a closed-loop geothermal heating and cooling system, as opposed to the utilization of natural gas. Due to the proximity of the site to FirstLight's reservoir, the location is ideal for harnessing the constant ground temperature. Obear has indicated that if the Railroad Salvage were to become a Town owned property, he would excitedly submit a proposal to an RFP. Based on the proposed uses, the Annex could generate up roughly \$20,000 a year in tax revenue. More importantly, the Annex could serve as the "poster-child" for its energy efficiency that be hopefully implemented across the District.



Figure 50. Railroad Salvage Yard Annex



Figure 51. Interior of Railroad Salvage Yard Annex

ENVIRONMENTAL CONDITIONS

Due to the size of and history of industrial use in the District, potential environmental impacts were a concern. Multiple environmental assessments were conducted on the Strathmore Mill Complex and the Railroad Salvage area.

STRATHMORE MILL COMPLEX

The following are summaries of the environmental assessments that have been completed for the Strathmore Mill Complex.

PHASE I ENVIRONMENTAL SITE ASSESSMENT (2013)

In 2013, Tighe & Bond performed a Phase I Environmental Site Assessment (ESA) of the Strathmore Mill Complex (Tighe & Bond, 2013). They found process tanks that appeared empty and in good condition throughout the buildings. Two fuel oil boilers are located on the first floor of one of the buildings and fuel oil is stored in two aboveground storage tanks located on the Site. Six inactive coal boilers, which formerly provided heat to the mill, remain in the boiler room. No other tanks are located at the Site.

The 2013 report found record of numerous releases that occurred at the Complex and on adjacent properties. However, the findings of previous ESAs indicate they had no impact on the underlying soil and groundwater and thus, mitigation was not required. The 2013 report also confirmed that the debris cleanup from the fire in Strathmore Building 10 was properly removed according to all applicable State and Federal hazardous material mitigation regulations.

ASBESTOS & HAZARDOUS BUILDING MATERIALS SURVEY (2005)

A 2005 survey of asbestos-containing building material (ACBM), lead paint, and other hazardous materials was conducted at the Strathmore Mill Complex. The survey sought to identify easily accessible hazardous materials throughout the mill buildings. At the time, a majority of the Complex was still in-use by the previous owner. The occupation prevented the completion of an invasive demolition survey to identify materials inside walls and other internal structures. A variety of materials were

identified as ACBM and/or hazardous in various quantities and locations throughout the Complex. Estimated quantities of these materials were provided in the report.

PHASE I & PHASE II ENVIRONMENTAL SITE ASSESSMENTS (2003, 2004)

In 2003, EPA Brownfields Funds funded Phase I and Phase II ESAs at the Complex. Based on Tighe & Bond's findings of Phase I, a Phase II ESA was recommended due to the long industrial history of the Complex. Tighe & Bond's 2004 Phase II investigation evaluated subsurface (soil and groundwater) conditions at the Complex. Tighe & Bond's analysis of soil and groundwater samples determined that excessive concentrations of arsenic and four polynuclear aromatic hydrocarbons (PAHs) were present in soil samples. No excessive concentrations were identified in groundwater samples. Coal, coal ash, and wood ash were the identified PAHs in the soil samples.

Based on these findings and as the sole contaminant of concern, no additional remedial actions were conducted, and notification to MassDEP was not required. In accordance with Section 40.0317(9) of the Massachusetts Contingency Plan (MCP), releases of oil and/or hazardous materials relating to coal, wood ash, and coal ash do not require notification. In accordance with State and Federal regulations, no further response actions were proposed.

While arsenic was identified in one sample at an excessive concentration, the calculated Exposure Point Concentration (EPC) or average concentration was well below the applicable standards and a Response Action Outcome (RAO) was prepared and submitted to MassDEP to close out the release (Tighe & Bond, 2013).

RAILROAD SALVAGE AREA

The following are summaries of the environmental assessments that have been completed for the Railroad Salvage area.

PHASE I & PHASE II ENVIRONMENTAL SITE ASSESSMENTS (2005, 2007)

In 2005 and 2007, EPA Brownfields Funds funded Phase I and Phase II ESAs at the main and annex buildings of the Railroad Salvage (Tighe & Bond, 2005). The Phase I analysis revealed the building floor plans indicated an "oil room" on the southeast side

of the building, but no underground storage tanks (UST) or above ground storage tanks (AST) were located at the site. The assessment found that no releases had occurred at the site. Access to the building was impossible to the structural concerns, and the report recommended that the building's historic heavy-industrial usage warranted a phase II subsurface conditions analysis.

The 2007 Phase II investigation evaluated subsurface (soil and groundwater) conditions at the Railroad Salvage (Tighe & Bond, 2007). An analysis of the soil and groundwater samples identified no excessive concentrations of pollutants. Based on these findings, no additional remedial actions were conducted or required. The report concluded with a recommendation that a hazardous material survey be completed prior to the demolition and removal of structural debris to determine appropriate disposal options for any hazardous building materials.

OVERALL FINDINGS

These reports indicate that despite its heavy-industrial history, the District is relatively pollutant-free. These findings represent a stark contrast to similar historic mill sites, and it is NewLeaf's opinion that these findings are one the District's greatest assets. This asset will play a significant role in NewLeaf's final recommendations to the Client.

LAND-USE

Table 6. Permitted use table for Historic Industrial (HI) zone

PERMITTED USES

BY-RIGHT	Business office or professional office; retail sales and services, manufacturing, processing, or research; bulk storage, warehousing, distribution; craft workshop or light assembly shop; and uses customarily accessory to the above.
SPECIAL PERMIT (ZBA)	New structures; alteration to the exterior of an existing structure; hotel; residential uses, as accessory or secondary to a primary permitted use, with management plan; public utility; uses that involve the construction, alteration or change of use of more than 10,000 square feet of floor area; Solar Energy Facility, in accordance with Section 7.9; demolition of an existing structure; Registered Marijuana Dispensary, in accordance with Section 7.10; other uses similar to the above in externally observable attributes.
SPECIAL PERMIT (PLANNING BOARD)	Self-service storage facility, in accordance with Section 7.7.

The District is a narrow strip of land northwest of Downtown, bounded by the Connecticut River to the West and the Power Canal to the East. The District is approximately eleven acres in size. Remnants of three of the five original mill complexes exist in the District today. The Town currently owns three properties in the District. Other property owners include Turners Falls Paper, FirstLight, Franklin County Regional Housing and Redevelopment Authority (FCHRA), and a private landowner. The District is zoned Historic-Industrial (HI) by the Town Zoning By-Laws. (Town of Montague, 2014). The Town added the HI zone designation in 2001 to encourage adaptive reuse of the historic industrial buildings in the District. HI zones have a number of uses permitted by right and by special permit (Table 6). The Town added Residential uses by special permit in 2004. The following sections will describe the current land uses in the District.

INDUSTRIAL USES



Figure 52. A truck pulls out of the loading dock at Turners Falls Paper into a dangerous intersection

Turners Falls Paper, formerly PaperLogic, is an active paper mill. As with any modern paper manufacturer, emissions and waste should be handled in a manner that does not create discernible impacts on the environment, nor which would diminish the quality of experience for users of adjacent properties. Due to the physical constraints of the property, traffic over the 5th Street Bridge must be stopped every time a tractor-trailer truck needs to pull in or out of the loading dock. Per the Client's Directive, NewLeaf will strive to retain existing industry to the greatest extent feasible in its District Vision Plan. It will be important to consider how additional industrial uses would affect potential residential uses in the District.

RECREATIONAL USES



Figure 53. Looking southwest down the Connecticut River from the FirstLight property

The northern end of the District presents significant potential recreational opportunities. FirstLight owns the undeveloped parcel on the northeast tip of the District. The Town owns the adjacent Indeck Property to the southwest. One wall and the coal silo were left to retain the building footprint when it was deconstructed in 2006. These properties offer spectacular views of the Connecticut River gorge, Canal, Turners Falls dam, fish ladder, and the Turners Falls-Gill Bridge. The public can access the FirstLight property; however, it isn't promoted as public access to the River. This area also connects to the Great Falls Discovery Center and Canalside Rail Trail via the IP Bridge.

RESIDENTIAL USES



Figure 54. A proposal for live-work units has been accepted for Strathmore Building 11

Residential uses are not currently, and have not historically, been a land use in the District. Strathmore Building 11 (Figure 54) presents an opportunity for future residential uses through a special permit from the Zoning Board of Appeals. The Town has recently accepted two proposals from Obear Construction that include live-work units: Strathmore Building 11, the Railroad Salvage Annex. The proposal for Strathmore Building 11 includes eight residential units within a mixed-use development. The proposal for the redevelopment of the Railroad Salvage Annex includes two residential units.



Figure 55. The Patch neighborhood

Although the Patch is outside of the District, it is important to note that the southern end of the District can be accessed from this neighborhood via Power Street.

ACCESS

The District is currently limited in access and connectivity. Maintaining and improving pedestrian and vehicular access across the Canal is important to the District's redevelopment and circulation. FRCOG's Slum and Blight Inventory describes the District as having an estimated 4,700 linear feet of roads, 2,250 linear feet of sidewalks, and six bridges that span the Canal (Franklin Regional Council of Governments (FRCOG), 2014). Four of the six bridges connect to the District: a closed footbridge (Figure 57), two operational vehicle bridges (5th Street Bridge (Figure 59), Power Street Bridge (Figure 61)), and the narrow IP Bridge adjacent to the Turners Falls-Gill Bridge (Figure 56). The 5th Street Bridge has an adjacent, functional pedestrian bridge; however, it is not ADA-compliant (Figure 58).



Figure 56. IP Pedestrian Bridge



Figure 57. Defunct Strathmore Pedestrian Bridge



Figure 58. 5th Street Pedestrian Bridge



Figure 59. 5th Street Vehicular Bridge



Figure 60. Defunct 6th Street Bridge



Figure 61. 6th Street Bridge



Figure 62. Closed Railroad Bridge between 6th and 11th Street Bridges



Figure 63. 11th Street Bridge



Figure 64. Canal Road and Turners Falls Paper loading dock and tunnel



Figure 65. Power Street connects the south end of the District with the Patch neighborhood

The District has a one-way access road; however, it is not adequate for continuous vehicular traffic. Property owners may utilize the road to access properties at the District's northern end. Turners Falls Paper has access for docking and drop-offs on the 5th Street Bridge (Figure 64). Additional access to the Strathmore Mill Complex is through a tunnel adjacent to the loading dock of Turners Falls Paper.

Specific conflicts between pedestrian and vehicular traffic along Turners Falls Road and the 5th Street Bridge are prominent when considering access, traffic-priority, and control between entering and exiting the District. Along with access hindrance, most pedestrian bridges are obsolete and not ADA-compliant. Improving the existing circulation systems are a major focus of the redevelopment of this District.

CIRCULATION

Access and circulation are one of the District's largest redevelopment constraints. The IP Bridge on the District's northern end provides pedestrian and emergency vehicular access. A privately owned access road named Canal Road travels south along the Power Canal embankment towards Turners Falls Paper. This 10-foot wide access road provides vehicular access to the Strathmore Mill Complex and the former Indeck Co-Generation Plant property. Canal Road has multiple owners with access to properties behind Turners Falls Paper guaranteed through easements. A tunnel runs underneath Turners Falls Paper and provides similar vehicular access to the ground levels of the Strathmore Mill Complex and the adjacent Strathmore Building 11. Pedestrian traffic to the Strathmore Mill Complex and former Indeck parcel are highly discouraged through visible no trespassing signage.

The Strathmore Pedestrian Bridge, located in front of the Keith Apartments on Canal Street is the District's lifeline, and was the primary path in which mill workers traveled to work. The Strathmore Pedestrian Bridge connects to Strathmore Building 4 and is currently obsolete and closed to all foot traffic. FCHRA, located across the street from Turners Falls Paper, is located in the historic Keith Paper Storehouse and is one of three parcels in the District that has on-site parking and frontage on a public right-of-way (5th Street). The south end of the District where the Railroad Salvage and Annex buildings are located provides ample parking space and frontage on 6th Street. There is

evidence of informal walking trails on the canal embankment behind the former Railroad Salvage Annex building. Map 8 illustrates the District's existing circulatory patterns.



Map 8. Existing circulation in the District

PARKING



Figure 66. New public parking lot at 3rd and Canal Streets

Currently, the District consists of a pre-existing, non-conforming parking design. There was no concept of parking in the pre-automobile days, and mill workers reported to work by foot over the Strathmore Pedestrian Bridge. With the exception of the FCHRA property, no onsite parking is available. Off-site parking lots on Canal Street and adjacent to the 5th Street Bridge are available for employees of Turners Falls Paper. The Town recently completed the 25-space Canal Street Public Parking Lot at the corner of 3rd and Canal Streets. This lot was an action item identified in the 2013 Livability Plan (Dodson & Flinkler; Howard/Stein-Hudson Associates, 2013).

Table 7. Town of Montague Parking requirements

PARKING SPACES REQUIRED	PER
1.5	Dwelling Unit
1	Employee
1	175 sq. ft. of retail or office floor space*
1	Motel, Hotel, Lodging House Unit
1	4 seats in a Restaurant, Theater, or such*
* In the CB District, retail, office, restaurant, theater and such uses are not required to provide off-street customer parking	
In the RB district, Special Permit may allow more than 25 spaces or parking to the front of the principal building from the Board of Appeals.	

The Town's Zoning By-Laws require that "All parking demands...shall be accommodated on the premises entirely off-street," (Town of Montague, 2014, pp. 23-24). Table 7 illustrates Town-wide parking requirements. These parking requirements, with identified exceptions, are applicable to all zone designations throughout the Town.

INFRASTRUCTURE

In 2005, Allied Consulting Engineer Services (ACES) performed a review of the heating, plumbing, fire protection, and electrical systems for the Strathmore Mill Complex (Allied Consulting Engineer Services (ACES), 2005). A secondary study (Fuss & O'Neill, 2008) noted utility changes to the complex after the fire destroyed Strathmore Building 10. These studies indicate age and poor condition of utility infrastructure within the complex would constrain redevelopment without significant improvement. Superintendents of the Turners Falls Water Department, the Water Pollution Control Facility, and other relevant stakeholders were included in discussions for these reports. While these reviews were not conducted for the entire District, they provide specific information that helped NewLeaf understand challenges and potential opportunities for the overall visioning process.

The Strathmore Pedestrian Bridge, which connects Strathmore Building 4 to Downtown at Canal Street provides sewer and water infrastructure to the District. The bridge carries a disconnected eight-inch boxed domestic water main and three sewer lines. An existing eight-inch fire suppression water main runs under Canal Road with feeds teeing off into the Strathmore Mill Complex. Turners Falls Paper utilizes one of two six-inch wastewater lines, with the active line from their own wastewater treatment plant running through Strathmore Building 11. The third sewer line is an abandoned four-inch line dedicated to the Strathmore Building 4 pump station. All three sewer

lines terminate at a manhole on the south side of the 5th Street Bridge. The Railroad Salvage Annex building is not connected to municipal sewer or water lines, and would require connection through the Patch Neighborhood in the event of redevelopment.



Figure 67. The Strathmore Pedestrian Bridge carries sewer and water infrastructure to the District

The District's electricity is transferred by 13,800-volt electrical lines, spanning the length of the Canal from the Keith substation on Canal Street to the upper level of the Strathmore Building 9. Since the Strathmore Feasibility Study was conducted in 2005, most of the electrical systems were illegally removed from the vacant mill buildings. The primary switchgear and metering equipment remains active. The only telecommunication connections to the Strathmore Mill Complex cross the Strathmore Pedestrian Bridge. Fuss and O'Neill have discussed the location of a proposed 13,800 to 480 volt primary transformer to separate Turners Falls Hydro, LLC from new electrical service and systems. Extensive repairs and upgrades to all electrical systems will be required to service any redevelopment.

PREVIOUS PLANS & REPORTS

GREATER FRANKLIN COUNTY COMPREHENSIVE ECONOMIC DEVELOPMENT STRATEGY PLAN (2015)

WHAT IS THE PROBLEM?

The problem was there lacked a vision of economic development that forwarded policies, programs, and projects to encourage economic opportunity for all. The Plan sought to sustainably cultivate competitive wages and career opportunities for residents of Franklin County.

WHO IS THE AUTHOR(S) THAT DID THE WORK?

The 2015 Comprehensive Economic Development Strategy (CEDS) Plan was developed by FRCOG staff under the guidance of the CEDS Committee and Economic Development District (EDD) Governing Board with input provided by member municipalities, partnering organizations and the public.

HOW MUCH TIME DID THE AUTHOR(S) HAVE TO DO THE WORK?

The report was completed in May 2015, although no specific timeline for research and development was mentioned in the Plan itself. Moving forward, the Plan will be updated annually for the next four years.

WHAT ISSUES DID THE AUTHOR(S) OUTLINE?

This 2015 CEDS Plan identifies strategies to be implemented within the next five years in key areas that will achieve this vision for Franklin County's economy.

DO ANY OF THESE ISSUES SYNC WITH OUR STUDIO PROJECT?

This Plan identifies key industries and clusters within the County that when operated within a regional context, could foster economic prosperity across community boundaries. In particular, three goals specifically relate to the District:

1. Invest in infrastructure that supports business development in appropriate areas that are currently under-utilized; One of the major District benefits is its close proximity to a fiber optic broadband connection. Extending this

connection throughout the District would create a marketable advantage over other mill redevelopment projects in the area;

2. Increase the amount of functional space available to foster the growth of small business. Another District benefit is the large square footage of the Strathmore Mill Complex. This supply of available, partitionable space would be ideal for businesses with varying size demands.
3. Create a cold storage food facility in the area. If such a facility was constructed it could be used by farmers, food producers, users of the Western Mass. Food Processing Center, and emergency food organizations. In case of a predictable weather event (such as an approaching hurricane that could cause severe flooding and high winds), such a facility could be used by farmers to harvest and store their produce in advance of a storm. This directly ties into the abovementioned square footage surplus of the Strathmore Mill Complex and fits with the uses identified within the District Plan, as well as ideal for the vehicular and circulatory constraints of the District.

WHAT, IF ANY, PUBLIC ENGAGEMENT PROCESS DID THE AUTHOR(S) USE?

The Plan states that it was developed by FRCOG using input from a number of sources, including the public, though no specific processes or strategies were explicitly identified.

RECOMMENDATIONS

The strategies and action items are grouped in three major categories: people (the ability for individuals and organizations to make the most of existing resources and potential opportunities), places (the need to have suitable places for businesses to locate and succeed), and businesses (goals and strategies targeted to grow individual businesses and industry clusters for the purpose of creating jobs and generating greater economic activity in the region). Some of the major recommendations for each include:

1. Respond to market opportunities by ensuring access to basic and sector-specific skills training for adults and youth;

2. Build collaborations within the region to enhance capacity and better support economic and business development opportunities;
3. Build collaborations with neighboring regions to better leverage economic development opportunities;
4. Invest in infrastructure that supports business development in appropriate areas that are currently under-utilized;
5. Increase the amount of functional space available to foster the growth of small business;
6. Accelerate business development and sustainability through direct support;
7. Support the ability of individual establishments and the economy to be resilient in case of future economic disruptions;
8. Enhance specific industry clusters through increased market understanding and asset development.

Performance measures were included to evaluate the progress of the Plan. These include:

1. Number of Projects - As the number of CEDS Plan projects and initiatives and related efforts are implemented, they will be documented in the CEDS Annual Report in the year the project or initiative was launched.
2. Number of Jobs Created and Retained - As CEDS Plan projects and initiatives and related efforts are implemented, the number of jobs created and retained will be documented in the CEDS Annual Report in the year the project or initiative was completed.
3. Number and Types of Investments Undertaken - As CEDS Plan projects and initiatives and related efforts are implemented, the number and types of investments undertaken (including the amount of private sector investment made) in the region will be reported in the CEDS Annual Report.
4. Changes in Economic Environment in the Region - Changes in the general economic environment in CEDS Region will be documented in the Annual Report, with particular attention to the size of the labor force, the number of private sector jobs, and the average wage per job.

MONTAGUE COMMUNITY DEVELOPMENT STRATEGY (2015)

The 2014 Montague Community Development Strategy (MCDS) is a comprehensive, integrated approach to the municipality's community development priorities. It summarizes a collection of public purposes set out within multiple planning documents. Some of these documents include the Comprehensive Plan, the Open Space and Recreation Plan, the Economic Development Plan, the Housing Plan, the ADA Transition Plan, and the Natural Hazard Mitigation Plan. The Montague Planning and Conservation Department prepared the MCDS. The Montague Board of Selectmen approved the 2014 MCDS on November 25, 2014. It incorporates a 3-year timeframe beginning in 2015 to the end of 2018.

The Massachusetts Department of Housing and Community Development (DHCD) requires the MCDS to address a number of items including:

1. A discussion how the community will plan for and implement both CDBG and non-CDBG projects that are consistent with the Commonwealth's Sustainable Development Principles;
2. An explanation how the community expects to address the priorities with CDBG and non-CDBG funds over a 3-5 year period;
3. A list of projects and activities in order of the priority in which the community intends to undertake them, and provide specific goals and annual timelines for accomplishing its goals; and,
4. Identification and description of the geographic target areas that are intended as the focus of community development efforts.

The Montague Planning and Conservation Department hosted a public information session on October 28, 2014 as part of the development of the MCDS. The MCDS included nearly two dozen projects or tasks listed in priority of importance. Item 12 on this list was "Revitalize Historic-Industrial Mill District." This Studio project is the drafting of a conceptual vision plan for the Canal District. Interestingly enough, the Studio project may address many other preceding tasks on this list due their adjacency or relationship to the Canal District.

MONTAGUE EDIC ECONOMIC DEVELOPMENT PLAN (2014)

WHAT IS THE PROBLEM?

The Montague Economic Development and Industrial Corporation (MEDIC) indicates that there are three areas within the Town that are prioritized for economic and industrial development. The District is one of these three focus areas.

WHO IS THE AUTHOR(S) THAT DID THE WORK?

MEDIC is the author of the 2014 revision of the town's Economic Development Plan. MEDIC is a corporation established by the municipality in order to implement economic development projects. MEDIC is a six-member Board of Directors and consists of a Chair, Treasurer, Secretary, and three additional members. MEDIC can purchase, sell, and manage property, as well as receive local, state and federal grants, among others (Montague Economic Development and Industrial Corporation, 2014). The Montague Economic Development plan was prepared with support from the Montague Department of Planning and Conservation.

HOW MUCH TIME DID THE AUTHOR(S) HAVE TO DO THE WORK?

MEDIC has been an economic development guide for over 30 years. It was established and certified by the Massachusetts Department of Housing and Community Development (MAHCD) in 1984. That same year, a Montague Economic Development plan was prepared to guide economic development and industrial activities in Montague. The Plan was updated in 1999. This 2014 publication represents the Plan's third update.

WHAT ISSUES DID THE AUTHOR(S) OUTLINE?

The 2014 update reflects the new phase in MEDIC's efforts to promote economic and industrial development in Montague. Economic and industrial development activities in the Town have been examined. Three project areas were identified as priorities: Turnpike Road Industrial Park, Airport Industrial Park, and the Turners Falls Historic-Industrial District. MEDIC can work to redevelop these areas in support of new

industrial and mixed-uses in an effort to reduce blight and increase the tax base in the town.

DO ANY OF THESE ISSUES SYNC WITH OUR STUDIO PROJECT?

Within the town, there are two Economic Opportunity Areas (EOAs). One extends from Turners Falls south to Montague City. The Historic Industrial District and the Great Falls Discovery Center areas fall within this Economic Opportunity Area. The Livability Plan highlights this particular area for redevelopment potential.

WHAT, IF ANY, PUBLIC ENGAGEMENT PROCESS DID THE AUTHOR(S) USE?

The 2014 Plan makes no mention of any MEDIC-specific public engagement processes; however, there is evidence that the Plan was not drafted in isolation. Addendum documents indicate that the Plan was prepared in accordance with Massachusetts General Law Chapter 121C. In addition, the Plan was developed in consistency with numerous municipal plans, including the following: 2004 Montague Economic Development Plan, 1999 Montague Comprehensive Plan, and 2013 Downtown Turners Falls Livability Plan. These findings were endorsed by the Montague Planning Board on May 3, 2014 (Montague Economic Development and Industrial Corporation, 2014).

RECOMMENDATIONS

The Plan included project goals, action items, and possible financing sources unique to each of the three identified priority areas. NewLeaf notes the third priority area, identified as the Turners Falls Historic Industrial District, is its Project Area. In that regard, the Plan identifies the following project goals, action items, and financing options for the District:

Project Goals:

- Promote adaptive and/or productive re-use of these buildings;
- Improve the physical condition of historic-industrial buildings; and,
- Remove barriers to private development including the remediation of environmental problems at these industrial sites and solving infrastructure/access issues.

Action Items:

- Support Town to seek Slum and Blight designation from DHCD (2014);
- Transfer municipal ownership of Strathmore Mill (Parcel C) to a responsible developer;
- Restore or improve bridges across the canal including Strathmore Mill pedestrian bridge, IP Bridge, and Power Street Bridge;
- Restore infrastructure connections to the historic mill sites including the Railroad Salvage area;
- Consider acquisition of parcels in tax title (currently B, H, and G) to support redevelopment

Financing Options:

- Private investors,
- US EPA Brownfield Program,
- MassWorks Infrastructure program,
- MassDOT,
- FirstLight/GDF Suez,
- Town of Montague,
- MA Department of Housing and Community Development: Community Development Block Grant Program (Montague Economic Development and Industrial Corporation, 2014).

PLANNING FOR BALANCED GROWTH & BALANCED BUDGETS: EXPLORING A MIXED METHODS FRAMEWORK TO ASSESS URBAN INFILL CAPACITY & VALUE IN CONTEXT (2014)

WHAT IS THE RESEARCH QUESTION(S)?

The primary aim of Stromsten's research was to develop an Urban Infill Assessment Framework (UIAF). A UIAF is a "framework that uses mixed-methods to integrate social values, fiscal efficiency, and spatial awareness" of different building typologies and parcels (Stromsten, 2014). Stromsten organized the research around three questions: Can the framework assess infill's potential in a small post-industrial downtown? Is it replicable? Lastly, does the framework change how local stakeholders perceive infill potential? Stromsten's research addresses issues of post-industrial redevelopment including issues created by a shift toward auto-centric development. Stromsten's research also includes a tax yield analysis, and a quasi-public engagement strategy of stakeholder interviews. Stromsten pilots her UIAF in Turners Falls and then tests the step by step UIAF through stakeholder interviews

WHO IS THE AUTHOR(S) THAT DID THE WORK?

Jennifer Stromsten, Masters in Regional Planning student, completed this report for her thesis in the Spring of 2014.

HOW MUCH TIME DID THE AUTHOR(S) HAVE TO DO THE WORK?

The author had approximately six months to design the thesis proposal and conduct research, write, and finalize the material.

WHAT ISSUES DID THE AUTHOR(S) OUTLINE?

Stromsten identified a few main issues of regional small municipalities and using the UIAF as a designated framework to evaluate the issues. One of the underlying issues is the weak market demand from low population areas and incomes. Specifically, in Turners Falls where the need for market-rate housing in proximity to Downtown is lacking. The Town currently has a high selection of below-market rate housing, but Stromsten notes that the market-rate housing cannot displace the current low-income

residents in town. Market-rate housing can support current and future downtown businesses, thus demanding potential more businesses and jobs.

DO ANY OF THESE ISSUES SYNC WITH OUR STUDIO PROJECT?

A relatable result of the framework for NewLeaf's project is Stromsten's "Interview or Decision-Making" step. She explains that her "questions" were in the same prompt through each interview even with her stakeholders being from different entities. Stromsten explains how bringing maps and using boundaries and buildings were "well-received, and set a positive tone for interviews" while giving validity of the infill assessment and setting a positive environment for decision making. On the contrary, Stromsten is weary of the spatial bias responses that could be produced when showing maps i.e. large, single-parceled areas. When thinking of our interview process with stakeholders, we should review Stromsten's process of engagement and results to further the future stakeholder interviews. In addition, thinking of incorporating market-rate housing uses in the District.

WHAT, IF ANY, PUBLIC ENGAGEMENT PROCESS DID THE AUTHOR(S) USE?

The public engagement process began with a questionnaire to two Turners Falls residents whose familiarity with the study area allowed them to identify problems with interview material. A range of stakeholders were selected from municipal staff, the Planning Board, Select Board and other relevant advisory groups. Of the fourteen stakeholders contacted, ten agreed to participate. Participants responded to questions by drawing on laminated materials. For this studio project, the specific questions that we will be asking are different; however, comparative visual analysis of maps created by the stakeholders could be an interesting component in our formal engagement interviews.

RECOMMENDATIONS

Overall, Stromsten recommends that the solution to the problems identified within the community (e.g., need for professional office space, demand for jobs, and lack of developable land) could be mitigated through infill development within the Strathmore Mill Complex. The needs identified by the research are still applicable today,

and NewLeaf shares the opinion that strategic infill development of the District would improve the overall character of Turners Falls and solve certain economic issues faced by traditionally low-income historic neighborhoods. Stromsten recommends that professionals or consultants facing similar issues in other towns could implement the step by step process that would focus on potential development situations and patterns. Ultimately, the results of the process should be presented and discussed with relevant local officials, and stakeholders that may be in a position to influence decisions for a project's needs.

In the “Results Chapter” of the thesis, Stromsten produces findings and feedback based on testing the framework of the ten-step UIAF in Turners Falls. Each step in the framework had broad, as well specific recommendations for planners on how to measure infill potential. The first two sections focused on defining urban infill and how to identify local typologies. Stromsten recommended that creating an urban infill boundary map is important because it starts the spatial process and leads to integrate the social and fiscal value from the beginning. In addition, Stromsten defined typologies in Turners Falls to help illustrate valued development types and tax bases, that can help reflect community values and goals.

Stromsten's “Finding Congruence” section, connected the components of infill opportunity and context (assets) into a single map. The data layers and components of the map are technology heavy, with multiple layers; she noted that it was difficult but important in the UIAF framework. Another result in her steps, was to “Run Scenario Levels,”; a tool that helps assess proposed developments and explore alternatives that add value to a community. The scenario runs certain “revenue metrics” for building parcels. Stromsten also found that many of the parcels had existing barns and garages, and the Town should further calculate the infill residential potential for Accessory Dwelling Units (ADUs). Stromsten explains that with this information the Town could shape new strategies or programs to better use the properties.

PRECISION MANUFACTURING IN THE CONNECTICUT RIVER VALLEY & WESTFIELD, MA: A MASTER'S PROJECT (2014)

WHAT IS THE RESEARCH QUESTION(S)?

Gehring's thesis focuses on how to sustain the precision manufacturing industry in the Connecticut River Valley by exploring how prominent the economic health, skilled workforce, and jobs are for the area. Precision manufacturing is defined as a manufacturing company who is skilled with extreme accuracy of producing materials. This type of machining is used to create identical parts, such as aeronautical or medical parts. Gehring attempts to understand through her research, on how to support the cluster of precision manufacturing in the Connecticut River Valley. Gehring's explores how local and state governments can encourage precision manufacturing in the Connecticut River Valley and Westfield, MA and strengthen the industry. The Connecticut River Valley encompasses 187 communities in 8 counties in Western Massachusetts and Connecticut. In addition, Gehring identifies ways that the state and local governments can contribute to the growth of the cluster already in place.

WHO IS THE AUTHOR(S) THAT DID THE WORK?

Tara Gehring wrote this thesis for the Masters in Regional Planning at the University of Massachusetts Amherst in 2014.

HOW MUCH TIME DID THE AUTHOR(S) HAVE TO DO THE WORK?

The author had approximately six months to design the thesis proposal and conduct research, write, and finalize the material.

WHAT ISSUES DID THE AUTHOR(S) OUTLINE?

Gehring describes the Connecticut River Valley, especially around the Springfield area, as an area that is dominated by small manufacturing firms since the 19th century. With the decline of precision manufacturing in the area, the Pioneer Valley Planning Commission's Plan for Progress Report states that "one of Massachusetts's goals for the Connecticut River Valley is to sustain the precision manufacturing cluster in the area." Gehring's thesis explores ways that the state and local government can contribute to the agglomeration of a manufacturing cluster in place. As precision manufacturing

proximity helps the industry to increase its competitive advantage in a global economy that lie increasingly in local things, such as knowledge, relationships, jobs, workforce pools and so on.

These clusters relate to synergetic output, involving machine shops, customers, supplies, shipping companies, and similar industries that complete the product. Becoming a cluster with other industries allows each individual business to benefit from one another. The precision manufacturing cluster in the Connecticut River Valley provides manufacturing shops with a pool of workers who historically have been trained in precision manufacturing. By keeping precision manufacturing in Connecticut River it not only brings exogenous revenue dollars to the Valley, but produces a large skilled workforce and keeps jobs in the area.

DO ANY OF THESE ISSUES SYNC WITH OUR STUDIO PROJECT?

The regional goal to keep precision manufacturing jobs and companies within the Connecticut River Valley does not directly relate to the Turners Falls Canal District project. Turners Falls Paper (TFP) does however, reside in the District, and is considered a manufacturing company that hires skilled workers. For future uses of the District, a business cluster could be developed with TFP to bring in businesses that supply TFP with specific orders and goods. Resulting in less trips generated between companies, providing a diverse job pool and producing products more sufficiently.

WHAT, IF ANY, PUBLIC ENGAGEMENT PROCESS DID THE AUTHOR(S) USE?

Gehring's public engagement process focused on interviewing industry leaders in the Connecticut River Valley, but focused on Westfield, MA industries. Gehring lists all nineteen precision manufacturers in Westfield, MA and identifies three shop owners that she interviewed as her public engagement. As she questioned each interviewee, she gathered answers and qualitatively analyzed them. Out of the many responses she received, a theme appeared between the responses. Stakeholders saw that the importance of the region were: Interstates 90 and 91, Bradley International Airport, and the Connecticut River Valley, and the low-cost of living compared to eastern Massachusetts and Hartford area. Problems of the region were identified as: high taxes

(i.e., “taxachusetts”), doing business is expensive in New England, and the lack of abundant training and education institutions for opportunities to learn a trade.

RECOMMENDATIONS

From Gehring’s interview data, a list of recommendations is formalized to be distributed to the Regional Employment Board and other manufacturing associations in Massachusetts. First, she recommends addressing the importance of training assistance for manufacturing position opportunities and provide educational apprenticeships at high school levels. Second, she recommends the association provide ten hours of skills workshops to each manufacturing company. Third, she suggests the state increase the number of grants available for upgrades to new machines with improved technology. Lastly, she recommends having associations visit each precision manufacturing shop in person at least once, instead of communicating through email. Other less notable recommendations included holding meetings in locations and at times that are easily accessible to owners and workers to attend.

SLUM & BLIGHT INVENTORY FOR THE TURNERS FALLS HISTORICAL-INDUSTRIAL DISTRICT (2014)

WHAT IS THE PROBLEM?

The Turners Falls Canal District has suffered from disinvestment and neglect in the post-industrial economy. This has caused the District’s historic structures to fall into disrepair and become structural hazards, further preventing investment and redevelopment.

HOW MUCH TIME DID THE AUTHOR(S) HAVE TO DO THE WORK?

The Town worked in conjunction with the Franklin Regional Council of Governments (FRCOG) and consultant Weston & Sampson to complete this inventory.

HOW MUCH TIME DID THE AUTHOR(S) HAVE TO DO THE WORK?

The study was completed between August and October 2014. FRCOG staff conducted the building inventory primarily in August 2014 and Weston & Sampson conducted the public infrastructure inventory in October 2014.

WHAT ISSUES DID THE AUTHOR(S) OUTLINE?

The designation “Slum and Blighted” allows the Town to apply for funding critical to the revitalization of the area. This designation will allow the Town to begin elimination of the current conditions of blight on an area basis and will help prevent further blight by addressing marginal properties that could, if left unassisted, deteriorate further. Specifically, the designation will allow the Town to proceed with a façade and signage improvement program, infrastructure improvements, housing rehabilitation, and other activities that support neighborhood revitalization.

DO ANY OF THESE ISSUES SYNC WITH OUR STUDIO PROJECT?

Regarding the creation of the District Vision Plan, this inventory and the “Slum and Blighted” designation is an important step in revitalizing the District. The designation allows the Town to apply for Federal Community Development Block Grants (CDBG) that can help fund investments that would contribute to District revitalization.

WHAT, IF ANY, PUBLIC ENGAGEMENT PROCESS DID THE AUTHOR(S) USE?

This technical report did not identify any public engagement processes or strategies.

RECOMMENDATIONS

Although there were no specifics recommendations outlined in the inventory, a “Slum and Blighted” designation gives the Town a framework to guide future actions in the District. While the designation allows the Town to apply for funding critical to the revitalization of the area, in the short/near term, it also allows the Town to begin elimination of the current conditions of blight on an smaller, area basis and prevent further blight by addressing marginal properties that could, if left unassisted, deteriorate further. Finally, the designation allows the Town to proceed with a façade and signage improvement program, key infrastructure improvements, housing rehabilitation, and other activities that support overall neighborhood revitalization.

DOWNTOWN TURNERS FALLS LIVABILITY PLAN (2013)

WHAT IS THE PROBLEM?

In 2013, the Town sought the services of Dodson & Flinker and Howard/Stein-Hudson Associates to prepare a long term in response the decline of traditional mill industries over the past fifty years and how they have impact on Turners Falls. The goal of the Livability Plan is to analyze opportunities to increase livability and mobility in Downtown Turners Falls, while identifying economically feasible recommendations that improve the attractiveness for tourist and visitors. In addition, the Livability Plan strives to create an inventory and prioritize key redevelopment properties and reduce vacancies of storefronts.

WHO IS THE AUTHOR(S) THAT DID THE WORK?

The Livability Plan was prepared through a collaborative process between the Town, Dodson & Flinker, Howard/Stein & Hudson, local and regional planning agencies, as well as local residents, property and business owners.

WHAT ISSUES DID THE AUTHOR(S) OUTLINE?

The Livability Plan addresses some underlying issues of Turners Falls. First, though it has a legacy of preserved historic structures, the economic reality of rental rates does not cover the cost for the renovations of buildings. Second, while Turners Falls has a range of below-market rate housing choices, a lack of job opportunities drives many young people away from the area. Third, businesses are local in town and have an emerging art, entertainment and creative economic base, but local customers are limited by income diversity and the uncertainties in the economy. Overall, the Livability Plan overall creates a plan from that was focused heavily on local community input.

WHAT, IF ANY, PUBLIC ENGAGEMENT PROCESS DID THE AUTHOR(S) USE?

The Turners Falls Partnership (TFP) was organized to support local residents, business owners and other stakeholders to help create a shared vision for the future. There were three levels of public engagement outreach. The first included Town staff and eight key community stakeholders who worked closely with Town officials and the

Dodson & Flinker and Howard/Stein-Hudson consulting team to design and implement the public participation plan. The second level involved a working group of thirty citizens that represented the stakeholders and ensured that the interests of local residents and business were represented at each phase. The third and final component of the public engagement strategy was an asset mapping workshop. The workshop included a variety of engaging activities that delineated the priorities that community members wanted addressed for the future of Downtown Turners Falls.

DO ANY OF THESE ISSUES SYNC WITH OUR STUDIO PROJECT?

The underlying issues and public engagement outcomes are extremely pertinent and important to NewLeaf's effort in this studio project. Many of NewLeaf's client directives resemble specific components of the Livability Plan including reconnecting the downtown to the district, incorporating a range of mixed-uses, and infrastructure reinvestments. With the challenges of housing, business development, and restoring historical integrity into the downtown, the District can reflect and mitigate these issues by incorporating some of these uses into the District.

RECOMMENDATIONS

The Livability Plan covered a range of revitalization and building recommendations for both Downtown and District by block. A general recommendation was to include streetscape enhancements and façade improvements on both historical and more modern building types. This will help restore the historical integrity and keep modern improvements in-line with Downtown's historical characteristics. Another recommendation was to connect with business owners by preparing a brochure on how to improve storefronts and other façade displays and distributing them to Downtown businesses. Building on that, it was recommended that creating a webinar, blog, and social media page that acts as an "idea tank" where businesses can share and explore creative ideas may be a good idea.

Another recommendation was to create a joint downtown partnership organization to lead economic developments efforts and marketing (branding), in order to help attract and motivate existing and new businesses in Turners Falls. This partnership would contact and meet with business prospects that could potentially

benefit from being Downtown. To further the idea of the Downtown being a “necessity” for the community, the Livability Plan recommends having safe and accessible streets. Having the support for pedestrian access and safety improvements to main businesses (i.e. pharmacy, grocery store) in the Downtown will persuade community members to walk and create a more pedestrian-oriented Downtown.

The District recommendation was focused on bridge infrastructure and an “island redevelopment vision.” With limited access to the District, the Livability Plan recommended reopening the bridges, such as the Strathmore Pedestrian Bridge and IP Bridge. Another recommendation was to consider extensive civic and recreational uses for properties specifically on the northern end of the site. This area has beautiful views and existing connections to the IP Bridge, Canalside Rail Trail, and the Great Falls Discovery Center. Finally, it was recommended that the Town explore the idea of reusing the coal silo and surrounding Indeck Property as an amphitheater to attract public attention.

PROGRESS

Since the report was written in June of 2013, the Town has made progress on a number of the recommendations. A timeframe table was provided in the Livability Plan to conceptualize how long a project will take to be completed when initiated. The timeframe ranges from “short,” “medium,” and “long.” For example, a “short” term project in the plan is creating art displays of murals around town. A “long” range project is strategically locating and installing informational kiosks around Downtown.

CONNECTIONS TO POWERING THROUGH

From the Livability Plans recommendations NewLeaf has adopted and considered many components of the plan, especially recommendations considering infrastructure improvements and future uses in the District. The Livability Plan emphasizes formalizing the northern end of the District as open space. The northern end of the District could act as a memorial to the current and past Native American descendants that inhabited the area. The recreational/open space activates the District as an easy and less-costly early phase development. NewLeaf also believes that reusing the coal silo is another early phased proposal of “tactical urbanism.” Using the coal silo

as an observation deck, and a lighting display and using the existing wall structure as an amphitheater will draw visitors into the District.

SUSTAINABLE FRANKLIN COUNTY: FRANKLIN COUNTY'S REGIONAL PLAN FOR SUSTAINABLE DEVELOPMENT (2013)

Sustainable Franklin County is a plan for the region and was authored by the Franklin County Regional Council of Governments in 2013. Chapters include housing, transportation, economic development, energy, natural resources, cultural resources and land use and infrastructure. It starts with a chapter on public participation. Outcomes from various and extensive public engagement methods provide the framework for each of the chapters that follow. This prioritization of public feedback is notable and NewLeaf brings this same emphasis to the District Vision Plan to ensure that our project integrates the value of the people of the town and responds to their needs.

One of NewLeaf's directives is to develop a vision for the District. NewLeaf's Vision is in line with the vision for Sustainable Franklin County, which is as follows:

The Regional Plan for Sustainable Development's 20-year vision for Franklin County is one in which economic vitality and social equity will thrive in balance with our natural and cultural resources. Our region's agricultural, forestry, and manufacturing heritage and history of innovation and creativity will provide a strong foundation for increased local living-wage jobs, more affordable and energy efficient housing, increased utilization of locally grown and produced wood products, greater availability and security of locally grown food, locally-produced clean energy, and revitalized town centers. Reduction of fossil fuel use, sound infrastructure, and sustainable transportation options that support mixed use development and reuse of historic structures in our town centers are essential to increasing the sustainability of our region.

Sustainable development decisions and long-term planning policies that include energy efficiency and conservation as well as

climate change adaptation and mitigation will effectively and equitably meet the needs of all current and future generations of Franklin County (p. ES-3).

The regional orientation and emphasis on sustainability are both valuable aspects of the report, and provided a great perspective for NewLeaf in terms of guiding thinking to ensure a complete and inclusive plan. Though the report is regional, it details specific priority development areas. NewLeaf conducted analysis of demographics for Turners Falls, Franklin County, and Massachusetts. Sustainable Franklin County provides insight into the issues affecting the county as a whole, and this perspective was informative and useful to ensure our recommendations fit into the overall vision for the county.

Sustainable Franklin County outlines priority areas for the county, which includes Turners Falls. The specific projects include the revitalization of the Strathmore Mill and Griswold Cotton Mill (Railroad Salvage building), streetscape improvements, downtown revitalization and Turnpike Road Industrial Park. Since the report's focus is at the county scale, it provides NewLeaf with perspective on how the District can fit into the greater region. There are several advantages and challenges that the report identified, and NewLeaf considers these in the development of recommendations for the District.

Advantages relate to access, utilities, as well as human and community resources. Turners Falls is located within easy access to I-91 and Route 2, which provides easy access to it, and to the employment base in the region. Public transit is also available in the area, with a bus stop just a 10-minute walk from most points in the District. Given its hilly rural character, the Downtown and District are relatively flat with a high density of buildings. This layout makes Turners Falls friendly for bicycling and walking. Available community resources include a farmers' market, as well as a senior center and library located Downtown. Also located Downtown are entertainment options such as the Shea Theater and the Great Falls Discovery Center.

Availability of utilities is another asset for Turners Falls, especially regarding water supply, wastewater treatment and energy supply. There is public water supply, and the Town has a centralized sewer system. Access to broadband services, including

MassBroadband123³ is a valuable asset which appeals to potential developers and entrepreneurs. Development of the District and Downtown can be connected to these services, which are not necessarily provided in other rural areas.

The report notes challenges to the District include aging infrastructure, high redevelopment costs, the potential of environment damage, and access. The sewer system is in disrepair, the report cites that 45% of the wastewater treatment plant is from inflow and infiltration. This makes the system extremely inefficient. Development in this area, specifically storm water from paved surfaces, is a threat to the nearby Connecticut River.

While access to the District itself is limited in terms of vehicular traffic, there is relatively easy access to Turners Falls from a regional perspective. NewLeaf proposes additional points of access to public transportation as a way to further improve the walkability and highlight it as part of the historic character of the District.

Though within easy access to major transportation corridors of Interstate 91 and Route 2, access to the District itself is challenging. The report cites significant parking and access issues. There is limited on-site parking. While there is a bus stop close to the District, bus service is limited, especially during evenings and weekends. NewLeaf plans to improve walkability, prioritizing wheelchair and emergency vehicle accessibility, and increasing parking in target areas.

Overall, the costs for redeveloping the District is a major challenge, and current lease rates are not sufficient to fund repairs to the infrastructure and buildings. Understanding that funding is a challenge, NewLeaf investigated funding at the state and federal levels, funding for specific types of development (i.e., historic tax credits), and through the FERC relicensing negotiations. NewLeaf also prioritized projects based on their likelihood of receiving funding, and provides low-cost options that the Town can implement in the absence of funding (Appendix A).

NewLeaf developed recommendations that respond to advantages and challenges outlined in the Sustainable Franklin County report. Details of these recommendations are in the pertinent chapters that follow.

³ <http://broadband.masstech.org/building-networks/middle-mile/massbroadband-123-operations>

STRATHMORE MILL COMPLEX REDEVELOPMENT TAP REPORT (2011)

WHAT IS THE PROBLEM?

The Town seeks to redevelop a derelict mill complex that it owns. The Strathmore Mill Complex is located in Turners Falls, on a strip of land between the Connecticut River and a hydroelectric canal. The complex consists of ten buildings on a 1.93-acre site. Access to the site is extremely limited due to bridges that are in disrepair. A substantial amount of work will be needed to make these buildings fit for occupancy, including the potential removal of asbestos and utility upgrades. Preferred uses for the site included retail, light manufacturing, office/professional space, performance/educational/cultural space, art studios, storage, and warehousing.

WHO IS THE AUTHOR(S) THAT DID THE WORK?

The Urban Land Institute worked in conjunction with the Montague Technical Assistance Panel (MTAP), and authored the report. The subject of the report is the redevelopment of the Strathmore Mill Complex, owned by The town. The report includes an assessment of the site and buildings, and makes recommendations for redevelopment based on the Town's economic, access, and development goals. These goals are to restore the mill to productive economic use, maintain the historic integrity, stimulate economic activity in the region and immediate surrounding area, provide skilled jobs, generate revenue, and enhance public river access.

WHAT ISSUES DID THE AUTHOR(S) OUTLINE?

As part of the assessment, several liabilities were listed, and recommendations address how to rectify or reduce these liabilities. The Town can address some of the liabilities directly, while others will require negotiation and further consideration. For example, the removal of debris and contamination is an action the Town can take sooner than later in order to make the site more attractive to potential developers. In terms of infrastructure, the panel states that water and sewer lines will likely need to be replaced, and the current limited access to the site (and emergency vehicle access) will need to be addressed in order to attract a developer to invest.

Requiring further negotiation are legal issues and the market-oriented challenges of development. At the time of the assessment, there were disputes over easements, as the abutting property owners asserted property rights. The costs of redevelopment are a substantial challenge for any investor. The MTAP team notes that the rental rates of \$80-\$100 per square foot that the redeveloped property would yield which would not cover the cost of redevelopment at an estimated \$230-\$280 per square foot .

WHAT, IF ANY, PUBLIC ENGAGEMENT PROCESS DID THE AUTHOR(S) USE?

Public participation was an integral part of MTAP's assessment. The team facilitated a day-long session focused on how to find a developer for the Strathmore Mill Complex. This involved a series of meetings, starting with the Town's planning staff, interviewing a dozen stakeholders and community leaders, and holding a panel of land use and development professionals. The audience at the public meeting consisted of residents, local business owners, city staff and other interested individuals. The results of the day-long session were presented by the panelists at a public meeting.

DO ANY OF THESE ISSUES SYNC WITH OUR STUDIO PROJECT?

The issues identified in the report and the public participation process are useful for NewLeaf to understand in detail. The stakeholder list was diverse, and included representatives from FRCOG, FCHRA, Southworth Paper (now Turners Falls Paper), Turners Falls RiverCulture, the Turners Falls Business Association and the utility companies.

RECOMMENDATIONS

The overarching recommendation made by the MTAP team was to minimize the risks to potential developers. The MTAP team delineated two main areas of action in order to do this: address access and infrastructure issues, and develop a marketing strategy for potential developers. They suggest that it may take five to ten years in order to redevelop the site, and there are several actions that can be taken to ease future development.

The report emphasizes that addressing infrastructure and site access is imperative for successful redevelopment of the site. One substantial recommendation is

that the Town prepare a transportation master plan for the entire District, which can then be used as a basis for funding requests. Replacing the steel girder bridge would provide ease of movement into and out of the site, especially important for freight vehicles. An easement across the Discovery Center parcel, a new bridge and an improved roadway would provide vehicular access on the eastern end of the island. Reconstructing the pedestrian bridge so that it is enclosed would be a way to provide access to the site as well as adequate parking, and provide an exciting way to arrive at a redeveloped site. The report recommends construction of a publicly funded enclosed walkway that would arrive at the same grade as Canal Street.

The other recommendation is for the Town to develop a marketing strategy to target potential developers. The components of this strategy outline include cleaning up the site, easements, and financial assistance. One source of funding is the New Market Tax Credits, and the MTAP team encouraged the Town look into eligibility. Other sources of funding may include USDA Rural Development, HUD Economic Development Initiative and MassDevelopment programs, and working with the state and federal government to earmark funding related to redevelopment and stabilization of the site. There are recommendations in the report for specific targets for the RFP, including hospitals, universities, local architects, engineers, and brokers.

MONTAGUE COMMUNITY NEEDS SURVEY (2010)

WHAT IS THE PROBLEM?

The Montague Community Needs Survey was designed to answer the following questions:

1. What should the Town of Montague do about the residents' priorities for community development needs and projects?, and
2. What should the Town of Montague know about the residents' priorities for social service needs?

WHO IS THE AUTHOR(S) THAT DID THE WORK?

Town officials administered and summarized the Montague Community Needs Survey.

HOW MUCH TIME DID THE AUTHOR(S) HAVE TO DO THE WORK?

No formal report is available outlining the timing and methodology of this survey.

WHAT ISSUES DID THE AUTHOR(S) OUTLINE?

The survey outlines the three top priority community needs, five top priority community projects, and five top priority social service needs of the residents of Montague. The three top priority community needs were: 1) encourage business development, 2) improve roads and sidewalks, and 3) revitalize the downtowns of Turners Falls and Millers Falls.

The top five priority community projects identified by Montague residents are: 1) demolish abandoned buildings, 2) increase commercial development, 3) reuse the Montague Center School, 4) develop industrial parks, and 5) create new public swimming area.

The top five social service needs identified by Montague residents are: 1) youth violence and bullying prevention, 2) food assistance and food pantry, 3) support for persons with disabilities, 4) domestic violence prevention services, and 5) elder self-sufficiency services.

The Montague Community Needs Survey includes the full text of the survey administered to Montague residents. The survey is structured with the same three sections as the summary: 1) general community needs, 2) specific community projects, and 3) social service program needs.

Survey participants were asked to rank each of the prompts on a scale of 1 to 5, where 5 indicates the highest priority concerns and 1 the lowest. For the General Community Needs Section there are eight prompts. For the Specific Community Projects residents were asked to respond to twenty-six prompts. For the Social Service Program Needs residents were asked to respond to twenty-two prompts. Finally, residents were given the opportunity to write in other projects or programs of concern and additional comments.

The survey is scored using what looks like the addition of scores within each value and then an overall percentage score. No information is provided about how that

percentage was calculated; however, for this purpose, NewLeaf assumes the percentage is based on added priority scores as a ratio to the highest possible score.

DO ANY OF THESE ISSUES SYNC WITH OUR STUDIO PROJECT?

Understanding the priorities of the Town's residents is important to the issues of our studio project. However, the delivery of the survey and the specific options included in the survey were not structured in the most appropriate manner to provide insight for this project. Delivery issues include structure, number of, and content of prompts. For example, residents identified 'demolish abandoned buildings' as one of their top priorities with a percentage score of 55%. However, redevelopment of the Strathmore Mill also ranks highly at 35% and multiple other individual stabilization, renovation, or redevelopment projects are also moderately high ranked. Thus, it is not clear which improvement serves as the priority.

However, the survey suggests that the community is both interested in demolition and preservation. Because the 'demolish abandoned buildings' prompt is vague and the stabilization, renovation, and redevelopment questions were specific, this survey suggests insight but also fosters uncertainty. NewLeaf must consider the survey design and questions structure before deciding the findings of the Montague Community Needs Survey can be applied to the Turners Falls Canal District Vision Plan. For example, 'preservation of historic resources' (30%) may be a better comparison to 'demolish abandoned buildings' but is still not entirely comparable since one response addresses historic resources and the other response addresses abandoned buildings.

Overall, the Turners Fall Canal District Vision Plan will encourage business development and should positively impact the revitalization of Downtown Turners Falls, both of which are identified as top priorities. In addition, the project will increase 'access to the river' (24%) which is related to the priority community project 'new public swimming area' (39%). However, NewLeaf's Vision Plan is poised to recommend revitalization, not 'demolition of the abandoned buildings' in the Turners Falls Canal District. However, 'stabilize former railroad salvage yard' (38%) and 'redevelopment of the Strathmore Mill' (35%) are only a few percentage points behind the priority community projects.

WHAT, IF ANY, PUBLIC ENGAGEMENT PROCESS DID THE AUTHOR(S) USE?

The Montague Community Needs Survey is entirely a public engagement project. The survey document includes data findings but does not include methodology or report information. Because there is no methodology section it is unclear exactly how the survey was distributed, how many respondents participated, or if there were any target demographics for the survey. In addition, there is a lack of information about how questions were crafted and how question inclusion was determined. This lack of information makes the information gathered less applicable to future projects including the Turners Falls Canal District Vision Plan.

NewLeaf must understand that the ranking priorities do not exist independently. Each ranking is not only a ranking of the priority of that prompt but also a comparison to each of the other rankings. In addition to the comparison between rankings, specific language used and available options impact resident response. The lack of a methodology section also brings into question if there was any educational information provided with the survey. Presumably the lack of mention reflects a lack of educational material. Often a lack of education material or at least reference images means that priority rankings reflect somewhat priority and somewhat knowledge of an issue.

RECOMMENDATIONS

The Montague Community Needs Survey does not pose any recommendations or outline what the survey will be used for. However, the priority responses could easily be confused as recommendations. The gaps and issues with the survey as discussed above reflect upon the fact that these priority resources probably should not be directly translated into recommendations. The Montague Community Needs Survey can however serve to provide recommendations for types of uses and potential co-benefits of development. For example, NewLeaf should consider using Alternatives Inc. in the Whitins Mill Complex in Northbridge as a case study due to the economic development component and the disability services component of this redeveloped mill.

STRATHMORE SITE DEVELOPMENT ASSESSMENT (2008)

WHAT IS THE PROBLEM?

Since the 2005 Strathmore Feasibility Study, conducted by Finegold Alexander + Associates Inc, FXM Associates, Ajax Investment Partners, LLC, Tighe & Bond, and Allied Consulting Engineering Services, Inc. (ACES), the Strathmore Complex has further declined in condition. This report examines only the 5.2 acre complex located on the northern end within the entire 11 acre Canal District. With the exception of Turners Falls Hydro LLC, and Turners Falls Paper, the overall perception of the Strathmore Complex's "abandonment" lead to the illegal stripping of valuable utility infrastructure for copper, among other components. The year prior to the completion of this report (2007), an arson fire related to the vandalism and illegal activity within the Strathmore Complex lead to the destruction of building # 10 and damaged adjacent buildings. The Site Development Assessment builds upon some of the research conducted during the Feasibility Study, however the report makes specific references to certain key items that have since changed within the site.

The engineering consultant was hired to specifically analyze the following problems:

- Propose recommendations for the revitalization, or replacement of the ADA non-compliant Strathmore Pedestrian Bridge;
- Reassess the condition of existing electrical, wastewater, and water utilities;
- Identify access and parking limitations within the site; and
- Revise and update an Architectural Feasibility Study.

WHO ARE THE AUTHORS THAT DID THE WORK?

The Site Development Assessment was developed by Fuss & O'Neill, a full-service civil and environmental engineering based in Connecticut. Fuss & O'Neill have experience working with historic buildings, and mill restoration projects.

HOW MUCH TIME DID THE AUTHORS HAVE TO DO THE WORK?

Fuss & O'Neill's timeframe to complete the evaluation, or finish the report was not specifically discussed in this report.

WHAT ISSUES DID THE AUTHORS OUTLINE?

Fuss & O'Neill identified the following issues in their report:

- Electrical and safety equipment would need be to be replaced within Strathmore building;
- Pedestrian Bridge must be replaced or rehabilitated;
- Structural issues with the building must be addressed;
- Aluminum windows must be replaced to match originals if Historic Tax credits are to be considered.

DO ANY OF THESE ISSUES SYNC WITH OUR STUDIO PROJECT?

The site development assessment is highly relevant to NewLeaf's studio project, as the report has been conducted on our focus site; addressed specific Client Directives pertaining proposed modifications to existing utilities; infrastructure alterations; and access and circulation. Since 2008, none of the suggestions from the consultant have been implemented; therefore, everything discussed is still applicable and should be considered.

WHAT, IF ANY, PUBLIC ENGAGEMENT PROCESS DID THE AUTHORS USE?

For the writing of this report, traditional "public engagement" was not conducted. Despite the consultant's capabilities to do so, their involvement was more of a technical nature. Fuss & O'Neill did however did meet on-site with representatives of the town, a potential developer, and the Western Massachusetts Electrical Company.

RECOMMENDATIONS

Fuss & O'Neill have proposed several recommendations to solve key issues (access, structural, infrastructure, and parking) that hinder redevelopment of the Strathmore Mill Complex. In terms of increasing accessibility to the site, the consultants recommended two potential options for the Strathmore Pedestrian Bridge (single span

truss). They suggest raising the 60' bridge to the next floor elevation. The raised bridge would connect to a newly constructed pre-fabricated bridge and abutment on Canal Street. Alternatively, the existing bridge could be replaced a 210' prefabricated bridge that would connect directly to existing north abutment at the building. Each bridge option would have a roof. Furthermore, to enhance accessibility to the district, the report suggested that the existing loading dock could be removed from the front of Building 11 to increase the width of Canal Road.

Effective wastewater, water, and electrical systems are the backbone of modernized society. Since an existing fire suppression system runs under the canal access road, any proposed redevelopment can utilize this system. However, the abandoned eight-inch boxed water line on the east side of the bridge, should be replaced with a six-inch line that would cross the Strathmore Pedestrian Bridge. Once water service and electrical power is brought to the mill, needs for maintenance repairs for the existing four-inch sewer line and ejector station (force main) should be evaluated. As with the Pedestrian Bridge, Fuss & O'Neill have provided two different options for reconfiguring the existing electrical connection to the site. The first option requires locating a new primary transformer on the exiting pad southwest of Building 4. The primary cable would have to run underground in a concrete encased conduit from the pole near Building 7 to the transformer, crossing at the hydro sluice gate. The second option entails locating the primary transformer northeast of the mainland side of the footbridge with 480 volt feeders traveling across the footbridge. Option Two would be more expensive than placing the transformer in front of the Mill Complex and may require an easement, as that land is owned by FirstLight.

COST AND TIME

Fuss & O'Neill provide two estimates:

Estimate 1: \$619,000

Removal and installation of a new 60' single span bridge; modification of north framing; demolition of south approach; repair deteriorated steel framing; construct roof for proposed trusses; and modification of north abutment.

Estimate 2: \$711,000

Same as before, however the bridge would be 210'.

*Estimates provided are an “Opinion of Cost”, accurate to within plus 50% or minus 30% in 2008 dollars.

PROGRESS

Currently, the parking issues mentioned have seen improvement with the opening of a new lot at the corner of 3rd and Canal Streets; however, the other recommendations at this point have been too costly to tackle thus far.

CONNECTIONS TO POWERING FORWARD

NewLeaf will be adopting certain recommendations from the assessment, especially those pertaining to the reconfigurations of the Strathmore Pedestrian Bridge. Despite the presence of renewable energy sources, the Strathmore Mill Complex will need to be connected to the grid. However, it is our hope that the need for the extensive proposed electrical connections could be reduced. At the time of the report’s creation (2008), NewLeaf believes that the “auto-centric” dominated culture was more acceptable, we understand that parking is essential for the feasibility of a redevelopment project such as this; however, our design strives to encourage alternative forms of transportation, and reduction of on-site parking. The assessment’s discussion of necessary alterations to the windows to be able to capitalize on Historic Tax Credits is vital to our project.

STRATHMORE MILL FEASIBILITY STUDY (2005)

WHAT IS THE PROBLEM?

For many years prior, the Strathmore Mill Complex sat predominantly sat idly by, serving only as a reminder to the sites once illustrious productivity. Since its economic heyday, the Strathmore Mill Complex has been severely underutilized and has supported some various business now and then up until the Feasibility Studies finalization. The overall lack of upkeep, aging, and seemingly obsolete infrastructure is a large barrier to its restoration. The Strathmore Mill Complex for the purposes of this study shall be considered only the 5.2 acres that supports the 11 buildings. The town had brought on the consultants to help evaluate if and how, the revitalization of the

Strathmore Complex could meet additional demands on infrastructure, and circulation issues within the site.

The consultants have identified the following problems:

- What would be the effect of new development within the Strathmore Mill on existing local business and overall market conditions in the trade area?
- Is adaptive reuse (arts, industrial, commercial, educational, governmental, or residential) a viable option for the Strathmore Mill Complex?
- What would need to happen within the complex for former business tenants to return?
- What infrastructure currently exists, and what condition is it in?

WHO ARE THE AUTHORS THAT DID THE WORK?

This Strathmore Feasibility Study was conducted and prepared by the following organizations: Finegold Alexander + Associates Inc, FXM Associates, Ajax Investment Partners, LLC, Tighe & Bond, and Allied Consulting Engineering Services, Inc (ACES).

HOW MUCH TIME DID THE AUTHORS HAVE TO DO THE WORK?

The feasibility study was conducted over a short eight-week period between March and May of 2005. The team familiarized themselves with the Strathmore Mill Complex over the course of several site visits as existing documentation denoting floor plan layouts, structure, and mechanical systems was limited.

WHAT ISSUES DID THE AUTHORS OUTLINE?

The authors identified the following issues in the feasibility study:

- Lack of parking (within reasonable walking distance of the district), and legal issues regarding access to, and use of loading docks for applicable transport vehicles.
- Resumed occupancy and redevelopment would be highly constrained by overall access to the site, circulation and abutting property interests.
- Buildings, weathered by age and deferred maintenance require significant upgrades to meet current codes and ability to obtain certificate of occupancy.

DO ANY OF THESE ISSUES SYNC WITH OUR STUDIO PROJECT?

The Feasibility Study is highly relevant to NewLeaf's studio project, as the report has been conducted on our focus site. Strong public leadership as discussed in the report is still a vital component to facilitate and expedite planning and implementation of key recommendations, while building on public-private partnerships and initiatives in progress within Turners Falls. NewLeaf recognizes the importance of such relationships and shall work to create synchronicity between the needs of existing property owners and the town and general public. The issues addressed are generally still applicable to the current conditions of the site. Some of the issues surrounding infrastructure have become more challenging due to illegal scrapping of valuable materials and the destruction of Building 10 by arson.

As demonstrated by the Feasibility Study, the location of the mill creates many challenges for development and possible demolition. The heavy equipment (for demolition purposes) and public safety (fire trucks) require an eleven-foot access clearance. The lack of accessibility to the site on the site's riverside may dictate the need for off-site staging of materials and equipment. Applicable state (MassDEP) and federal permitting regulations based on the proximity to the river will require additional protection to prevent debris from entering and degrading the river and surrounding ecology. The site provides many logistical challenges for revitalization; a detailed plan will help to alleviate significant disruption to the community through added traffic.

WHAT, IF ANY, PUBLIC ENGAGEMENT PROCESS DID THE AUTHORS USE?

Very similar to the stakeholder interview method that NewLeaf has proposed (semi-structured District-specific stakeholder interviews), FXM Associates senior staff completed over thirty interviews with real estate and economic development professionals; mill and related property owners and/or managers; artists; businesses; institutions, and other knowledgeable individuals throughout Franklin County and a broader market area. These specific interviews focused on multi-building and historic complexes that are adjacent to downtown business districts of older industrial cities in Western Massachusetts and that are along the Connecticut River and close to adjacent canals and bike paths. Furthermore, FXM Associates contacted twelve previous

owners/developers of rehabilitated mill buildings, and interviewed seven of them. Information sufficient for comparative purposes was obtained from research materials or interviews for seventeen different mill/reuse projects including. The authors did not include the general public in their engagement process.

RECOMMENDATIONS

It is important to note that based on the age of the 2005 report, some of the suggested recommendation have already been implemented, while others remain unaddressed. Additionally, the economic and overall market conditions presented should be carefully reviewed as they show variability over time. According to the study, the following steps are essential to “accomplishing sustainable redevelopment and attracting private investment in the Strathmore Mill that will be supportive of Montague’s economic development goals:” reconstructing of the Strathmore pedestrian bridge, creating additional off-street parking, resolving of property access, and usage of loading docks (pg. 2, 2005). To ensure that the site can support increased activity through redevelopment, many recommendations were made concerning infrastructure, site logistics, and preservation of the historic buildings.

To increase access, the right of way should be limited to delivery and drop-off only. Buildings 5A, 6A, and 8 were selected for demolition in a later phase, which would allow for a turnaround space for smaller vehicles. For pedestrian access, major restoration was discussed to stabilize the structural integrity of the pedestrian bridge. Adding pedestrian lifts at either end of the bridge was suggested to ensure that the bridge is in compliance with ADA standards. The authors argued that the more realistic scenario would be to remove the stairs and raise the bridge to meet Canal Street and span across to meet the fifth floor of the main Strathmore building. To increase visual interest and reduce additional maintenance caused by weather (e.g. snow removal), the bridge should be enclosed by glass. We note that this alteration would cost as much as a new bridge.

Regarding historic preservation, the authors recommend that the buildings should be “mothballed.” Mothballing means that buildings are sealed and left unused so they can be readily used again. The most important step of this process is to build a weather-tight envelope, which would require all damaged masonry walls to be repaired.

The ACES analysis noted that existing sewer, water, and other utilities should be replaced, as the aging infrastructure would be prone to leaks. Natural gas is currently provided to 5th Street; tapping into the line may be an attractive fuel source for new heating systems. For the creation of live-work spaces, new ventilation systems will be required. It may be appropriate to have separate systems for heating, ventilation and cooling of the spaces. Fancoils (2-piped), water source heat pumps, packaged rooftop units and variable air volume (VAV) rooftop units were suggested as alternatives sources.

COSTS

The consultants have identified different costs (in 2005 dollars):

- Complete demolition of all buildings, or partial demolition of 5a, and 8 later phases: \$2.1 million, \$120,000.
- Mothballing/Stabilization costs: \$2,075,000
- Phase 1a & 1b (complete renovation, pedestrian bridge alteration, parking addition, hazmat removal) & (gut renovation, hazmat, mothballing): \$14,505,000

PROGRESS

Understanding any alterations to the physical structure will require further conversation with the Town's building inspector and planner.

SUMMARY: CONNECTIONS TO POWERING FORWARD

NewLeaf will be adopting certain recommendations from the assessment, especially those pertaining to the select demolition of the newer structures in the Strathmore Mill Complex. At the time of the reports creation, Building #10 was still intact and had not yet been destroyed by arson; therefore, NewLeaf will make sure to address any changes that may have occurred since then, if the recommendations are to be included in the report. Furthermore, NewLeaf believes that the “auto-centric” dominated culture was more acceptable, we understand that parking is essential for the feasibility of a redevelopment project such as this; however, our design strives to encourage alternative forms of transportation, and reduction of on-site parking. Overall,

NewLeaf share the opinion that the site should undergo extensive infrastructure repairs to piping and access points, and the overall vision for potential uses. NewLeaf will look to introduce more sustainable renewable energy into the recommendations for the entire Strathmore Site, something at the time of the report's creation was not as well acknowledged as opposed to 2016.

CHAPTER 3: CLIENT DIRECTIVES



Figure 68. Strathmore Mill Complex as seen from IP Bridge

The conceptual district vision plan, *Powering Forward: A Vision for the Turners Falls Canal District*, seeks to reintegrate the District with Downtown Turners Falls, connect people with the Connecticut River, and honor the history of the mills. The Town of Montague's Department of Planning and Conservation (the Client) has given NewLeaf six directives related to drafting a redevelopment strategy for the District.

The directives are as follows:

1. Conduct interviews with property owners, abutters, and developers;
2. Recommend a brand/identity for the District;
3. Develop a conceptual district vision plan;
4. Identify key public infrastructure and investments;
5. Create inspiring plan view and perspective visuals; and
6. Provide recommendations and an implementation plan.

DATA COLLECTION

In order to meet the Client's Directives, NewLeaf collected and processed data through a variety of methods. This section shall describe the methods in which NewLeaf addressed that need which include fiscal analysis, Lynch analysis, research, site visits, and stakeholder interviews.

FISCAL ANALYSIS

NewLeaf conducted three different analyses related to the financial scope of redeveloping the District: Fiscal Impact, Pro Forma, and Tax Yield Per Acre (TYPA).

FISCAL IMPACT ANALYSIS

As discussed by Mullin and Kotval, a Fiscal Impact Analysis seeks to connect the planning and local economics by estimating the public costs and revenues that result from property investments (Mullin & Kotval, 2006). This type of analysis enables the comparison of revenues to costs associated with new development indicating whether local government can meet demands for services, or must raise taxes to meet new service demands. To calculate these costs, the most frequently used tools used by practitioners are Average Costing Methods, and Marginal Costing Methods. For the purpose of this discussion, each method has three individual techniques that fall under each approach. The Average Costing Method works best when, "the project represents an incremental demand for services within the Current Capacity of local infrastructure" (pg. 4).

The Per capita Multiplier, Service Standard, and Proportional Valuation are the individual techniques that fall under this approach. Marginal Costing Methods are different from Average Methods, as local officials "use subjective judgment (and local economic indicators) to adjust the estimates to reflect specific changes expected from new development" (pg. 9). Additionally, Marginal Methods are better suited where growth is rapid and unexpected as the redevelopment would promote.

NewLeaf has identified that for the revitalization of the District, there are applicable elements from both of the aforementioned methods. Generally speaking, NewLeaf believes that there is not a single technique that adequately reflects the needs

of the District, and recommends that the town further investigate the applicability of the following combination of techniques: Case-study (marginal), Proportional Valuation (average), and Comparable city (marginal). The Case-study approach relies on interviews with officials to determine strengths and weakness of service capacity for various categories, and is best suited when deficient service capacity is expected, as is the case with the district. Similarly, Proportional Valuation is best suited to estimate the impacts of non-residential uses. The Comparable City technique is useful when there are no precedents for the type of development on which to predict costs.

Utilization of the Employee Anticipation Method could be effective if potential Request for Proposals signify intensive uses. Employee Anticipation helps to predict changes in municipal costs based on expected change in local commercial/industrial employment. It is important to remember that there is a tendency of the Proportional Valuation technique to be “overly optimistic”, keep in mind that nothing has occurred yet. As the District includes overlapping service centers (Turners Falls and Greenfield) one should keep in mind that it may be unclear as to whom will receive the benefits of the redevelopment. Lastly, Proportional Valuation seeks help to assess whether there is any local fiscal benefit, and the impact of “specific classes of industrial and commercial development” (pg. 8).

PRO FORMA ANALYSIS

NewLeaf has created a Pro Forma model (Appendix III), based on multi-part training session run by the Urban Land Institute (ULI). This model will assist the Town in evaluating whether or not future proposals are generally economically compatible, or realistic for the redevelopment of the District. For the model to successfully illustrate potential return on investments (ROI), two tracts of information are needed from both the developer (development costs and utility provision logistics) and financial institutions. NewLeaf obtained the financial information below from a local bank.

Based on a discussion with said financial institution, typical loan periods are for twenty-five years. For the first five years, the interest rate is 4.75%. After the initial five years, this rate increases to 2.5 % above the Federal Home Loan Rate. Typically, the bank will approve loans up to 80% of the total appraised value of proposed (re)development. A 25% amortization rate is typical.

In order to address the other “tract” of information needed for the Pro Forma model, NewLeaf recommends that the Town input renovation estimates provided by a developer(s). Furthermore, as developers may handle provisions of utilities differently, clarification of their intended plan is important for an accurate reflection.

TAX YIELD PER ACRE ANALYSIS (TYPA)

NewLeaf has created a framework to make Turners Falls’ development processes clearer and more effective, as well as create more opportunities for the Town to engage developers and other stakeholders in conversations regarding specific development projects (Appendix II). Not only will our recommendations have aesthetic and social benefits for the Town, but also through a Tax Yield per Acre (TYPA) analysis, they create the potential for the Town to increase its tax revenue. The TYPA analysis will demonstrate that vacant lots generate a comparatively small amount of money for the Town while advocating the direct benefits of well-designed, dense development. This analysis is a measure of soft tax generation and does not account for fiscal impacts that the development may incur such as traffic and infrastructure. The Town should do a more thorough fiscal analysis when considering these options as our TYPA analysis represents a preliminary review. Furthermore, by encouraging the development of appropriate uses, the Town can efficiently generate the most amount of revenue throughout the Site.

LYNCH ANALYSIS

NewLeaf performed a Lynch Analysis of the Site and adjacent areas. Kevin Lynch, an urban planner in the United States who worked in the field of environmental psychology and urban form, developed the method for mapping places. These maps reflect place perceptions as defined by five physical elements: edges, paths, districts, nodes, and landmarks. It is the arrangement and character of these physical forms that creates a sense of place and shape the human experience of that place. Lynch authored a book entitled *Image of the City* in which he details how the physical form can shape a place and the experience of it.

NewLeaf applied the techniques established by Lynch to analyze the District. This analysis clarified issues regarding access to the District and circulation within it, as well

as opportunities for improving the activity on the site and reconnecting it with the adjacent areas.

The District is a narrow strip of land surrounded by water on three sides, and a neighborhood on the other. Water bodies function as edges that define the District and separate it from the nearby areas. The Connecticut River separates the northwest edge from Greenfield, and the Power Canal on the Southeast edge separates it from Downtown. There are several large buildings in the District, and there is an informal park on the northeast end.

While there are many bridge, most of them are defunct and/or decrepit, thus limiting access to the District, and the desire to cross over onto it. The District is directly served by seven bridges, only three of which are currently open to vehicles. Pedestrians and cyclists can also use these three for crossing, leaving just one bridge that is free of vehicles. The Strathmore Pedestrian Bridge, a landmark historically used for workers to cross over from Downtown to work in the mills, is now closed.

The main nodes with the greatest activity on the site currently are at the White and 5th Street Bridges. These are the main access points for the site. Due to the layout, this node is a pinch point for traffic. Delivery vehicles to Turners Falls Paper block traffic during the unloading process, and have to use the property of an adjacent landowner to navigate. Additionally, the narrow 5th Street Bridge makes it unsafe for non-vehicular modes of transportation.

An analysis of the paths on the site highlight circulation challenges. Based on the footprint of an old railroad bed, the one access road runs along the Power Canal. At this road's narrowest width, it can only accommodate one vehicle. This condition limits traffic circulation. In its current state, traffic in the District is limited. There are informal foot paths on that provide access to the Connecticut River. These footpaths are a bit overgrown with vegetation and difficult to find. The improvement of paths would improve the pedestrian, cycling, and vehicular experience.

The similar size and character of the buildings in the District, especially based on their history, constitute the site as a district. Many of them are vacant, and a couple of them are in extreme disrepair. This character can be the underpinning for the establishment of the District with reuse of the buildings while retaining historic

character. The coal silo, another landmark of the site, is a sign of its historic past, and can be utilized for further definition of a reinvigorated District.

NewLeaf used the Lynch analysis as a way to frame challenges on the site and opportunities to leverage in order to develop a vision for the District. Challenges include circulation access and parking. Assets include the historic buildings, proximity to Downtown and surrounding areas, and its location on the Connecticut River. The illustrated plan in Chapter 6 integrates components of Lynch analysis, address challenges and demonstrate ways to leverage assets of the District. The resulting plan shows how nodes can be gateways to invite people to the District and paths can move people effectively through it. The consideration of these elements is an effective way to develop ways to establish the District and create a positive experience for those who visit.

RESEARCH

NewLeaf has reviewed a range of relevant literature, existing plans, census data, reports, and precedent and case studies, to gain a firm understanding of the region in which Turners Falls is located, the District, and other recent mill revitalization projects. The diversity of existing plans and reports from the Town cover a broad scope of economic, community, environmental, and engineering topics. Below is a list of the most important documents and data that were analyzed:

- Downtown Turners Falls Livability Plan (2013)
- Strathmore Mill Complex Redevelopment TAP Report (2011)
- Strathmore Site Development Assessment (2008)
- Strathmore Mill Feasibility Study (2005)
- Historical Census and Economic Data (1980-2010)

In addition, NewLeaf has extracted and explored relevant peer-reviewed journal articles and previous research conducted by faculty and students of the Department of Landscape Architecture and Regional Planning at the University of Massachusetts Amherst. Furthermore, NewLeaf has analyzed and written concisely on applicable literature, that is used into solving the District's pertaining issues and recommending creative and insightful approaches for the District.

SITE VISITS

NewLeaf has visited eleven mill revitalization sites throughout the region; ten in Massachusetts and one in Vermont. The site visits have helped improve our understanding of the diverse range of mill sites that surround Turners Falls. NewLeaf explored the general location around the mills and wandered inside some to see how mill buildings utilized their space and what mixture of uses worked well together. NewLeaf observed the following characteristics: uses, circulation, historic preservation of buildings, wayfinding signage, and infrastructure. Out of the many prominent features, NewLeaf noticed that mill sites often utilized their space with residential units, incubator spaces, and incorporated creative wayfinding systems and interpretive signage throughout their site. Through these site visits, NewLeaf absorbed important elements that were relevant for the District and incorporated into this report. NewLeaf visited the following communities:

- Brattleboro, VT
- Easthampton, MA
- Fitchburg, MA
- Florence, MA
- Holyoke, MA
- Lawrence, MA
- Lowell, MA
- Ludlow, MA
- North Adams, MA
- Whitinsville, MA
- Worcester, MA

STAKEHOLDER INTERVIEWS

NewLeaf worked with the Client to compile a list of stakeholders connected to the Town, mill redevelopment, and proposed land-uses described in the District Plan. NewLeaf continued to work in conjunction with the client to develop interview prompts and will conducted semi-structured interviews with each identified stakeholder. The interviews collected information that will inform redevelopment decisions in three ways.

The interviews helped identify priority actions to enable redevelopment; they identified and addressed impediments to redevelopment, and finally, they provided insight into the overall feasibility of Site redevelopment. NewLeaf used the interview data in conjunction with previous public input from the Livability Plan, Community Needs Assessment, and Franklin County's Regional Plan For Sustainable Development to inform our research and recommendations.

CHAPTER 4: STAKEHOLDER INTERVIEWS



Figure 69. Public art at the corner of Avenue A and 3rd Street

CLIENT DIRECTIVE

The Client has requested that NewLeaf conduct stakeholder interviews with the District's property owners, abutters, and developers.

BACKGROUND

The Client wished to gain input from the District's property owners, abutters, and developers regarding the redevelopment potential of the District. Since this group of key stakeholders was small, one-on-one structured interviews were chosen as the engagement method for NewLeaf to implement. Structured interviews provide depth, as opposed to a breadth, of information. Creating a depth of knowledge from a small group of key stakeholders helps create a more refined District vision. This approach is a great fit with the Client's outreach goals because it connects with a small number of

individuals, considers their perspectives, and fosters a relationship between them and the project.

Structured interviews offer an opportunity to learn the motivations and perspectives of key stakeholders; therefore, the interviewer's attitude and approach are important in yielding meaningful results. The interviewer can gain the trust of the interviewee by clearly communicating the research goals, and build a relationship with them by keeping them informed and continuing communication with each entity. These actions seek to motivate the interviewee to provide candid feedback that will be instrumental in creating a refined District Vision Plan.

NewLeaf conducted semi-structured interviews to gather input from District property owners and begin to facilitate a sense of collaboration among the various entities that exist related to the site, such as existing and potential business and property owners. The interview framework is designed to allow for candid, personalized responses from a small, defined base of people. Structured interviews provide a way to understand the perspectives of these stakeholders and to use their feedback to develop a meaningful vision for reinvestment.

Individual semi-structured interviews offer timing flexibility because they can take advantage of the time availability across multiple potential interviews. This qualitative approach is flexible to fit a variety of participants; and can adapt to potential fluctuations or variations along the interview process. Conducting personal interviews allowed NewLeaf members to work around a schedule that is appropriate for both parties. In addition, one-on-one interviews make overall project coordination much more efficient. This flexibility effectively utilizes NewLeaf's resources while meeting the specific needs of the individual stakeholder.

EXISTING PLANS

DOWNTOWN TURNERS FALLS LIVABILITY PLAN (2013)

As part of the development of the Livability Plan, there were a few public engagement strategies employed. First, the Turners Falls Advisory Committee, which made up of town staff and eight key stakeholders from the community, was formed. The Advisory Committee worked closely with Town officials and the consulting team of

Dodson & Flinker to review the public participation plan, refine the scope of services, and review elements of the plan. There was also a Working Group. Thirty community members comprised this group, which included residents and business owners, as well as community groups, clubs, service organizations, resident leaders, business owners, social service providers, clergy, and other local and regional entities that have a stake in the future of Turners Falls. The Working Group played a big role in the Public Design workshop.

SUSTAINABLE FRANKLIN COUNTY: FRANKLIN COUNTY'S REGIONAL PLAN FOR SUSTAINABLE DEVELOPMENT (2013)

This Plan utilized various types of public participation that helped to guide recommendations. The types of public engagement included a steering committee, a needs assessment survey, an online survey of goals, a series of workshops, and a series of open houses. This helped to gather public input at various stages of the process to ensure that the resulting plan was in line with community needs and values. A summary of the public participation for the project is as follows:

- Steering Committee Members: 74
- Needs Assessment Survey Respondents: 416
- Franklin County Goals Survey Respondents: 180
- Workshop Facilitators and Scribes: 22
- Workshop Participants: 102

COMMUNITY NEEDS ASSESSMENT (2010)

The Town administered a Community Needs Survey in 2010 to better understand the desires and values of the community. Participants identified community needs, projects and social service needs. One of the top priority three community needs was to encourage business development, improve roads and sidewalks, and Downtown revitalization in Turners Falls and Millers Falls. All of these are pertinent to the District Vision Plan. Two of the top five priority community projects identified by Montague residents are pertinent: 1) demolish abandoned buildings and 2) increase commercial development. The top five social service needs identified by Montague residents are

youth violence and bullying prevention, food assistance and food pantry, support for persons with disabilities, domestic violence prevention services, and elder self-sufficiency services. The recommendations in the following chapters take the prioritization of community needs into account.

ULI TECHNICAL ASSISTANCE REPORT (2010)

Public participation was an integral part of the Technical Assistance Panel's (TAP) assessment. They facilitated a day-long session focused on how to find a developer for the Strathmore Mill Complex. This involved a series of meetings, starting with the Town's planning staff, interviewing a dozen stakeholders and community leaders, and holding a panel of land use and development professionals. The results of the meeting were presented by the panelists at a public meeting. The audience at the public meeting consisted of residents, local business owners, Town officials, and other interested individuals.

Both the issues identified in the report and the public participation process are useful for NewLeaf to understand in detail. The stakeholder list was diverse, and included representatives from FRCOG, the Franklin County Regional Housing and Redevelopment Authority, Southworth Paper (now Turners Falls Paper), Turners Falls RiverCulture, the Turners Falls Business Association and the utility companies. NewLeaf cross-referenced this list in developing the one for stakeholder interviews.

LITERATURE REVIEW

The discussion of public engagement has become a vital component of planning and development processes. Public engagement can serve as foundation that helps analyze whether or not "good-governance" is implemented at various hierarchical levels. As defined by the United Nations, good governance is participatory, accountable, transparent, equitable, and inclusive," (U.N. Economic and Social Commission for Asia and the Pacific, 2013). Public engagement takes the voices of those often unheard into consideration, and can help assuage unfair practices (Head, 2007).

By involving the public, organizations or municipalities are able to identify key difficulties or challenges, increase social capital, and create more substantive decision-

making abilities, (Bryson & Carroll, 2002). Planners and officials can solve problems more efficiently, and avoid potential political and legal predicaments when issues are clearly identified by the public (Wildavsky, 1979; Bryson & Carroll, 2002). Increasing social capital through public participation may prove as a useful foundation and resource for future work, as relationships with stakeholders can be created and maintained (Putnam, 2000). The contextual and historical information which public participation reveals is often invaluable to the decision making process (Scott, 1998).

However, Arstein's typology of the eight hierarchical levels of public participation, demonstrates the feasibility of whether or not an individual is able to influence the final outcome of any given participator process (1969). Arstein's ladder denotes on the lower end (Manipulation & Therapy), participation efforts are "non-participatory" in the sense that they have been manufactured or crafted by some to replace real engagement process (p. 217). The middle section (Informing, Consultation, and Placation) introduces the concept of "tokenism", or the ability of citizens to hear and be heard, under such conditions individuals still lack significant power to ensure that their desires and wishes will be acknowledged and implemented by those in power (p. 217). The upper rungs (Partnership, Delegated Power, and Citizen Control) reflect that typical "non-participatory" citizens obtain the majority of "decision making-seats" and are able to negotiate and advocate with those in power (p. 217).

NewLeaf Recommends that the Town of Montage conduct a broader public engagement process formulated around the upper rugs of the ladder following the completion of NewLeaf's stakeholder interviews, and finalization of the Vision Plan. While public engagement can sometimes make the planning process more difficult, it important to demonstrate to the stakeholders that they are respected and included. NewLeaf recognizes that the recommendations put forth have the potential to affect those within the Town and hope to further gain insight concerning the needs and desires of the Village through public engagement.

DISCUSSION OF STAKEHOLDER FINDINGS

NewLeaf selected twelve stakeholders to participate in structured interviews and completed nine interviews. From the interviews, NewLeaf gathered information about

stakeholder perspectives about revitalizing the mills in general, and specific opportunities and concerns. Topics of concern include aging infrastructure, access issues, and the economic revitalization of the community. The interview prompts were as follows:

- If money were no concern, what do you and your organization envision ideally happening on the Site in the short-term? In the long-term?
- Given the known constraints of the Site, what types and scale of redevelopment do you and your organization consider reasonable or realistic?
- What do you and your organization see as potential challenges to redeveloping the Site?
- What do you and your organization think could help solve these challenges? Why?
- Is there anything we haven't covered that you think is important to the overall success of the redevelopment of the Turners Falls Canal District?

Short-term actions for the site include stabilizing and maintaining building, solving infrastructure challenges, and potential demolition of buildings. While some stakeholders indicated that maintaining buildings is important, there was also a general feeling of frustration regarding the amount of money the town has put into the buildings without much return. A couple stakeholders suggested that if there is not further activity soon to revitalize the District, and given the sheer volume of issues on the area, that the Town may as well tear down all the buildings. This sentiment indicates frustration in the lack of recent activity in the District.

Participants voiced a sense of urgency related to the practical issues around the buildings and infrastructure. There were suggestions from Town representatives that an evaluation of the buildings would be a good short-term step. This evaluation would reveal which buildings are worth saving, and which ones should be demolished. Proper funding and process would suggest a phased demolition approach. In terms of infrastructure, rebuilding the pedestrian bridge for people and utilities was top of mind for many of the stakeholders.

Regarding the long-term actions for the site, discussions of the character of the buildings highlighted this as an important part of the character of the District.

Participants shared personal stories about the history of the District, either working on there, or having family members that worked there in the past. Maintaining historic character is clearly an important element of keeping people connected to the site. On the more practical side, historic preservation would enable The town to apply for tax credits.

One stakeholder emphasized the incorporation of the Native American vulture into either the physical buildings (Native American Cultural Museum) or by creating an outdoor Cultural Park. Funding for this could be procured through funds in conjunction with the 400th anniversary of the Pilgrim's landing on Plymouth Rock (and designation of the historic National Corridor). A bike path could incorporate the Native American theme while increasing tourism economy as well.

The discussion with a developer expressed great interest in long-term development plans for the site. The Select Board had just approved his proposal for the Railroad Salvage Annex. He had mentioned that eventually if the adjacent Railroad Salvage Building property becomes available that he would like to obtain that property as well. While the building is unsightly, he does not believe that it will adversely affect his property in the long-run. He indicated that it would be nice for the re-use of any buildings to be compatible with the Railroad Salvage Annex, and he indicated a willingness to invest in the District.

Relocation of businesses was also a topic of discussion. The Franklin County Regional Housing and Redevelopment Authority (FCHRA) representative stressed the fact that the location was poor for a public agency and that the building space was inadequate for FCHRA needs. Equipment for the maintenance of properties, such as plows and lawn mowers, lack adequate storage space, and there are not enough parking spaces for staff and cliental. The assessment of current tenant and owner needs is an important step in determining phased construction that will retain tenants and accommodate new growth.

The discussion about the types and scale of redevelopment revealed an overall openness for various options. Due to the large amount of square footage in the buildings, there is ample space to accommodate a variety of uses. Participants indicated the space could be excellent for offices, studio space, or possibly housing. Additionally, the buildings could support light manufacturing and/or production space. One life-long

resident made it a strong point that his ideal long-term redevelopment would not be a competition against, but a complement to, the adjacent Downtown area.

A few participants provided specific ideas for how to use the ample space. One stakeholder suggested production space as a use that was previously there, such as photography, music, or film making. Additionally, uses that require limited vehicle traffic would need to be complemented by an on-site food production/assembly area, or a standard restaurant to prevent excessive vehicular trips. A current tenant sees small-scale manufacturing and some retail in the site's future, and is concerned about residential and intensive uses in the District. The presence of visitors to the site results in potential safety conflict in terms of the operation of a manufacturing business. A plan for the District would need to incorporate areas where the public is welcome, and also areas where public access is limited or restricted, ideally through signage and fence to physical deter trespassing on the property.

Other discussions delved into a greater, wider vision for the site and surrounding area. The developer is interested in reinforcing and strengthening the Turners Falls arts culture, and shared his knowledge of recent activity and needs. He considers the potential for artist work-live spaces, and the possibility of collaborations. One specific partner is a local entrepreneur trying to start a contemporary Chinese Art School. The artists would be from China, and the work they create would be sold in New York City, where the market would support such activity. There is interest in creating a neighborhood preservation group to help "keep the streets clean" and network with the neighbors.

The District has challenges and stakeholders were able to provide some insight on major challenges as well as potential ways to solve them. Among the largest challenges stakeholders identified were overall access and circulation, water supply, building conditions, parking, and safety. There is concern of the Town's ability to maintain the District; it being a continuous drain of money the Town cannot afford. The general sense is that addressing current infrastructure and utility concerns were paramount to success in redevelopment, as they are the main barriers for potential investors.

Of the infrastructure issues, the most prominent is the Strathmore Pedestrian Bridge. There is a shared opinion that the replacement of the bridge is key to

redevelopment. Some mentioned that it would also be an opportunity to upgrade the water sewer lines for current manufacturing operations as well as to accommodate future needs.

Circulation is a major challenge for the site and the stakeholders had few different ideas about what the site should provide in terms of parking, and appropriate levels of activity. Given the constraints in the District, there is acceptance that the District would have limited parking, but that development could occur despite parking limitations. Any proposals need to include a circulation plan for deliveries, emergency vehicles and wheelchair accessibility, and that the best overall development would limit vehicular activity in the District to those areas most appropriate.

One example of the accommodation of parking and circulation is regarding existing tenants. The FCHRA representative stated that some of their issues could be resolved by relocating to the Railroad Salvage building, including interior space requirements and parking accommodations. While there is some potential here, she also expressed concern of the limited funds that would be available and the overall cost for the redevelopment of the building.

Among comments regarding possible vehicular circulation solutions, a Town representative posited the idea to redesign the IP Bridge to accept vehicular traffic. Doing so would require upgrades to accommodate the increased vehicular load (which the Bridge does not currently support). He also stated that parking could be remedied by utilizing the Indeck Property as a parking site, either as a parking structure, or as a surface parking lot. Also, in any event, the Strathmore Pedestrian Bridge would need to be upgraded for ADA-compliance, which would prove costly.

Another challenge mentioned by a stakeholder is the source of energy. The District was historically run using hydropower then steam from the former Indeck Co-Generation Power Plant. While natural gas would be the most efficient due to the proximity of a high-capacity gas line, long-term usage presents a challenge itself, given the current gas moratorium in the region. To accommodate this energy source constraint, the idea of the “lowest and best use” for the District may be a feasible solution. Using the District as a warehouse or cold storage facility could be immensely efficient, requiring minimal upgrades, and would be ideal given District constraints.

Stakeholders cite the need for public support in the redevelopment of the District. One developer has encountered issues related to historic tax credits. A tenant of the District mentioned the fate of their utilities is tied to the Town. Support from the Town and public officials is important in order to gain traction. Having partnerships between the public and private entities on the site and maintaining communication is essential to making progress.

There were several comments regarding the utilities that are helpful in understanding the District and its challenges. Sewer is a concern because where it runs is an unknown. There is a water line for the site, but the state of completion is under is also unknown. There is also concern about whether property owners would allow any wires to cross the Canal. If this is the case, it would be a major factor that would need to be accounted for in the District Vision Plan.

The stakeholder interviews highlighted that there are diverse interests involved in the District. Representatives from the organizations are also members of the community. Stakeholder participation is important in understanding the issues and developing successful proposal for the site.

RECOMMENDATIONS

The District Vision seeks to reflect the values of the community, and the District Plan responds the community needs and desires. To that end, public engagement is an essential component in order for the District to thrive. NewLeaf's recommendations are the continuation of public engagement through various ways that complement the previous engagement efforts.

There are several ways the Town can foster public engagement and gather feedback from the community. Specifically, NewLeaf suggests conducting a visual preference survey using the visuals developed for the District Vision by the UMass Design Center. Tactical urbanism, low-cost events, or temporary installations, are great tools to gather feedback and engage the public. A third strategy is to create an organization of representatives similar to a neighborhood association or business development group. These strategies are fresh ways to keep the community interested and supportive of the long-term work needed to establish a thriving district.

The visual preference survey would be a way to utilize the images developed for the District Vision Plan. NewLeaf targeted several areas within the District that can serve as gateways, or demonstrate other recommendations. The Town could post these images in community gathering places, such as the Town Hall or library, along with a quick survey. These images and an accompanying survey could also be disseminated through social media for even greater outreach.

Tactical urbanism strategies include any number of typically low-cost, temporary events or installations through which ideas are tested. NewLeaf suggests holding community events that highlight assets of the District. These events are a way to rally the community, introduce new ideas, and get the community's feedback about potential developments. For example, the Town could facilitate the testing of a bike path through the District in conjunction with a community tour. Lights could be hung on the IP Bridge to attract people to the beginning of the tour. People of all ages should be encouraged to decorate their bicycles, scooters, or wheelchairs. The tour would highlight assets of the District, and inform people of development efforts, and could culminate in an event at the newly established Native American Cultural Park. A possible name for the event could be "Wheeling and Dealing: The Vision for Turners Falls Canal District."

There have been significant efforts in public outreach. While the Town is aware that the community supports the efforts to establish the District, it is also aware that there is some public engagement fatigue. This public fatigue may be due to the perception of progress, or lack thereof. A community group is a way that individual stakeholder or members of the public can be involved in making decisions and disseminating information to the wider community regarding the incremental changes that are underway. These organizations can serve to strengthen community ties as well as collaboration among the property owners and tenants on the site.

IMPLEMENTATION PLAN

6 MONTHS

- Conduct the visual preference survey. Utilize the images provided as part of the District Vision Plan.

- Reach out to more stakeholders on the master stakeholder list for further outreach activities (Appendix IV). Consider individuals that could be instrumental in organization a stakeholder group to foster collaborative approach for the District.
- Begin tour/event planning utilizing tactical urbanism strategies

1-2 YEARS

- Hold the tour/event of the site during the summer months.

3-5 YEARS

- Continue to hold events that will engage public and offer opportunities for community feedback.

CHAPTER 5: DISTRICT VISION



Figure 70. The Connecticut River as seen from the White Bridge

CLIENT DIRECTIVE

The Client has requested that NewLeaf create an overall vision for the Turners Falls Canal District. This vision includes recommendations for the brand of the District.

BACKGROUND

The Town has completed previous planning studies and assessments for several of the individual parcels in the District. The Town now has site control of three properties, but has not yet developed a comprehensive vision for the District as a whole. While Turners Falls has been able to reconnect to the Connecticut River north of the dam through the Canalside Rail Trail and Unity Park, in many ways it has turned its back to the slow decaying mills on the River. The Livability Plan calls for reconnecting

and revitalizing this area as a major component of the community's vision for Downtown.

The Client has asked that the overall vision for the District incorporate a mixture of land-uses, including recreation, residential, commercial, and light industrial. It is important to retain the existing industrial uses (Turners Falls Paper) to the extent feasible. The community also values the historic character of Downtown and the District and would like to see that character retained in future design palettes.

EXISTING CONDITIONS

There is an existing branding effort in Turners Falls. Turners Falls RiverCulture (RiverCulture) is a partnership of leaders from the arts and business communities, committed to enhancing and promoting cultural programming in Turners Falls. Its mission is to: foster art and culture in Turners Falls; enhance the quality of life of the community; work with a diverse group of community, political, educational, and business leaders to support the creative economy; establish art and culture as a highly visible element of the region's identity; establish an environment that attracts businesses, residents and visitors to Turners Falls; and develop live-work, retail and studio space throughout the town. RiverCulture accomplishes this mission by: hosting and promoting cultural events; spearheading cooperative marketing efforts; branding and presenting the area's best cultural resources to the public; maintaining a website as a central resource for event information; serving as a forum for the RiverCulture partners to convene around shared topics; serving as a platform to address local social issues through cultural means; producing printed materials promoting the resources of Turners Falls; participating in the Town's economic development initiatives; and analyzing the various impacts of cultural events on the community. RiverCulture is funded by local businesses, the Town, and the Massachusetts Cultural Council (Turners Falls RiverCulture, 2016).

While there are many notable examples of large scale mill redevelopment projects in Massachusetts (i.e., Easthampton, Holyoke, Lowell, Lawrence, and North Adams), the Turners Falls Canal District is unique in its scale and largely rural regional context. That being said, it must be noted that NewLeaf acknowledges that many of the

former mill towns that we visited do not fit the scale of Turners Falls. We believe that there are still important lessons to be learned from these various mill redevelopment projects, especially when it comes to developing a brand for the District.

CASE & PRECEDENT STUDIES

NORTH CANAL DISTRICT – LAWRENCE, MA

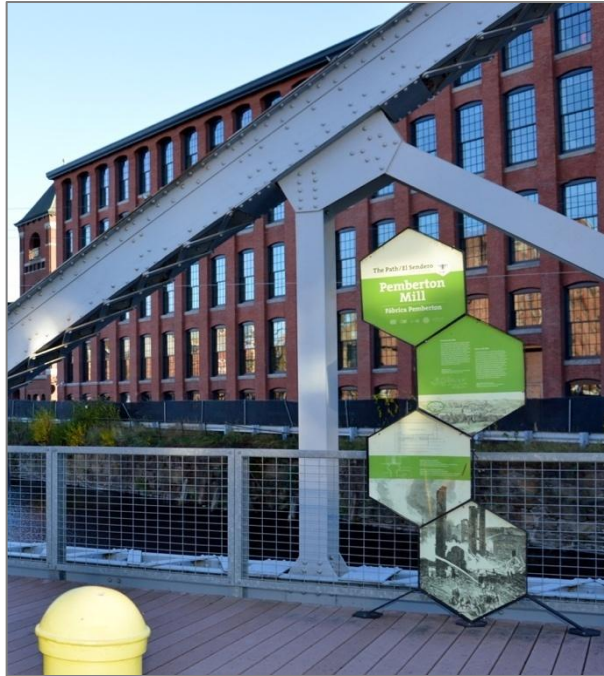


Figure 71. Interpretive signs in Lawrence's North Canal District

NewLeaf visited the North Canal District in Lawrence, MA on November 11, 2016. Lawrence is a city within Essex County north of Boston with a population of 76,377 persons as of the 2010 Census. Lawrence sits on the Merrimack River near the Great Stone Dam, which was the source of power for its booming textile industry.

When the team visited the North Canal District, the sheer scale of development immediately stunned us. The North Canal District includes mill buildings from a number of historic companies and mill sites. These include the Atlantic Mill, American Woolen, and Bay State Woolens Companies (the last whose c. 1847 brick boarding house is now the visitor center of Lawrence Heritage State Park). The North Canal District also includes buildings that are in the Everett, Kuhnhardt Woolen, Washington, Pemberton, and Pacific Mill Complexes. As a way to spread historic awareness, Lawrence had

incorporated the lifestyles of the mill workers, as well as the extensive “Made in Lawrence” products into the redevelopment vision. This slogan bridged the present to the past, and gave the entire site a sense of pride. Interestingly enough, when the team spoke to a MassDCR representative at the visitor center, we learned that initial redevelopment projects were made possible with an initial investment from the State. Finally, he also told us that the redevelopment projects were similar to other mill projects in that they were a mix of residential and commercial uses.

Similarities between the North Canal District and the Turners Falls Canal Districts are not only project scale (though the former certainly dwarfs the latter) but the incorporation of the history into the present redevelopment strategy. The historic nature of the District is present throughout our Client Directives, and the same appears to be the case in Lawrence. Both communities understand the importance of acknowledging the past as a story or theme for the future. Buildings in the North Canal District look and remain remarkably similar to their past facades, and no obvious signs of modern design are present. In addition, the North Canal District contributes to a larger, overall plan of community reinvestment and redevelopment.

HAMILTON CANAL DISTRICT – LOWELL, MA



Figure 72. Interpretive signage in Lowell's Hamilton Canal District

NewLeaf visited the Hamilton Canal District in Lowell, MA on November 11, 2016. Lowell is a city in Middlesex County, north of Boston, with a population of 106,519 persons as of the 2010 Census. The City sits at the confluence of the Merrimack and Concord Rivers near Pawtucket Falls, and the Pawtucket Dam, which was the source of power for the booming textile industry.

When the team visited the Hamilton Canal District, we discovered the mills were open to the public. We took particular interest in Mill No. 5 due to its advertised tenants. Mill No. 5 is six stories high, and the fifth floor served as the tenant spaces. The corridor ran the length of the floor, and housed a multitude of various tenants (i.e., a Wiccan supply store, a small eatery, a dance studio, a cheese maker, a stationary maker, and a small theater). The floor's overall design modeled that of a downtown, with each tenant indicated by overhead signage and a unique "storefront" façade. The floor itself was the original uneven, wood base. While the fifth floor was the only floor with public

access, outside signage indicated that an additional tenant on the opposite side of the building was a public charter school.



Figure 73. An example of branding at Mill No. 5 in Lowell's Hamilton Canal District

While we were able to visit only one part of a much larger project, the team was able to note similarities between the two Districts. Similar to the North Canal District in Lawrence, the Hamilton Canal District also tries to incorporate the mills' history into the present redevelopment. Both Lowell and Turners Falls understand the importance of acknowledging the past as a story or theme for the future. Mill No. 5 in the Hamilton Canal District looks and remains remarkably similar to its past usages, though the interior appears to be heavily (though tastefully) modified to incorporate individual tenant spaces.

An interesting identifying marker throughout the District was the presence of wall-mounted flags indicating your current location within the District. The way finding was present within the North Canal District as well, and could very easily translate into a unique and tasteful identifying signage within the Turners Falls Canal District.

ECO-INDUSTRIAL PARKS

Eco-industrial parks are a cooperative business model where the uses of an area are planned in terms of sharing resources while reducing waste and pollution. This model functions as a system where resource management is optimized for efficiency, and the waste from one business is utilized as a source of energy for another part of the system. An eco-industrial model is one option for a low-impact economic development in the District. Lowe's writing of Eco-Industrial Park development outlines the potential for creating a circular economy through resource utilization includes projects across the world, limitations of this approach, as well as advantages and disadvantages of implementing through both private and public sector funding.

Either the public sector or the private sector can take the lead in eco-industrial developments, and there are advantages and disadvantages for each. While the Town is facilitating the development of the District, there is flexibility in the Town providing the structure for development, with private sector investment. The advantages of the public sector leading the development is that a municipality can ensure that development satisfies multiple goals of economic, social, and environmental well-being. The public sector also can provide incentives, and funding through research and development monies. Regulations can ensure that development is in-line with community goals, and the Town can benefit from resulting business tax revenues.

There are also advantages for the private sector driving eco-industrial developments. Expertise in financial analysis and real estate development can ensure these innovative developments are successful. When driven by the private sector itself, the resulting collaboration reflects a profit-motivated value proposition. Tenants function as shareholders, so are deeply connected to the project, and the sharing of risks among businesses can reduce start-up costs and further motivate collaboration.

The application of the eco-industrial concept to the District would leverage the assets of the site, and take the limitations of the site into account. One asset of the

District is the existing business activity. Part of the business approach of Turners Falls Paper is to respond to niche markets, and its operations are flexible in order to respond to the market. Of their innovative paper-making, that is used for agricultural purposes and looking at using waste products to create papers. This waste product utilization could be provided on-site as part of an eco-industrial concept. They are already looking in to using hemp fiber and discarded tea leaves to make paper.

RECOMMENDATIONS

One idea would be a marijuana growing facility in the Strathmore Mill Complex, and Turners Falls Paper would use the hemp waste product to make paper. There are many other options for complementary business operations that fulfill the principles of eco-industrial development. For example, spent grains from a brewery could be used as an ingredient to make bread in a bakery. Additionally, on-site wastewater management could use the settled solids in a bio-digester to create energy.

NewLeaf recommends that the Town further investigates the following gateway reconfigurations as illustrated by the renderings created by the UMass Design Center: Canalside Rail Trail Connector (Figure 75), Strathmore Pedestrian Bridge (Canal Street Entrance) (Figure 77), and the reconfiguration of the Railroad Salvage area (Figure 79).



Figure 74. Intersection of Canalside Rail Trail and IP Bridge (Before)



Figure 75. Intersection of Canalside Rail Trail and IP Bridge (After)



Figure 76. Canal Street Gateway to Strathmore Pedestrian Bridge (Before)



Figure 77. Canal Street Gateway to Strathmore Pedestrian Bridge (After)



Figure 78. Railroad Salvage Area Gateway (Before)



Figure 79. Railroad Salvage Area Gateway (After)

Successful revitalization of the district is dependent upon a powerful and recognizable brand which visitors and residents can relate to and interact with. NewLeaf recommends the following actions:

- Create a recognizable wayfinding design (temporary or permanent in nature), designating the spatial relationship between key locations within the District, and in relation to the Downtown;
- Establish interpretive signage emphasizing the historical and cultural aspects of the District;
- If sustainable renewable energy production (Geothermal, PV) at any point is implemented within the District, signage should reflect the benefits of said techniques. Similarly, educational signage pertaining to the importance of trees and the benefits they provide (I-Tree analysis) in the FirstLight Open Space would help increase awareness and foster stewardship;
- Ensure that overall brand or identity of the District complements existing efforts by Turners Falls RiverCulture;
- Reflect and showcase local innovation and demonstrate bottom up development, if economically feasible;
- Investigate the concept of the District's potential as an Eco-park. Perhaps the Town could require that any incoming business to the District would need to provide information discussing if by-products could be re-used;
- Continue to encourage public art projects designed by local artists;
- Attract adventure tourism (i.e., Crabapple Whitewater Rafting) to strengthen the Town's argument for negotiations with FirstLight through the FERC process.
- Encourage mixed-use development that retains existing industry.
- Commit to creating local jobs that serve local needs.

IMPLEMENTATION PLAN

6 MONTHS

- Develop a Logo/Brand

- Design and Install a “trial” wayfinding system
- Creation of a Town administered Social Media pages (i.e. facebook, twitter, blog posts) dedicated to the Turners Falls Canal District.
- Conduct I-Tree analysis and create informational tag to be affixed to trees within the District
- Hold a public art design competition for art to be placed in the District

1-2 YEARS

- Establish a cultural park and annual event
- Finalize wayfinding systems and design

3-5 YEARS

- Build adventure tourism economy
- Welcome new tenants into the space

CHAPTER 6: DISTRICT PLAN



Figure 80. The Connecticut River below the Turners Falls Dam and Turners Falls-Gill Bridge

CLIENT DIRECTIVE

The Client has requested that NewLeaf create a conceptual district plan (District Plan) for the District. The District Plan is to address the following elements: land-use, housing, natural and cultural resources, open space, and circulation. The District Plan must incorporate a mix of land-uses including commercial, light industrial, recreational, and residential. The Client has also requested that NewLeaf determine the highest and best use for each property in the District, with the understanding that these uses may not be compatible. The Client would like to see that the existing industry, an active specialty paper mill by the name of Turners Falls Paper, be retained to the extent feasible.

Additionally, the Client has requested that the District Plan include a land-use map, a zoning map, and a modified permitted use table. The Client has asked that NewLeaf review the Town's current zoning and entitlement procedures and make

recommendations for improvement, if necessary. The Client would like NewLeaf to consider the adoption of master permits or planned-unit development (PUD) as redevelopment tools. The Client has requested that NewLeaf create a pedestrian circulation plan for the District. All recommendations within the District Plan are to be supported by relevant case and precedent studies, as well as peer-reviewed research.

BACKGROUND

In the late nineteenth-century, Turners Falls was booming with cutlery, cotton, and paper industries that relied on the cheap and abundant hydropower generated by the Connecticut River. As the manufacturing industry declined in the mid-twentieth century, the economy stagnated and development slowed to a near halt. While downtown revitalization efforts have been underway for the past ten or so years, the neighboring District has suffered from disinvestment and neglect. The Client has asked NewLeaf to develop a District Plan that would provide the basis for a redevelopment strategy. This strategy seeks to extend the success of the adjacent Downtown to the District.

EXISTING CONDITIONS

The Town's Zoning By-Laws designate the entire District as Historic-Industrial (HI) (Town of Montague, 2014). In 2001, the Town added the HI zone designation to encourage adaptive reuse of the historic mill buildings in the District. The HI zone permits a number of uses by-right and by special permit (Table 6). In 2004, the Town added residential as an accessory or secondary use by special permit from the Zoning Board of Appeals. The modification was an early attempt to attract the development of work-live spaces. Currently, there are no housing units in the District. The existing zoning by-laws are the District's only regulatory guidelines.

Despite its location between the Connecticut River and the Power Canal, the District offers minimal formal recreational opportunities. The FirstLight Open Space property on the north end of the District provides informal public access to the River; however, it is not advertised as such and is unwelcoming to those who are not familiar with the area. FirstLight provides additional access to the river, primarily for fishing, on

the south end of the District. The District is known for its historic mill buildings; however, there are also strong Native American connections to the north end of the island. While the historic industrial significance is self-evident, the Native American ties are not.



There is an informal, one-way road on the District's northern end, called Canal Road, that extends from Turners Falls Paper north to the Turners Falls dam. FirstLight owns this access road and uses it primarily for maintenance and emergency access. A tunnel underneath Turners Falls Paper provides similar access to the Strathmore Mill Complex. The District's southern end has greater vehicular circulation capacity and provides traffic access to the southerly Patch neighborhood. The District's vehicular capacity decreases travelling north towards the Dam, but provides a relatively high degree of pedestrian and bicycle circulation capacity.

LITERATURE REVIEW

Land-use planning is an integral part of the process of growth and development. This process seeks to identify, articulate, and satisfy the basic social/human needs of a community within the context of available resources and technical knowledge. Humans have basic needs such as housing, employment, education, recreational opportunities, and transportation that must be satisfied. Humans also require basic services such as water, food, electricity, clean air, and health care. Land-use planning derives from the necessity to accommodate these needs in a manner within a technical and spatial framework. This spatial framework takes form as a land-use plan that articulates development policies and actions (Thomas, 2001).

Land-use plans are prepared to anticipate the development needs of an area; identify relevant development issues; identify opportunities for and constraints to development; identify areas that are suitable or unsuitable for different types of development; make proposals for the way in which the area should develop over time; and, to establish policies and standards to guide development (Thomas, 2001). Plans are not tools to restrict development, but rather to ensure an orderly process that creates sustainable communities accommodating a variety of uses that meet the needs of the people who live in these communities (Thomas, 2001).

A land-use plan is a policy that seeks to manage and regulate development in a manner that conforms to a pre-determined set of goals and standards. The plan is a roadmap that defines the pattern of development over a length of time necessary to achieve the overall vision (Thomas, 2001). If no land-use plan exists, development proposals may raise critical development issues for which no policy guidance is available: What is the assessment process for development applications? What criteria determine application compatibility with nearby uses? Is the proposed development located on an appropriate site or does it include the necessary facilities to support the proposed activity? (Thomas, 2001). Most importantly, the absence of a guiding plan raises multiple ethical concerns (Thomas, 2001). If development decisions are at the sole discretion of the approving entity, is the decision arbitrary or capricious? Is there any sound basis or foundation for the decisions made? A properly written and executed land-use plan eliminates these concerns.

CASE & PRECEDENT STUDIES

DISTRICT PLAN

The following two case studies provide helpful information in understanding essential elements of a District Plan.

PLACEMAKING IN THE NORTH CANAL DISTRICT – LAWRENCE, MA

INTRODUCTION: PURPOSE OF PLAN

Placemaking in the North Canal District (North Canal District) is the culmination of the effort by the Project for Public Spaces, Inc. (PPS) to identify immediate, low-cost, and/or short-term action items to revitalize targeted public spaces in the North Canal District within the City of Lawrence, MA.

LOCATION: DESCRIPTION OF PLAN AREA

The North Canal District includes the historic Atlantic Mill, American Woolen mill, and Bay State Woolens Companies (the last whose c. 1847 brick boarding house is now the visitor center of Lawrence Heritage State Park). The District also includes buildings that are in the Everett, Kuhnhardt Woolen, Washington, Pemberton, and Pacific Mill Complexes. This particular plan covers five specific area identified in public outreach workshops: 1) Ferrous Site/Lower Locks Waterfall, 2) Intersection at Union and Canal Streets, 3) Lawrence Heritage State Park, 4) Along the Canal, and 5) Pemberton Park/Cardinal Shoe.

CONTEXT: WHY IS THE PLAN NEEDED?

Similar to neighboring communities, such as Lowell, Lawrence's once thriving industrial base suffered from competition and disinvestment through the late 19th and early 20th centuries.

GOALS & GUIDELINES OF THE PLAN: WHAT IS THE PLAN SUPPOSED TO ACHIEVE?

The action items proposed to revitalize public spaces in the North Canal District are an initial step in a larger strategic planning framework meant to generate excitement and critical mass for sustaining long-term changes, such as increasing housing and job density, improving transportation options, and reducing vehicle miles traveled. These action items are recommended because of their capacity to:

- create a common vision for each place that is not only unique to each site but that would also strengthen the North Canal District as a destination to create a whole is greater than the sum of its parts;
- address the issues specific to each site;
- best leverage existing opportunities and capture the creativity of the people and cultural assets of Lawrence;
- pool together the local capacity of the community; and,
- build long lasting partnerships to ensure that there is community buy-in and a sense of ownership and pride.

LAND USE TOOLS & TECHNIQUES: WHAT TOOLS AND TECHNIQUES ARE PROPOSED?

Although there are no *technical* planning tools proposed, the recommendations shared a common theme of activation based upon the unique identity and characteristics of each individual site. These individualized activation recommendations would be a part of the greater whole of community buy-in and identity.

DATA: WHAT DATA IS USED OR NEEDED FOR THE PLAN?

During April 2012, PPS facilitated two workshops hosted by community organizations Groundwork Lawrence and Lawrence Community Works. These workshops initiated a community visioning and place-making process that gathered feedback from the community and local stakeholders regarding the North Canal District.

The first workshop listed five sites within the North Canal District that the community identified as having the most potential to become great places in Lawrence. The second workshop asked attendees to envision short-term interventions that could

be implemented on the five sites. This plan takes these workshop findings and outlines an action plan for implementation that will transform the North Canal District into a multi-use destination strengthened by a series of vibrant public spaces.

DESIGN PRINCIPLES: ARE ANY OFFERED?

No specific design principles were offered; however, many recommendations suggested beautification accomplished by conducting cleanups and routine maintenance at individual sites.

APPLICABILITY TO YOUR MA MUNICIPALITY: HOW DOES THIS PRECEDENT INFLUENCE YOUR EVALUATION?

This North Canal District plan offers a multitude of ideas for the District. One major aspect is the incorporation of initial “spot-activation” as a means to create community buy-in. This is an ideal strategy particularly for the District’s northern end. Activation of targeted, key areas could serve as a manageable first-step in increasing community awareness and fostering connection to the redevelopment project.

Another major aspect is the discussion of the establishment of local partnerships that can accomplish goals and policies within the overall redevelopment project. These partnerships can incorporate commercial and other larger groups into the mix, which further strengthen community buy-in. Partnerships can also reveal funding opportunities that would not have otherwise been realized in their absence.

HAMILTON CANAL DISTRICT MASTER PLAN – LOWELL, MA

INTRODUCTION: PURPOSE OF PLAN

The Hamilton Canal District (Hamilton Canal District) Master Plan is the culmination of the effort by the Trinity Hamilton Canal Limited Partnership (Trinity Partnership) to design, re-zone, market, and redevelop the Hamilton Canal District within the City of Lowell, MA.

LOCATION: DESCRIPTION OF PLAN AREA

The Hamilton Canal District Master Plan covers a 13-acre area adjacent to Downtown Lowell. The Hamilton Canal District is located within the Lowell National

Historical Park and Preservation District, the Downtown Lowell Historic District, and the Locks and Canals Historic District. The area is located at the confluence of the Hamilton, Pawtucket, and Merrimack Canals. These canals divide the area into three major sections. Approximately 3.8 acres of vacant land is located north of the Pawtucket Canal and includes the 2.2-acre National Park Service Visitor Center parking lot adjacent to the Merrimack Canal. Approximately 6.5 acres of land is located between the Pawtucket and Hamilton Canals. Water, historic mill buildings, and the Swamp Locks surround this parcel. The district concludes in the area south of the Hamilton Canal with approximately 0.65 acres of land located at the corner of Jackson and Revere Streets.

CONTEXT: WHY IS THE PLAN NEEDED?

Lowell's once thriving industrial base suffered from competition and disinvestment through the late 19th and early 20th centuries. In the early 1970s, a collaboration of political, business, and educational leaders, working with urban planners and historians, devised a strategy to revitalize the City based on its architectural and cultural heritage. Creation of the Lowell Heritage State Park in 1974, followed by the Lowell National Historical Park and Lowell Historic Preservation Commission in 1978 led to the development and implementation of the City's first Preservation Plan. The Preservation Plan in turn led to the creation of the Downtown Lowell Arts District in 1998, spurring an arts and cultural development renaissance. The Hamilton Canal District's adjacency to the successful Downtown seeks to continue Lowell's transformation from a decaying industrial canal city to a "living history" venue with new economic vitality.

GOALS & GUIDELINES OF THE PLAN: WHAT IS THE PLAN SUPPOSED TO ACHIEVE?

The Hamilton Canal District Master Plan identified a range of significant goals it aimed to achieve. One was the integration of the Hamilton Canal District into greater infrastructure improvement projects such as upgrades to streets, sidewalks, street trees, and lighting that would ultimately create a safe and inviting pedestrian experience. Appropriate land-uses would complement this inviting pedestrian experience to create

an urban character where buildings meet the sidewalks with active first-floor uses and encourage an active street presence. The Hamilton Canal District would extend the successful loft reconstruction in Downtown Lowell, link the Gallagher Terminal to Downtown, as well as support transit expansion for greater Downtown circulation.

The Hamilton Canal District envisions a successful residential component that appeals to consumers seeking an urban experience with access to Downtown Lowell, rail access to Boston, or highway access to the Route 3 and Interstate 495 corridors. This residential component and surrounding development would incorporate planning for energy efficiency and sustainability, including the use of renewable energy sources, as well as green building construction and operational standards wherever feasible.

LAND USE TOOLS & TECHNIQUES: WHAT TOOLS AND TECHNIQUES ARE PROPOSED?

Form-based code (FBC) is a proposed redevelopment method to address the interconnected goals within the Hamilton Canal District. The FBC will establish parameters for the building forms on each parcel including height, massing, relationships to street lines, open space, and the canals and canal walks. These parameters allow for alternate uses and building forms while maintaining the critical urban design characteristics identified in the FBC. The resulting diverse mixture of uses combined with the juxtaposition of historic mills, contemporary structures, and extensive new canal walks presents a tasteful integration of historic infrastructure and a vibrant new residential and commercial district.

DATA: WHAT DATA IS USED OR NEEDED FOR THE PLAN?

As part of the master planning and development process, the City of Lowell and Trinity Partners utilized a series of planning charrettes to gather public input. The charrette gathered baseline information and significant stakeholder input, and maximized public review and comment opportunities. Data from the charrettes helped identified whether the participants agreed that the Hamilton Canal District Master Plan and addressed their concerns.

DESIGN PRINCIPLES: ARE ANY OFFERED?

Although the Hamilton Canal District Master Plan did not outline specific standards, it indicated that the architectural character of the development will evoke the scale and density of the previous mills, but will not mimic the look of the historic mill buildings. Contemporary architecture will differentiate new buildings and additions from the historic structures in the Hamilton Canal District in order to create the mixed-use district vision. These design principles are in accordance with historic preservation guidelines supported by the Secretary of the Interior through the National Park Service.

APPLICABILITY TO YOUR MA MUNICIPALITY: HOW DOES THIS PRECEDENT INFLUENCE YOUR EVALUATION?

The Hamilton Canal District Master Plan offers a multitude of ideas for the Turners Falls Canal District. One major aspect is the incorporation of development phases. The scale of these mill sites dictates that successful redevelopment does not happen overnight. We propose phased redevelopment for the District for similar reasons.

Another aspect is the discussion regarding project financing. The Client has directed NewLeaf to investigate the applicability of funding sources, and the Hamilton Canal District Master Plan identifies many funding options including tax credit equity, tax-exempt bonds, transit-oriented development funds, revenue proceeds from homeownership units, historic tax credits, and private equity. The Hamilton Canal District Master Plan highlights three case studies that successfully incorporated a number of these funding sources. All of these ideas will influence NewLeaf's recommendations for the District.

PLANNED-UNIT DEVELOPMENT (PUD)

The following case study provides helpful background information about the successful implementation of Planned-Unit Development.

ASSEMBLY SQUARE DISTRICT – SOMERVILLE, MA

INTRODUCTION: PURPOSE OF PLAN

This plan is the culmination of the effort of Vanasse Hangen Brustlin, Inc. (VHB) to design, re-zone, market, and redevelop the Assembly Row area of the Assembly Square District within the City of Somerville, MA.

LOCATION: DESCRIPTION OF PLAN AREA

The Master Plan covers an approximately 56.2-acre area known as Assembly Row within the Assembly Square District of the City of Somerville. The Assembly Square District is located on the industrial site of a former Ford Motor Company assembly plant (Somerville Assembly) and a Boston and Maine Railroad spur. It encompasses the area bounded by the Mystic River, the City of Boston's border, the I-93/Route 38 corridor, and Route 28.

CONTEXT: WHY IS THE PLAN NEEDED?

The area covered within the PUD includes the area of the former Somerville Assembly of the Ford Motor Company, which closed upon the failure of Ford's Edsel Division in 1958. In 1979, the City declared the Assembly Square District blighted and substandard, and adopted the Assembly Square Revitalization Plan, a 20-year urban renewal plan, in an effort to assist in redevelopment. The plan focused on retail. The impetus was the conversion of the former auto assembly plant to the Assembly Square Mall. With the demise of the mall, a 2000 planning study envisioned a 24-hour mixed-use district of residential, retail, office, cinema, restaurant, hotel, and recreational open space uses.

In 2005, Federal Realty Investment Trust (FRIT), a Maryland-based real estate investment trust and developer, purchased the defunct Assembly Square Mall along with other properties in Assembly Square. FRIT quickly redeveloped the existing mall into the Assembly Square Marketplace with numerous retail stores. In 2012, FRIT broke ground on two residential apartment blocks, a new main street, and a new MBTA station.

GOALS & GUIDELINES OF THE PLAN: WHAT IS THE PLAN SUPPOSED TO ACHIEVE?

The Master Plan is based upon the following four principles:

1. Create a balanced mixed-use design including retail, commercial, and residential that will create jobs, increase tax revenue, and improve the quality of life for Somerville's residents.
2. Transit-oriented design that incorporates dense, active ground-floor uses as well as pedestrian-and bicycle-friendly streetscapes to leverage the site's transit opportunities and mass transit connections. These will maximize the site's appeal as a major employment center, visitor destination and residential neighborhood.
3. Focus development around new pedestrian-oriented public places that, when combined with the streetscape environment, design the mixed-use framework of the project. The public open spaces serve as green oases, social gathering points, event venues, natural extensions of the Mystic River Reservation, Project gateways, and locations for other outdoor activities.
4. Improve access to the waterfront that incorporates direct pedestrian, bicycle, transit, and vehicular access to an enhanced Mystic River waterfront to increase recreational opportunities for Somerville residents and visitors while restoring and improving riparian habitat. Improvements to the waterfront open space and activation of the waterfront by residents, employees, and visitors within the Project Site will result in a vibrant community resource

LAND USE TOOLS & TECHNIQUES: WHAT TOOLS AND TECHNIQUES ARE PROPOSED?

The major technique utilized is planned-unit development (PUD). PUD's built-in flexibility allows for a diverse mixture of uses, building forms, and design standards which in turn creates a vibrant transit-oriented district.

DATA: WHAT DATA IS USED OR NEEDED FOR THE PLAN?

The project narrative did not specifically mention any data that was utilized for the development of the PUD. It is implied that the developer and the City drafted a narrative based upon common factors of the community and market-forces.

DESIGN PRINCIPLES: ARE ANY OFFERED?

The site's overall design seeks to minimize environmental impacts by locating development on previously paved and/or otherwise disturbed land. This allows for a continued growth of any underlying native vegetation and allows the developer to incorporate such growth into the design plan to create a more natural and inviting site.

In addition, the pedestrian-based building design palette envisions active, first-floor spaces in order to create a friendly, inviting, and “enclosed” atmosphere that contributes to a sense of place for visitors and residents alike.

APPLICABILITY TO YOUR MA MUNICIPALITY: HOW DOES THIS PRECEDENT INFLUENCE YOUR EVALUATION?

The Assembly Square District Plan offers a multitude of ideas for the Turners Falls Canal District. One of the major aspects is the incorporation of development phases. The scale of this site dictates that successful redevelopment does not happen overnight, and phased redevelopment is a key proposal for the District for similar reasons.

Another major theme is the desire to increase access to the local water body (Mystic River) into development plans. The citizens of Turners Falls express similar desires, which are reflected in the Client's directive to include recreational uses within the District Plan. These uses supplement recommendations for greater Connecticut River access to be negotiated in the FERC relicensing process. All of these ideas will influence our recommendations for the District.

DISCUSSION

FERC RELICENSING PROCESS

The Client has expressed this District Vision Plan comes at an immensely important time for the Town. At the time of the development of this District Vision Plan,

FirstLight, the power company that owns that Power Canal is going through their FERC relicensing process.

The Federal Energy Regulatory Commission (FERC) is an independent federal agency that oversees, evaluates, and approves the operation of non-federal hydroelectric projects (Federal Energy Regulatory Commission, 2012). Projects may request an original license (for a brand new project), or a relicense (for an existing project). FirstLight's Power Canal is an existing hydroelectric project under the jurisdiction of the relicensing process. All projects have a license term that indicates the project's operational timeframe. An existing project's license term may be between 30-50 years, depending on the cost of any developmental or environmental modifications that are requested (2012, p. 4). The Client has stated that the FirstLight license term is 40 years, and this District Vision Plan coincides with the early stages of FirstLight's relicensing process.

The Client has stated that the relicensing process offers the Town a prime opportunity to negotiate modifications that would enable successful redevelopment of the District, as well as address concerns voiced throughout the community noted within the Livability Plan regarding greater recreational opportunities and River access. Any modifications successfully negotiated during the relicensing process would be funding by FirstLight as a condition of relicensing, which allows the Client to approach the process with a set of possible ideas or items for negotiation that would enable District redevelopment that does not require municipal funding. This makes the relicensing process paramount to successful District redevelopment. While the relicensing process is certainly not the sole lynchpin, it offers the greatest opportunity for the community and the Client to negotiate for items or ideas with wide reaching benefit. In addition, the FERC process involves multiple public comment sessions, which enables the community to engage in the process. Appendix V contains NewLeaf's recommended negotiation items. The Recommendations and Implementation Plan related to this discussion can be found at the end of this chapter.

PLAN ELEMENTS

The following section addresses the following plan elements (or chapters): land-use, planned-unit development, phased development, selective demolition, associated

maps, permitted uses, current procedure review, housing, natural and cultural resources, open space, and circulation.

LAND-USE

The Land-Use Element (or chapter) is the most important element of the District Plan. The District Plan's technical framework guides redevelopment in a manner that is consistent with the District Vision. The Land-Use element also links to the other elements of the District Plan, thereby providing a complete redevelopment strategy for the District. The District's Vision of "local innovation" with a later emphasis on "adventure tourism" reflects the Client's directive of a mixed-use district that incorporates a variety of land-uses consistent with the community's vision reflected within the Livability Plan. The Land-Use element will highlight appropriate uses which will fully realize that Vision.

The District's industrial past, coupled with the Client's desire to retain and incorporate the existing industry to the greatest extent possible, is a focal point for potential redevelopment uses. As such, the uses within the existing HI zone will form the basis for designating appropriate land-uses. The included Permitted-Use Table section details specific uses allowed within the District (Table 6).

Feedback gathered from NewLeaf's stakeholder interviews shows that the uses found in standard mill redevelopment projects may not be appropriate for the District. Concerns regarding limited vehicular access, proximity to an active industrial facility, as well as existing housing stock and a unique business environment heavily influenced our discussion.

The FirstLight Open Space property at the District's northern end represents a unique opportunity to codify recreational use within the District. While FirstLight maintains the area, it is not advertised as publicly accessible and many residents are unaware of its existence. While the inclusion of recreational use would initially increase public awareness, it would also be a catalyst for increased utilization of the District's northern end. Increased usage over time would foster a connection between the adjacent Downtown and Unity Park, as well as serve as a recreational anchor point for the District's proposed connection to the Canalside Rail Trail. Finally, recreational uses on

the northern end could foster the creation of a “destination,” especially with the proposal of a future observation deck on the Indeck Coal Silo.

Industry has a long and well-documented presence in the District. The Client has requested that the District Vision Plan continue to encourage and foster that presence. While industry may not have as heavy a presence as it did in previous decades, its existence serves as an integral compliment to include Turners Falls Paper in the redevelopment process. In addition, light-industrial uses provide the facilities and capacity for artisanal entrepreneurs that have been attracted to the area in recent years.

Additional feedback has provided insight into a unique business situation in the area. In recent years, business owners attracted by lower overhead costs have relocated to Turners Falls. As their businesses grew and they sought larger facilities, they found a lack of available mid-sized commercial space. For example, one stakeholder shared their knowledge of a financial institution in the Turners Falls Airport Industrial Park that had outgrown their space, but were unable to move within the community due to the lack of mid-sized commercial space. The stakeholder expressed that the inclusion of commercial uses within the District would be doubly beneficial in that it provided necessary space for growing businesses while simultaneously freeing up space in the industrial park.

Although residential uses did not historically exist in the District, the Client expressed interest in including them as a means to attract artisanal entrepreneurs, as well as addressing a unique housing situation similar to the abovementioned business situation. The Client had expressed there was a lack of market-rate housing units near the Downtown area. Given the District’s adjacency to Downtown, rectifying this situation could draw greater investment into the Downtown area while providing solutions to an identified housing gap within the community. Several stakeholders noted that residential uses should constitute a smaller percentage to the other uses listed for a number of reasons including limited vehicular access and proximity to an active industrial facility. Balancing these concerns with the District Vision of a “non-traditional mill redevelopment project” that primarily addresses identified local needs, residential uses will be included within the District, but to an extent that balances the identified concerns above.

The Recommendations and the Implementation Plan related to this discussion can be found at the end of this chapter.

MASTER PERMITS & PLANNED UNIT DEVELOPMENT

Planned-Unit Development (PUD) is a form of development that incorporates a mix of residential and nonresidential uses in one unified site. PUD combines residential, retail, office, and public institutional uses in a compact and pedestrian-friendly design (Figure 81). PUD creates opportunities to live and work close to shopping and services. In addition, placing housing and jobs in close proximity reduces the number of vehicle trips between work, home, and shopping (Pioneer Valley Planning Commission (PVPC), 2015).

THE ASSEMBLY ROW PROJECT

Construction is scheduled to begin next year on a mixed office, residential, and retail project with up to 50 outlet stores at street level.

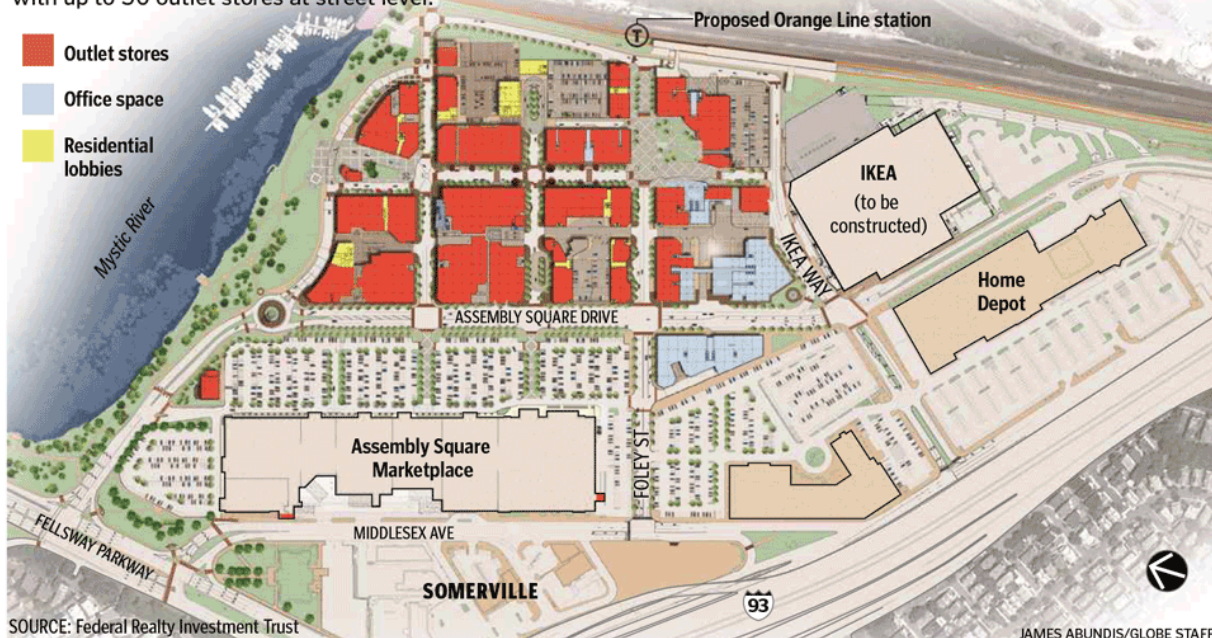


Figure 81. PUD in Assembly Row, Somerville, MA

As a development strategy, PUD can allow greater design flexibility, and can promote redevelopment projects to reflect the needs and character identified by the community. PUD also provides the opportunity to achieve flexibility in architectural design, a mix of compatible land-uses, and the preservation of natural, cultural, or

historic features that are otherwise difficult to achieve using traditional, lot-by-lot zoning, (Pioneer Valley Planning Commission (PVPC), 2015).

PUD offers an ideal development capability for the District. One of the Client's strongest directives was to retain existing industry (Turners Falls Paper) to the fullest extent possible. The District Vision reflects this ideology, which the District Plan can achieve through the flexibility of PUD. The Land-Use element and the Permitted-Use Table illustrate this flexibility through the incorporation of compatible uses complementary with Turners Falls Paper. PUD grants the Client significant capacity to retain Turners Falls Paper as an invested neighbor in any redevelopment proposal.

This flexibility contributes to the determination of appropriate uses for the District. The District Vision illustrates the District's overall identity. The Permitted-Use Table in the District Plan outlines a variety of land-uses that, as a whole, accomplish this overall vision. PUD enables a compatible variation that might not otherwise coexist under standard zoning. Focusing on the district as a whole, as opposed to a lot-by-lot basis, creates a district where uses are not isolated, but complementary and interconnected. This in turn fosters a sense of uniqueness and identity for the District.

The Current Procedure Review section below discusses a currently proposed PUD ordinance. Recommendations and the Implementation Plan related to this discussion can be found in the Recommendation and Implementation sections at the end of this chapter.

PHASED DEVELOPMENT

In addition, PUD's flexibility offers an opportunity to implement phased development. NewLeaf feels strongly that redevelopment occurring in phased sequencing is appropriate and ideal given the size and physical characteristics of the District. The redevelopment of the former Digital Equipment Corporation headquarters in Maynard, MA applies phased development for similar reasons, as illustrated in Figure 82.



Figure 82. Phased development plan for Main & Mill mill redevelopment project in Maynard, MA

One particular aspect of phased development is targeting development on parcels along a timeline. For example, the Franklin County Regional Housing and Redevelopment Authority (FCHRA) is partially located in the historic former Keith Paper Storehouse. NewLeaf recognizes the building’s historic character, its vehicular capacity, and its potential to be a “visual gateway” for the District and Turners Falls.

FCHRA has expressed interest in relocating within Turner Falls as their demand for space has outstripped their current location’s capacity. While no suitable spaces have been located, the abovementioned amenities make the storehouse a prime redevelopment parcel although immediate redevelopment is impossible until the FCHRA has relocated. The “timeline” of phased development can be revised as development opportunities arise. FCHRA’s departure from their current site could prioritize the Storehouse’s redevelopment, which Figure 83 illustrates.

Recommendations and the Implementation Plan related to this discussion can be found in the Recommendation and Implementation sections at the end of this chapter.



Figure 83. Drawing show the FCHRA property restored to its historic form

SELECTIVE DEMOLITION

Stakeholder feedback has indicated that preferences for redevelopment of the Strathmore Mill Complex are about evenly split between total demolition and total renovation. One stakeholder idealized total renovation but recognized that potential costs relative to the sheer size of the Complex would make that route implausible. NewLeaf feels that total demolition would be a disservice to the community, as total demolition would completely erase the District's historic heritage. At the same time, NewLeaf similarly recognizes the impracticality of total renovation (in terms of both cost

and supply and demand). NewLeaf believes that selective demolition of the Complex's "least historic" structures would be an effective compromise, as Figure 84 illustrates.

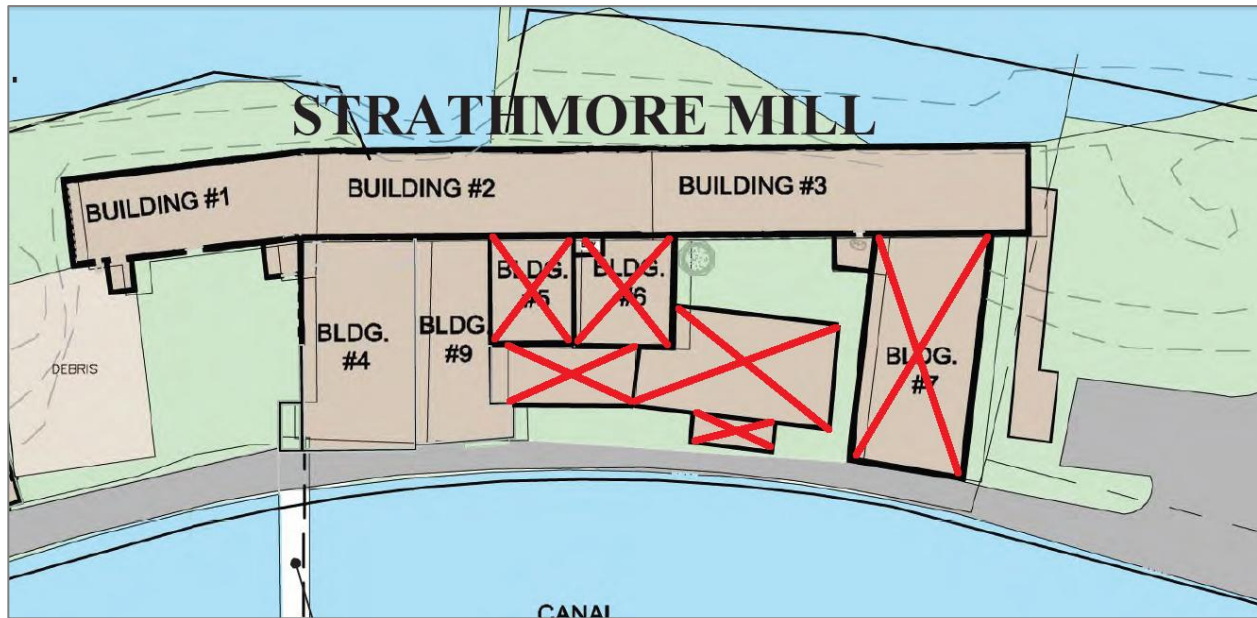


Figure 84. Selective demolition of the "least historic" buildings may be an appropriate redevelopment strategy

The remaining structures would represent the Complex's "core" historic heritage, as Figure 84 illustrates. Recommendations and the Implementation Plan related to this discussion can be found in the Recommendation and Implementation sections at the end of this chapter.

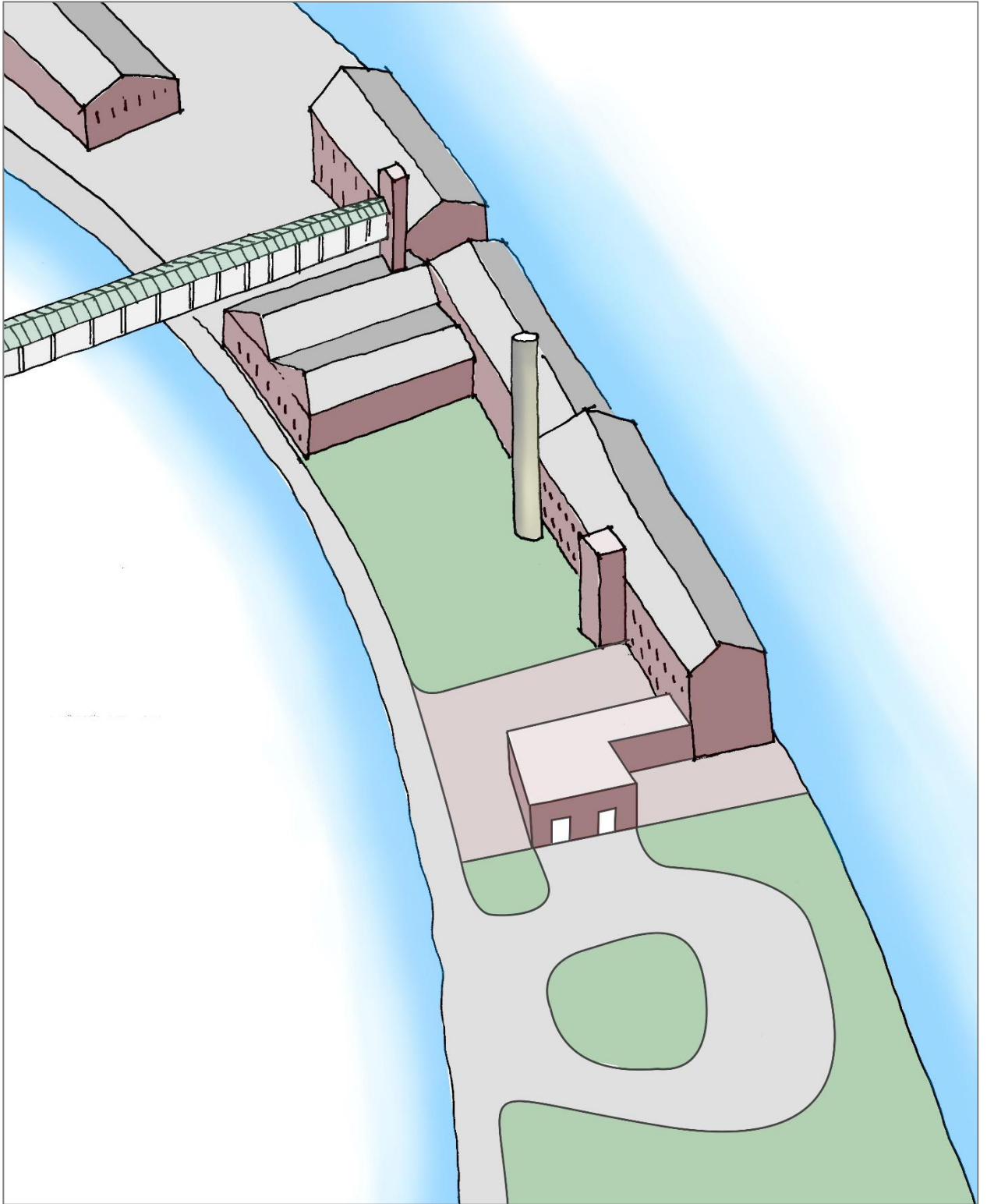
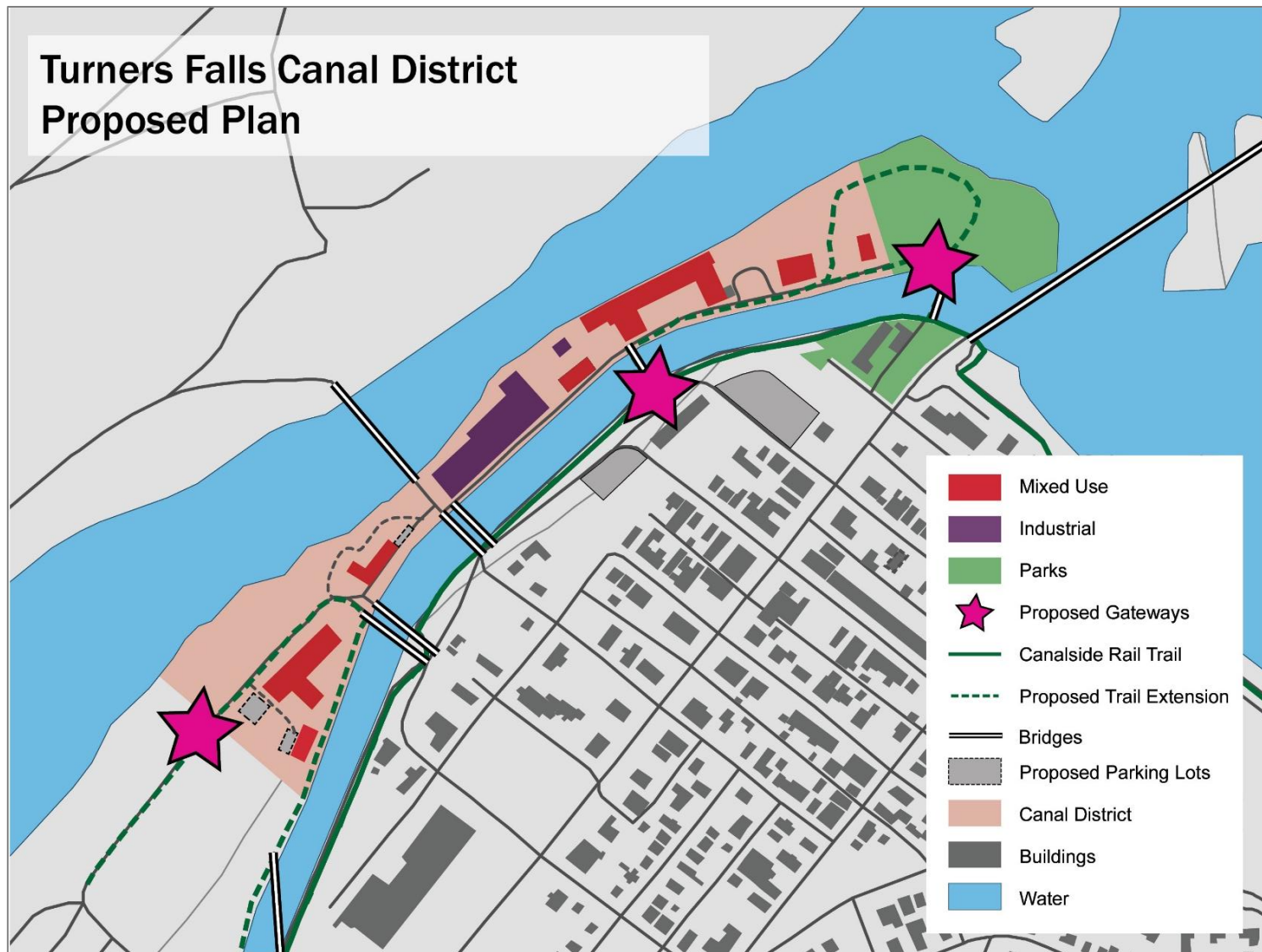


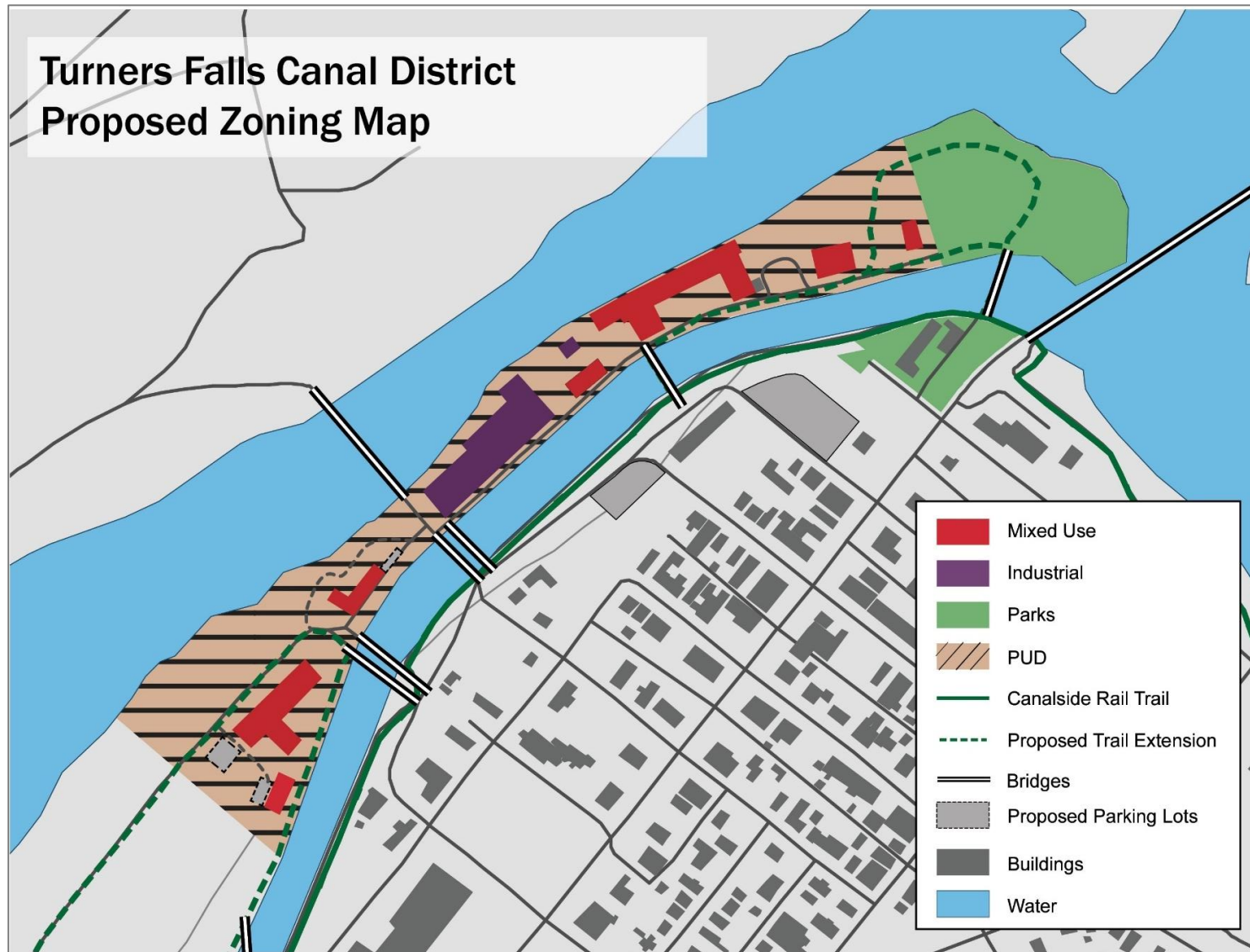
Figure 85. Drawing of the Strathmore Mill Complex after selective demolition

ASSOCIATED MAPS

The Client has asked NewLeaf to create a land-use map and a zoning map of the District and include them within the Canal District Vision Plan. The maps are included below.



Map 9. Proposed District Plan



Map 10. Proposed Zoning Map

PERMITTED-USE TABLE

The Client has asked us to create a new, or modify an existing Permitted-Use Table that designates by-right uses as well as those that require discretionary approval. The District's industrial past, as well as the intent to retain and incorporate the existing industry to the greatest extent possible, is a focal point for potential redevelopment uses. As such, the uses within the existing HI zone will form the basis for designating appropriate land-uses. Recommendations and the Implementation Plan related to this discussion can be found in the Recommendation and Implementation sections at the end of this chapter.

CURRENT PROCEDURE REVIEW

The Client has asked NewLeaf to conduct a review of the Town's current zoning and entitlement procedures and indicate any necessary improvements. These improvements would encourage District redevelopment. As previously discussed, NewLeaf examined the potential for the Town to implement PUD as a redevelopment tool. As part of the procedural review, NewLeaf discussed recommending either PUD, or adjustments to the District's existing HI zone designation. While the existing HI designation contains many uses and requirements that coincide with the Client's redevelopment ideas for the District, NewLeaf had to consider the implications of designation adjustments.

While specification adjustment seems relatively straightforward compared to implementing a new zone designation, changes to a zone designation are applicable to *any future* projects that have that designation. This includes *any property within the Town* that may seek a zone change to take advantage of adjustments made to benefit this particular District. This may not be appropriate for other properties within the Town and at worse, could harm neighboring or nearby parcels.

In addition, feedback from stakeholder interviews suggest that while the existing procedural review process is simple, the relief process is almost *too* simplistic and may not fully adhere to the "spirit of the relief process;" which is meant to ameliorate a practical difficulty or particular or unique hardship. Implementing PUD as opposed to designation adjustments would absolve future relief issues in that the initial creation of

the PUD would take into account a majority of the ideal uses for the District. The District Vision influences ideal District uses reflected in the Permitted-Use Table section of this chapter.

In order to implement PUD as a redevelopment tool, the Montague Board of Selectmen would need to enact an enabling ordinance that would allow PUD to occur. The Planning and Conservation Department submitted a preliminary draft dated November 17, 2016 of the Planned Unit Development Overlay District to the Board of Selectmen for review. The adoption process would occur in a similar fashion that enabled the HI district in 2001. Recommendations and the Implementation Plan related to this discussion can be found in the Recommendation and Implementation sections at the end of this chapter.

HOUSING

The Housing Element outlines the strategies and policies regarding residential uses within the District. The regional housing market exhibits high occupancy rates, and steady rent and sales price appreciation. The region remains a favorable location for residential investors due to its location and economic strength.

The housing stock in Turners Falls accounts for nearly half of the available stock throughout the Town. According to the 2015 Montague Housing Plan, the number of owner-occupied and renter-occupied units in Turners Falls is roughly half-and-half, with renter-occupied units representing 53% (Town of Montague, MA, 2015). In addition, the available housing stock in Turners Falls includes a rich variety in unit designs. Single-family units represent a little over one-third (38%) of available stock, two-and three-family units represent just over a quarter a piece (27% and 22% respectively), and multi-family units the remaining 13%, (2015, p. 15). Finally, the Downtown area has over 200 permanently protected, affordable housing units.

The Housing Plan mentions:

Montague officials recognize that despite the diversity and general affordability of housing in Town, some residents still have burdensome housing costs or face other significant housing issues. For example,....23% of residents in the Village

of Turners Falls live below the poverty line and have special difficulties finding housing and affording housing-related expenditures. Related concerns are the age and condition of some of the older housing stock in the downtown areas, and the need to maintain and preserve these structures. Older housing is often more affordable than newer homes. The Town of Montague is working with its community partners to develop new affordable housing, improve the quality of existing affordable units and address other housing issues in the Town,” (2015, p. 6).

Although residential uses did not historically exist in the District, the Client expressed interest in including them as a means to attract artisanal entrepreneurs, as well as addressing a unique housing situation similar to the abovementioned business situation. The Client had expressed there was a lack of market-rate housing units near the Downtown area. Given the District’s adjacency to Downtown, rectifying this situation could draw greater investment into the Downtown area while providing solutions to an identified housing gap within the community. Several stakeholders noted that residential uses should constitute a smaller percentage to the other uses listed for a number of reasons including limited vehicular access and proximity to an active industrial facility. Balancing these concerns with the District Vision of a “non-traditional mill redevelopment project” that primarily addresses identified local needs, residential uses will be included within the District, but to an extent that balances the identified concerns above.

Recommendations and the Implementation Plan related to this discussion can be found in the Recommendation and Implementation sections at the end of this chapter.

NATURAL & CULTURAL RESOURCES

The Natural and Cultural Resources Element outlines the strategies and policies regarding the promotion, protection and preservation of significant natural and cultural resources within the District. The protection of these resources is a common theme expressed throughout stakeholder feedback as well as the Livability Plan. While the

policies highlighted in this element are protective in nature, they are *not* designed to prevent development. These policies merely seek to guide development in ways that are compatible with protecting these significant resources as a legacy for future generations. The District's historic heritage is an important, defining aspect of the community and not only provides a physical link to the past, but also helps shape the community's current identity and future vision.

The District's adjacency to the Connecticut River and the Power Canal offer spectacular views and recreational opportunities for the community. The recreational access point at the District's northern end enhances these recreational opportunities. However, public river access –both visually and physically– have been largely inadequate for several decades. Initially due to a greater industrial presence succeeded by property owners that do not want increased foot traffic, greater river access has been a focal point within the community. This discussion, initially represented within the Livability Plan, has reached greater volume now that the power company that owns the Power Canal and open space on the District's northern end is going through the Federal Energy Regulatory Commission's (FERC) relicensing process. Greater river access with complementary recreational uses, would address the protection and preservation of the District's natural resources.

While adaptive reuse of the District's historic structures preserves Turners Falls' industrial heritage, inclusion of the District's Native American heritage has not played a significant role in the past decades. The Client has expressed interest that the redevelopment process incorporates the significant Native American heritage as a dual-homage to the District's cultural significance. The Livability Plan reflects this, and feedback suggested the "...pursuance of a Native American Cultural Park" (2013, p. 31). The funding section of the Key Public Infrastructure and Investments chapter addresses funding for this proposed Cultural Park. NewLeaf fully recognizes this incorporation opportunity and suggests this plan move forward as part of the District redevelopment strategy.

These policies are part of a larger plan to mark the District's northern end as a destination area and recreational anchor point providing connections between the adjacent Downtown and neighborhood parks. Together with the District's proposed connection to the Canalside Rail Trail and a future observation deck on the Indeck Coal

Silo, the creation of a destination area would greatly enhance the resource preservation policies of this element. Recommendations and the Implementation Plan related to this discussion can be found in the Recommendation and Implementation sections at the end of this chapter.

OPEN SPACE

The Open Space Element guides how recreational uses can complement redevelopment strategies for the District. While open space does not automatically infer recreational use, the dual usage of open space as a passive or even active recreation site enables a sense of community connection and ownership of the area.

As discussed in the previous sections, the incorporation of a Native American Cultural Park and increased communal River access, create a “destination” at the District’s northern end. This “destination” is enhanced by additional proposals to connect the District to the Canalside Rail Trail and the creation of scenic viewpoints atop the Indeck Coal Silo and the Strathmore RiverView. This destination coincides with the District Vision’s later emphasis on “adventure tourism.” The North End’s emphasis on open space will attract in residents and regional visitors alike with greater River access –physical and visual–the Native American Cultural Park, and the Rail Trail extension.

The inclusion of open space in the District’s northern end contributes a greater role in the surrounding area by catalyzing reactivation through increasing communal awareness and fostering connections. Feedback within the Livability Plan indicates residents’ desires to activate the open space near the Discovery Center directly across the Power Canal from the District, (Dodson & Flinkler; Howard/Stein-Hudson Associates, 2013, p. 28). The incorporation of open space in the District’s adjacent area could serve as an activation measure for the Discovery Center space in that accessing the former requires crossing the latter. The creation a dog park in the District’s North End (a sentiment expressed within the Livability Plan (2013, p. 31)), coupled with the creation of a node at the junction of the Rail Trail and Discovery Center (complete with wayfinding signage) would provide ample opportunity for increased utilization of the Discovery Center. This cross-Canal connection would create a gateway to the District’s North End.

The Recommendations and Action Items based upon this discussion are in the Recommendation and Implementation sections at the end of this Chapter.

CIRCULATION

The Circulation Element is the Plan's framework that guides movement, or the "ebb and flow" throughout the District. The Client and all stakeholders interviewed unanimously agree that access to the District and limitations to circulation were the primary barriers to redevelopment. In addition, one stakeholder raised safety concerns regarding pedestrian and bicycle usage in close proximity to an active industrial site. This Circulation element will address these concerns as well as overall concepts for vehicular and non-vehicular circulation.

NewLeaf identified vehicular access to the District improved as you travelled south towards the Patch neighborhood. Access to the northern end is limited to the IP Bridge that functions as a pedestrian bridge with emergency vehicular access capacity. Canal Road, a private, 10-ft. wide access road runs the length of the canal embankment and ends at the 5th Street Bridge and Turners Falls Paper. Canal Road provides access to the former Indeck Co-Generation Plant property and the Strathmore Mill Complex with the latter also serviced by a tunnel that runs beneath Turners Falls Paper. FCHRA building and the former Railroad Salvage area provide a greater level of vehicular access. The former has frontage on 5th Street where the latter has over 100' feet of frontage on 6th Street.

In order to provide adequate access for emergency medical services and future occupants, NewLeaf acknowledges the selective demolition of less-historic structures of the Strathmore Mill Complex will provide a turn-around/staging area for service and delivery vehicles and ADA-required parking. Canal Road will service this area, and will continue to function as the primary delivery corridor for Turners Falls Paper. NewLeaf emphasizes the available off-site parking in order to maintain minimal vehicular trips in and out of the District. This emphasis, along with uses that generate minimal vehicular trips will help alleviate stakeholder concerns regarding safety and traffic within the District.

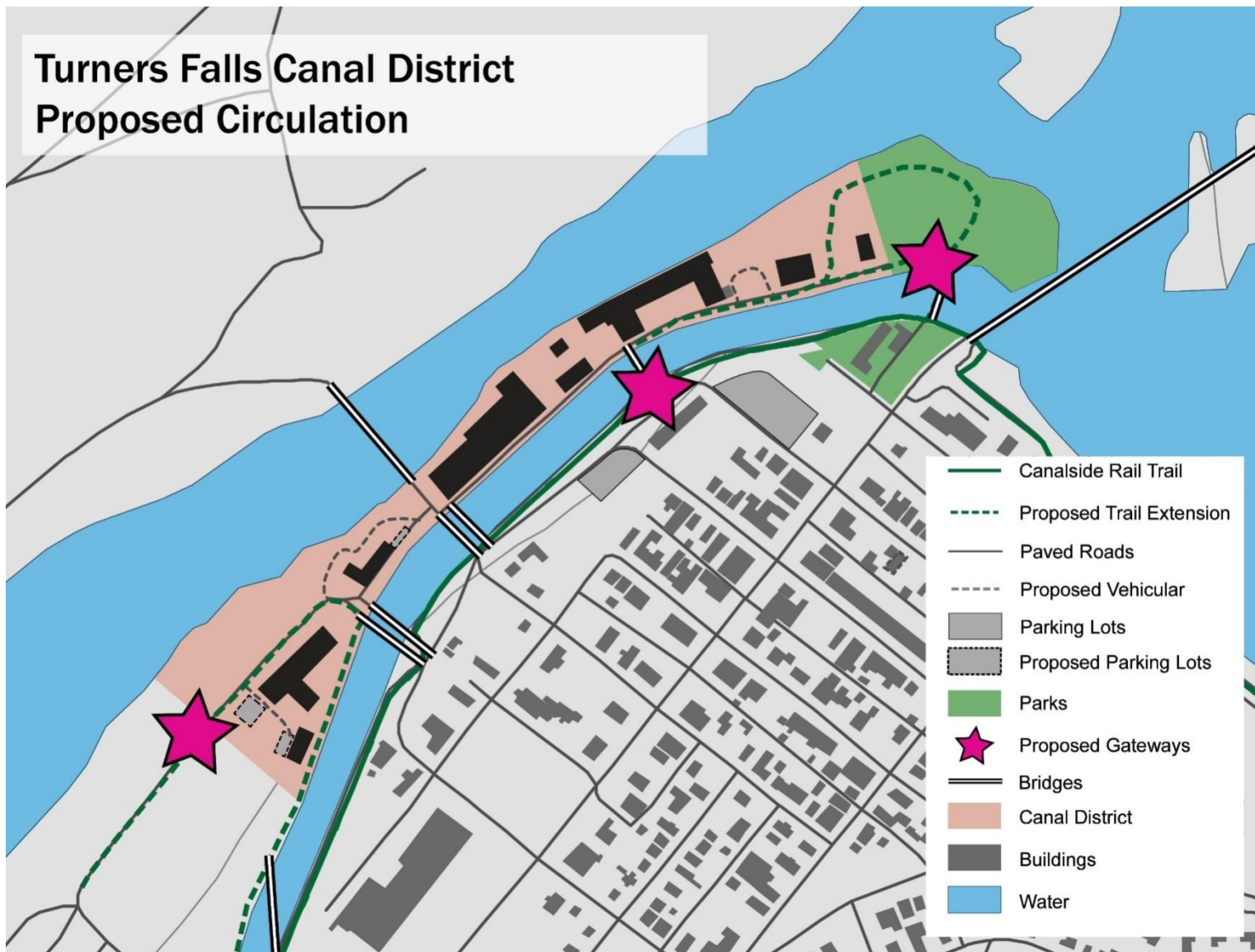
NewLeaf envisions service and delivery trips (which support the District Vision with uses identified in the District Plan) will be limited to the area between the 5th Street

intersection and the northern boundary of the Strathmore Mill Complex. This supports the District's noted "intensity gradient" of concentrated activity in the District's center, (Turners Fall Paper to Strathmore Mill Complex) with open space to the north and decreased intensity from the FCHRA to the Railroad Salvage area. District redevelopment will require infrastructure upgrades to service envisioned circulation patterns, and the Key Infrastructure and Investments Chapter discuss these requirements.

PEDESTRIAN ACTIVITY

While the designated uses limit vehicular trips in and out of the District, our Client directed us to incorporate non-vehicular access into the redevelopment strategy as well. The District is adjacent to, and is a part of, the Downtown area. However, the Power Canal and redevelopment neglect have isolated the District. As part this Plan, NewLeaf intends to incorporate non-vehicular access as a means to increase awareness and community buy-in of the District.

The popular Canalside Rail Trail runs along the Downtown side of the Power Canal towards Deerfield. NewLeaf proposes integrating the District within the Rail Trail to provide an "alternate" route for Rail Trail travelers. The proposed gateway at the Indeck Property Bridge will serve as the extension's Northern entrance, and will continue along the canal embankment to the Strathmore Pedestrian Bridge. Travelers will access the reconfigured Pedestrian Bridge through the Strathmore Mill Complex, and can travel across to the District's proposed Central gateway in front of the Keith Apartments and down towards the redesigned 5th Street Intersection. Travelers can then choose to return to the existing Rail Trail, or access the proposed extension that will continue along the rear of the Railroad Salvage Annex building towards the Patch neighborhood. Travelers can again choose to return to the existing Rail Trail along the diagonal cross-Canal bridge beyond the District's southern end. Map 11 illustrates the District's proposed non-vehicular circulation plan.



Map 11. Proposed Circulation Plan

Extension of the Rail Trail will require the Town to negotiate within the FERC relicensing process to gain permanent public access easements on property along the District's canal embankment. The proposed Rail Trail extension will provide travelers with an interesting alternative route through the District, as well as creating connections to the Patch neighborhood and the Silvio Conte Center. The proposed extension creates community access to a number of proposed amenities on the District including:

- Open Space on the North End,
- Access to the Connecticut River and associated amenities,
- Native American Cultural Park,
- Dog Park,
- Indeck Coal Silo Observation Deck, and the
- Strathmore RiverView and associated public spaces

Finally, the proposed extension's configuration alleviates stakeholder concerns regarding pedestrian safety and their proximity to an active industrial site. Map 11 illustrates the configuration of the proposed Rail Trail extension and pedestrian circulation patterns. The Recommendations and Action Items based upon this discussion are in the Recommendation and Implementation sections at the end of this Chapter.

CASE STUDIES & PEER-REVIEWED RESEARCH

All of the abovementioned discussion topics, and this District Plan in general, are supported by relevant case studies and peer-reviewed research material. For access to individual sources in which any recommendation, discussion, or idea is promulgated, please refer to the Bibliography of this Plan for source material.

RECOMMENDATIONS

OVERALL

- Adopt PUD as a redevelopment strategy for the Canal District with Historic-Industrial as the base zone.
- Utilize phased development within PUD as a particular redevelopment tool
Phased development offers the Client and the future developer a manageable

and coordinated process that allows for the creation of a critical mass of investment that will drive later redevelopment stages.

- Explore possibility of implementing a special, District-wide tax assessment to address split-tax rate issue in Town.
- Utilize selective demolition to remove “least-historic” structures of the Strathmore Mill Complex. Selective demolition reduces the overall building footprint (which lowers overall redevelopment costs as well as creating needed space) while the “least-historic” targeting identifies the remaining structures that create the largest contribution to the historic heritage. NewLeaf acknowledges that while selective demolition is akin to separating Siamese twins, it represents the best solution to address competing issues.
 - These include Strathmore Buildings 5a, 5b, 6a, 6b, and 7.
- Retain truck-loading dock on Strathmore Building 3.
- NewLeaf recognizes these are visual-based suggestions, and recommend a full structural integrity analysis by an engineering consultant prior to any demolition work.
- Utilize the FERC relicensing process as a negotiation tool to:
 - Gain greater River access In particular, feedback within the Livability Plan suggested, “[the community] needs...places to swim...and...access to the River, including a boat launch,” (Dodson & Flinkler; Howard/Stein-Hudson Associates, 2013, p. 31).
 - Gain canal embankment easements in order to facilitate Rail Trail extension and guaranteed public safety access.

REGARDING PROPERTY OWNERS

- Turners Falls Hydro LLC – Town and property owner engage in discussion of continued operation within Strathmore Building 9.
- Railroad Salvage - Town takes property through tax title and develops RFP for property through Commercial Homesteading Act (already used on two sites). The Town should consider retaining historic footprint and design to greatest extent possible, as well as compatible uses for South End within said RFP.

- Franklin County Regional Housing and Redevelopment Authority – Based on findings, recommend if current owner moves, the Town should take possession of property and seek feasibility of removing non-historic addition and renovation of original historic structure. NewLeaf recognizes this is a visual-based suggestion, and recommends a full structural integrity analysis by an engineering consultant prior to any renovation work.

REGARDING LAND USE

Mixed-Use:

- Bldg. 1-3 Levels 1-3: Light-industrial
- Bldg. 1-3 Levels 4-6: Market-rate Residential / Commercial
- Bldg. 1 Levels 5: Public Spaces
- Bldg. 1 Levels 6: Public Spaces
- Bldg. 4: Commercial / Light-industrial
- Bldg. 2 or 3: UL: Market-rate Residential / Commercial
- FCHRA / Keith Paper Storehouse Building
- Commercial / Office Space
- Railroad Salvage

Open Space:

- Move Indeck property line North
- Consider extending the proposals identified in the Livability Plan (Native American Cultural Park, dog park)

Specific to the Strathmore Mill Complex:

Mixed-Use:

- LL: Commercial / Office Space
- UL: Market-rate Residential
- Railroad Salvage Annex
- Live / Work Space

IMPLEMENTATION PLAN

6 MONTHS

- Adopt proposed PUD Overlay District
 - This will provide the foundation for District redevelopment to begin.
- Engage in discussion of continued operation with Turners Falls Hydro LLC within Strathmore Building 9.
 - This will provide insight into whether tenant considered continued operation economically feasible.
- Take former Railroad Salvage main building property through tax title.
 - This will enable streamlined redevelopment of District's South End.
- Assist with identifying potential relocation spots for FCHRA.
 - This will help gain ownership of building for District redevelopment.

1-2 YEARS

- Engage in FERC relicensing process
 - Successful negotiation could provide great District redevelopment assistance as well as address concerns / ideas / suggestions highlighted in Livability Plan
- Hire engineering consultant to explore selective demolition and renovation recommendations
 - This will enable the identification of salvageable District structures.
- Explore possibility of implementing a special, District-wide tax assessment
 - This could address split-tax problem for mixed-use development and help in long-term District redevelopment.

3-5 YEARS

- Explore feasibility of conducting cleanup of former Indeck Co-Generation Plant site.
 - This will help make the area more visually appealing for the District's North End.

CHAPTER 7: PUBLIC INFRASTRUCTURE & INVESTMENTS



Figure 86. Strathmore Pedestrian Bridge after a snow storm

CLIENT DIRECTIVE

The Client has requested that NewLeaf identify key public infrastructure and investments by examining existing conditions and connections, while considering vehicular, pedestrian, and public safety access. The Client has also requested that NewLeaf recommend improvements to bridges and intersections.

BACKGROUND

The District, like many iconic New England mills, once thrived on new infrastructure that could support the demands of industrial uses. The loss of these vital industries led to a period of economic decay throughout the 1950s to 1980s. While this stagnation allowed Downtown's architecture to be preserved, the neglect of the District has negatively affected the condition of infrastructure and overall image of the area. The illegal "stripping" of the buildings for their valuable metals (copper), further

exacerbated the decline of remaining infrastructure and utilities. Successful revitalization of the District requires substantial infrastructure investment from a myriad of entities; discussion of these cost be included further in this section.

Currently, the Strathmore Pedestrian Bridge is the District's lifeline. Due to the bridge's non-compliance with the Americans with Disabilities Act (ADA), it is currently closed to pedestrians, but connects the District's active municipal infrastructure and utilities from the "mainland" to an operating business in the District. A committed developer for Strathmore Building 11 will move forward with the project, only if the bridge and infrastructure and utilities are upgraded to support the additional demands from proposed land-use. NewLeaf will further investigate sustainable and strategic infrastructure solutions aimed to maximize efficiency, and create economic collaboration between governments (federal, state, and local) and the private sector.

Under Massachusetts General Law Chapter 121B, an area must meet certain requirements to be considered as a substandard, blighted, or decadent area. The blight definitions is defined as, "an area which is detrimental to safety, health, morals, welfare, or sound growth of a community because of the existence of buildings which are out of repair, physically deteriorated, unfit for human habitation, obsolete, or in need of major maintenance or repair..." (MGL Ch.121B).⁴

Weston & Sampson was hired by FRCOG to conduct the public infrastructure assessment of the Slum and Blight Inventory on behalf of the Town. Results of the inventory illustrated that the District, or "Historic-Industrial District" met all necessary criteria (Franklin County Regional Council of Government, 2014). Of the assessed eight public improvements, the consultant found seven were in fair to poor condition (2014).⁵ The designation as a "Slum and Blighted Area" is important factor that will allow the town to apply for funding critical to the revitalization of the area, through a "signage and facade improvement program, infrastructure improvements, housing rehabilitation, and other actives that support neighborhood enhancement" (2014).

⁴ Under MGL Ch. 121B an area must have at least 25% of its properties experience one or more of the following conditions: physical deterioration; abandonment of properties; chronic high occupancy turnover rate; decline in property values; or public improvements throughout the area are in general state of deterioration.

⁵ Public Improvement inventory items included: Roadway; Parking; Sidewalks; Curbing; Street Lighting; Water; Sanitary Sewer; and Storm Drainage.

EXISTING CONDITIONS

The overall condition of the District and identified infrastructure has been studied extensively by respected engineering firms within the region, all reports are publicly available on the Town's website.⁶ Successful completion of the Client Directive requires an in-depth analysis of these reports that demonstrate strengths and weaknesses of the existing infrastructure and utilities. Similarly, the reports provide insight to potential funding mechanisms for redevelopment. The Massachusetts State Building Code guides and regulates the construction process, in addition to specific components such as fire protection systems (527 CMR), accessibility (521 CMR), energy conservation, plumbing and gas (248 CMR), and electrical wiring and equipment (527 CMR). The information included below, aligns with concepts included in the building code, but will not evaluate adherence to such regulations.

In 2005, Allied Consulting Engineer Services (ACES) performed a review of the heating, plumbing, fire protection, and electrical systems for the Strathmore Mill Complex (Allied Consulting Engineer Services (ACES, 2005). A secondary study (Fuss & O'Neill, 2008) noted utility changes to the Site after the fire destroyed Strathmore Building 10. These studies indicate age and poor condition of utility infrastructure within the Site would constrain redevelopment without significant improvement. Estimates alone for the replacement of the Strathmore pedestrian bridge, and reconfiguration of electrical systems on Site totaled roughly \$1.3 Million in 2008 dollars.

ACCESS

The following sections will discuss the existing conditions related to access to the District, which includes bridges and right of ways/easements.

BRIDGES

There are seven bridges that directly serve the District. There are an addition two that indirectly serve it. The following sections will detail the existing conditions of each bridge.

⁶ There have been five studies directly related to infrastructure, 14 related to the District.



Figure 87. IP Bridge

The IP bridge is located at the northern-most end of the site and is owned by FirstLight. Its initial construction date is unknown. The Town possesses an access easement across the bridge. The bridge has a 13-ton weight limit and serves only as a pedestrian bridge; however, emergency and maintenance vehicles can be supported. As of 2016, the IP bridge is the only lawful way of accessing the FirstLight open space and Connecticut River. The bridge is an important future consideration for pedestrian and continuing the bicycle Canalside Rail Trail.

STRATHMORE PEDESTRIAN BRIDGE



Figure 88. Strathmore Pedestrian Bridge

The Town has investigated the historic significance of the Strathmore Pedestrian Bridge, relative to the historic Strathmore complex, and has determined that bridge is not considered part of the complex. As illustrated previously, the Strathmore Pedestrian Bridge acts as the District’s “life-line” to Turners Falls via Canal Street. Due to its non-compliance with ADA regulations, the bridge has been closed to public access. Similarly, it provides key infrastructure services (sewer and water) to existing property owners in the District. Several studies conducted have discussed the need to upgrade the bridge to comply with modern accessibility standards; however, that future designs should retain the bridge as a conduit for the existing municipally supplied infrastructure.



Figure 89. 5th Street Pedestrian Bridge

The riveted through-truss 5th Street Pedestrian Bridge, built in 1912 is adjacent to the 5th Street vehicular Bridge. This pedestrian bridge, like many others on site, were allowed workers to access to the canal site; however, riveted pedestrian-only bridges are uncommon and denote the importance of Massachusetts's milling history. The sidewalk which crosses the Canal is non-compliant with ADA requirements, as the western side of the bridge has two steps. The stairs closest to Turners Falls Paper are beginning to deteriorate.



Figure 90. 5th Street Bridge

The two lane 136-foot pony truss bridge constructed in 1954 allows motorists to pass over the Power Canal. The bridge accommodates traffic from White Bridge and traffic from 5th Street. Even though the bridge was rehabilitated in 1992, as defined by the U.S Federal Highway Administration, the bridge is structurally deficient. The National Bridge Inventory has identified this bridge as a National Historic Bridge. It will need to be completely replaced or significant structural repairs shall be required.



Figure 91. White Bridge over the Connecticut River

The 500-foot concrete and steel bridge connects Greenfield to Turners Falls over the Connecticut River. The bridge contains a narrow sidewalk on the east side of the bridge that terminates in front of Turners Falls Paper. In 2015, MassDOT - Highway Division completed a rehabilitation project on this bridge. Despite these rehabilitation efforts, as defined by the U.S Federal Highway Administration, the White Bridge has been classified as functionally obsolete. As of 2016, the bridge has been identified for replacement following the rehabilitation of the General Pierce Bridge, further south the River, which is scheduled for 2019. The White Bridge also serves as the conduit for the provision of fiber-optic telecommunications services to Turners Falls.

DEFUNCT 6TH STREET BRIDGE



Figure 92. Defunct 6th Street Bridge

The defunct 136-foot 6th Street Bridge was originally built in 1912 by Eastern Bridge and Structural Company of Worcester, MA. The bridge has since been fenced off on both ends of the Canal, connecting the FCHRA parking lot to 6th Street. This bridge has been bypassed and replaced by a more modern bridge. This bridge would be a good candidate for potential reuse and as a historic bridge for non-motorized traffic. The active gas line that runs across the west side of the bridge will need to be shut off and/or reconnected if the bridge is to be removed, modified, or retained.

6TH STREET BRIDGE

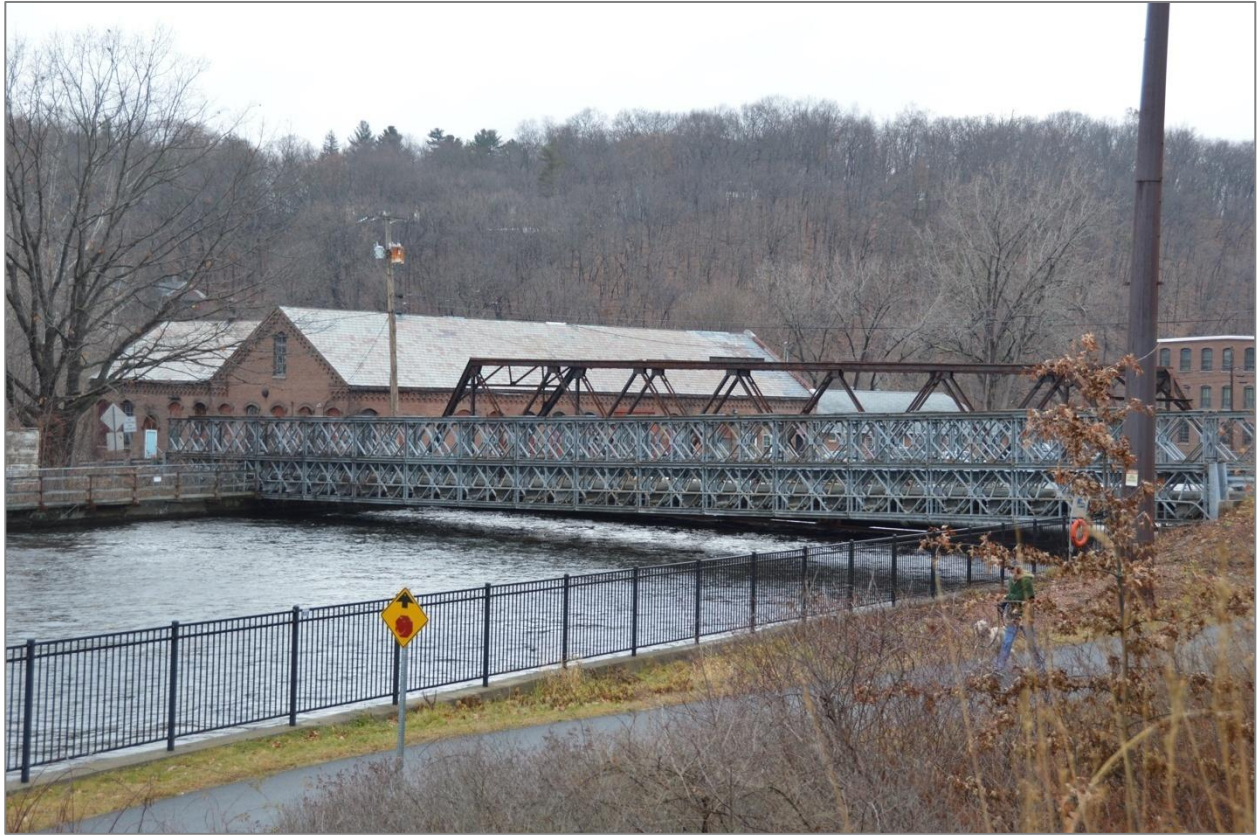


Figure 93. 6th Street Bridge

In 1988, a temporary double-story Bailey Truss bridge was erected by the Army Corps of Engineers to replace the now defunct 6th Street Bridge. The bridge currently accepts one-way traffic from Canal Street onto the District, leading to the Railroad Salvage area and Patch Neighborhood. All through-traffic in the District must exist by means of 11th Street Bridge in the Patch Neighborhood. As the temporary bridge, it is at the end of its lifespan and due for replacement.

RAILROAD BRIDGE



Figure 94. Railroad bridge across the Canal

The Railroad Bridge, which connected rail services to the eastern side of the District, diagonally crosses the Canal from the corner of FirstLight's property, to the Canalside Rail Trail near J Street. Currently, FirstLight is the owner of this structure. The bridge remains unused and has significantly deteriorated since its usage during the District's heyday.

11TH STREET BRIDGE



Figure 95. 11th Street Bridge to the Patch

Built in 1915, the 11th Street Bridge is a critical connection from the mainland to the Patch residential neighborhood on the southern end of the island. The 167-foot bridge serves vehicular traffic with a roadway width of 27 feet. Six-foot wide sidewalks run between each pair of trusses.

RIGHT OF WAYS

The following sections will detail the two Rights of Way that provide as access to the District.

CANAL ROAD



Figure 96. Canal Road looking south toward 5th Street

On the northern end of the District, Canal Road, sometimes referred to as the Canal Access Road, runs from the northwest corner of the 5th Street Bridge along the Canal, passing Turners Falls Paper, the Strathmore Mill Complex, IP Property, and terminates at the entrance to the IP Bridge. FirstLight maintains ten-foot easement along the road closest to the fence that traverses the Canal's edge. FirstLight has restricted access along this road with a locked chain-link fence at the property boundary between the open space parcel and the Town's Indeck Property, despite the Town owning this land. Turners Falls Paper has an easement on the remaining area of Canal

Road in front of their mill. The eight-inch water suppression main runs under Canal Road, terminating in front of the Strathmore Mill Complex.

POWER STREET



Figure 97. Power Street runs through the Railroad Salvage Area to the Patch

Power Street is the only access point to the southern side of the District. Power Street is equipped to handle two-way traffic; however, the traffic light at 6th Street is no longer active. All traffic enters over the 6th Street Bridge and flows south past the Railroad Salvage building and Annex. All through-traffic must exit by means of the 11th Street Bridge in the Patch neighborhood. The road infrastructure of FCHRA connects to Power Street; however, concrete median partitions currently block this potential connection.

INFRASTRUCTURE

The following sections will discuss the existing conditions related to infrastructure in District, which includes electrical, fire suppression, sewer, telecommunications, and water

ELECTRICAL



Figure 98. Electrical infrastructure near Strathmore Building 4

Power to the District is transferred by 13,800-volt electrical lines, spanning the length of the canal from the Keith substation on Canal Street to the upper level of the Strathmore Building 9. Since the feasibility study, most of the electrical systems were illegally removed from the vacant mill buildings; however, as of 2008, the primary switchgear and metering equipment remain in the same condition since its original evaluation during the Strathmore Feasibility Study. In 2008, existing on-site electrical transformers, panel boards, disconnects and other devices were tested for voltage and

all were inactive. The core and copper windings⁷ of transformers were removed completely; however, some components remain. Fuss & O'Neill's analysis in 2008 discussed two potential options for relocation and enhancement of electrical infrastructure for the northern end of the Site.

FIRE SUPPRESSION



Figure 99. The fire suppression system runs underneath Canal Road

Based on Town drawings, Tighe & Bond determined that a previous fire suppression system was comprised of two different eight-inch water mains connected to the Town's water system (Feasibility Study, 2005). The first main is the disconnected boxed eight-inch water line that also provided domestic water to the Strathmore Mill Complex. This line crosses the Strathmore Pedestrian Bridge and enters Strathmore Building 4 on the fourth story, then drops to a valve room on the second floor. Within the valve room, the line is separated for domestic water and fire protection services,

⁷ Windings are the primary components in an electrical transformer that either step voltage up, or to step it down to be used by different heavy, and/or low voltage equipment and outlets.

each with a backflow preventer.⁸ The other water suppression line comes from a connection to the Town's water system in 5th Street, outside of Turners Falls Paper and runs below right-of-way on the canal access road, a single backflow preventer is located at the corner of the 5th Street Bridge on Turners Falls Road.

SEWER



Figure 100. TFP water treatment facility: sewage outflow passes through Strathmore

As previously discussed, all provision of municipal wastewater services to the northern end of the District passes over the Strathmore Pedestrian Bridge. Of the three lines on the western side of the bridge, Turners Falls Paper owns a six-inch and four-inch wastewater main. Turners Falls Paper would like to install an additional line

⁸ A backflow preventer is used to protect water supplies from contamination or pollution resulting from the undesired reversal of flow caused by failure or reduced water pressure. Water pressure may fail or be reduced when a water main bursts, pipes freeze, or if there is an unexpectedly high demand on the system (e.g. several fire hydrants opened).

parallel to the active six-inch line to provide secondary services to its wastewater treatment plant. The active outflow main from the wastewater treatment plant passes through Strathmore Building 4; Turners Falls Paper has voiced their concerns about the current condition of the wastewater infrastructure and the vacant building. The third sewer line is an abandoned four-inch main dedicated to the Strathmore Building 4 pump station and force sewer main (Figure 95).⁹

According to the Feasibility Study, the pumps' stations pumps were last replaced in 1998. All three-sewer lines to Turners Falls Paper and the Strathmore Mill Complex terminate at a manhole on the south side of the 5th Street Bridge. On the southern end of the District, the Railroad Salvage Annex building is not currently connected to the Town's wastewater services.

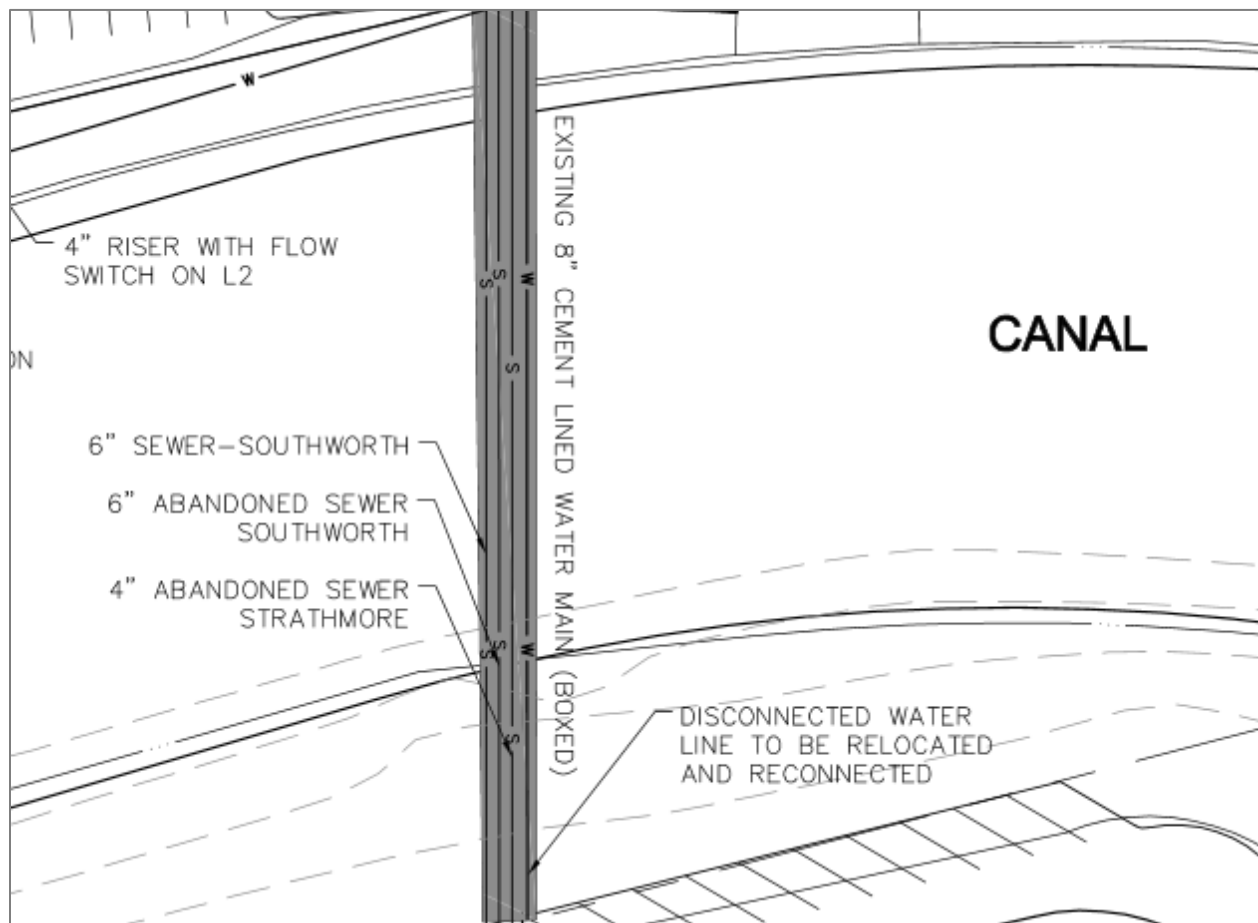


Figure 101. Fuss & O'Neill schematic drawing of existing infrastructure on Strathmore Pedestrian Bridge

⁹ As defined by the EPA, force mains are used to convey waste water from a lower to higher elevation.

TELECOMMUNICATIONS



Figure 102. Telecommunication lines run across the Canal to Building 9

In 2014, over \$90 million in state and federal funds were allocated to connect 120 cities and towns in western and north central Massachusetts to the global telecommunication network via through the creation of a fiber optic “middle mile” by the Massachusetts Broadband Institute (FC CEDS, 2015). As of 2015, only 16 of 29 municipalities within the Greater Franklin County Comprehensive Economic Development Strategy (CEDS) region have access to a cable TV Broadband system, which is most common for accessing broadband services (FC CEDS, 2015).¹⁰ The Town, including Turners Falls, is connected to this existing broadband network. While broadband utilities have not been connected to the District itself, a fiber-optic connection was made available to Turners Falls from Greenfield via the 5th Street Bridge, bisecting the District. Currently, telephone lines run across the Strathmore

¹⁰ This region includes the twenty-six municipalities of Franklin County and the neighboring towns of Amherst, Athol, and Phillipston.

Pedestrian Bridge with loop around the bridge's structural components, only the telephone line in the Turners Falls Hydro, LLC building is active. Similar to the electrical components, many lines have since been stripped from the Strathmore Complex; the southern end of the District lacks telephone connectivity as well.

WATER



Figure 103. 6- 8" inactive water main from Strathmore Pedestrian Bridge entering Building 4 (Fuss & O'Neill)

Prior to the early 2000s, domestic water was supplied to the northern end of the District by the eight-inch boxed water line that crosses the east side of the Strathmore Pedestrian Bridge. Additionally, there is a water line that comes from a connection to the Town's water system on 5th Street, outside of Turners Falls Paper, and runs below the Right-of-Way on Canal Road. Domestic water services were once provided to the Indeck Property and Turners Falls Hydro, LLC, illustrating that there may be some crossover (cross connections) between fire suppression and domestic water

infrastructure.¹¹ Currently, the water infrastructure, or lack thereof, supplying the site is outdated and will require further investment and discussion.

LITERATURE REVIEW

The potential of any proposed development is as only good as the infrastructure that supports the proposal. Despite the recent interest in mill redevelopment, the process usually is more complicated than traditional “greenfield” development.¹² Revitalization of these sites includes more than simply finding new uses to fill vacant space. Buildings should be retrofitted with innovative technologies including, but not limited to state of the art telecommunications, sustainable energy sources, and utilities to meet current and potential needs of users, and applicable regulations. While these are all ideal principles, unfamiliarity with non-traditional methods of development may detract from application of these techniques. In order to make substantiated recommendations for infrastructure and investment opportunities, NewLeaf has examined peer-reviewed research, existing articles, and documents and will explore local area examples and topics related to the project.

FINDING AN IMPACT OF PRESERVATION POLICIES: PRICE EFFECTS OF HISTORIC LANDMARKS ON ATTACHED HOMES IN CHICAGO, 1990-1999

Noonan, an environmental economist at the University of Indianapolis, used tax assessors’ data from the City of Chicago to test if there is an implicit relationship between prices of homes (not limited to single family) and the effect of landmark designation status (2007). The Chicago Landmark Division of the Planning and Development Department provided landmark information used within the research. Noonan’s methodology, a Hedonic Price model, tested through an Ordinary Least Squares regression analysis that accounts for spatial information pertaining to the impact of historical significance on building value. Based on over 63,000 observations

¹¹ Traditionally, cross connections between water suppression and domestic water lines are illegal.

¹² Greenfield development refers to development on previously undeveloped (“green”) parcels in suburban or non-urban locations with limited existing infrastructure and development (http://www.epa.gov/smartgrowth/pdf/infill_greenfield.pdf)

of condominiums, townhouses and apartments within Chicago during the 1990s, the analysis illustrates that presence of landmark status account for 77% ($r^2 = .77$) of the increased value of the property. Generally, the presence of other landmarks, distance to water, and proximity to other public amenities such as public transportation or parks contributed positively to the model.

Many previous studies have sought to show the impact of historical designation on property values through empirical studies, however as discussed, some previous studies fail to identify potential omitted-variable bias and endogenous designation (Noonan, pg.20). Historic designation is likely correlated with “unobserved” characteristics of the property, such as the presence of parking, number of rooms, and distance to other amenities, therefore better maintained, or ideal locations may be more frequently designated. Alternatively, certain area prime for revitalization may attract biased support for their designation (pg. 20). Noonan attempts to address both of these illustrated in previous studies by addressing potential omitted variables (e.g. construction quality, unique design features, or extra prestige), and controls for differentials in price associated with landmarks. Noonan’s research places more emphasis on the spatial relationship between designation and overall value.

Noonan defines landmark designation as structure that is critical to an areas heritage, a historic event, architecture, or distinctive theme to a district. The results provided by the research are important to the Turners Falls Studio project, as it illustrates these culturally significant properties within landmark districts can sell for 3% to 5% more than comparable properties. This information can be used to support NewLeaf’s decision to preserve and revitalize the Canal District’s historic buildings. Similarly, the results show that additional allocation of resources from the town for infrastructure can be regained through increased property taxes. Based on the socio-economic climate of Turners Falls, the potential additional to the values of these properties would not being high enough to raise concerns of gentrification within the village.

ECONOMIC VALUATION OF AESTHETIC AMENITIES: A CASE STUDY OF RIVER VIEW

Kulshreshtha and Gillies, both established environmental researchers at the University of Saskatchewan, use tax data from the Saskatoon Real Estate Board to evaluate the economic contribution of the South Saskatchewan Rivers aesthetic amenities to city of Saskatoon through property ownership, and rental of private property (1993). The empirical methodology of the study can be broken down into three parts: 1) determining the implicit price of the river view for property owners; 2), methodology for determining the relationship between property taxes and river view; and 3), creating a methodology for renters (1993, pg. 260). Based on roughly 392 observations, an OLS regression and Hedonic Price Model that showed that visibility of the river explained 93% (adjusted R^2 .93) of the variability in additional property tax collected from each home between 1986 to 1987. The isolated effect of river views on increased home value is significant at a 99 percent confidence level within the model. In total, the annual contribution through increased taxes of the river to the city was worth \$ 1.2 Million U.S Dollars in 1989, valued at over 2.25 Million in 2016.

In comparison to existing research, there has been very little, if any studies that evaluate the aesthetic value of a water body. Kulshreshtha and Gillies have created a vital framework form which other studies can be built up, as the discussion of environmental amenities commands more attention. However, even though this information is original, the authors summarize previous studies that illustrate how land differs across sites, and therefore commands different values. The first economist to use residential property value data to estimate benefits of changes in environmental quality occurred in the late 1960's (pg. 258). The Hedonic Price Model and resultant economic value can be explained by an overall willingness to pay (WTP) through fixed costs of purchasing, or through bearing the cost of maintenance (pg.260). The authors illustrate how their Hedonic Price Model can accurately disaggregate the data into separately measure characteristics of interest to the analyst, without the presence of multicollinearity or selection bias as in similar studies.

This article speaks directly to the Turners Falls Canal District as it addresses the economic value of the existing and potential properties bordering the Connecticut River

and power canal. While NewLeaf will not be replicating this study, the results can be used to show applicable local governmental officials, and potential developers that there is a “Willingness to Pay” for properties that overlook the Connecticut River. The aesthetic amenities are translated into actual dollars that can be used to help cover the costs of providing necessary utilities and infrastructure to the Canal District through District Improvement Financing. Despite the proposed land-uses for the district, moderately higher prices and/or rental rates could be asked without potentially gentrifying the area, or excluding local business by applying for new business tax credits through the Commonwealths Economic Development Incentive Program (EDIP) or other applicable state and federal programs. The combination of NewLeaf’s Pro forma Training, and understanding of this study will help NewLeaf to make better-informed development, investment and valuation decisions for the Canal District and applicable target areas

CASE & PRECEDENT STUDIES

FROM SKID ROW TO LODO: HISTORIC PRESERVATION IN DENVER'S REVITALIZATION

The flight of Denver’s industrial trades in the Lower Downtown area, and resultant economic stagnation during the late 1800’s led to the decline of a once vibrant and prosperous district. In an effort to revive activity with the area, the City of Denver worked collaboratively with the private sector to rebrand and rebuild the Lower Downtown, or “LoDo.” As a result, the revitalization and reintegration of the Downtown to the community now flourishes as a mixed-use historic district. McMahon, illustrates how conservation of historic buildings can serve as an impetus for the revitalization of areas negatively impacted by industrial changes. The redevelopment required a considerable investment from the city of Denver concerning infrastructure and streetscape improvements. Despite opposition to the project, resulting from a fear of decreased property value caused by extensive regulations, the city council passed the historic zoning ordinance in 1998. McMahon argues that preserving buildings within the historic district essentially created new jobs, increased housing, achieved economic diversification, and maximized both private and public investment.

Denver's Lower Downtown is both a powerful and relevant example of how allocating funds for infrastructure improvements, like the Strathmore Pedestrian Bridge, can strengthen public and private investment opportunities. While Denver's high-priced lofts drive economic prosperity of this historic neighborhood, there is also a demand for moderately priced residential units within Turners Falls (Montague Community Needs Survey, 2010). The most useful information from this article describes how municipal investment is essential for private sector activity. Furthermore, the story reflects how the transition from traditional industrial uses, to that of more contemporary uses, increases the profitability of the district. Based on the findings of this article, NewLeaf shall recommend the Turners Falls Canal District should be rezoned to streamline the permitting process, use District Improvement Funds to collect new incremental taxes on redeveloped properties, and impose strict design guidelines to maintain its historic resources.

GREY SCARS OF THE PAST: CASE-STUDY-BASED GREEN PRINCIPLES OF HISTORIC MILL REDEVELOPMENT WITH A SUSTAINABLE FUTURE

Historic architectural remnants left behind from an age of immense wealth and innovation during the milling heyday of New England create both opportunities and challenges for municipalities and developers. Iarossi examined mill redevelopment projects in Massachusetts that implemented various sustainable concepts in the redevelopment. These locations were Davis Square Lofts (Somerville), Forbes Park (Chelsea), Nobis Engineering, Inc. (Lowell), and Monarch Lofts (Lawrence). Iarossi's research generated ten "case-study-based green principles" that can be used as a launching point for sustainable mill revitalization. These ten principles are as follows

1. construct sustainable roofs;
2. maintain open layouts for natural air-flow
3. introduce Zip Cars
4. foster urban agriculture
5. use green methods as bold statements
6. promote a simpler quality of life
7. implement solar efficiency

8. provide a variety of transportation choices
9. follow best practices to prevent on-site pollution; and
10. 10) consider LEED certification.

Iarossi's work is unique because it focused on sustainable mill redevelopment case studies only within Massachusetts. This is particularly useful because many sustainable concepts could be affected by the climate and may not be transferrable. Furthermore, it is implied that the techniques can be easily implemented as long as they conform to applicable code and regulation.

This precedent supports and has helped NewLeaf formulate sustainable recommendations for the Site. For example, to combat space constraints, the introduction of Zip Cars reflects re-imagination of the auto usage on the Site and capitalizes on maximization of space as many person may use the same vehicle. Furthermore, implementation of highly visible green methods or signage is crucial to increasing awareness of how the users identify with their built environment. Showcasing the technologies or methods (e.g. geothermal, solar, and/or green infrastructure) is an important recruitment tool to spread awareness about the Triple Bottom Line (e.g., social, environmental, and financial). The research supports that these techniques are able to support the demands on the systems, in addition to the economic savings resultant of their implementation. One particular principle that NewLeaf had not considered was the application of urban agriculture methods such as raised garden beds, on-site community gardens, edible architecture and/or cooking and food programs that could showcase Franklin County's agrarian roots.

ARTS & INDUSTRY BUILDING GOES WEEK WITHOUT POWER



Figure 104. Arts and Industry Building in Florence, MA

Our modernized society is becoming exponentially dependent on reliable and secure electricity supplies that support economic growth and community prosperity. While large-scale power outages are unavoidable, the weeklong power outage experienced at the Old Brushworks building, in November of 2016 (221 Pine Street, Florence, MA) was caused by an outdated electrical infrastructure malfunction (blown building transformer). The Brushworks Arts and Industry building, once a former toothbrush factory, now houses community based services like the Western Massachusetts Vertical Training Cooperative (rock climbing), and over 50 fine crafters and artists, including some nationally recognized clothing designers, jewelers, potters, and woodworkers. New artists to the building demonstrate their commitment to sustainability through upcycling,¹³ and repurposing of objects. As discussed by Drane, the malfunction of the transformer, besides from electricity, compromised the building's heating source as well; tenants depended on gasoline generators to track shipments and write invoices.

¹³ Upcycling is the reuse of discarded objects or material, in such a way as to create a product of a higher quality or value than the original.

The Legacy¹⁴ system once adequately met the demands of the historic building situated along the Mill River; however, failure of this system significantly affected the livelihood of businesses, especially during the months leading up to the holiday season. The recent power-outages at Brushwork Arts and Industry building power is an invaluable example of the delicate relationship between the business vitality and the dependence on reliable power. Even though most of the electrical infrastructure within the District has been compromised by illegal removal, allocating additional resources to upgrade the electrical infrastructure, as opposed to simply replacing missing mechanisms can be an instrumental step for recruiting businesses dependent on reliable power. Even the loss of power for one day for any potential tenant could create significant economic hardship, and/or pose significant safety related issues related to the well-being of residents and visitors. Based on the findings of this article, NewLeaf shall recommend the Turners Falls Canal District's electrical infrastructure be retrofitted to meet modern demands; alternative on-site energy resource production and storage be implemented to reduce dependence on traditional source; and incorporate discussion the Site's energy reliability due to upgraded systems, as a marketing tool for attracting tenants.

¹⁴ Legacy systems are not only related to electrical systems. Legacy systems is often a pejorative term, implying that the system is out of date and needs to be replaced to keep up with modern demands.

ANWELT HERITAGE APARTMENTS – CITY OF FITCHBURG, MA



NewLeaf visited the former Massachusetts Innovation (MIC) Center in Fitchburg, MA on November 11, 2016. The Anwelt Heritage Apartments, replaced the historic Anwelt Shoe factory adjacent to the Nashua River, and is located in the historic Cleghorn neighborhood of Fitchburg. The MIC complex includes three buildings totaling 333,000 square feet of developable space. Nearby attractions to the Anwelt Heritage Apartments include CenterStage, continuing education classes at Fitchburg State College, Fitchburg Art Museum, Fitchburg Historical Society, Stratton Players Theater, and the Wallace Civic Center.

In keeping with sound environmental principles, the 86 mixed-income senior housing residences are efficiently heated and cooled by a 200 Ton geothermal system that cost slightly more than 1.5 Million. The Anwelt Heritage apartment building features a landscaped courtyard with bridges, trellises and a granite block fountain; gardens have been crafted for butterflies and songbirds, and planting beds for residents. MassInnovation received a \$500,000 dollar grant from the Massachusetts Technology

Collaborative, and matching competitive federal grant (Renewable Energy Program) from the USDA Rural Development for the installation of the geothermal system and integrated 147-kilowatt PV system to power the geothermal system.

The Anwelt Heritage Apartments are an invaluable example of how revitalization of the District could not only increase the triple bottom line of involved parties (developers and the Town), but also attract the political attention needed for the funding and creating interest in the redevelopment. Furthermore, our visit to site solidified the idea that state of the art alterations can be made to historic buildings without compromising their architectural significance. Thorough analysis of this project has unveiled key funding mechanisms that will be included into the recommendations to our client. While the Anwelt building will be used for apartments and serves a much different demographic than Turners Falls, discussion of the sites connection to natural environment and sustainability can be reflected in our recommendations. Further discussion will be required to analyze whether or not a geothermal system could be implemented in the District given the constraints.



Figure 105. Geothermal system at Anwelt Heritage Apartments, Fitchburg, MA

THE WHITIN MILL – VILLAGE OF WHITINSVILLE, MA



Figure 106. The Whitin Mill, Whitinsville, MA

NewLeaf visited The Whitin Mill on December, 4, 2016. The Whitin Mill is located on the edge of the Mumford River in the unincorporated village of Whitinsville within the town of Northbridge (Worcester County). As reflected by the 2010 census, the village had population of 6,704 people, slightly more than Turners Falls. The Whitin Mill is in close proximity to the GB & Lexi Sing Performance Center, The Whitin Community Center, Whitinsville Social Library and Downton Whitinsville. While incorporating the historic design of the original cotton mill, the building houses Alternatives Unlimited Inc (site developer) administrative offices, a residential program, and artisan studio space.

The renovation of the Whitin Mill earned a LEED Gold designation from the U.S. Green Building Council in 2011. USDA Rural Development awarded over \$5.2 million through the Community Facilities Guarantee program to Alternatives Unlimited Inc., to refinance mortgage debt and renovate the mills.

Alternatives Unlimited Inc., is a non-profit residential and employment services who works with intellectually disabled adults. Additional grant money from the Massachusetts Technology Collaborative was put towards a feasibility study, on-site solar project, subsidy for the hydropower project, and outreach efforts. The combination of a geothermal, solar, and hydropower energy will generate nearly 80% of the project's electrical needs and entire heating and cooling demands. Beals and Thomas, an engineering consultant, obtained a FERC Exemption Permit for the proposed 50 kw hydro power facility.



Figure 107. Whitin Mill Redevelopment Site Plan

The Whitin Mill is another essential example of how a historic mill building can be upgraded to implements today's progressive energy standards. While the size of this project is much smaller than the District, and includes energy renewable energy components (hydroelectric) that may not be feasible on our site, the project uses funds allocated for mill revitalization. While it will require further discussion, NewLeaf will look further into our proposed design that can capitalized USDA Community Facilities Grant programs (CFGP), and other applicable programs. The CFGP is typically used to fund projects under special initiatives such as Native American Community development efforts, an important element NewLeaf looks proposes incorporate in the

District. NewLeaf will thoroughly all potential funding mechanisms and sustainability elements through USDA Rural Development, and other applicable entities.

STAKEHOLDER FINDINGS

Even though our stakeholder interview questions did not specifically address infrastructure and investment, key information was disclosed during these sessions that has guided and strengthened NewLeaf's recommendations and overall understanding of the sites current condition, in terms of infrastructure and underlying stakeholder dynamics. Said notable information will be categorized into their respective sections: infrastructure and investments. In total, 77% (7 of 9) of respondents had discussed that infrastructure needed be addressed, while 55% (5 of 9) touched upon funding challenges or opportunities.

INFRASTRUCTURE

Turners Falls Paper's recent name change demonstrates their commitment to the community. More importantly, it signifies that they plan on remaining in the District for the foreseeable future. Turners Falls Paper had disclosed that currently the only active sewer line (passing though Strathmore Building 4) has reached its capacity. Turners Falls Paper would like to add another line, essentially allowing the company to expand and increase productivity. As Turners Falls Paper has a significant stake in infrastructure enhancements, they are willing to contribute funds for the restoration of these systems.

Furthermore, interviews with municipal officials have confirmed and unveiled other issues that will be addressed in our recommendations. The IP bridge on the northern most end of the site, can structurally support one emergency vehicle at a time; however, further testing and/or upgrades will be required to support additional vehicles. Pertaining to other municipally supplied and maintained infrastructure services, a sewer line enters into Strathmore Building 11; however, it is unclear if or where the line exits the building. NewLeaf was informed that the longer these vital systems remain unused, the more their deterioration is exacerbated. Similarly, a water main was installed for usage by Turners Falls Hydro, LLC., but the condition of the main. Another helpful piece

of information explained that FirstLight does not want any additional wires crossing the Canal. Further discussion with the Town or FirstLight shall be required for additional information, allowing us to propose alternative options. Lastly, we understand that Turners Falls is at the end of the Berkshire Gas service area. Thus, Turners Falls gas service is the first to be shut off when Berkshire Gas requires additional gas supply.

INVESTMENTS

The investment discussion obtained from the stakeholder interviews will be discussed in detail in the subsequent Investment Discussion section. Stakeholder feedback included discussion of difficulties associated with the Massachusetts Historic Rehabilitation Tax Credit Program.¹⁵ A particular project required three different applications until the project was approved finally approved for tax credits. The application process also required obtaining letters of recommendation from Massachusetts Preservation and the Local Historical Society. Furthermore, NewLeaf now is aware that as of 2016, the Commonwealth's Secretary of State, William Galvin, serves as the chairman of the board for Massachusetts Historical Society and was instrumental in the success of the aforementioned project.

DISCUSSION

Successful revitalization of the District requires identification of foresight and progressive thinking. The Client has asked NewLeaf to analyze and identify key public infrastructure and investments to support and stimulate the redevelopment of the District. NewLeaf fully understands the costs associated with a project of this magnitude, and has proactively based their recommendations, discussed in the next section, to not only meet the efficiently meet the demands of today, but that needs of future generations in a sustainable and thoughtful manner. To do so, NewLeaf has created discussion four sections: Energy and Sustainability, Infrastructure, Funding Mechanisms, and Public Safety. These sections will illustrate the fulfillment of the client deliverables, while incorporating our own creativity towards enhancing the District, and establishing the revitalization of the District as a precedent for similar projects.

¹⁵ 830 CMR 63.38R.1

The Recommendations and Action Items based upon these sections are in the Recommendation and Implementation sections at the end of this Chapter.

CLIMATE CHANGE, RENEWABLE ENERGY, & SUSTAINABILITY

While the direct cause may frequently be debated through conflicting political opinions, it is widely recognized that at a global scale our climate is changing much faster and with more intensity than ever before (Moser, 2014). The anthropogenic impact of our existence has exacerbated the irreparable alteration of the biophysical (land, water, soil, air) environment. Climate is defined as the characteristics, means, and extremes of weather (local short-term atmospheric conditions) (Barnes et al., 1993). Climate change can be explained as the rapid variation in climate patterns (late 20th century onwards) resulting from increased levels of atmospheric carbon and gases which trap infrared energy (heat) within our atmosphere (greenhouse gasses). Acknowledgment and implementation of initiatives to assuage our current climatic condition can create employment opportunities, provide economic savings, and enhance the health of biodiversity in totality (Benedict. & McMahon, 2006; Lund & Hvelplund, 2012).

NewLeaf acknowledges their bias that they do indeed believe in the climate change, and that even though the earth may be warming on its own, research has demonstrated that general warming trends have exponentially increased at an alarming rate. Due to such atmospheric conditions, sea level rise, heavy precipitation and storm surges are expected to increase flooding and costal erosion, put further strain aging infrastructure in the Northeast (USGCRP, 2014). Despite these projected trends, the exact nature of the changing climate cannot conclusively be predicted. The District is situated along the Connecticut River, a body of water that has demonstrated its capability for destruction in the town of Montague.¹⁶ NewLeaf believes that further research is required to evaluate infrastructure and the communities and vulnerability to precipitation conditions. The ability to increase the flow through the power canal, and

¹⁶ March 11, 1936 marked the beginning of a record setting two-week precipitation period within New England claiming over 200 lives and leaving nearly 14,000 homeless (New England Historical Society). The incessant rains created tumultuous flooding conditions that devastated communities throughout, especially in the Pioneer Valley. The flooding of the Connecticut River had damaged the 'Red' Suspension Bridge beyond repair.

divert additional water into the Connecticut River could eliminate potential flooding situations.

Electricity and heat production are the largest source of greenhouse gas emissions within the United States, and account for 25% of the entire output based on data collected in 2010 (IPCC, 2014). NewLeaf understands that overall, due to outdated building practices and efficiency standards, historic buildings, compared to those constructed today are significantly less energy efficient and require the additional expenditure of energy. The United States has since adopted stricter federal codes and standards to regulate energy consumption levels of new products, including appliances (Appliance Standards) and Buildings (Building energy codes). Early studies and publications related to energy efficiency and refurbishment of historic buildings began to emerge in the late 1970s. However, there is something to be said about simply designing to satisfy the minimum efficiency requirements, as opposed to pushing boundaries to maximize sustainability of individual components, communities, or the region as a whole.¹⁷ The total footprint reduction of the northern end of the District, through selective demolition will allow help developers to make investments to maximize energy efficiency, are reduce the total demands of the alternative energy sources as discussed below.

One of the most important goals of this project seeks to find a critical balance, transmitting restored and efficient buildings with maximum preservation of heritage values of the District's industrial past for future generations. For the purposes of this discussion, energy efficiency is defined as techniques used to reduce the amount of energy required (e.g. insulation, double-pane windows), but also techniques to reduce dependence on traditional non-renewable resources through implementation of renewable energy. As demonstrated in the supporting literature of this chapter, revitalization projects focusing on sustainable energy design and practices have received a considerable amount of attention from the media, local legislators, and can be a powerful marketing tool attract tenants.

NewLeaf strongly believes that the implementation of an industrial grade geothermal system, satisfying both heating and cooling needs, in addition to a large

¹⁷ Sustainability describes a condition in which natural systems and social services thrive together from the standpoint of ecology, energy, equity and engagement.

scale photovoltaic (PV) system to support the geothermal system will help create support for the project from applicable parties. Similarly, in line with the overall sustainable vision for the District, renewable energy production through utilization of the earth natural processes will reduce the Districts overall greenhouse gas contribution.¹⁸ Most importantly, it is feasible to make these progressive upgrades without compromising the historic design of the existing infrastructure. A traditional geothermal system would not be sufficient to meet the demands of the entire Strathmore Mill Complex. NewLeaf recommends that a coiled heat exchanger shall be lag-bolted to the side of the power canal to generate the geothermal energy. However, based on the chemical nature of the exchanger, further analysis of its compliance with the Massachusetts River Protection Act must be evaluated.

As disclosed in the stakeholder interview process, the Strathmore Mill Complex is currently a prime candidate for heating by natural gas. However, based on the potential unreliability of gas service to the District and contradiction to our overall sustainable vision, NewLeaf supports that renewable energy and more sustainable practices such as geothermal are ideal. In accordance with the widely accepted three components of sustainability: environment, economics, and equity, our overall recommendations are not limited to the reduction of non-renewable resources and seek to address underlying some equity issues faced by the Town and region as a whole.

ACCESS

BRIDGES

NewLeaf agrees with the client that The Strathmore Pedestrian Bridge is the single most important improvement to stimulate further support and investment for the District's restoration. The Town has investigated the historic significance of the Strathmore Pedestrian Bridge, relative to the historic Strathmore Mill Complex, and has determined that bridge is not considered part of the complex. This critical decision allows for the Town to bring the bridge up to code, (ADA accessibility) and to re-

¹⁸ A greenhouse gas is any gaseous compound in the atmosphere that is capable of absorbing infrared radiation, thereby trapping and holding heat in the atmosphere. The following gases are the largest contributors: Carbon Dioxide, Methane, Nitrous Oxide, and Ozone.

establish the entrance on Canal Road as a main gateway to the Site as it historically once was. Furthermore, NewLeaf believes the replacement of the existing Strathmore Pedestrian Bridge, with the 210-foot single span pre-fabricated bridge as recommended by Fuss & O'Neill is the most economically feasible, and desirable option. The replacement of the Strathmore Pedestrian Bridge would also require establishing new infrastructure for the outdated sewer and water lines. The current condition of the additional bridges may be sufficient for current levels of activity within the District, however with the additional demands for all the bridges must be re-evaluated.

PUBLIC SAFETY

The physical location of the District's natural amenities provides many benefits to residents and visitors; however, the configuration of the District has its challenges and limitations as well. Increased utilization of the District will inevitably increase the need for emergency services (fire, police, and paramedics). Canal Road can accommodate smaller emergency vehicles, as the roads narrowest point is ten feet. Ideally, business that could depend on box trucks would be best suited for the sites constraints, and minimization of public safety complications. However, if Canal Road is blocked, resulting from a tractor trailer being staged at the Turners Falls Paper loading bay, there could be some very dangerous complications. For example, as experienced during the arson fire of Strathmore Building 10, fire trucks attempted to quell the fire from the mainland. The IP Bridge could accommodate the weight of a single small fire truck, or ambulance; however, frequent strains of this nature could eventually compromise the integrity of the bridge. To avoid potential hindrances to the District due to access complications on Canal Road, the potential replacement of the IP Bridge could be a sound investment.

Turners Falls Paper has voiced their concerns about the liability of potential pedestrian utilization of their access road. As discussed in the pedestrian circulation plan, NewLeaf has proposed an alternative path for the proposed extended rail trail to avoid complication on Canal Road with Turners Falls Paper. Overall, as NewLeaf looks to redefine auto-centric nature instilled at the onset of the era of suburbanization, reduction of on-site parking should reduce the amount of pedestrian/vehicular conflict. To enhance the walkability of the District, provision of adequate infrastructure, such as

the reconfiguration of the 5th Street intersection would help to increase safety. Furthermore, as the District's surrounding bridges pose many safety issues for pedestrians and/or cyclists, their replacements should reflect the modern needs of adequate pedestrian and/or cyclist lanes that are physically separated for safety concerns.

INFRASTRUCTURE

Even though this District will require significant infrastructure investment and modifications, the modernity and stability of our recommended improvements will separate the District from the many other revitalized mill districts with New England.

ELECTRICITY

The shutdown of the Arts and Industry building in Florence, MA is a prime example of how outdated systems can negatively affect the livelihood of business. The potential danger of failing systems is exponentially greater when residences are included in the building, as we have proposed. The separation and reconfiguration of existing electrical infrastructure as referenced in Fuss & O'Neill's assessment is worth the initial investment. The new and dependable electrical infrastructure is an incredibly important selling point to attract new business and residents to the District, and to provide some security that they will not have to worry about their heat or cooling source (geothermal) losing the ability to provide their services, or the ability to run equipment. Furthermore, the addition of PV systems will help supplement the dependence on traditional electricity sources. The system could be designed to store some of the energy it creates for emergency situations when the rest of Turners Falls may not have power at all.

SEWER

In previous revitalization processes, superintendents of the Turners Falls Water Department, the Water Pollution Control Facility, and other relevant stakeholders were included in discussions of potential wastewater system modifications on the District. Turners Falls Paper evaluated the feasibility of abandoning the sewer lines entirely and installing a gravity line down Canal Road to the west; however, the alternative was determined to not be economically infeasible (Fuss & O'Neill, 2008). Based on this

assessment, TFP's willingness to financially contribute towards new infrastructure to separate their system from Strathmore Building 4 should be capitalized upon. Again, the exact condition of the sewer lift system is unknown and shall require further evaluation. All existing reports have reaffirmed that the sewer infrastructure should be entirely replaced upon the restoration of the Strathmore Pedestrian Bridge. The specific economic outlets to supplement this expensive undertaking shall be addressed further on in this report.

TELECOMMUNICATIONS

Telecommunication infrastructure, especially access to fiber optic is an expectation for almost every industry, specifically those utilizing cloud-based services or handling massive amounts of data. This infrastructure is vital to the retention and attraction of companies and the capital investment associated with them.

Broadband service connects business and individuals to the global marketplace. Essentially, it has flattened the world by allowing business to communicate in a way never before possible due to the increase in the vast amount of information that can be transferred at faster speeds which can increase productivity and overall productivity. Due to the physical security of the District (surrounded on both sides by water), potential availability of inexpensive and sustainable cooling and heating systems (geothermal), ample amount of square footage, and access to fiber-optic, the District could be well suited for as future home for a data center. Such a use would be compatible with the District's limitations as the need for frequent deliveries, or potentially noxious processes is a non-issue.

WATER

Through an analysis of existing documentation illustrating the current condition of water and wastewater infrastructure, it is clear that there are certain gaps in knowledge pertaining to individual components and exact locations of certain infrastructure. Initial recommendations for further investigation of the suitability for one fire suppression main (as opposed to the two which once served the area) has been resolved. According to Fuss & O'Neill's 2008 Site Assessment, the current fire suppression main under Canal Road would be sufficient to meet the demands of

additional utilization with the Strathmore Mill Complex. As NewLeaf understands, the owners of Turners Falls Paper, the Strathmore Mill Complex and the Indeck Property are responsible for any repairs that are made to the eight-inch water lines from Canal Road and 5th Street, via the Strathmore Pedestrian Bridge. Further analysis of the potential illegal cross-connections between domestic and water fire supply via the eight-inch main under Canal Road should be addressed, prior to replacing the eight-inch boxed water main that travels across Strathmore Mill Complex, with a new six-inch main as suggested by Fuss & O'Neill. Keeping in line with the sustainable design of the district, NewLeaf hopes the developer would install low-flow appliances.¹⁹

FUNDING MECHANISMS

There is a myriad of important funding mechanisms that will help bring this project to fruition; however, there are certain elements that must be addressed to capitalize on said funds. This discussion section is not an exhaustive list; however, it will touch upon different programs and opportunities at the federal, state, municipal, and quasi-governmental levels. First and foremost, negotiations between the Town and FirstLight through the FERC relicensing process is perhaps one of the most important sources of potential funding to help increase access to the River and the District. NewLeaf has identified a couple of potential uses that these funds could be beneficial to the revitalization of the district: Strathmore Pedestrian Bridge, IP bridge, construction of additional bike lanes, and/or establishment of a formal access point to the river, such as a boat ramp and visual access to the Connecticut River.

In order to capitalize on Rehabilitation Historic Tax credits, administered by the Commonwealth, as discussed in existing plans, windows need to be restored to their original condition (wood, double hung 12 over 12 windows). It is unclear at this time if the Massachusetts Historical Commission would require a new slate roof to be eligible for the tax credits. Rehabilitation Historic Tax Credits are in high demand; it would be wise to ensure that credits are secured prior to the revitalization. However, the cost to restore all of the windows could potentially outweigh the benefits of the tax credits

¹⁹ LEED Credit for reduction of potable water consumption through efficient fixtures are based on the requirements of the United States Energy Policy Act of 1992. Calculations are based on estimate occupant usage and typically include the following: water closets (toilet), urinals, lavatory faucets, showers, and kitchen sinks.

value. Potentially the developer could require that the tenants are responsible for the replacement of their own windows. Again, the Strathmore Pedestrian Bridge is not included as a historic structure of the site, which will allow for its much needed replacement.

As touched upon earlier in the literature review, the aesthetic amenities provided by the District creates a “willingness to pay” for the enjoyment of such views overlooking two “bodies” of water. This willingness to pay would result in higher tax revenue for the Town. Similarly, the preservation of the District’s historic nature increases property values, yet retains its affordability. The additional revenue collected from the properties could be used to cover a portion of the infrastructure upgrades, as well as increased revenue to be redistributed back within the community. The Town has a couple of financing tools at their disposal as well. District Improvement Financing (DIF) enables municipalities to fund infrastructure and development projects by allocating future, incremental property tax revenues collected (defined geographical location/district) to pay for project costs. Similarly, under Massachusetts General Law c.40§59, landowners may be granted property tax exemptions of up to 100% of the tax increment. One potential pitfall of offering these subsidies includes the flight of businesses prior to the end of the Tax Increment Financing agreement as occurred within the Turners Falls Industrial Park. Furthermore, the Town may utilize General Obligation, or Revenue Bonds to cover infrastructure improvements. However, the Town is beholden to pay the entirety of the bond (General Obligation) if the project is not successful. Another important source for avenue to support infrastructure improvements is the Commonwealth’s Infrastructure Investment Development Program, or I-Cubed.²⁰

NewLeaf’s vision for sustainable energy production on-site could prove useful for the acquisition of grants made available for energy efficiency as illustrated by the Anwelt Heritage Apartments and the Whitin Mill, both located in the Commonwealth. These projects were awarded significant grants from both the federal government, (USDA – Rural Development) and a local public non-profit (Mass Technological Collaborative). The USDA Rural Development provides grants for the purchase and installation of energy efficiency infrastructure, or the retrofitting of existing infrastructure.

²⁰ I-Cubed will finance significant new public infrastructure improvement necessary to support major new private development.

Additionally, USDA – Rural development provides grants to enhance water and wastewater disposals systems, and to improve public safety in blighted areas.

Due to the previous contamination of the District, the Town has recently (2016) secured two substantial grants to conduct a hazardous abatement survey for the Strathmore Mill Complex. While the district has received a clean bill of health overall, it would be wise to earmark additional funds to cover potential unforeseen environmental issues that could be uncovered in revitalization of the district, as experienced in the competition of the new 3rd Street parking lot in 2016. The Slum and Blighted designation for the district makes the site a prime candidate for Community Development Block Grants (state and federal). At the state level, the abandoned buildings with the District are eligible for a 10% tax deduction on costs associated with their renovation.²¹ Projects that seek to activate a distressed area within the district, that is open to the public, could benefit from application to MassDevelopment's Commonwealth Place Grant Program.²² Furthermore, MassDevelopment offers other grants such as the Manufacturing Future Program, which speak directly to NewLeaf's overall vision to retain and incorporate industrial uses, emblematic of the District's rich heritage.²³

²¹ Abandoned Building Renovation Deduction. M.G.L. c. 62, S. 3(B)(a)(10)

²² The maximum amount allocated under Commonwealth Place Grants is \$50,000.

²³ Provides support to manufacturing companies in Massachusetts grow and thrive. Grant recipients will create community-based programs and activities to help dispel common misconceptions about the manufacturing industry.

RECOMMENDATIONS

ACCESS

The following sections will discuss recommendations related to access to the District, which includes bridges and right of ways.

BRIDGES

There are seven bridges that directly serve the District. There are an addition two that indirectly serve it. The following sections will detail recommendations for each.

STRATHMORE PEDESTRIAN BRIDGE

NewLeaf believes that for the Strathmore Pedestrian Bridge, the Town should move forward with Option 2 (210 foot replacement bridge), provided by Fuss & O'Neill in the 2008 Site Development Assessment.

WHITE BRIDGE

NewLeaf recommends that when the Commonwealth is ready to reconstruct White Bridge (functionally obsolete), the Town should be prepared to make significant alterations to the 5th Street intersection. Ideally, the new White Bridge should incorporate safer pedestrian and bicyclist access, and retain the existing fiber-optic broadband connection from the Greenfield.

5TH STREET BRIDGES

At the time of the White Bridge reconstruction, the Town should incorporate pedestrian access on the new replacement bridge, allowing the deconstruction of the ADA non-compliant 5th Street Pedestrian Bridge.

6TH STREET BRIDGES

As the temporary 6th Street Bridge erected by the Army Corps of Engineers is at the end of its lifespan, the Town should look for a replacement bridge that includes pedestrian and bicycle access. As a result, NewLeaf would not see a need to reopen the defunct 6th Street Bridge. The Town should coordinate the deconstruction and

replacement of both bridges at the same time. The gas line that currently crosses the 6th Street Pedestrian Bridge will need to be reconnected to the new vehicle and pedestrian bridge.

IP BRIDGE

NewLeaf recommends that for the increase of the District's proposed use by EMS services and pedestrians, further evaluation of its structural integrity shall be required.

The Town should incorporate a tactical urbanism element on the IP Bridge to draw in users to experience the FirstLight Open Space.

RAILROAD BRIDGE

The Railroad bridge between the 6th Street Bridge and 11th Street Bridge be reopened to pedestrian and bicyclists as discussed in the Circulation element of the District Vision Plan. Further evaluation will be required to analyze if the bridge needs to be repaired or replaced.

RIGHT OF WAY & EASEMENTS

NewLeaf recommends that the Town exercises its right to use Right-of-Ways, and to form partnerships with long-time stakeholders within the area.

NewLeaf recommends that the Town include discussion pertaining to Right-of-Ways and easements in the FERC relicensing process to help increase pedestrian connectivity as referenced in the Circulation Plan.

INTERSECTIONS

NewLeaf recommends that the Town consider the feasibility of the 5th Street intersection as illustrated in the Livability Plan, and hires an engineering consultant to evaluate the technical feasibility of the design to accommodate potential traffic increase.

NewLeaf recommends that the 5th Street and Canal Street Intersection be reconfigured to enhance cyclist and pedestrian safety at the time of the Strathmore Pedestrian Bridge replacement.

If the IP bridge is to ever be dedicated as a primary vehicular access point to the District, the Great Falls Discovery center intersection should be reconfigured.

INFRASTRUCTURE

Based on a review of existing reports, NewLeaf recommends that the Town, or engineering consultant conduct a holistic inventory of both current conditions, and mapped location of all water, sewer, electrical, gas and telecommunication infrastructure. All upgrades required to handle additional demands, or for efficiency, should be made.

ELECTRICITY

The Town should further review Option A (relocation of primary transformer) provided in the Fuss & O'Neill Site Development Assessment.

HEAT

NewLeaf suggests the Town further evaluate the feasibility of geothermal energy production (heat exchanger in the Canal) for the Strathmore Mill Complex, and other restored buildings.

SEWER

Once water service and electrical power is established at the Strathmore Mill Complex, the need for the four-inch sewer repairs and existing ejector stations will need to be further evaluated.

WATER

As recommended by the 2008 Site Development Assessment, a new six-inch domestic water line to the Strathmore Mill Complex should be installed across the Strathmore Pedestrian Bridge.

The Fire department will need to be contacted to discuss emergency cross connection to the fire suppression line.

TELECOMMUNICATIONS

NewLeaf suggests that new telephone lines be attached to the underside of the replacement Strathmore Pedestrian Bridge.

Some space in the main electrical room is needed for telephone and communication and possibly security equipment. Each tenant space also needs a wall devoted to their low voltage equipment.

FUNDING

NewLeaf recommends that the Town and/or developer further investigate the following programs offered by the Commonwealth of Massachusetts: Abandoned Building Renovation Deduction; Infrastructure Investment Development (I-Cubed) Program; Economic Development Incentive Program (EDIP); New Market Tax Credits; and, Research and Development Tax Credits.

NewLeaf Recommends that the Town and/or developer investigate the following grants or programs administered by MassDevelopment: Commonwealth Places (grant); Manufacturing Future Program; Collaborative Workspace Program (grant); and Cultural Facilities Fund (grant).

NewLeaf recommends that the Town and/or developer further investigate whether or not the potential cost of restoring applicable windows to original condition would outweigh the financial benefits of Rehabilitation Tax Credits.

NewLeaf recommends that the Town or Developer investigates the following options provided by the USDA Rural Development: Community Development Program; Renewable Energy and Energy Efficiency Program; and Water/Wastewater & Environmental Programs.

To reduce additional burden on a developer(s), NewLeaf suggests that the Town should utilize General Obligation or Revenue Bonds to jumpstart critical infrastructure related repairs and/or replacement.

NewLeaf recommends that the Town does not offer TIF options to developers as businesses within Turners Falls have left prior to the end of the TIF agreement period in the past

As opposed to Tax Increment Financing, NewLeaf recommends that DIF should be further evaluated. There is a myriad of tools that the Town can implement through DIF, including acquiring land, pledging tax increments and other revenues for repayment of debts to cover infrastructure.

NewLeaf recommends that the Town negotiates with FirstLight, to assist or cover certain infrastructure related projects through the FERC relicensing process.

NewLeaf recommends that the Town and/or developers explore grant opportunities through the Massachusetts Technology Collaborative for the proposed sustainable and renewable energy sources.

NewLeaf recommends that the Town further investigates funding mechanism to be earmarked for the establishment of a Native American Cultural Park, or an interactive trail.

IMPLEMENTATION PLAN

6 MONTHS

ACCESS

- Contact Fuss & O'Neill to receive an updated quote for Option Two (210-foot single-truss replacement bridge) discussed in the 2008 Site Development Assessment.
- Create, or hire a consultant to delineate owners, and map all Right of Ways and easements within the District.
- Investigate low cost Tactical Urbanism lighting options for the IP Bridge.
- Evaluate structural conditions of all bridges if previous evaluations are outdated.
- Figure out where the replacement of White Bridge stands on the State Transportation Improvement Program (TIP) List.
- The town should their exercise rights to use right of way in front of the Indeck Property, and on the IP bridge.

INFRASTRUCTURE

- Map all existing infrastructure and utilities, connections, entrance points and exit points.
- Contact Fuss & O'Neill to receive an updated quote for Option A (relocation of primary transformer) as discussed in the 2008 Site Development Assessment.
- Initiate discussion with Turners Falls Paper pertaining to the separation of existing sewer line from Strathmore Building 4.

FUNDING

- Further investigate funding sources identified by NewLeaf, in addition to others that may have been overlooked or previously suggested.
- Create a list of applicable projects that could potentially be included in the FERC negotiation process.
- Apply for grants and/or loans to supplement revitalization costs.

1-2 YEARS

ACCESS

- Hire consultants to evaluate the feasibility of the of the 5th Street reconfiguration as illustrated in the Livability Plan.
- Investigate options for the replacement of the 6th Street Bridge.

INFRASTRUCTURE

- Evaluate condition of existing sewer ejector stations in the Strathmore Mill Complex.
- Research costs associated with connecting the northern and southern ends of the District to existing fiber-optic cable routed in from Greenfield.
- Obtain estimate for the replacement of existing eight-inch domestic water line that crosses the Strathmore Pedestrian Bridge, with new six-inch main.
- Hire consultant to evaluate the feasibility of a water based (in Canal) closed loop geothermal system for the Strathmore Mill Complex, and traditional

closed-loop ground systems for: Strathmore Building 11, FCHRA, Railroad Salvage and Annex.

- Initiate Strathmore Pedestrian bridge replacement as suggested by Fuss & O'Neill.

FUNDING

- Evaluate cost of restoring windows to original condition for the Strathmore Mill Complex in order to be eligible for qualify for Historic Rehabilitation Tax Credits.
- Apply for grants and/or loans to supplement revitalization costs.

3-5 YEARS

ACCESS

- Replace 6th Street Bridge; deconstruct or move defunct 6th Street Bridge.
- Restore or replace Railroad Bridge to connect proposed bike path with existing Canalside Rail Trail.

INFRASTRUCTURE

- Replace all municipally supplied infrastructure (sewer, water and electrical) across Strathmore Pedestrian Bridge.
- Implement sustainable energy sources where applicable.

FUNDING

- Apply for grants and/or loans to supplement revitalization costs.

FINAL CONCLUSION



Figure 108. Canal Street street sign

SUMMARY OF RECOMMENDATIONS

The Montague Department of Planning and Conservation, tasked NewLeaf with nine directives relating to the creation a redevelopment plan for the Turners Falls Canal District in the Village of Turner Falls. In response, our team has integrated those nine directives into one District Vision Plan, which provides the initial roadmap for successful District redevelopment. This Canal District Vision Plan incorporates those nine directives into three deliverables: a District Vision, a District Plan, and identification of Key Public Infrastructure and Investments.

The major recommendations from each of the three above identified Client Deliverables include:

- Develop gateways to the District at the IP Bridge, Strathmore Pedestrian Bridge, Railroad Salvage Area

- Install interpretive signage through the District that tells the stories of the area's Native American and Industrial roots.
- Adopt the proposed PUD overlay district ordinance as a redevelopment strategy for the District.
- Utilize the FERC relicensing process as a negotiation opportunity to address community concerns and redevelopment needs.
- Redesign and redevelop the Strathmore Pedestrian Bridge in accordance with Option 2 of the 2008 Fuss and O'Neill Site Development Assessment.
- Apply for all identified funding sources and investigate other funding options as feasible.

Taken together, these major recommendations, along with the other recommendations made, will embody a redevelopment plan that creates a revitalized District that welcomes appropriate development that reflects the historic character of the mill buildings as well as neighboring Downtown.

CLOSING REMARKS

Despite long-term disinvestment and neglect due to the lingering effects of the post-industrial economy that hit the Town and Turners Falls particularly hard, residents remain optimistic about the future of the District, a sentiment expressed through feedback and the drive to retain and honor its historic character.

A growing arts culture solidifies this optimism, and the successful Downtown revitalization based upon this culture has pushed to direct this success onto the neighboring District. Turners Falls needs to incorporate the past with the present in order to continue on the vibrant path of the future. It is NewLeaf's hope that this District Vision Plan and its recommendations provide the community with the tools and ideas necessary to preserve its heritage while incorporating new development into its community character. Although the journey may be long and intensive, the route to success is clearly laid out.

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APPENDICES

APPENDIX I: IMPLEMENTATION PLAN COMPILATION

As requested by the Client, NewLeaf has compiled and prioritized a list of recommendations that can be implemented with 6 months, 1-2 years, and 3-5 years. Recommendations in the 6-month time period seek to activate the District through implementation of low cost techniques. NewLeaf hopes that any potential benefits or perceived successes of these economical applications by means of increased visitation, or exposure would be a strong indicator that allocation of more significant resources would have a similar or more pronounced effects for the revitalization and reintegration of the District with the Town within over time (2 - 5+ years).

PUBLIC/STAKEHOLDER ENGAGEMENT

6 months

- Creation of Town administered social media pages (i.e. Facebook, Twitter, blog posts) dedicated to the Turners Falls Canal District.
- The Town should reach out to the remaining stakeholders whom NewLeaf was unable to interview.
- Engage in the FERC relicensing negotiation process.

1-2 years

- Design a second round of public engagement to gather information specifically about the future of the District.
- Create a design competition for the restoration of the FCHRA building, based on criteria set forth by the Town.
- Hold a tour of the District, or activation event during the summer months.

3 - 5 years

- Continue to hold events that will engage the public and offer opportunities for community feedback.

DISTRICT VISION

6 months

Tactical Urbanism:

- Hire an artist to paint a mural on the Indeck Coal Silo.
- Affix red (left-port) and green (right-starboard) lights to the IP bridge to represent watercraft history
- Establish a low-cost wayfinding system that connects Downtown to the District (e.g. corrugated plastic, affixed by zip ties).

1 - 2 years

Tactical Urbanism:

- Colored lighting on Coal Silo (night-time connection).
- Redesign IP Bridge/Canalside Rail Trail intersection into a major gateway for the northern end of the District
- Create an amphitheater on the existing footprint of the Indeck Property.
 - Partner with Shea Theater on the project

3 - 5 years

- Install an outlook observation deck on the top of the Coal Silo to promote as a tourist attraction for the region.
- Develop the Strathmore Pedestrian Bridge entrance on Canal Street into a gateway to the Strathmore Mill Complex.

DISTRICT PLAN

6 months

- Adopt proposed PUD Overlay District.
- Engage in discussion of continued operation with Turners Falls Hydro LLC within Strathmore Building 9.
- Pursue acquiring former Railroad Salvage property.
- Assist with identifying potential relocation spots for FCHRA.
- Consider the usages within the Livability Plan (Native American Cultural Park, dog park) for FirstLight Open Space

1-2 Years

- Engage in discussion with FirstLight through FERC relicensing process.
- Hire engineering consultant to explore selective demolition and renovation recommendations.
- Explore possibility of implementing a special, District-wide tax assessment.

3 - 5 Years

- Explore feasibility of conducting cleanup of Indeck Property.
- Utilize selective demolition to remove “least-historic” structures of the Strathmore Mill Complex.

INFRASTRUCTURE & INVESTMENTS

6 Months

Access

- Contact Fuss & O'Neill to receive an updated quote for Option Two (210' single-truss replacement bridge) discussed in the 2008 Site Development Assessment.
- Create, or hire a consultant to delineate owners, and map all Right of Ways and easements within the District.
- Investigate low cost tactical urbanism lighting options for the IP Bridge.
- Evaluate structural conditions of all bridges if previous evaluations are outdated.
- Determine where the replacement of White Bridge stands on the State Transportation Improvement Program (TIP) List.
- The Town should exercise their rights to use Right of Way in front of the IP Bridge.

Infrastructure

- Map all existing infrastructure and utilities, connections, entrance points, and exit points.
- Contact Fuss & O'Neill to receive an updated quote for Option A (relocation of primary transformer) as discussed in the 2008 Site Development Assessment.
- Initiate discussion with Turners Falls Paper pertaining to the separation of existing sewer line from Building 4.

Funding

- Further investigate funding sources identified by NewLeaf, in addition to others that may have been overlooked or previously suggested.
- Create a list of applicable projects that could potentially be included in the FERC negotiation process.
-

1-2 Years

Access

- Hire consultants to evaluate the feasibility of the of the 5th Street reconfiguration as illustrated in the Livability Plan.
- Investigate options for the replacement of the 6th Street Bridge.

Infrastructure

- Evaluate condition of existing sewer ejector stations in the Strathmore Mill Complex.
- Research costs associated with connecting the northern and southern end of the District to existing fiber-optic cable routed in from Greenfield.
- Obtain estimate for the replacement of existing eight-inch domestic water line that crosses the Strathmore Pedestrian Bridge, with new six-inch main.
- Hire consultant to evaluate the feasibility of a water based (in power canal) closed loop geothermal system for the Strathmore Mill Complex, and traditional closed-loop ground systems for: Building 11, FCHRA, Railroad Salvage & Annex.
- Initiate Strathmore Pedestrian Bridge replacement as suggested by Fuss & O'Neill.

Funding

- Evaluate cost of restoring windows to original condition for the Strathmore Mill Complex in order to be eligible for qualify for Historic Rehabilitation Tax Credits.
- Apply for grants and/or loans to supplement revitalization costs.

3 - 5 Years

Access

- Replace 6th Street Bridge; deconstruct or move defunct 6th Street Bridge.
- Restore or replace Railroad Bridge to connect proposed bike path with existing Canalside Rail Trail.

Infrastructure

- Replace all municipally supplied infrastructure (sewer, water, and electrical) across Strathmore Pedestrian Bridge.
- Implement sustainable energy sources where applicable.

Funding

- Apply for grants and/or loans to supplement revitalization costs

APPENDIX II: TAX YIELD PER ACRE (TYPA) ANALYSIS

Analyzing data based on tax yield per acre, as opposed to other metrics, demonstrates the most financially efficient way to develop a single acre of land. As of 2016, the tax rate for residential properties was \$17.61 and \$26.30 for commercial properties, (Town of Montague, MA, 2016). In Montague, the tax yield per acre is calculated as follows:

$$\text{TYPA} = [(\text{Assessed value of the parcel}) \times (\text{Tax rate}/\$1000)] / \text{Parcel acreage}$$

TYPOLOGIES

Using building types that are already present within the Town of Montague, NewLeaf created an array of typologies (classifications based on general type) that demonstrate how different development models will yield different tax revenues for the Town. These chosen typologies are based upon needs identified through stakeholder feedback and Client Directives. The typologies provide a range of development types that can be combined to fit various development contexts. In this way, the typologies can be viewed as a “shopping list” that allows The Client to tailor the TYPA model to ideal mixed-use redevelopment outcomes. Table X lists the tax yields per typology and the next sections provide details on each typology.

Table 1 - Building Typology Summarization

Typology	Assessed Value (Est.)	Tax Rate / \$1,000 (2016)	Parcel Acreage¹ (Sq. ft.)	TYPA (Tax Yield per Acre)
Light-Industrial	\$20,000	\$26.30	5,000	\$4,112.21
Mid-scale Commercial	\$100,000	\$26.30	5,000	\$20,561.07
Market-rate Residential	\$50,000	\$17.61	1,200	\$38,366.01

LIGHT INDUSTRIAL

The light-industrial typology is a common building type in Montague. A light-industrial typology could be a small machine shop, a carpenter's workshop, or an artisan's studio space. Assuming an estimated assessed value of \$20,000 the annual tax yield for a 5,000 sq. ft. light-industrial space is roughly \$4,112.21

Master Equation

$$\text{TYP A} = [(\text{Assessed value of the parcel}) \times (\text{Tax rate}/\$1000)] / \text{Parcel acreage}$$

Example Equation

$$\text{TYP A} = [(\$20,000) \times (\$26.30/\$1,000)] / 0.11478 = \$4,112.21$$

MID-SIZE COMMERCIAL

The mid-size commercial typology is a common building type. A mid-size commercial typology could be a doctor's office, a data center, or a financial institution's operations center. Assuming an estimated assessed value of \$100,000 the annual tax yield for a 5,000 sq. ft. mid-size commercial space is roughly \$20,561.07

Master Equation

$$\text{TYP A} = [(\text{Assessed value of the parcel}) \times (\text{Tax rate}/\$1000)] / \text{Parcel acreage}$$

Example Equation

$$\text{TYP A} = [(\$20,000) \times (\$26.30/\$1,000)] / 0.11478 = \$20,561.07$$

MARKET-RATE RESIDENTIAL

The market-rate residential typology is a common building type. A market-rate residential typology could be a 2-bedroom apartment or condominium. Assuming an estimated assessed value of \$50,000 the annual tax yield for a 1,200 sq. ft. mid-size commercial space is roughly \$20,561.07.

Master Equation

$$\text{TYPA} = [(\text{Assessed value of the parcel}) \times (\text{Tax rate}/\$1000)] / \text{Parcel acreage}$$

Example Equation

$$\text{TYPA} = [(\$50,000) \times (\$17.61/\$1,000)] / 0.02295 = \$38,366.01$$

Page Break

OVERALL SUMMARY

While the TYPA for each of the three-abovementioned typologies seem small relative to an assumed value, remember that these are not standalone structures, but units within a larger building. Partitioning a large, open interior area into smaller, individual spaces generates a volume of smaller revenue streams, as opposed to a larger, singular revenue stream. Square footage is a key factor, and these typologies represented above are estimates and for illustrative purposes only. A developer would be more knowledgeable about the best square footage / use ratio to maximize profit, which in turn, the Town receives through assessed property tax revenue.

APPENDIX III: PRO FORMA MODEL

The Pro Forma model can be found as an Excel document included on the disk of materials provided to the Client.

APPENDIX IV: MASTER STAKEHOLDER LIST

The following list includes stakeholders that the Client and NewLeaf identified, but were not able to contact during the preparation of this report.

NAME	TITLE	ORGANIZATION	CONTACT INFO
Bazler, Beth	Land Manager	FirstLight	(413) 659-4515
Brule, David	Executive Director	The Nolumbeka Project	dpbrule@hotmail.com
Kennedy, Shawn	Supervisor, Great Falls Discovery Center	MA DCR	(413) 863-3221
Waite, John	Director	Franklin County Community Development Corporation	johnw@fccdc.org
Zaccheo, Mark	Owner	Olive Street Development, LLC	mzaccheo@olivestreetdevelopment.com

APPENDIX V: FERC NEGOTIATION REQUESTS

Below are the suggested items to negotiate within the FERC relicensing process with FirstLight regarding the Turners Falls Canal District and the greater area.

1. Fund total replacement and construction of 210' Strathmore Pedestrian Bridge with visual extension through Strathmore Mill to the Connecticut River (Strathmore RiverView)
 - Bridge to be level with Canal Street and be raised one-story to connect to Strathmore Mill Complex.
 - Bridge to provide a thermal covering to allow for four-season access
 - Bridge to continue to provide utility access to the Canal District
2. Provide greater public River access on the Canal District's North End and Throughout Area
 - Less River drainage (allow more water to flow through the River to enable greater recreational usage)
 - Provide a public boat launch (canoes, kayaks, etc.)
 - Provide a permanent public access easement along Canal embankment rail bed near Railroad Salvage Annex building from 6th Street to the 10th Street Pump Station and include cross-Canal Rail Bridge for Canalside Rail Trail connection.
 - Provide a permanent public access easement along canal embankment from Indeck Property Bridge to Strathmore Mill Complex.