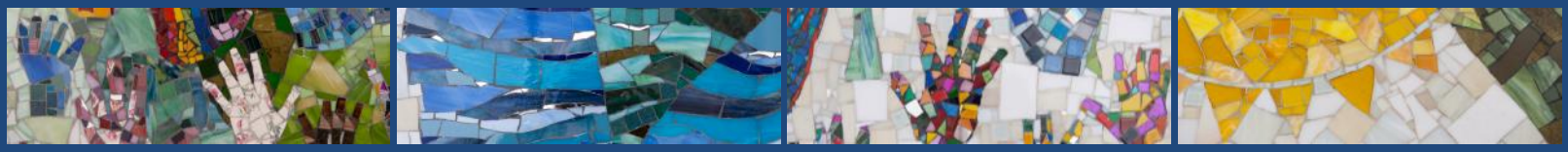
SUSTAINABLE

Franklin County

June 2013



Franklin County's Regional Plan for Sustainable Development

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June 2013

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The work that provided the basis for this publication was supported by funding under an award with the U.S. Department of Housing and Urban Development. The substance and findings of the work are dedicated to the public. The author and publisher are solely responsible for the accuracy of the statements and interpretations contained in this publication. Such interpretations do not necessarily reflect the views of the Government.

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Sustainable Franklin County

SUSTAINABLE Franklin County

What is the Regional Plan for Sustainable Development (RPSD)?

The RPSD is a long term guide for Franklin County municipal governments, regional organizations, businesses, non-profits, and individuals. Through extensive public participation, individual residents and representatives of many organizations have contributed to the creation of this Plan.

What is Sustainability?

and why do we care?

Sustainability is the ability of Franklin County to meet its current and ongoing environmental, social, and economic needs without compromising the future for succeeding generations.

A sustainable Franklin County would have: affordable housing, jobs with livable wages, transportation options that would save money and improve the environment, reduced energy costs, enough farmland to feed ourselves and others, good schools, equal access to services, a vibrant community, and much more.

PLAN CHAPTERS

Franklin County's Challenges and Opportunities:

Franklin County is a rural region. Providing infrastructure, transit, and an equitable distribution of jobs is difficult and expensive with a small, widely dispersed population. Fortunately, regional cooperation is a norm for Franklin County. Continuing to think regionally will be imperative in the future since resources go beyond municipal borders, such as watersheds, roads, economy, culture, and more.

Regional Plan for Sustainable Development Goals:

- Increase and improve the housing stock, while focusing on affordability;
- Provide additional options for alternative transportation;
- Encourage economic development, by redeveloping vacant sites;
- Promote energy conservation and efficiency;
- Protect natural resources, including farmland and drinking supplies;
- Foster the growth of arts and culture;
- Concentrate new growth near town centers and focus on infill development; and
- Improve infrastructure, particularly broadband

In 2010, the Franklin Regional Council of Governments, along with its Project Partners (Community Action, Franklin County Regional Housing & Redevelopment Authority, Franklin County Community Development Corporation, North Quabbin Community Coalition, and the Towns of Deerfield, Greenfield, Montague, and Orange) were selected as one of 45 regions across the U.S. to receive a Sustainable Communities Planning Grant.

This project is made possible through a U.S. Department of Housing and Urban Development (HUD) Sustainable Communities Grant. For more information about the project please contact Mary Praus, FRCOG Land Use Planner, by phone (413-774-3167, ext. 131) or e-mail (mpraus@frcog.org) or visit the FRCOG website at (http:www.frcog.org/landuse/landuse_HUD.php).

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Sustainable Communities Planning Grant Program
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FRANKLIN COUNTY CDC
COMMUNITY DEVELOPMENT CORPORATION

COMMUNITY Action!
of the Franklin, Hampshire, and North Quabbin Regions

PLAN VISION

Where are we headed?

"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."

Public Participation Summary

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

Primary Goals

- Educate residents about principles of sustainability and planning issues in the region;
- Encourage an open and inclusive dialogue across populations;
- Gather information regarding the region's present and future needs; and
- Increase participation in the planning process across populations.

Types of Public Participation Utilized

Needs Assessment Survey

The Needs Assessment Survey was developed by the Consortium member Community Action, in partnership with Sustainable Franklin County to ensure that the needs of people with lower incomes, people with disabilities or minorities were well represented in the planning process.

The final survey was distributed throughout Franklin County with assistance from Project Partners. A total of 416 surveys were completed by Franklin County residents in this demographic, far surpassing the number needed to obtain a representative sample.

Goals Survey

As a precursor to the Sustainability Workshops, a set of potential goals for Franklin County was compiled from past regional plans for each of the topic areas. The surveys were distributed across the County prior to the Workshops. The survey was available both in electronic form as well as hard copies. Survey respondents were asked to identify the three most important goals for Franklin County with respect to each of the Plan topic areas. Input was received from 180 respondents and nearly all Franklin County towns were represented. Top ranked goals are presented in each of the Plan's chapters to guide the recommendations and strategies.

Sustainability Workshops

The Sustainability Workshops were designed to be a hands-on, interactive way to get people involved in the planning process. The goals of the workshop were to educate residents on the principles of sustainability, identify the current and future needs of the region, and to establish a regional vision for sustainable development. Three Sustainability Workshops were held in Franklin County in each part of the County (east, west, central).

Workshop participants were presented with a set of housing flags which represented the projected amount of new housing that will be needed to accommodate the 3,500 households expected over the next 25 years. These flags also represented the current composition of housing—mostly single family. Participants could assume "business as usual" and use the provided flags or participants could exchange these housing types for others, such as additional multi-family housing or redevelopment of vacant mill buildings for housing. The participants were then asked to place the housing on the map.

The mapping exercise challenged participants to envision a more sustainable future by presenting them with housing choices and the trade-offs associated with each selection. The choices that were made helped provide important information that was used throughout the Plan.

Sustainable Franklin County Steering Committee

The Steering Committee was created in the early stages of the project to oversee the creation of the Regional Plan for Sustainable Development. The Steering Committee provided critical feedback regarding the development of the Sustainability Workshops as well as with the development of individual chapters. Participation on the Steering Committee was open to anyone who was interested. In total, 74 residents, municipal officials, students, and business owners served on the Sustainable Franklin County Steering Committee during the life of this project and provided a wide array of valuable perspectives.

Public Art Display

As a capstone to the public participation efforts, a public art display was commissioned with the goal of visually demonstrating the vision statement and goals of the Regional Plan for Sustainable Development. The public artwork is meant to illustrate the outcome of the public participation efforts, but the creation of the art itself involved the public – particularly local youth. Community Action organized a youth group that helped select the winning artist and participated in the creation of the art. The selected artist, Cynthia Fisher, created a mosaic design, which incorporated the handprints of many residents, including the youth group.

Chapter 4: Housing

Major Findings

Many in Franklin County are burdened with housing costs that are higher than they can afford. The population is aging rapidly and many elders are faced with large single family homes that they can no longer maintain or afford. Forty percent of the County's housing stock was built prior to 1939, which means that much of the region's housing is energy inefficient. Franklin County has a very small amount of rental housing stock. Roughly seventy percent of the housing stock is composed of single family homes and there are few alternatives for those that may desire more affordable housing options or less maintenance.

What about housing?

Issues & Constraints

Limited public funding

The scarcity of public funding has severely challenged the housing landscape in the region. Specifically, it has made providing new affordable housing and renovating current subsidized housing very difficult. The waiting list for housing vouchers has been closed due to overwhelming demand and insufficient supply. In addition, there is very limited public funding available to spur redevelopment of Franklin County's many vacant or underutilized historic buildings. These buildings would be ideal for conversion to mixed uses including residential uses because of their central locations in employment centers and the need for additional housing in the region, particularly market rate and affordable rental housing.

Zoning can support infill opportunities

Many Franklin County communities have zoning that reflects the predominance of large lot single family homes that are in the region. In downtowns and village centers, zoning that allows mixed use development including residential and commercial uses should be adopted. Additional housing should be located in areas close to existing services, transit and other public amenities. Allowing lots with reduced road frontage can also encourage infill in town centers.

Insufficient infrastructure to accommodate additional housing

Besides funding, sewer and water infrastructure is the most common and critical constraint in the region's ability to construct additional housing in or near downtowns or village centers. An analysis of the current state of the County's infrastructure is detailed in the Land Use & Infrastructure Chapter.

Franklin County's Top Housing Goals

1. Improve the energy efficiency of housing
2. Improve the quality of existing housing
3. Locate housing near employment and town centers

Future Housing Needs for Franklin County

35,500 Total Housing Units Needed by 2035*

- 4,300 of these units need to be affordable for low income households *(based on the current 12% of the population that is considered very low income)*
- 8,500 of these units need to be able to accommodate households over the age of 65 *(based on the projection that 24% of the population will be over the age of 65)*
- 3,100 of these units need to be accessible for the disabled *(based on the current Census estimate that 9% of the population under the age of 65 has a disability)*

*There are currently 33,536 units already in the County.

Selected Housing Recommendations & Strategies:

Increase energy efficiency of all housing stock
- ✓ Educate renters, landlords, and homeowners about programs that offer financial assistance for home energy upgrades.

Promote housing affordability
- ✓ Encourage the creation of accessory apartments.

Promote residential infill in downtowns and town centers
- ✓ Revise zoning to facilitate the creation of various housing types and densities.

Provide housing options for elder and disabled populations
- ✓ Construct traditional senior housing complexes in or near town centers served by public transit.

Increase rental housing stock
- ✓ Convert vacant or underutilized mill buildings to residential uses.

Prevent homelessness and assist with homeless
- ✓ Provide incentives and support for landlords to rent to low & moderate income families.

What Can YOU Do?

- Ask for a FREE energy assessment of your home
- Improve the energy efficiency of your home by adding insulation.

This project is made possible through a U.S. Department of Housing and Urban Development (HUD) Sustainable Communities Grant. For more information about the project please visit the FRCOG website at (http:www.frcog.org/landuse/landuse_HUD.php).

Chapter 5: Transportation

Major Findings

Franklin County residents are dependent on their cars. Almost 80% of Franklin County residents drive to work alone. Only 10% carpool and a much smaller amount (1%) took public transit. While most residents drive, bicycling is very popular in the region for both recreation and commuting. The Franklin County Bikeway is an on-road and off-road 240-mile network that connects town centers across the County. There is a sizable proportion of the population (10%), mostly composed of low income households, that have no access to a vehicle. The availability and effectiveness of the public transit system is critically important for this population group, as is the need for more walkable downtown areas. Currently, the transit system only serves the largest population centers and runs only on weekdays during the daytime. Increased public transit including more frequent service and east-west passenger rail and bus service is needed. Funding is a major constraint to expanding public transit.

What about transportation?

Issues & Constraints

Limited availability of transit services

The most frequently mentioned transportation constraint for Franklin County is the limited availability of transit services. Currently, the region's transit service only has funding to operate during the day on the weekdays with several hour intervals (a few routes run more frequently at once an hour). In addition, the transit service only connects a portion of the communities within Franklin County. For someone dependent on public transportation, this lack of transit services is a serious obstacle to obtaining a living wage job, having children in daycare, running basic errands, and more. The scarcity of public funding for additional transit is the primary reason for limited service. Expansion of service to evening and weekends is needed to increase sustainability.

Lack of passenger rail

The lack of passenger rail enabling Franklin County residents to travel longer distances without having to depend on a car is a major constraint. A north-south passenger service is returning to the region over the next year and stopping in Greenfield, but an east-west route to Boston is also very important to residents in the region.

Growing elder population

Population projections show that over the next 30 years, the size of the elder population in the County will grow by 77%. This trend has important consequences for transportation planning as people drive less as they age. Demand for public transit and demand response services will increase and meeting this demand in a rural region with scarce public funds will be difficult.

Franklin County's Top Transportation Goals

1. Increase availability and use of public transit
2. Restore passenger rail service
3. Increase bicycle/pedestrian facilities and promote walking and biking

News Flash!

Did you know that passenger rail is returning to Franklin County?

Amtrak will begin stopping in Greenfield at the John W. Olver Transit Center by 2014.

Selected Transportation Recommendations & Strategies:

Encourage integrated planning activities that support sustainable development

- ✓ Increase frequency and extend bus service hours during evenings and weekends, in addition to expanding bus services between town centers and dense residential neighborhoods.

Promote transportation activities and technologies which conserve energy and reduce travel congestion and vehicle emissions

- ✓ Promote improved bicycle and pedestrian connections between the towns of Greenfield and Montague.

Promote economic development

- ✓ Promote and market the County's Scenic Byways and Bikeways.

Improve transportation safety

- ✓ Advance the Route 2 East Safety Improvements.
- ✓ Implement Complete Streets and Safe Routes to School

Support the preservation of existing transportation infrastructure

- ✓ Maintain roadway pavement condition in "good" status when possible.

What Can YOU Do?

- Walk or bicycle when possible.
- Use public transit as much as possible.
- Drive less by combing errands into single trips and carpooling.
- Buy the most fuel-efficient vehicle possible.

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Chapter 6: Economic Development

Major Findings

Franklin County residents have incomes much lower than the state average, although they are comparable to the national average. However, the higher cost of living in Franklin County, due to transportation and housing costs, creates a very challenging reality for many residents trying to survive economically. Addressing underemployment and creating jobs with "living wages" is critical. Manufacturing is the largest employment sector in the County and also has some of the highest wage rates. Fortunately, precision manufacturing and food processing are poised to grow further. The percentage of manufacturing jobs in the County is twice the state and national rates. In addition, the region is increasingly recognized for its strong arts and cultural community, and is a growing destination for natural resources-based tourism. In the downtowns and village centers, there is strong interest in redeveloping underutilized properties for productive use. However, the high cost of redevelopment is an obstacle to support economic growth.

What about economic development?

Issues & Constraints

Workforce Development

The population in Franklin County is getting older. Older members of the workforce may need training to transition to new work opportunities or to remain employable. Due to the high demand for jobs in the region, youth are not getting their "first jobs" and gaining experience. This makes it more difficult for them to be hired as young adults. There is a gap between the growing number of skilled manufacturing jobs and the availability of skilled workers. More training opportunities are needed to develop "middle skills" for individuals who have completed high school but are not pursuing college degrees.

Difficulty in developing/redeveloping property

There are a number of vacant or underutilized historic structures and mill buildings throughout Franklin County that would be ideal for redevelopment as commercial and/or residential properties. However, the high cost to redevelop these properties often cannot be recouped through market rate lease or rental rates and there is very limited public funding to assist with redevelopment. This difficulty is sometimes compounded by the cost of upgrading or expanding sewer and water infrastructure or the stormwater management needed for redevelopment.

Factors that limit business development and growth

One factor limiting business development is the lack of funding to expand businesses technical assistance programs, support local/regional business associations, and to implement marketing initiatives. Access to venture capital funding and alternative capital for start-ups is scarce. In terms of space, there is limited availability of shovel ready industrial park land for manufacturers to locate or expand on. In addition, there is little commercial and office space in village centers that is accessible.

Franklin County's Top Economic Development Goals

1. Redevelop vacant or underutilized industrial and commercial buildings or sites
2. Support sustainable economic development in the region
3. Promote and invest in specific business sectors including manufacturing, agriculture, and clean energy

Did you know...

That 95% of all private sector businesses in Franklin County have fewer than 50 employees? And that half of all employees in the County are employed by small businesses?

Western Mass. Food Processing Center (Photo: FCCDC/Beth Reynolds)

Selected Economic Development Recommendations & Strategies:

Support activities that enhance job skills and access to jobs in manufacturing and other significant industry clusters

- ✓ Promote career awareness of growing industries.
- ✓ Create middle skills training programs.
- ✓ Explore the feasibility to develop more childcare facilities in employment centers, industrial parks, and near transit centers.

Support activities that revitalize and more intensely use downtowns & village centers

- ✓ Support zoning for mixed use development.
- ✓ Targeted investments to expand or upgrade water, sewer, and/or stormwater management infrastructure systems.

Support activities to expand the amount of planned industrial park land available

- ✓ Support the development of new "planned industrial parks."
- ✓ Prepare parcels to become "shovel ready."

Support growth of information technology cluster.

- ✓ Support investments that connect MassBroadband123 network to homes, businesses, and institutions.

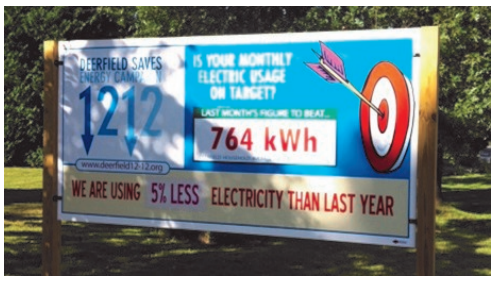
What Can YOU Do?

- "Buy Local" when possible.
- Support local artists and attend cultural events.
- If you own a business, become involved in your chamber of commerce or business association.

This project is made possible through a U.S. Department of Housing and Urban Development (HUD) Sustainable Communities Grant. For more information about the project please visit the FRCOG website at (http:www.frcog.org/landuse/landuse_HUD.php).

Major Findings

The Franklin County region has been a leader in the nation in terms of a growing clean and renewable energy movement. Over half of the County's towns are designated Green Communities and the nation's first net-zero energy transit center was recently constructed in downtown Greenfield. However, much more needs to occur to make the region more sustainable and to mitigate climate change. It is projected that U.S. energy demands will increase by more than one-third by 2030, with electricity demand rising by more than 40%. Franklin County's carbon emissions per capita are the highest in Western Massachusetts and higher than the statewide average—largely because of the amount of driving residents do in the region. Franklin County has more than enough hydropower to meet the County's electric needs, but much of it is consumed by users outside the region. The County has also recently sited more than 18 MW nameplate capacity of renewable energy in the form of solar and wind projects.



What about energy?

Issues & Constraints

Reliance on vehicles for transportation

In Franklin County, between 1975 and 2010, there was a modest increase in population by 3,085 people. During the same time period, the number of vehicles registered increased 3.5 times the rate of the population increase. This large increase can be attributed primarily due to rural development located away from employment centers leading to an increased reliance on vehicles. The growth of women in the workforce and more common use of personal automobiles for single occupancy travel have also contributed to the growth of the number of vehicles.

Difficulty in siting large-scale renewable energy facilities

There are limited areas in Franklin County zoned for large-scale industrial facilities including renewable energy electric generating facilities. For communities wishing to support renewable energy, they will need to identify suitable locations and appropriate siting standards for large-scale solar and/or wind facilities.

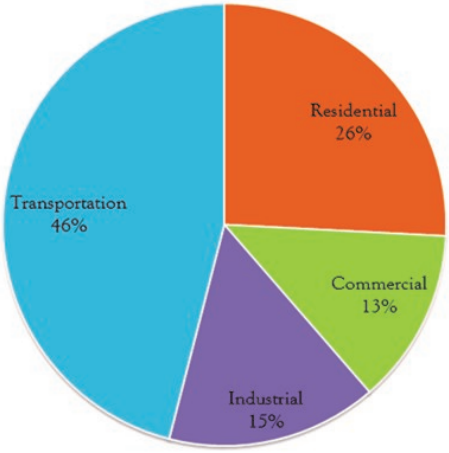
Implementing energy recommendations in residences

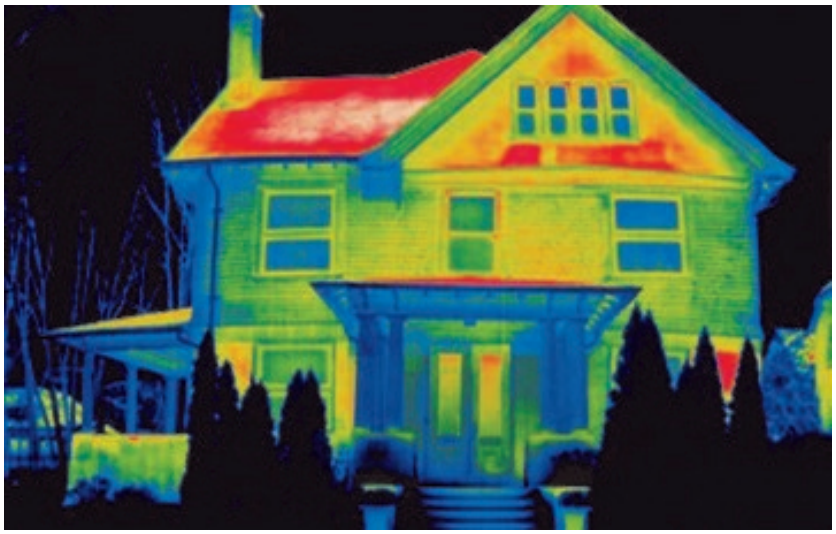
A surprising, yet common challenge is getting residents to sign up for one of the many available energy efficiency programs and in executing the recommended improvements. Requirements to remediate existing issues such as the presence of knob-and-tube wiring and asbestos are often cost-prohibitive and prevent households from seeking weatherization services.

Franklin County's Top Energy Goals

1. Promote energy conservation and efficiency
2. Increase the quantity of locally-produced clean energy
3. Reduce the use of fossil fuels

Franklin County Energy Consumption, by Sector (2010)





Selected Energy Recommendations & Strategies:

Reduce energy consumption across all sectors – transportation, residential, commercial, and industrial – without sacrificing quality of life or economic opportunities

- ✓ Implement an Alternative Transportation Marketing Campaign to reduce vehicle miles traveled.
- ✓ Expand an efficient transit service in the County.

Improve energy efficiency so as to reduce wasted energy

- ✓ Extend and enhance financing for energy efficiency improvements for homes, and rental housing, businesses.

Reduce the impacts of emissions and related extreme weather events

- ✓ Adopt Low Impact Development Bylaws in Towns.

Site new green energy and support the local economy

- ✓ Adopt a "buy local" purchasing policy in schools and municipalities.

What Can YOU Do?

- Improve the energy efficiency of your home using funds from Mass Save or Community Action.
- When replacing a vehicle, look for the most fuel-efficient vehicle.
- When moving, consider moving closer to work and play.
- Install solar electric and/ or hot water panels.

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Major Findings

Franklin County has abundant natural resources which support its residents in many ways. A recent study shows that the County could have enough active farmland to grow all its own food if needed. Complete food self-sufficiency is not necessarily practical, but Franklin County could strive for food self-reliance, in which all its own vegetables, dairy and meat, and much of its grain and fruits could be grown locally. Protecting farmland and keeping it affordable is a key strategy to help ensure the region's sustainability. Currently, only 25% of the region's farmland is permanently protected.

Forests dominate the region, covering about 77% of Franklin County. While a large portion of the forests are permanently protected, the vast majority could be vulnerable to development and fragmentation. While it is important to protect forests, it is also important to maintain some as working forests to provide significant wood products and employment.

What about natural resources?

Issues & Constraints

Lack of food processing infrastructure and affordable farmland

For local farmers, a constraint to growing more food for the region and for export is the lack of infrastructure for food aggregation and processing. Infrastructure needs include meat and poultry slaughter and processing facilities; dairy processing facilities; cold storage and freezer facilities; expanded facilities for aggregation, basic processing, freezing and packing; and grain processing facilities and equipment. Another barrier is the lack of affordable farmland and farm buildings, especially for new-entry farmers.

Effect of climate change on the region's forests

Climate change could greatly impact New England's forests. These impacts could include changes in forest structure, more frequent forest fires associated with droughts, and more invasive species and diseases. These changes could have negative impacts on local resources such as a decline in maple syrup production and the deterioration of the Eastern Hemlock.

Vulnerability of drinking water supplies

A regional approach to protecting drinking water supplies is vital to Franklin County's sustainability. Currently, there are gaps in protection at the local level because some existing water supplies were approved prior to DEP source regulation protection. Further, there is a lack of knowledge about the extent and condition of aquifers that supply private existing wells. Because of these issues, existing and potential drinking water supplies could be vulnerable to contamination throughout Franklin County.

Franklin County's Top Natural Resource Goals

1. Protect farmland and local food supplies
2. Protect forests
3. Protect drinking water supplies and reduce water usage

Did you know…

Much of the County's best farmland is located in floodplains and are vulnerable to damage? Tropical Storm Irene dumped up to 10.6 inches of rainfall and caused an estimated $5 million in damage to 6,300 acres of farmland in the Pioneer Valley.

Selected Natural Resources Recommendations & Strategies:

Support town, regional, and state policies that help make farms and farming economically viable

- ✓ Help increase access to fresh food at farmers markets by all residents in the region including those with limited income.

Support the expansion of food and farming related infrastructure and services

- ✓ Expand the County's capacity to process locally raised meat, grains, and other products.

Support initiatives that protect large areas of unfragmented forestland and that promote local forest products.

- ✓ Promote town forests for the purpose of education, forest products, recreation, and conservation.

Encourage regional and local initiatives that identify and protect existing and potential drinking water supplies

- ✓ Inventory existing public water supplies, identify gaps in protection and encourage towns to adopt DEP standards or other model bylaws for aquifer protection.

Encourage regional and local initiatives that ensure the protection of wetlands and important flood storage areas

- ✓ Support the adoption of floodplain bylaws or floodplain

What Can YOU Do?

- Shop at a local farmers market.
- Have your well water tested regularly for contamination and make sure that your septic system is functioning properly.
- Replace older woodstoves with newer models that are much more efficient at burning wood.

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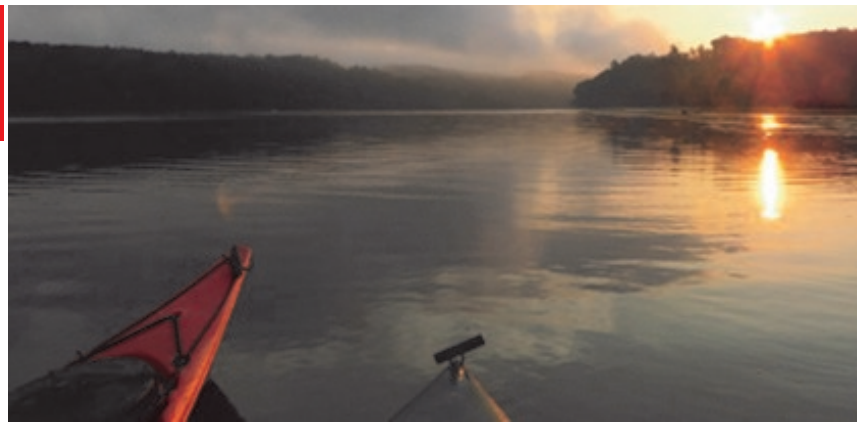
Chapter 9
Cultural Resources



Major Findings

Franklin County has a rich cultural heritage and a thriving artistic and cultural community. Cultural resources include places (such as a village centers), objects (such as artifacts), and creations (such as festivals). Development pressures, lack of upkeep, and environmental threats, such as flooding and acid rain, are endangering many of the region's cultural resources.

The County has several geographic concentrations of artisans (also called creative economies) in the region, including Turners Falls, Shelburne Falls, and the North Quabbin. Not only do these creative economies create a lively and interesting community, but they also provide employment and mentoring opportunities.

What about cultural resources?

Issues & Constraints

Environmental threats to cultural resources

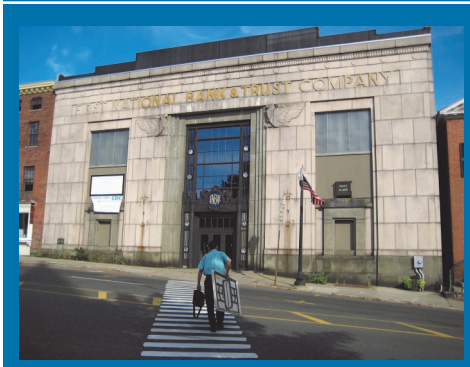
Many of the County's cultural resources could be vulnerable to damage due to flooding, which is anticipated to increase due to climate change. Village centers and Native American sites, many of which settled on rivers, are especially vulnerable to flooding. The buildings and other structures within village centers, which are also frequently designated as historic districts, are often older and of historical significance. They can contain historic archives, maps, and other objects which serve as a record of a town's history. Franklin County towns are challenged to find funding to help flood-proof older buildings and/or move cultural resources to areas less prone to flooding.

Scarce funding for protection and promotion of cultural resources

There is limited funding available for both the preservation of existing cultural resources and the support of emerging cultural resources. There is a great need in Franklin County for funding to restore and reuse the region's historical buildings and to protect them from threats, such as flooding. In addition, funding is needed to inventory and map cultural resource locations throughout the region before they become endangered. Lastly, funding is needed to support the vital sector of artists who make up the creative economy.

Difficulty in reusing/rehabbing historic structures

Franklin County has many historic vacant or underutilized buildings located in its village centers. Reusing or rehabilitating these buildings would be ideal for many reasons. However, retrofitting these older structures to meet current building codes and requirements for access are difficult and expensive. In addition, rehabilitating these structures to meet energy efficiency goals can be challenging due to the time period in which they were built and the manner of construction.



Franklin County's Cultural Resource Goals

1. Foster the growth of arts and culture
2. Support our agricultural heritage

3 (tie). Preserve rural and scenic landscapes

3 (tie). Revitalize and preserve historic town centers

Did you know...

That cultural organizations contributed $20 million to the Franklin County economy in 2003.

Selected Economic Development Recommendations & Strategies:

Encourage regional and local initiatives that identify and protect existing cultural and historic resources

- ✓ Provide technical assistance to towns for assessing, inventorying, mapping, and planning for cultural and historic resources.
- ✓ Support the development of a safety net for professional artists in the event of a disaster and/or emergency (such as Craft Emergency Relief Fund in Vermont).

Support the growth of creative economy

- ✓ Help sustain the North Quabbin Woods program and Turners Falls RiverCulture, projects that promote and enhance cultural activities.
- ✓ Seek funding to create and maintain a cultural resource database which captures information on artists and events in the region.

Support education and outreach related to cultural and historic resources

- ✓ Pursue funding to digitize historic photos and documents for the purposes of preservation and sharing.

What Can YOU Do?

- Attend local festivals and events.
- Purchase local art and craft items.
- Become involved in your local historic society.
- Encourage and/or participate in the collection of oral history narratives to capture important stories from elders.

This project is made possible through a U.S. Department of Housing and Urban Development (HUD) Sustainable Communities Grant. For more information about the project please visit the FRCOG website at (http:www.frcog.org/landuse/landuse_HUD.php).

Chapter 10: Land Use and Infrastructure

Major Findings

Historically many population centers in the region were settled along rivers, with houses clustered around town centers. In the last forty years, land use patterns have changed and new residential development has mostly occurred in dispersed areas, strung out along rural roads. The consequences of this type of development include fragmentation of forests and loss of farmland, increased municipal costs for road maintenance, infrastructure, and services, and increased climate change emissions due to more driving to outlying areas.

Because the majority of development in the region has historically occurred along rivers, things such as buildings, infrastructure, and farmland may be at risk from more frequent flooding as a result of climate change. Much of the public water and sewer infrastructure in the County is old and some facilities are operating near capacity. Few municipalities have the resources to complete the needed upgrades to this infrastructure. Some town centers lack any water or sewer infrastructure.

What about land use and infrastructure?

Issues & Constraints

Residential development patterns are fragmenting forests and farmlands

Residential development in outlying rural areas is due, in part, to large lot zoning and the Approval Not Required (ANR) provision of the Subdivision Control Law, Chapter 41 of the Massachusetts General Law. The ANR provision allows land owners to develop land for residential use without Planning Board approval as long as it meets frontage and access requirements.

Climate change may pose significant challenges to infill and redevelopment

Some of the areas identified as Priority Development Areas in the Plan are also located nearby rivers. More severe and frequent flooding events are expected to occur as a result of climate change. Infill and redevelopment should occur in locations outside of floodplain areas since buildings and infrastructure may be unable to withstand repeated flooding.

Water and sewer infrastructure may not support infill in recommended areas

Much of the public water and sewer infrastructure in Franklin County municipalities was constructed over 100 years ago. In order to support more infill and redevelopment of structures served by water and sewer lines, upgrades and expansions of infrastructure will be necessary.

Proposed Priority Development Areas

- South Deerfield Village Center
- Downtown Greenfield
- Downtown Orange
- Turners Falls
- Shelburne Falls Village Center

Emerging Development Areas

- Bernardston Village Center
- Northfield Village Center
- Sunderland Town Center
- Millers Falls/Ervingside

Franklin County's Top Land Use Goals

1. Prioritize redevelopment of vacant or under-utilized structures & properties
2. Locate new businesses in town centers or near transit services
3. Coordinate new development with existing transportation, water & sewer infrastructure

Franklin County's Top Infrastructure Goals

1. Protect and expand green infrastructure to reduce flooding, purify air and water, and decrease energy used for cooling
2. Improve broadband internet access
3. Maintain or upgrade sewer and water infrastructure

Selected Land Use Recommendations & Strategies:

Promote infill and redevelopment of Priority Development Areas, Emerging Development Areas, and all town centers

- ✓ Promote mixed use development (residential, commercial, light industrial, retail) in town centers and encourage roof-top and other low-impact siting of alternative energy as part of redevelopment.

Assess the impact climate change could have on vulnerable areas and infrastructure

- ✓ Update floodplain mapping using predictive modeling to help identify at-risk facilities and structures.

Encourage the adoption of sustainable development and redevelopment techniques

- ✓ Increase resilience of infrastructure, restore wetlands and maintain flood storage capacity of floodplains.

Support the deployment of broadband infrastructure

- ✓ Support investments that connect the MassBroadband123 network to homes, businesses, and institutions.

What Can YOU Do?

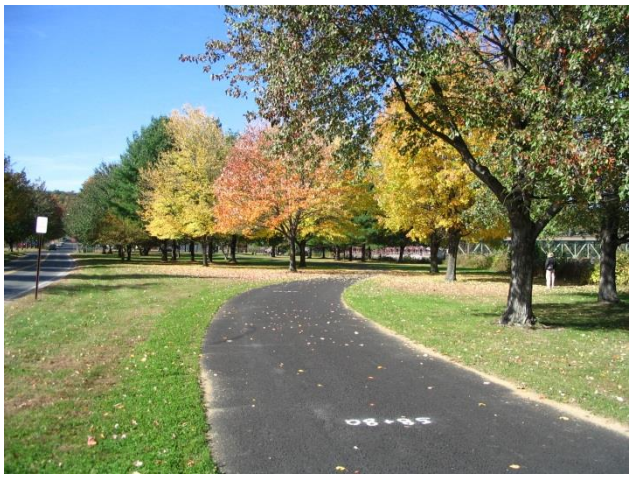
- Use green infrastructure techniques such as rain gardens, downspout disconnection, and tree planting around your home.
- Encourage your town to adopt bylaws that better protect flood storage areas.
- Get involved with your town's planning board or conservation commission to support sustainable development.

This project is made possible through a U.S. Department of Housing and Urban Development (HUD) Sustainable Communities Grant. For more information about the project please visit the FRCOG website at (http:www.frcog.org/landuse/landuse_HUD.php).

SUSTAINABLE COMMUNITIES GRANT
Sustainable Communities Planning Grant Program funded through US HUD, EPA & DOT
HRA DEVELOPING BETTER COMMUNITIES
FRANKLIN COUNTY CDC COMMUNITY DEVELOPMENT CORPORATION
COMMUNITY Action! of the Franklin, Hampshire, and North Quabbin Regions
frcog
North Quabbin Community Coalition
MONTAGUE
ORANGE
TOWN OF DEERFIELD
TOWN OF GREENFIELD

SUSTAINABLE FRANKLIN COUNTY

Chapter 1: Introduction



INTRODUCTION

Sustainable Franklin County: ***A Regional Plan for Sustainable Development*** (the "Plan") is a long-range blueprint for Franklin County's sustainable development. The Plan builds on past regional planning efforts and looks to the future, using the vision created through the public participation process. The resulting goals and recommendations, supported by the public, will help the region become more resilient and sustainable. The Plan acknowledges the impact climate change is likely to have on our region. Given these likely impacts, the Plan seeks to protect our environment, enhance our communities, and support our economic development. It also seeks to guide choices made by town governments and regional organizations and will serve as a decision-making tool for individuals, businesses, organizations, and municipalities.

The recommendations and strategies in the Plan are intended to be implemented in both the short and long term. In order to help ensure that the recommendations are implemented, each of the chapters within this Plan contains measureable benchmarks, which are data-driven and can be used to assess the progress Franklin County has made toward sustainability.

For the purposes of this planning effort, sustainable development is defined as "the ability of Franklin County to meet its current and ongoing environmental, social, and economic needs without compromising the future for succeeding generations". Sustainable development requires collaboration and compromise between individuals and local and regional organizations. This Plan supports this collaborative spirit and ensures that the recommendations made reflect Franklin County and its unique characteristics.

A sustainable Franklin County, as envisioned by this Plan, will incorporate climate change adaptation and mitigation into its local and regional planning processes. It will also offer variety in its new and rehabilitated energy-efficient housing and in its greater employment options, both of which will be concentrated within close proximity to one another. The Plan encourages alternative modes of transportation. Transportation, energy, and infrastructure costs will be lower and the County's communities will be more economically resilient and healthier. Chapter 2 describes in more detail the future vision of sustainability that this Plan articulates for Franklin County.

BACKGROUND

In 2011, the Franklin Regional Council of Governments (FRCOG) partnered with several regional organizations and towns to obtain a Sustainable Communities Regional Planning Grant from the U.S. Department of Housing and Urban Development. The partner organizations form the Sustainable Communities Consortium and include: Community Action, Franklin County Regional Housing and Redevelopment Authority (HRA), North Quabbin Community Coalition (NQCC), Franklin County Community Development Corporation

Why is sustainability important?

Sustainability can provide:

- Expanded transportation options;
- Lowered energy costs;
- Decreased dependence on oil from foreign countries;
- Increased vitality of local communities;
- Greater food security;
- More affordable housing options;
- Cost savings from greater coordination and leveraging of resources;
- Increased local control of the regional economy;
- Protection of critical resources, such as drinking water supplies and farmland; and
- Many other benefits.

(FCCDC), and the towns of Greenfield, Deerfield, Montague, and Orange. In addition to this Consortium group, a larger Steering Committee was formed to provide a variety of perspectives on the wide-ranging topic of sustainability. The Steering Committee was composed of regional organizations, non-profits, municipal officials, and residents from the region. This grant allowed the FRCOG to conduct a comprehensive regional planning process in order to create the first sustainability plan for Franklin County.

An extensive public participation effort was conducted prior to the drafting of this Plan in order to better understand Franklin County's residents' priorities and vision for the future. This process is detailed in "Chapter 3: Public Participation" and the vision and goals that came from the public participation process are detailed in "Chapter 2: Vision and Goals".

As part of the HUD Sustainable Communities Grant, several of the partner organizations are conducting local planning activities to demonstrate how this Plan can be used to guide planning and implementation at the local level. The Town of Greenfield is developing a Master Plan for Sustainable Development while the Town of Deerfield is conducting a Complete Streets and Livability Plan for the South Deerfield village center. The Town of Montague is conducting a Livability Plan for downtown Turners Falls and the Town of Orange is updating their Subdivision Regulations and Bylaws to incorporate sustainable development practices such as low impact development bylaws. Each of these towns will use this Plan's vision and goals as a guide as they apply the specific recommendations to each of the towns' unique characteristics and circumstances.

HUD Livability Principles

1. Provide more transportation choices.
2. Promote equitable, affordable housing.
3. Enhance economic competitiveness.
4. Support existing communities.
5. Coordinate policies and leverage investment.
6. Value communities and neighborhoods.

REGIONAL LANDSCAPE

Franklin County is located in Western Massachusetts on the border of Vermont and New Hampshire. It is the most rural county in the Commonwealth with a population of 71,778, distributed over 26 towns. Only four towns have a population over 5,000. See the Map at the end of this chapter for an overview of Franklin County and the surrounding region.

Franklin County is located in the Connecticut River Valley, which runs north and south through the County. The valley has a broad flat expanse offering unparalleled agricultural soils and beautiful scenic vistas. Flowing into the Connecticut River from the west and the east are the Deerfield and Millers Rivers, respectively. These rivers once provided the necessary power for the early mill towns that thrived on their banks. To the west of the Connecticut River Valley are forested hilltowns, where steep slopes pose some limitations in siting large-scale development, and in some areas can present constraints with respect to transportation access. Not surprisingly, the flat plains of the Connecticut River Valley contain most of the existing large-scale development. However, this area also contains much of the prime farmland in the region. Development pressures in this area could negatively impact the agricultural economy by driving up land prices and making farmland unaffordable to farmers.

In additional to its excellent farmland, Franklin County has a large amount of forestland. In 2005, 77 percent of Franklin County was forested, while only 8 percent of the land was in agriculture and 6 percent was developed.[1] There are a number of large, permanently protected state forests and privately-owned forests located in the County, some of which are actively managed and others of which are less impacted by human activity.

[1] MassGIS Land Use, 2005.

The largest employment and population centers in Franklin County are located in the towns of Greenfield (pop. 17,537), Montague (pop. 8,175), Orange (pop. 7,699), and Deerfield (pop. 4,692). Of these towns, Greenfield, Montague and Orange have similar characteristics. All are former mill towns with a long history of manufacturing and agriculture. While the traditional, large-scale manufacturing businesses in the tap and die or paper industries have declined over the last several decades, smaller size manufacturers and those serving niche industries remain strong in these towns. Greenfield, Montague and Orange all have densely developed downtown areas while the Town of Deerfield is more rural. Until the last several decades, most of Deerfield's economy was agricultural-based with manufacturing developing more recently than in the other three employment centers. The County's largest private employer, retailer Yankee Candle Company, Inc., is located in Deerfield.

Colrain is a village that settled along a river, a common development pattern in Franklin County.

Overall, Franklin County's economy is powered by the following industries: Manufacturing, Health Care & Social Assistance Services, Retail Trade, Accommodations & Food Services, and Education Services. This industry data does not include local, state, and federal government employment, such as public school employees. It also does not include self-employed individuals, such as artisans and others in agricultural and construction trades. Overall, Franklin County has a higher percentage of employment in the Manufacturing, Retail Trade, Arts, Entertainment & Recreation, and Education Services sectors than the state or nation.[2]

POPULATION OVERVIEW

Population Demographics[3]

Over the last 40 years, Franklin County has experienced changing growth rates. Between 1970 and 2000, Franklin County's population grew by 20 percent – an increase of 12,300 people. Most of this growth took place in the 1980s. During the 1990s, growth slowed substantially. Between 2000 and 2010, the County actually lost population (163 people). These growth patterns are similar to that of the Commonwealth and the northeast region in general. Much of the growth during the 1980s and 1990s took place in the southern portion of Franklin County bordering Hampshire County, where many major employers, such as UMass Amherst, are located.

[2] 2010 County Business Pattern Data, U.S. Census Bureau. Released in 2012.

[3] All data in this section comes from the U.S. Census Bureau, Decennial Census. The 2010 data comes from the American Community Survey, 2006-2010 Five-Year Estimates.

During the 2000s, the majority of the population growth took place in the northern and eastern portions of the County. This may be due to the fact that these regions still have lower housing costs and a relatively large amount of undeveloped land, which is easily accessible to major employment centers.

Like much of the nation, Franklin County is getting gradually older as the "Baby Boomer" generation ages. Currently, almost half (45%) of the population is aged 45 and older. Of that, 15 percent is aged 65 and older. The largest individual age group in the County are those aged 25-44 years old making up 28 percent of the population. This age group is important, comprising the majority of the current work force and income earners for the region.

Due to its rural nature and location far from the major urban centers, Franklin County is the least racially and ethnically diverse county in the Commonwealth. As of 2010, the U.S. Census shows that 94 percent of the population is White. This is compared to a Massachusetts percentage of 80 percent. The remaining percentage of the population in Franklin is comprised of Hispanic (3.2%), Black (1.1%) and Asian (1.3%). The racial and ethnic composition of the population has remained fairly stable since 2000, although the Hispanic population has increased slightly from two percent of the total population since 2000.

Income and Employment

U.S. Census data show that Franklin County incomes are lower than in Massachusetts as a whole.[4] In 2010, the median household income was $52,002, which is 18% less than Massachusetts' median household income of $64,509. Another income indicator is per capita income. By this measure, Franklin County's income is 24 percent lower than the Commonwealth's. Franklin County's per capita income is $27,544, compared to the Massachusetts per capita income of $33,966. The lower per capita income and median income figures for Franklin County reflect in part the lower average salaries and lower costs of living in Western Massachusetts compared to Boston and other Eastern Massachusetts communities. However, these statistics also reflect economic challenges within the region. These challenges include a decline in manufacturing employment, which paid higher wages. As numerous manufacturing jobs have left Franklin County, they have often not been replaced by comparable employment opportunities with good wages and benefits. This has resulted in lower incomes in the region.

While Franklin County often experiences a similar pattern of unemployment highs and lows as the Commonwealth and the nation, traditionally Franklin County has had a lower unemployment rate than the state and the nation. The unemployment rate for Franklin County in 2011 was 6.7 percent, down from 7.9 percent in 2009, which was the highest rate in the County since 1991. This is compared to an unemployment rate of 7.4 percent and 8.9 percent in 2011 for the state and the nation, respectively. More recent data from 2011 and 2012 demonstrate the beginning of a decline in unemployment rates as the national economy begins to recover from the recent "Great Recession."

Population Projections

The demographic data presented previously shows that Franklin County's population is fairly stable. It is growing slowly, getting older, and the ethnic composition has only slightly increased. It is important to look ahead and forecast how the population may change in order to meet shifting demands of the region. In 2011, the Massachusetts Department of Transportation (MassDOT) developed socio-economic forecasts for all regions of the Commonwealth, including Franklin County, projecting out to 2035.

[4] U.S. Census, American Community Survey, 2006-2010 Five-Year Estimates.

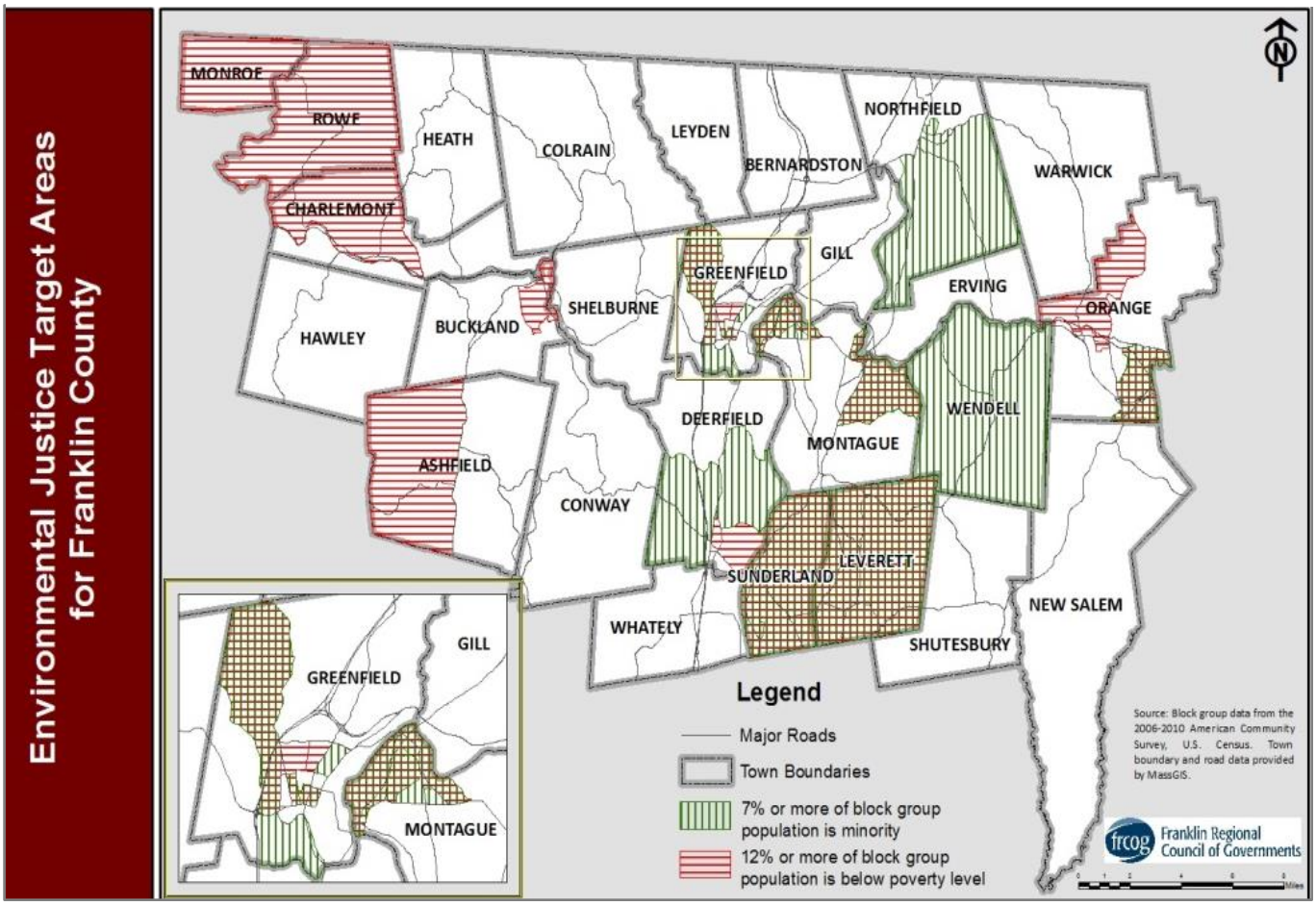
In general, the MassDOT forecasts show that the next 25 years will be a period of moderate growth for the Commonwealth as a whole. Massachusetts is projected to grow at about ten percent – with some places increasing more rapidly and others more slowly. The Commonwealth's pace of growth also applies to Franklin County. Franklin County's population is projected to grow by seven percent to 77,000 from 2010 to 2035, an increase of 5,600 people.

Using the MassDOT projections, the FRCOG estimates the future population age distribution for Franklin County. The projections show that the most significant population trend over the next 25 years will be the growing number of elders. From 2000 to 2035, residents aged 65 years old and older will increase by 77 percent, making this segment of the population almost a quarter of the County's total population. From 2000 to 2035, almost all other age groups will experience declines in their share of the population. Most notably, the largest decrease will occur in residents aged 25-34 years. This group, which makes up a significant part of the workforce, will decrease by 20 percent. These forecasted changes in the age distribution of the future Franklin County population will have significant impacts on the economy, transportation, social services, housing, and more.

Environmental Justice Populations

On a regular basis, the FRCOG conducts an Environmental Justice Analysis that examines the locations of large populations of minorities and/or

Map 1-1: Poverty and Minority Population by Blockgroup



low-income households. This is done with the objective of ensuring that appropriate services are provided to these populations and that they are not unfairly burdened by or do not benefit from public infrastructure projects. For this analysis, FRCOG defines the "Environmental Justice Target Areas" as blockgroups in which: 1) racial minorities or ethnicities comprise seven percent or more of the blockgroup's total population; **or** 2) at least 12 percent of the blockgroup's population lives below the poverty level. As shown in Map 1-1 on the previous page, there were 13 blockgroups that met these criteria.

In the most recent analysis that was conducted in 2012, FRCOG found that there was little change in the Target Area locations from previous analyses. These Target Area's blockgroups contain 43 percent of Franklin County's population and almost three-quarters (73%) of its minority population. Combined, the Target Areas also include 59 percent of the County residents who are living below the poverty level.

Fair Housing and Equity

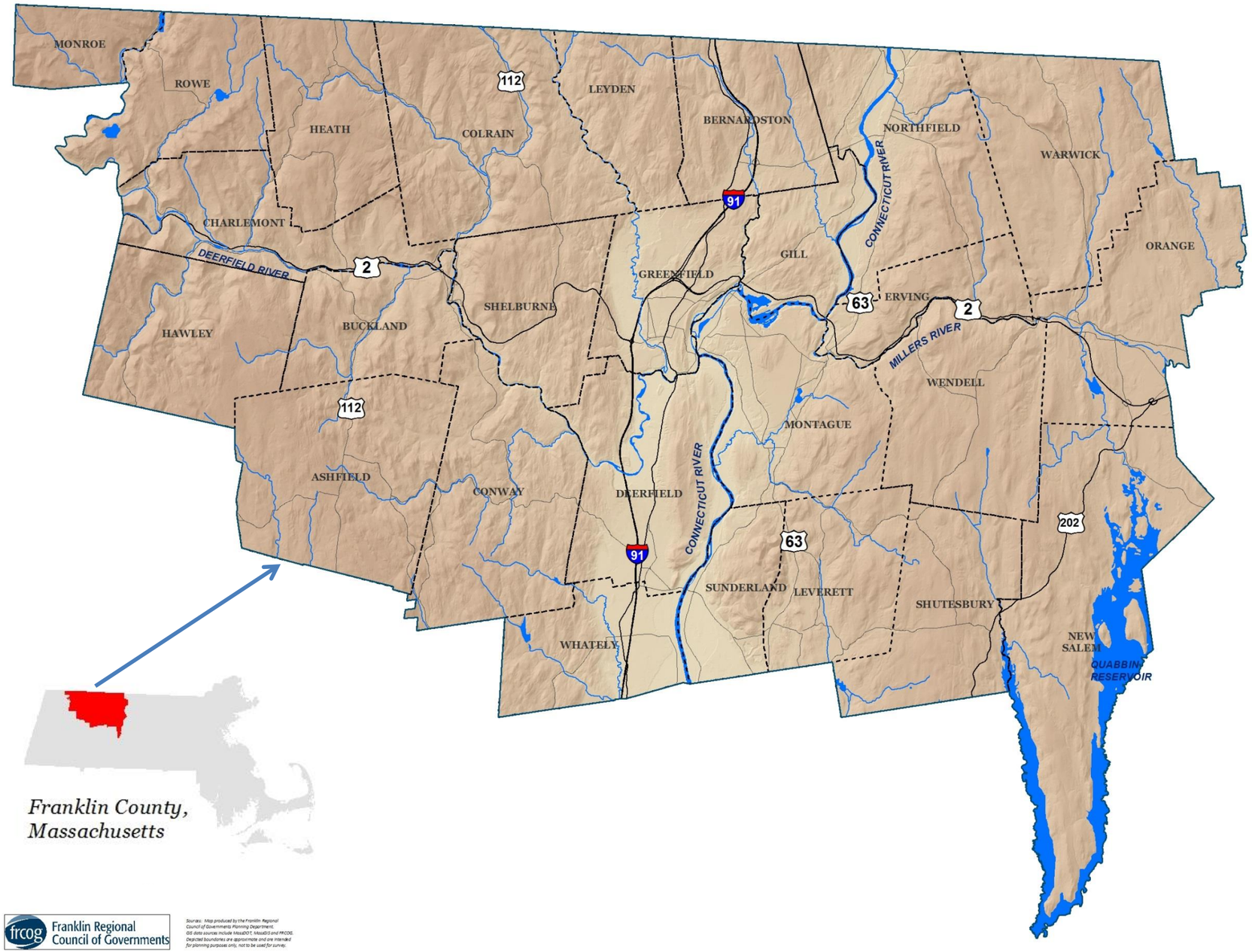
As part of this Plan, a Fair Housing and Equity Analysis (FHEA) was conducted in order to determine whether everyone in Franklin County has an equal ability to find suitable housing (see the Appendix for the full FHEA and its recommendations). The FHEA revealed that there has not been a history of systemic fair housing violations in Franklin County and that public infrastructure investments have been equitably distributed throughout the region with respect to race and income. However, the FHEA did find that there are a few communities in Franklin County that have higher levels of racial and ethnic concentrations than in the surrounding region. These areas are also highly correlated with poverty. Fortunately, the FHEA revealed that many of the areas of concentrated poverty are also located in areas of high opportunity. Specific recommendations to mitigate a potential over-concentration of poverty can be found in Chapter 6: Housing and in more detail in the Appendix C: Fair Housing Equity Analysis.

SUSTAINABLE REGIONAL PLANNING

Because of its rural nature and small town populations, Franklin County has a long history of collaboration at the regional level. The Project Partner Consortium and the Steering Committee created to guide the HUD Sustainable Communities grant are composed of organizations that regularly work together on a variety of topics. The FRCOG has collaborated with many of the organizations to conduct short- and long-term planning for housing, economic development, transportation, energy, natural hazard mitigation, watersheds, and more.

This Plan is an excellent opportunity to synthesize goals from these previous planning efforts and to identify new recommendations and strategies for sustainability. It is also an opportunity to plan for sustainable development by identifying the needs of disadvantaged populations, and developing an integrated plan that will guide development patterns and future infrastructure investments and projects within Franklin County.

Map 1-2: Franklin County Overview

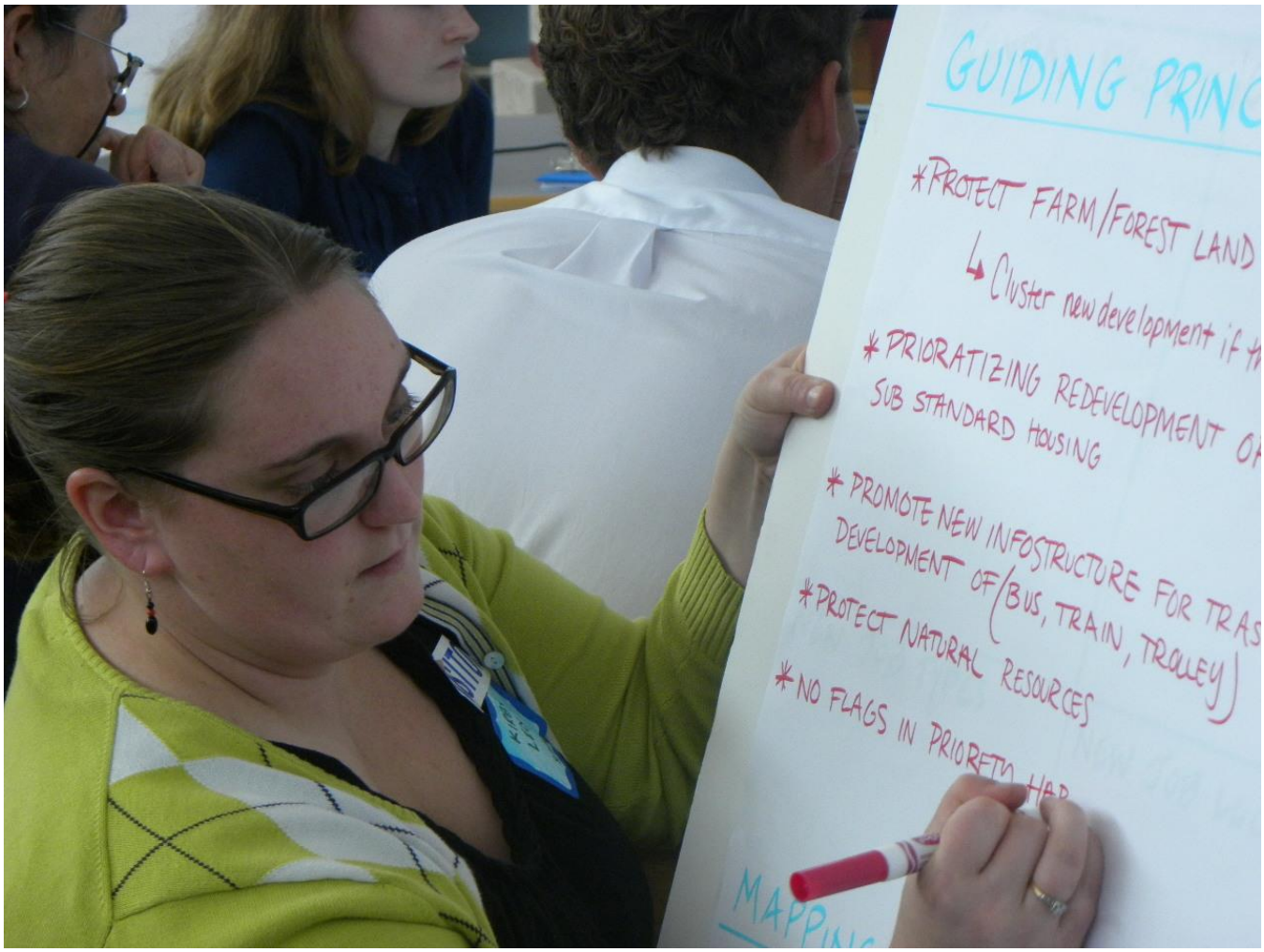


frcog Franklin Regional Council of Governments

Sources: Map produced by the Franklin Regional Council of Governments Planning Department. GIS data sources include MassDOT, MassGIS and FRCOG. Depicted boundaries are approximate and are intended for planning purposes only; not to be used for survey.

SUSTAINABLE FRANKLIN COUNTY

Chapter 2: Vision and Goals



INTRODUCTION

The Regional Plan for Sustainable Development (the "Plan") presents sound, achievable strategies which meet the needs of present citizens without compromising the ability of future generations to meet their own needs. An overall Vision Statement was developed to provide a framework for the Plan. This Vision Statement takes into consideration the results of a goal setting survey, a survey of people of low or moderate income, and several public workshops. This public participation process is described in detail in Chapter 3: Public Participation.

VISION STATEMENT

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. Sound infrastructure, sustainable transportation options that support mixed use development and reuse of historic structures in our town centers, and reduction of fossil fuel use 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.

GOALS

Goals Survey

A compilation of the top goals from the Sustainable Franklin County Goals Survey is included in this chapter. Complete survey results and demographics of the respondents are located in Appendix A. Goals listed in the Survey were developed over a several-week process, during which regional plans were reviewed for existing and relevant goals and objectives, which were then compiled by topic. This compilation of goals was subjected to a thorough review and comment period by the Consortium Members and Steering Committee. The final goals were incorporated into the Goals Survey, accessible online and in paper form.

The Survey included an introduction and provided a definition for sustainability that was used throughout the planning process. Organized by topic, the Survey included an overview for each topic, with the aim of providing an education element to the survey and clarifying any potentially unfamiliar terminology. Within each topic, a list of the compiled goals was provided and respondents were asked to select their top three goals for that topic. Each topic offered the ability for respondents to select "other" as a top goal and to write in goals they thought were the most important to the topic.

The online Goals Survey was made available from Sept. 1 through Oct. 28, 2011 through SurveyMonkey, a web-based tool used to capture and compile responses to surveys. Several survey responses were submitted on paper and were manually entered into SurveyMonkey.

Input was received from 180 respondents and all but four Franklin County towns were represented. Nearly 92 percent of respondents live in Franklin County and about 88 percent work in the County. Approximately 52 percent of respondents were between the ages of 45 to 64. The top three goals for each topic are shown on the following page.

Top Three Housing Goals

1. Improve the energy efficiency of housing.
2. Improve the quality of existing housing.
3. Locate housing near employment and town centers.

Top Three Transportation Goals

1. Increase availability and use of public transit.
2. Restore passenger rail service.
3. Increase bicycle/pedestrian facilities and promote walking and bicycling.

Top Three Economic Development Goals

1. Redevelop vacant or underutilized industrial and commercial buildings or sites.
2. Support sustainable economic development in the region.
3. Promote and invest in specific business sectors including manufacturing, agriculture and clean energy.

Top Three Energy Goals

1. Promote energy conservation and efficiency.
2. Increase the quantity of locally-produced clean energy.
3. Reduce the use of fossil fuels.

Top Three Natural Resources Goals

1. Protect farmland and local food supplies.
2. Protect forests.
3. Protect drinking water supplies and reduce water usage.

Top Three Cultural Resources Goals

1. Foster the growth of arts and culture.
2. Support our agricultural heritage.
3. Preserve rural and scenic landscapes.*
3. Revitalize and preserve historic town centers.*

*These two goals were tied for third place.

Top Three Land Use Goals

1. Prioritize redevelopment of vacant or underutilized structures & properties.
2. Locate new businesses in town centers or near transit services.
3. Coordinate new development with existing transportation, water and sewer infrastructure.

Top Three Infrastructure Goals

1. Protect and expand "green infrastructure" to reduce flooding, purify air and water and decrease energy use for cooling.
2. Improve broadband internet access.
3. Maintain or upgrade sewer and water infrastructure.

SUSTAINABLE FRANKLIN COUNTY

Chapter 3: Public Participation

INTRODUCTION

A critical component of the development of this Regional Plan for Sustainable Development (the "Plan") was strong public participation accomplished through strategic and inclusive public outreach. The goals were to educate residents about principles of sustainability and planning issues in the region; encourage an open and inclusive dialogue across populations; gather information regarding the region's present and future needs; and to increase participation in the planning process across populations.

Public participation and outreach during this project have taken on various forms and this chapter will explain those efforts in more detail.

Public Participation and Outreach are critical elements of this plan and aim to:

- Educate residents about principles of sustainability and planning issues in the region;
- Encourage an open and inclusive dialogue across populations;
- Gather information regarding the region's present and future needs; and
- Increase participation in the planning process across populations.

PUBLIC PARTICIPATION

There were many opportunities for public participation including an open and inclusive invitation to participate on the Sustainable Franklin County Steering Committee, a Needs Assessment Survey distributed to people with lower incomes, an online survey of goals, a series of Sustainability Workshops at the outset of the planning process, and a series of Open Houses to obtain input on the draft Plan. Each one of these public participation efforts sought to include a diverse population of people who are part of the Franklin County community in the planning process to create this Plan. The following section describes each of these efforts.

Sustainable Franklin County Steering Committee

The Franklin County Regional Plan for Sustainable Development was developed through a collaborative effort between the Franklin Regional Council of Governments (FRCOG) and its Project Partners, who make up the Sustainable Communities Consortium. These agencies represent the Consortium Members who oversee all phases of the grant.

In addition to the Consortium Members, the project is also guided by the Steering Committee. The Steering Committee was created in the early stages of the project to oversee the creation of the Regional Plan for Sustainable Development. The Steering Committee provided the Consortium Members with critical feedback regarding the development of the Sustainability Workshops as well as with the development of individual chapters.

While the Consortium Members consist of FRCOG and its Project Partners, participation on the Steering Committee was open to anyone who was interested in becoming more involved in the creation of the Plan.

Prior to the Sustainability Workshops, the Steering Committee consisted of 36 people who represented a mixture of residents, business owners, municipal committee members and regional agencies. An additional invitation to join the Steering Committee was distributed at each of the Sustainability Workshops where an additional 38 people signed up to be on the Steering Committee. In total, 74 residents, municipal officials, students, and business owners served on the Sustainable Franklin County Steering Committee during the life of this project.

Needs Assessment Survey

The Needs Assessment Survey was developed by the Consortium member Community Action, in partnership with Sustainable Franklin County to ensure that the needs of people with lower incomes, people with disabilities or minorities were well represented in the planning process. The survey was developed based on Community Action's 2008 community survey to allow year-to-year comparisons of results.

Once the 2011 Needs Assessment Survey was finalized, Community Action and the North Quabbin Community Coalition took the lead in field testing the survey with representatives of the groups who would be asked to respond to them. The feedback that was received was used to make the survey as user-friendly and understandable as possible.

The Needs Assessment Survey was nine pages long and was available both in print and online. Additionally, the survey was also translated by the UMass Translation Center into the two most widely used languages other than English in Franklin County – Spanish and Russian.

The final survey was distributed throughout Franklin County with assistance from Community Action staff as well as several Sustainable Franklin County partners: the North Quabbin Community Coalition, the Franklin County Regional Housing and Redevelopment Authority, the Montague Housing Authority, and the Greenfield Housing Authority. An incentive for filling out the survey to increase the return rate was offered.

Surveys were collected and analyzed by Community Action. According to the U.S. Census Bureau 2009 Estimates, there were 15,422 adult residents in Franklin County under 200% of the Federal Poverty Guidelines (FPG). A total of 416 surveys were completed by Franklin County residents in this demographic, far surpassing the number needed to obtain a representative sample.

The results have been incorporated into the different elements of this Plan to help identify current and future needs of people with lower incomes.

Top Rated Goals Survey

As a precursor to the Sustainability Workshops, a set of potential goals for Franklin County was compiled from past local and regional plans for each of the topic areas. The original list of goals extracted from past plans was quite long and many of the goals were repetitive and were often actions rather than goals. The FRCOG, with input from the Consortium Members and the Steering Committee, was able to pare down these goals into more clear and concise goal statements with clear outcomes.

The revised list of goals was then formatted into a survey and distributed across Franklin County prior to the Sustainability Workshops. The survey was available both in electronic (online survey) form as well as hard (paper) copies. This survey was distributed at Town Halls, Libraries, and Senior Centers and was also made available online on September 1, 2011. A link to the survey was published on the FRCOG website as well as on the Workshop Registration page. Survey respondents were asked to identify the three most important goals for Franklin County with regards to each of the Plan topic areas. Top rated goals were presented at the Workshops to help guide the exercises.

Input was received from 180 respondents and nearly all Franklin County towns were represented, with the exception of Charlemont, Hawley, Rowe, and Monroe. Nearly 92 percent of respondents live in Franklin County and about 88 percent work in the County. Approximately 52 percent of respondents were between the ages of 45 to 64.

More detailed information about the top rated goals is presented in Chapter 2: Vision and Goals, of the Plan.

Sustainability Workshops

The Sustainability Workshops were designed to be a hands-on, interactive way to get people involved in the planning process. The goals of the workshop were to educate residents on the principles of sustainability, identify the current and future needs of the region, and to establish a regional vision for sustainable development.

Three Sustainability Workshops were held in Franklin County in each part of the County (east, west, central) and at different times of the day to accommodate various schedules. Food and beverages were provided at each workshop. The first workshop was held in Greenfield on September 22, 2011 from 5:00 - 8:30 p.m. There were 49 participants at this workshop. Another workshop was held at the Mahar Regional High School in Athol on September 27, 2011 from 10:00 a.m. to 1:30 pm. A total of 38 participants attended this workshop, many of them youth. The final workshop was held in Shelburne Falls on October 5, 2011 from 5:00 to 8:30 pm and a total of 15 participants attended this workshop. In total, there were 102 people who participated in the Sustainability Workshops and an additional 22 people who helped lead the workshops as Facilitators or Scribes. Of the 102 participants, 20 of them were youth. Out of the 26 towns in Franklin County, 20 towns were represented by participants who live and/or work in those towns.

TOP: Training Session for Sustainability Workshops
MIDDLE: Orange Sustainability Workshop
BOTTOM: Some results from the Shelburne Falls Sustainability Workshop

As a precursor to each of the workshops, the Sustainable Franklin County Goals Survey was disseminated. The top rated goals were presented at each Workshop to help guide the mapping exercise.

The workshops generally utilized the following format:

- Introduction
- Overview – Franklin County Background Information and Principles of Sustainability
- Regional Sustainability Goals
- Break
- Mapping Exercise
- Discussion of Projects/Strategies
- Summary of Exercise Results
- Workshop Wrap-up

After the principles of sustainability and overview of trends in Franklin County were presented, the participants launched into a mapping exercise that asked participants to identify suitable areas for growth in the region on a map of Franklin County. The mapping exercise concluded with a discussion at each table addressing challenges, obstacles, and strategies for meeting these goals.

The mapping portion of the exercise began with each table developing a set of overarching Guiding Principles (e.g. place new housing near existing infrastructure, protect farms, forest, drinking water supplies, and endangered species) which were then recorded and revisited throughout the exercise. After establishing the Guiding Principles, participants were presented with a set of housing flags which represented the projected amount of new housing that will be needed to accommodate 3,500 households over the next 25 years. The number of households is based on population projections for Franklin County.

The breakdown of the housing flags was based on the composition of the current housing stock in the County, such as single-family versus multi-family or duplex housing. Participants could choose to proceed with this stock or they could make trades to obtain a different housing mixture to include housing types such as accessory apartments or additional multi-family housing. They could also choose to rehabilitate existing housing or historic mills. Prior to the mapping exercises, FRCOG staff performed an inventory of available existing facilities in Town to determine a reasonable number of housing that could be rehabilitated. Staff also inventoried underused mill buildings that could be converted into housing to make housing options as realistic as possible.

Once participants finished exchanging housing types, they were asked to place the housing on the map. The mapping exercise ended with a series of discussion questions to help identify challenges and obstacles to meeting these housing scenarios as well as potential projects to help overcome these and other barriers to sustainability. Time permitting, participants were also asked to identify the types of jobs desirable for Franklin County and their locations.

Immediately following each workshop, participants were asked to complete an Exit Survey which was used by FRCOG and the Consortium Members after each workshop to incorporate feedback into the exercises. The exit surveys also presented an opportunity for workshop participants to become involved in the Steering Committee. The results of the Goals Survey, Sustainability Workshops and Workshop Exit Surveys were incorporated into different elements of this plan.

Sustainable Franklin County Open Houses

With the valuable input from the Sustainable Franklin County workshops, the FRCOG staff began drafting the Regional Plan for Sustainable Development, "*Sustainable Franklin County*." As each chapter was completed with the help of the Subcommittees and Consortium Members, FRCOG staff presented them

to the larger Steering Committee for feedback. In addition, the FRCOG staff presented each draft chapter to the Franklin Regional Planning Board (FRPB) for their input and feedback. The FRPB is composed of representatives from every Franklin County town's Planning Boards and Select Boards, in addition to several at-large County residents.

Once the draft Plan had been completed, three Sustainable Franklin Open Houses were held throughout the County to receive additional public input and comments on the draft Plan. They took place at the same locations as the Sustainability Workshops and were held at a variety of times to accommodate attendees' various schedules. The format of the Open Houses was designed to be informal with the goal for encouraging conversation and feedback. Poster boards summarizing the findings and recommendations of each of the chapters were created. FRCOG staff and Steering Committee members who worked on each of the chapters were stationed at each of the poster boards to explain the findings and receive people's feedback on the chapters. Attendees could submit their feedback either verbally to staff members, write their thoughts on available comment cards, or contact the staff via email or phone after the Open Houses. Executive summaries of each chapter were available for attendees to take with them to read. Both the draft chapters and the executive summaries were available on the FRCOG website for the public to review as well. Over 80 people attended the three Open Houses and the FRCOG received very positive feedback on the draft Plan. Following the Open Houses, the FRCOG staff incorporated the comments received into the draft Plan.

Participation Outreach Results

One of the goals of this component of the public participation outreach efforts was to increase participation in the planning process across populations. Some populations are traditionally underrepresented in the planning process, including people with lower incomes, the elderly and youth. This project aimed to extend additional outreach efforts to this population to increase participation in the planning process. Consortium Members reported that people with lower incomes participated in the Workshops, particularly in Orange.

The Needs Assessment Survey was significant in increasing the participation levels of people with lower incomes. Community Action gathered 416 surveys from Franklin County residents over the age of 18 with incomes below 200% of the Federal Poverty Guideline, far surpassing the number needed to obtain a representative sample. This is considered a high level of participation. This population was also

Public Participation Recap

- Steering Committee Members: 74
- Needs Assessment Survey Respondents: 416
- Franklin County Goals Survey Respondents: 180
- Workshop Facilitators and Scribes: 22
- Workshop Participants: 102
- Open House Participants: 83

The Open Houses provided the public a chance to interact with each of the chapters and to provide input.

represented at other events, such as the Sustainability Workshops. Information on income levels from participants was not requested, so their level of participation could not be quantified.

The estimated number of elderly and youth who attended the Workshops is based upon the completed Workshop Exit Surveys. Across all the workshops, 12 participants identified themselves as retired and 20 participants identified themselves as students. Of the 26 towns in Franklin County, 20 towns were represented by workshop participants who live and/or work in those towns.

Many of the workshop participants are residents or business owners who serve on municipal or regional boards and committees which include Town Selectboards, Energy Committees, and Area Business Associations, for example.

OUTREACH & COMMUNICATION

In order to increase public participation, FRCOG and its Consortium Members recognized the need for extensive outreach and used a broad range of communication tools. The following section describes the outreach efforts that were performed during this project.

Broad Distribution

One of the main concerns of the Consortium Members was to ensure that no segment of the Franklin County population was excluded from the planning process. In order to try and reach the greatest number of residents, business owners, agencies, and students, the project team developed a strategic and inclusive distribution plan. The first part of the plan was aimed at developing a set of effective outreach materials to reach more people. This included the use of branding, web and internet, print, television, and

The Open Houses were advertised throughout Franklin County via flyers distributed through print publications, social media, newspaper articles, press releases, email and other methods.

word of mouth communications, as described below.

The second component of the outreach campaign is to ensure that those materials are distributed to as many people as possible. To ensure a broad and inclusive distribution of materials, the FRCOG has relied heavily on its Consortium and Steering Committee Members.

Press releases, announcements and articles appeared in many regional newspapers including The Recorder, Athol Daily News, Warwick Community Newsletter, and the FRCOG Newsletter. Print publications and announcements are distributed at local and regional meetings and at events such as the Greenfield Community Supper, Bernardston Old Home Days, Heath Fair, North Quabbin Garlic and Arts Festival, and the Salmon Falls Street Festival. A copy of the Workshop and Open House Flyers were shown on local television stations including Greenfield Community Television (GCTV), Orange-Athol Public Television, and Shelburne-Buckland Public Television. Posters for the Open Houses were also posted on the inside of the public buses in the County.

Print publications were available at the offices of the Consortium Members as well as at all Franklin County Libraries, Franklin County Senior Centers, Town Halls, and on display at various businesses in the County.

Finally, a concentrated outreach effort was aimed at involving youth in the planning process. Invitations were sent to area high schools as well as to Youth Service Council Members. The Community Coalition for Teens (CCT) and teachers involved in the project have also assisted with outreach efforts to this population.

Outreach Tools

Project Logo & Branding

Among the first outreach tasks completed for this project was the creation of a Project Logo. The logo serves as a consistent identifier for the project and helps brand all materials related to this project to aide in marketing efforts. The logo was drawn by hand to represent the many aspects of Franklin County, such as our communities, downtown areas, farmlands and forestlands. It demonstrates the county's rural nature combined with our downtown areas.

The Sustainable Franklin County Project Logo lent recognition to the project.

Web & Internet

The use of the web and the internet are among the fastest and most eco-friendly ways to communicate information and this mode was used widely throughout this project. In fact, this Regional Plan for Sustainable Development is among the first plans to be made predominantly available online by FRCOG to save critical paper and resources.

However, this particular mode of communication has limitations, particularly in Franklin County. Many areas of Franklin County do not have ready access to high speed internet and are served only by dial up internet, if at all. Furthermore, a large percentage of our residents are elderly who may not use computers. Residents who do not have access to the internet at home could visit a local library to check their email or access the internet or pick up copies of the goals survey or draft Plans. Paper copies of the goals surveys were also available at each of the Workshops.

Therefore, while the web and internet are the preferred methods of communication for the project, it was always supplemented with more traditional means of communication so as not to exclude anyone who may be unfamiliar with or may not have access to the internet.

Electronic materials that were created for this project include online registration forms, surveys, email communications, documents and flyers. These materials have either been distributed by email communication and/or were posted on the project's webpage, hosted by FRCOG, and the FRCOG Facebook page.

Print Publications

In addition to online and electronic mediums, outreach materials were also printed and distributed at various meetings and locations around Franklin County. Print publications consist of letters, flyers, surveys, posters, press releases, and newspaper articles. These materials were used to help spread the word about upcoming meetings and events and to help advertise the project and invite people to participate. As previously mentioned, there are large populations of residents who do not have access to the internet or who may prefer print publications.

The Sustainable Franklin County Flyer was perhaps the most widely distributed material related to outreach for this project. The ultimate goal of the flyer was to maximize participation at the Sustainability Workshops. Additionally, the flyer was designed to both educate and inform residents of the project and the Six Livability Principles of HUD.

Word of Mouth

The FRCOG and its Consortium and Steering Committee Members reach many members of the Franklin County population through their services. Everyone participating in the project has helped spread the word about upcoming events. For example, the FRCOG staff made summary presentations at the meetings for the Franklin County Regional Planning Board, North Quabbin Community Coalition, and the Greenfield Master Plan Committee. Announcements were made at regional and local meetings and many people have joined the project through this simple outreach method. While Franklin County has a wide geographical expanse, our close-knit communities make this an effective means of communication.

This project used a broad range of outreach materials and communication modes to reach as many people as possible, including:

- Television
- Internet: email, webpage, social media, online surveys and registration sites, social networking
- Print: flyers, surveys, press releases, articles, letters, invitations
- Word of Mouth

PUBLIC PARTICIPATION KEY FINDINGS

One of the goals of the public participation portion of this project was to gather information regarding the region's present and future needs. Many of the outreach materials served as tools to collect this information such as the Needs Assessment Survey, Franklin County Goals Survey, and the Sustainability Workshop Exit Surveys. The workshops were also designed to be multifaceted to educate residents, encourage dialogue, and also to collect information regarding the region's needs.

The mapping exercise was the centerpiece of the workshops and was intended to garner feedback from

those who live or work in Franklin County on various topics including housing, infrastructure and transit needs. The mapping exercise challenged participants to envision a more sustainable future for Franklin County by presenting them with housing choices and the trade-offs associated with each selection. The choices that were made, such as housing type, location and proximity to existing resources, helped provide the project team with important information that was used throughout the plan.

This section presents the findings from the Needs Assessment Survey and the Sustainability Workshops. The results of the Franklin County Goals survey are presented in Chapter 2: Vision and Goals.

Needs Assessment Survey Findings

The following section summarizes the results of the Needs Assessment Survey and recommendations based on these findings. A more complete report can be found in Appendix B.

Income/Savings/Debt/Financial Management

- Financial security is paramount to a sustainable community in which people are able to purchase what they need and have something left to invest in the future;
- Very few of the survey respondents have the ability to make progress on increasing their financial security because their incomes are low and the cost of living here is so high;
- Many of the adults working with Community Action would benefit from additional financial management skills;
- Among the survey respondents, there was strong interest in financial literacy education, repairing credit, and saving toward long-term goals; and
- Many services do exist in the community but cannot reach all those who would benefit because of underfunding. Individual development account, free tax assistance, and financial literacy education programs, first-time homebuyer workshops, the small business incubator, and employability skills training all bring important resources to people with low incomes who are trying to build a solid financial foundation. More funding is needed to support more people.

Housing and Homelessness

- Housing is the single largest household expense and is the driver of the high cost of living in Franklin County. Given the low wages prevalent in the area, the affordability burden for housing is very high for a large portion of households;
- Many people cannot consistently pay their heat/utility and/or rent/mortgage bills on time;
- Current housing subsidy programs do not come close to meeting the need;
- Homelessness has increased dramatically in the past several years;
- Barriers to moving into a better rental unit include the requirement for a large sum of money for security deposit and last month's rent; bad credit; transportation issues; and the lack of safe, healthy rentals that are affordable;
- Families and individuals that struggle with physical and mental illness, addiction, development disabilities, and a history of trauma often need supportive services if they are to maintain housing stability;
- It is essential for the sub-set of the population that is not able to manage independently to have individualized supportive services co-located with their housing; and
- New housing and rehabilitated housing needs to incorporate energy efficient design to reduce the cost of heating and cooling in order to improve housing affordability.

Food Security

- Food insecurity is widespread in Franklin County;
- Although a network of services and public benefits exist to address food insecurity, and these services are widely used, the help offered is in no way sufficient to eliminate hunger and food insecurity;
- Growing and distributing more food locally is one major way to make our community more sustainable and to reduce our environmental impact;
- Franklin County contains a lot of agricultural and open land, as well as commercial kitchens that could be put to fuller use;
- The survey indicated a lot of home gardening activity and interest among lower income respondents but revealed barriers as well; and
- Making it possible for people with low incomes to include fresh, nutritious, inexpensive produce in their diets through their own work would require developing shared garden spaces, access to gardening supplies, and education about successful gardening and food storage methods, and education about nutrition and healthy eating on a tight budget.

Transportation

- A smaller percentage of survey respondents drove their private vehicle to work (66%) in comparison to Franklin County overall (79%), and many more walked at least sometimes (25% vs. 4%). Fewer took part in carpool (5% vs. 8%). Many more took public transit (14% vs. 1%);
- Private vehicles are expensive and have more environmental impacts than other forms of transportation;
- Walking and bicycling are optimal for the environment and affordable for people with lower incomes. Increasing the number of people who can walk or bicycle to work will require mixed use development including housing, employment and services in close proximity;
- Public transit is a good option but requires additional financial resources to increase the frequency of service or to expand transit routes and this is extremely challenging given the rural nature of our region;
- Organizing carpools on a larger, more formal scale could be a way to reduce some of the transportation-related environmental impacts in our area, as well as the cost of transportation for low income households. This approach has not always been successful in rural areas but could be part of our local solution; and
- There are successful models for helping people with low incomes to purchase new, fuel-efficient vehicles that could be tried locally, given enough funding to support the financial literacy education, credit repair, and car dealer negotiation services that would be needed as part of the model. This is not a preferred approach since it relies on a mode of transportation with high environmental impact. However, it is better than having very old, inefficient, unsafe, unreliable cars on the road, especially if the new cars purchased are electric or hybrid.

Job Readiness/Job Development

- Job readiness and job training are fundamental to a sustainable local economy that has room for workers with lower education levels to earn a living wage; and
- It is critical that training systems developed be accessible and effective for people with low incomes. To make use of the opportunities provided, people need stable sources of food, shelter, warmth, and health care; high quality secondary and post-secondary education; English language instruction for newcomers; employability skills such as time management,

understanding of workplace expectations, and household financial management; affordable, high quality child care; transportation; and successful transition to work for youth.

Sustainable development is equitable, inclusive development. Development that ignores the people at the bottom of the ladder simply makes the ladder unstable and unmanageable in the long run. The primary goal of the Needs Assessment Survey was to ensure that people with lower incomes made significant contributions to the Regional Plan for Sustainable Development. Inclusion of people from all walks of life will remain a goal of Sustainable Franklin County, and each element of planning and implementation should contain goals and action steps that will encourage the participation of all people. The survey provided a great deal of valuable information about goal and action items.

Sustainability Workshop Findings

The following sections describe the results of the Workshops. The results were used in this Plan to help create a vision and goals for the region, identify barriers and challenges to sustainability and develop strategies for achieving our goals. The findings of the Workshop are presented below in four areas: Guiding Principles, Housing Type, Housing Location, and Discussion Questions.

Guiding Principles

As previously mentioned, each table at the Workshops was charged with the task of establishing a set of Guiding Principles prior to the exchange of housing types. The most common Guiding Principles taken from the workshops consisted of the following (in no specific order):

- Locate housing near infrastructure;
- Locate housing near town centers and employment;
- Locate housing near transit;
- Protect farmland;
- Protect forests;
- Protect Natural Heritage and Endangered Species Program (NHESP) areas;
- Protect water resources/supplies;
- Rehabilitate existing buildings as much as possible; and
- Utilize Conservation Development techniques for new residential subdivision to protect natural resources including farmland and forestland.

Housing Type

At each of the workshops, participants were given housing flags representing 3,500 households. These flags were divided into different housing types based on the current distribution of housing in Franklin County; 70 percent single family homes; 20 percent multi-family; and 10 percent duplexes. Participants were then challenged to proceed with the current distribution of housing or to make trades for such things as an accessory apartment or rehabilitating existing housing to obtain a different housing mixture.

Across all of the workshops, the most popular housing type was the New Mixed Housing type (50 percent single family, 25 percent duplex, and 25 percent multi-family housing), which accounted for approximately 17 percent of all housing that was placed. The second most popular housing types were the Accessory Apartment and Rehabilitated Mill Buildings, each coming in at 15 percent. Rehabilitated Substandard Housing, New Single-Family, and Converted Single- to Multi-Family Housing followed closely thereafter at 14 percent, 13 percent, and 12 percent, respectively. New Multi-Family was among the least popular at eight percent and new Two-Family housing only accounted for three percent of the placed housing.

Overall, the majority of new housing (56 percent) was traded in for infill/rehabilitated housing thus demonstrating a demand for the reuse of existing properties. Throughout the workshops, only 41 percent of the housing stock that was selected fell into

the "new housing" category. This is particularly noteworthy as the quantity and type of infill/rehabilitated housing stock was limited in the workshops based on the current availability of existing properties. While participants were given the option of proceeding with current housing trends, the results of the workshops show a desire to change the distribution and diversity of the housing stock. Overall, only 13 percent of new single family housing was placed on the maps. This is substantially less than the current distribution of single family homes in the County at 70 percent. An additional 14 percent of general rehabilitated substandard housing could include a small percentage of single family housing stock. Therefore, single family homes, at most, accounted for 27 percent of the housing stock that was selected in the exercises.

An additional housing category (Other Housing) accounted for approximately three percent and consisted of participant-identified housing types which included:

- Innovative green or affordable co-housing;
- Affordable housing;
- Mixed use in village centers;
- Multi-generation housing; and
- Net-zero energy housing.

Housing types and quantities were placed on maps by Workshop participants.

Housing Location

In addition to the housing type, the exercise also challenged participants to think critically about where new or rehabilitated housing should occur. Nearly half of all housing that was placed on the maps throughout the workshops was placed in one of the four employment centers (Orange, Greenfield, Deerfield, and Montague). Aside from the four major employment centers, a significant amount of housing was also placed in Erving and Northfield. It is not surprising that some of Franklin County's most rural and remote communities (Monroe and Rowe) received very little housing (less than 1%, each).

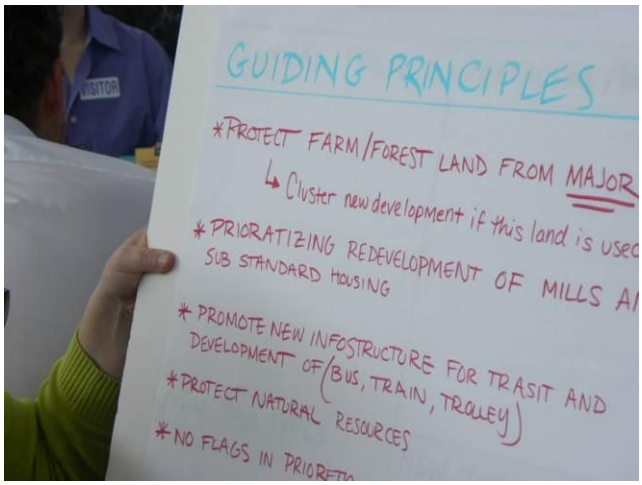
The communities with the highest percentages of new housing were Sunderland (68%), Whately (63%), and Shutesbury (62%). The communities with the highest percentages of rehabilitated or infill housing were Orange (80%), Montague (70%), and Charlemont (70%).

Overall, the location of housing appeared to be driven by the realization of the benefits of developing housing near existing infrastructure.

Discussion Questions

Additionally, once the mapping portion of the exercise was complete, each table was given a series of discussion questions to pursue. The discussion questions consisted of the following:

- Do you think there are major barriers for obstacles to sustainability here in Franklin County?
- What ideas do you have for projects that could potentially be included in the Regional Plan for Sustainable Development that will increase sustainability and help make your vision a reality?
- What type of jobs would you like to come to the County?
- Where would you like to see jobs located in the County?



Workshop participants agreed upon Guiding Principles to help guide their visions for Franklin County.

The most common infrastructure needs and wants identified during the exercises were:

- Water and sewer improvements in Orange;
- County-wide broadband;
- East-west passenger rail; and
- County-wide bike paths.

Transit Needs

The most common transit needs and wants identified during the exercises were new or improved transit service to the following communities:

- Ashfield/Conway (Route 116);
- Bernardston/Northfield (Route 5/10);
- Colrain (Route 112); and
- Increase transit service frequency

Projects

In addition to identifying needs in the County, participants were also asked to brainstorm potential projects that would help the County progress towards a more sustainable future. These projects varied greatly; however, many of them build upon the top infrastructure needs that were identified. The most common projects that were identified in the workshops consisted of the following:

- County-wide broadband;
- Bike/pedestrian paths;
- East-west passenger rail;
- Senior housing; and
- Co-housing.

The above list contains the most popular projects that were consistently identified throughout the workshops. However, some participants and tables came up with innovative ideas that are worth noting. These ideas are contained in the following list of innovative projects:

- Consider the use of the Connecticut River for transportation needs;
- Create villages for new housing growth with mixed housing types rather than scattering growth across rural areas;
- Provide tax credits or grant funding to residents to improve energy efficiency;
- Require a certain percentage of affordable housing for new residential subdivisions;
- Operate large scale greenhouses for year round food production;
- Create a bed and breakfast network for bicyclists; and
- Allot farm land in rural areas for agricultural use by residents living in more densely developed areas.

Barriers to Sustainability

Several barriers to sustainability were also identified in the County which included the following most common barriers:

- Zoning;
- Housing affordability;
- Lack of funding;
- Negative perceptions of certain housing types; and
- Individual choice.

JOBS

The following job types were identified as the most popular for the region:

- Ecotourism and tourism;
- Food production, manufacturing and processing;
- Alternative energy production; and
- Arts, entertainment and music.

Due to time constraints, few tables were able to have a discussion about job location so the results of this question are quite limited. However, the vast majority of participants indicated that jobs should be located in existing town centers and in existing commercial or industrial areas that have infrastructure.

PUBLIC ART DISPLAY

As a capstone to the public participation efforts, a public art display was commissioned with the goal of visually demonstrating the vision statement and goals of the Regional Plan for Sustainable Development that came out of the public has been installed at the John W. Olver Transit Center located in downtown Greenfield. The Transit Center is a very appropriate location for the art, since it supports a sustainable mode of transportation and is the nation's first net-zero energy transit center.

Franklin County youth enjoyed creating mosaic hands which were included in the public art project.

The public artwork is meant to illustrate the outcome of the public participation efforts, but the creation of the art itself involved the public – particularly local youth. Community Action, one of the Project Partners, organized a youth group that helped select the winning artist and participated in the creation of the art. The selected artist, Cynthia Fisher, a local artist created a mosaic design (final product is shown on cover of this Plan), which incorporated the handprints of many County residents, including the youth group. The youth group worked closely with the artist, cutting glass pieces to create the hands contained in the mosaic. The art display was unveiled in a ceremony at a Sustainable Franklin County Open House at the Transit Center on March 13, 2013. Another Community Action youth group assisted in the presentation of the display during the ceremony with a choreographed dance and music.

The finished mosaic was unveiled at a public ceremony to celebrate its installation in the John W. Olver Transit Center, with the artist, Cynthia Fisher (above center),in attendance.

In addition, large posters of the mosaic were created and attached to the sides of the Franklin Regional Transit Authority buses for several weeks during the public comment period for the draft Plan in order to help publicize the Open Houses and the Sustainable Franklin County Plan.

CONCLUSION

The FRCOG and its Project Partners utilized an extensive range of outreach materials and communication tools during this project. A concentrated outreach effort was performed to include people with lower incomes, people with disabilities, as well as minorities, elderly and youth in the planning process.

As a result of these efforts, a large amount of useful information about the County's present and future needs was gathered. This information was used to create the vision and to develop each chapter of this Plan, help guide policy, and develop strategies to progress towards a more sustainable future.

SUSTAINABLE FRANKLIN COUNTY

Chapter 4: Housing

INTRODUCTION

This chapter examines the existing conditions of Franklin County's housing in order to determine opportunities, constraints and/or barriers to sustainability in the region and makes recommendations to improve the diversity, quality, and affordability of housing in the County.

Information collected for this chapter was extensive. Many sources contributed to the recommendations, strategies, and benchmarks identified in this chapter. In addition to U.S. Census data, input was gathered from three public workshops and an online survey. Valuable information was also obtained from the Community Action *Report of Survey of Adults with Low Incomes* and the Fair Housing & Equity Assessment, included in the appendices.

The top overall housing goals identified through the public outreach process are:

- Improve the energy efficiency of housing.
- Improve the quality of existing housing.
- Locate housing near employment and town centers.

More specific housing goals have been identified by the Fair Housing & Equity Assessment, regional housing experts, and the Community Action *Report* with the aim of increasing the supply of affordable housing in Franklin County. They are:

- Increase the supply of affordable, accessible rental housing for low and moderate income seniors and persons with disabilities, and provide affordable options for seniors to "age in place;"
- Increase the supply of supportive, subsidized rental housing for extremely low income families, including families with a history of homelessness; and
- Provide incentives to increase the supply of lead-compliant rental housing.

Strategies and specific projects identified by the Towns, stakeholders, and regional housing experts in the County that address these goals are listed in the Recommendations section at the end of this chapter.

BACKGROUND

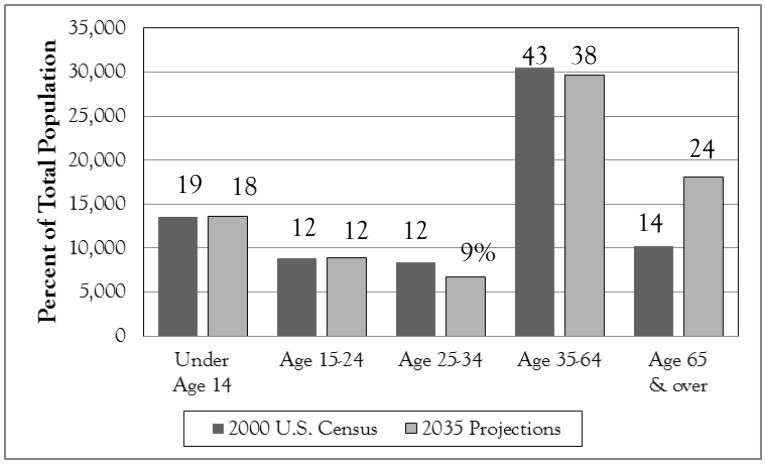
Housing is very important to the wellbeing of Franklin County residents and is integral to the sustainability of the region. The provision of safe, accessible, and healthy housing not only allows residents to live in decent conditions, but the opportunity to access jobs, schools, and services to engage as fully equal members of their community. Housing is a particularly vital issue in Franklin County as the housing stock, mostly composed of single-family houses, continues to age and housing/living costs continue to rise. These conditions make it more difficult for residents to secure safe, decent, and affordable housing, especially for households with low or fixed incomes.

Franklin County's housing stock is mostly composed of older single-family housing on larger lots spread throughout the rural region. These characteristics mean that while much of the housing in the region has great historical and aesthetic character, much of it is not energy efficient. Older, single-family homes may also not be suitable for all segments of the population, particularly the growing population of elders who may find it difficult to maintain large homes, use stairs, or drive long distances to access basic services. In addition, the region is faced with high heating costs which poses even more financial challenges to those seeking affordable housing.

Population Characteristics that Influence Housing Demand

An understanding of the demographics of Franklin County is important to any discussion of housing in the region. There are currently 30,447 households in Franklin County and the average household size is approximately 2.32 individuals.[1] The population in the County experienced steady growth between 1970 and 2000 and then stabilized. Between 1970 and 2000, the region experienced an approximate 20 percent increase. After 2000, the growth rate leveled off and the population has remained stable over the past 12 years. Projections estimate that the County's population will resume growing at a rate of seven percent between 2010 and 2035.[2]

Figure 1: Population Age Distribution, 2000 and 2030



Source: 2000 U.S. Census and MassDOT in collaboration with FRCOG, 2011

While the population as a whole is projected to increase by seven percent over the next 30 years, not all segments of the population will experience the same type of growth during this time period. The elder population (those 65 years old and older) is expected to grow at a much faster pace. Over the next 30 years, this population is projected to increase by 77 percent – making this age group almost a quarter of the total County population (Figure 1). This substantial increase in elders will likely impact the housing needs of the region. As elders age they may no longer be able or want to maintain large homes and may want to be closer to services.

Another population group that may have special housing needs and that may have difficulty finding suitable, affordable housing are individuals with disabilities. Approximately 14.4 percent (10,243) of the County's population in 2010 had at least one disability. Many of these individuals (37%) are over the age of 65 with ambulatory difficulty (22%).

Another significant portion of individuals (about 11.7% or 5,435) with disabilities is aged between 18 to 64 years old. The types of disabilities that occur in this age group include the following difficulties: hearing, vision, cognitive, ambulatory, self-care, mental health, and other challenges to independent living.

Persons with lower incomes may also have difficulty securing suitable, affordable housing. In 2009, approximately 12.1 percent of the Franklin County population had incomes below the Federal Poverty Guideline. Table 1 shows the Federal Poverty Guideline income levels by household size in 2009. In addition, more than a quarter of the County's population (27%) had incomes at 200 percent of the Federal Poverty Guideline, which is twice the official poverty level, but still very low income – especially in Massachusetts with its high cost of living. Massachusetts has the seventh most expensive housing costs in the nation.[3] For Franklin County, poverty rates for single mother-headed families are particularly high. This specific population and their housing needs (i.e. affordable units with multiple bedrooms for families and free of lead paint) should be taken into

[1] Unless otherwise noted, all data on existing population and housing comes from the U.S. Census, 2006-2010 American Community Survey, Five-Year Estimates.

[2] MassDOT, in collaboration with FRCOG, 2011.

[3] National Low Income Housing Coalition, "Out of Reach 2010: June Update."

consideration when developing affordable subsidized housing in the region.

Table 1: 2009 Federal Poverty Guidelines by Household Size

Persons in Family	Poverty Guideline
1	$10,830
2	$14,570
3	$18,310
4	$22,050
5	$25,790
6	$29,530

Source: Department of Health and Human Services

Existing Housing Characteristics

In 2010, there were 33,536 housing units and 30,447 households in Franklin County. This means that there are only 3,000 more housing units than there are households that reside in the County. The supply of vacant units available for occupation is likely much smaller than the difference between the number of households and the number of housing units. Some units may be second homes occupied by non-residents, while other units may not be available for occupation due to code violations. There may also be a mismatch between vacant housing units and the housing needs of the population.

The majority of housing in the region is composed of single-family housing (69%). The rest of the housing stock is made up of two-unit duplexes (10%), multi-family units (18%), and mobile homes (3%). Only 30 percent of the housing in the County is rental. This is slightly less than the Commonwealth's rate of 36 percent. As to be expected, younger residents with no children or small families are more likely to rent rather than own their home. The average size of rental households is 2.02 persons versus the 2.45 persons for owner-occupied households.

Forty percent of the housing in Franklin County was built prior to 1939. This provides the region with a rich architectural and historical heritage, which helps contribute to its scenic resources and sense of community. This age of construction also means that many homes in the County are not energy efficient and require high maintenance.

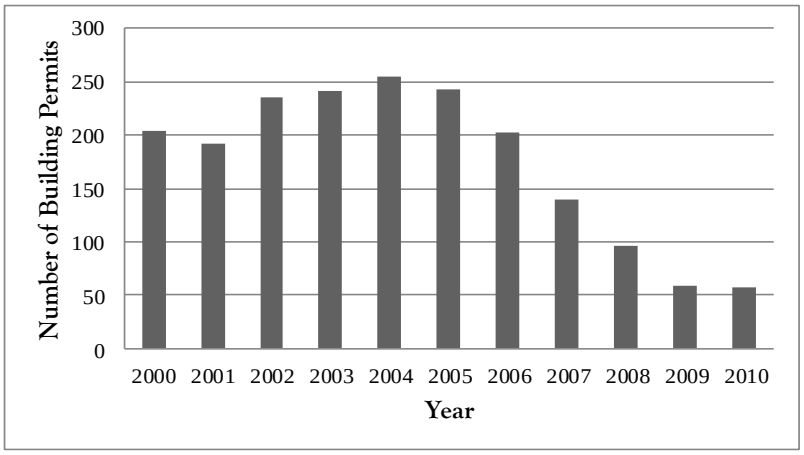
Franklin County Residents Say...

People involved in the public Sustainable Franklin County workshops recommended the following:

- Focus on locating new housing in already developed areas (infill);
- Convert mill buildings to residential uses;
- Encourage accessory apartments to diversify the housing stock;
- Plan for the changing housing needs of the growing elder population in the County; and
- Offer affordable options for all.

A majority—57 percent of homes in the County are heated with fuel oil, which is currently the most expensive form of heat and can be particularly burdensome on fixed or low income households. In addition to being expensive, purchase of heating oil typically requires a large cash payment for a minimum delivery of 100 gallons. Households that heat with oil are unprotected from shutoff of heat due to nonpayment of bills during the winter. When a low-income household runs out of heating oil due to lack of funds, it typically incurs additional charges for emergency delivery and re-starting of the heating system.

Figure 2: Franklin County Building Permits, 2000-2010



Source: U.S. Census Bureau, Building Permit Database

Other popular heating systems include natural gas (15%) and wood (13%). Natural gas is the most affordable heating option; however, it is only available in a small portion of the region. Wood is fairly inexpensive, but it causes air quality problems, especially in more densely populated areas, and can be dangerous if not properly installed or maintained. Further, it is a difficult heat source to manage for elders or persons with disabilities.

Because Franklin County is the most rural county in the Commonwealth, most housing in the region is sited on relatively large properties. In fact, 79 percent of homes are located on properties larger than 0.5 acres. This is primarily due to very limited sewer infrastructure in the towns and soil constraints in some areas for septic systems.

Housing Construction and Zoning

As mentioned previously, Franklin County's population grew during the time period between 1970 and 2000. After 2000 however, the population has remained level. The rate of new home construction in the County reflects this trend and shows how the recent economic recession has affected the region. Between 2000 and 2010, there were a total of 1,923 building permits issued for new residential construction, almost entirely for single-family homes. Building permits peaked in 2004 during this period at 254 that year and have since declined. In 2010, only 58 total permits were issued.

Many of the new homes that have been built were constructed along existing roadways as ANR development (Approval-Not-Required). In Massachusetts, new residential development can occur along road corridors with relative ease, due to the Commonwealth's ANR rules, which allow for the subdivision of land without planning board approval, if certain conditions are met. Each subdivided lot must meet minimum road frontage requirements and must have adequate access to protect public safety and welfare. Because other forms of new construction are typically subject to local approval and conditions, development of single-family homes on rural roads is the path of least resistance for new construction in the region.

Vacancy and Foreclosures

Because the supply of housing just slightly exceeds the number of households in Franklin County, there are very low vacancy rates. In 2010, the homeowner vacancy rate was 1.2 percent and the rental vacancy rate was 2.6 percent. According to housing organizations such as the Franklin County Regional Housing and Redevelopment Authority (HRA), a

healthy housing market is generally considered to have vacancy rates between 2 to 3 percent for owner-occupied homes and 4 to 5 percent for rental properties. The very low levels of vacancy in the region suggest that residents may have difficulty finding suitable housing and that the price of housing may be high due to the lack of supply.

The fact that there are approximately 600 units of substandard housing in Franklin County puts additional pressure on the already tight housing market. The U.S. Census defines substandard housing as units that are overcrowded (more than 1 occupant per room) or do not have complete plumbing or kitchen facilities. This definition does not include units that are simply in very poor repair due to deferred maintenance. Local housing experts believe that the number of homes with structural defects, substandard plumbing or electrical systems, failing septic systems and health hazards such as lead paint and mold is substantially higher that the 600 units of substandard housing identified in the Census.

Fortunately, the recent economic downturn and the resulting credit crisis did not hit Franklin County as hard as it did other locations across the nation. In 2008, the United States had a home foreclosure rate of 0.79 percent and Massachusetts had a much lower rate of 0.29 percent. Franklin County's rate was slightly less than that of the Commonwealth at 0.27 percent.[4] While the overall rate is low for the County, there are specific areas within the region that have much higher rates –the towns of Greenfield, Montague, and particularly Orange are hot spots for foreclosure. These three towns account for 64.3 percent of the total County foreclosures between 2006 and 2010.[5] Orange had the highest amount with 155 foreclosures, compared to the County total of 432 foreclosures during this time period.

[4] "Home Foreclosures in the Pioneer Valley Region," Pioneer Valley Planning Commission. April 2010.
[5] Franklin County Registry of Deeds; www.masslandrecords.com.

AFFORDABILITY

Housing Costs

Housing is generally considered to be affordable when households spend no more than 30 percent of their gross income on housing costs. For renters, housing costs include rent and utilities. For homeowners, housing costs include mortgage principal, mortgage interest, mortgage insurance, property taxes and property insurance. Households that spend more than 30 percent of their income on housing are considered to be "cost-burdened." According to the U.S. Census, in 2010, nearly 49.5 percent of renters and 34 percent of homeowners in Franklin County were cost-burdened. Young renters and older homeowners were the most cost-burdened age groups in the region.

According to the National Low Income Housing Coalition, an average very low income household in Franklin County makes $20,670 a year. Based on the 30 percent guideline, this household could afford $517 in monthly housing costs. However, the Fair Market Rent (FMR)[6] for a 1-bedroom apartment in Franklin County is $730 and a 2-bedroom costs $905 – making affordable housing out of reach for low income households.[7] The average elder household with an annual household income of just $13,000 has even a more difficult time securing affordable housing at an affordable cost of $325 a month.[8]

Utilities, as noted above, can be a huge expense. It is not unusual for a Franklin County household to pay $3,000 - $5,000 each year for heat and electricity.[9] Lower income populations are more likely to have high utility bills because they often live in older, poorly maintained buildings. Seniors who own older

[6] Fair Market Rent (FMR) is set by HUD at 40% of an area's median rent, adjusted according to the number of bedrooms.
[7] "Out of Reach 2010: Just Update," National Low Income Housing Coalition.
[8] Franklin County Home Care Corporation *Consumer's Home Repair Guide*. January 2012.
[9] *Massachusetts Clean Energy and Climate Plan for 2020*, (2010)

single-family homes are more likely to be burdened by the cost of heating oil. Heating costs are high today, and the cost of fuel oil and alternative heating sources is likely to continue to increase as demand increases for these finite resources.

In a rural region such as Franklin County, transportation costs should also be taken into consideration when choosing a place to live since driving long distances is usually required to access basic services. However, this expense is often not calculated even though it is the second largest cost for families after housing. The Center for Neighborhood Technology (CNT) has created an index that combines both housing and transportation costs as a tool to assess the true affordability of locations. The index states that a household should spend no more than 45 percent of its income on housing and transportation combined. According to the CNT, the average Franklin County household spends 25 percent of its income on housing alone. By this measure, housing is affordable. However, if transportation costs are included, then the average household spends 56 percent of its income on housing and transportation – making living in Franklin County unaffordable.[10]

Subsidized Housing

Subsidized housing in Franklin County is scarce and not sufficient to meet the demand. The Franklin County Regional Housing and Redevelopment Authority (HRA) is the largest provider of subsidized housing in the County. HRA owns and/or manages a total of 262 affordable and/or subsidized units in 10 different towns. Some of these units are restricted to specific target populations, such as seniors, persons with disabilities, and persons in recovery from alcohol and substance abuse. The average waitlist length for a subsidized unit is two years. The HRA also manages 579 federal Section 8 Housing Choice Vouchers and approximately 20 Massachusetts Rental Vouchers. The demand for the vouchers is so high that the waiting list is often closed.

Massachusetts has legislation, Massachusetts General Laws Chapter 40B, to promote the creation of affordable housing in the Commonwealth. The law has a goal of increasing the amount of long-term affordable subsidized housing to 10 percent of housing stock in each community. The affordable housing must be state- or federally-subsidized units with guaranteed long-term affordability for low and moderate income households. Chapter 40B has been credited with producing much of the subsidized affordable housing in the Commonwealth over the past several decades. In communities that have not met the Chapter 40B goal, the local government has limited ability to prevent development of new affordable housing, even if the development does not comply with local zoning.

What are Housing Vouchers?

There are 2 types of housing choice vouchers:

1) Federally-funded Section 8 Housing Choice Vouchers
2) State-funded Massachusetts Rental Voucher Program (MRVP)

Both types assist low-income households to afford housing in the private market. A voucher holder is able to choose any housing that meets the requirements of the program and is not limited to units in subsidized housing projects. A voucher holder pays 30-40% of the rent and then a subsidy for the remaining rent amount is paid directly to the landlord on behalf of the voucher holder.

The Franklin County Regional Housing & Redevelopment Authority and the Greenfield Housing Authority administer the local voucher programs.

[10] "Housing and Transportation Affordability Index," Center for Neighborhood Technology. http://htaindex.cnt.org/. April 2012.

In Franklin County, there are few communities that have met the Chapter 40B goal, and it is not feasible for the most rural towns in the region to do so. Many of the communities have little or no public transit services or water and sewer infrastructure. Less than 20 percent of the towns have town centers with retail and commercial services, all of which are important to low income households with affordable housing needs. It is more realistic that the need for additional affordable housing be addressed regionally.

Stoughton Place in Gill provides 14 units of subsidized state public housing for seniors and persons with disabilities.

Homelessness

The recent economic downturn has greatly stressed households that were already financially strapped. The combination of high housing costs and rising unemployment has resulted in a dramatic increase in homelessness in Franklin County. Between 2007 and 2010, the number of homeless families more than doubled and homelessness among individuals increased by 30 percent for Hampshire and Franklin Counties (data specific to Franklin County is not available).[11] The HUD Point in Time survey data shows that there were 1,881 homeless people in 2010 for both Hampshire and Franklin Counties, although the actual number may have been much higher. Data from local agencies working with the homeless in Franklin County indicate that most of the individuals and families receiving services related to homelessness in the region have deep roots in the region. Service providers emphasize that this is not a problem of urban residents moving to the area, but a real increase in homelessness in our local, rural population.

Over the past several years, Massachusetts has moved from a shelter-oriented approach to homelessness to a "housing first" model. The new approach is focused on preventing homelessness if possible, and on rapid re-housing, rather than temporary shelter. While local housing providers strongly support this approach, they say that it is challenging to identify affordable housing options and funding for the supportive services required to ensure long-term, stable housing for individuals and families with a history of homelessness.

FAIR HOUSING AND EQUITY

A Fair Housing & Equity Analysis (FHEA) was conducted as part of this plan to determine whether everyone in Franklin County has an equal opportunity to find suitable housing (see appendix for the full FHEA). Federal and state fair housing laws are designed to provide universal access to safe, accessible, and healthy housing, and to increase opportunities for members of disadvantaged groups to secure jobs, quality education, and services to engage as fully equal members of their community. Federal legislation prohibits discrimination in the sale, rental, and financing of housing based on race, color, national origin, religion, sex, familial status, and disability. The Commonwealth of Massachusetts also prohibits discrimination on the basis of ancestry, marital status, veteran status, age, gender identity, sexual orientation, public assistance, children under age six and lead paint laws, and status as a recipient of public assistance, such as the Section 8 or Massachusetts Rental Voucher program. Policies and actions that

[11] "Report on Survey of Adults with Low Incomes Completed in Spring 2011," Community Action. March 2012.

have the practical effect of denying opportunities to any of these protected classes may constitute illegal housing discrimination, even if the discrimination is unintentional.

The FHEA revealed that there has not been a history of systemic fair housing violations in Franklin County and that public infrastructure investments have been equitably distributed throughout the region with respect to race and income. However, the FHEA did find that there are a few communities in Franklin County that have higher levels of racial and ethnic concentrations than in the surrounding region. These areas are also highly correlated with poverty. Fortunately, the FHEA revealed that many of the areas of concentrated poverty are also located in areas of high opportunity. This reflects the fact that the region's population centers have the most affordable housing, transportation services, and opportunities for employment.

To mitigate the over-concentration of poverty, the priority for regional policy makers and planners is to encourage infill development in these town centers with areas of poverty in order to promote economic revitalization, while improving and expanding the number of affordable housing units and living wage jobs. Having additional people living closer to services and jobs also promotes the principles of sustainability by reducing transportation costs and greenhouse gases, improving health, and providing opportunities to walk and bicycle.

Specifically, to promote infill in the town centers and employment centers where there are higher racial concentrations of poverty, the following strategies are recommended:

- Revise zoning to facilitate infill residential and commercial development.
    - Promote the redevelopment of vacant commercial, industrial and institutional buildings and the creation of accessory apartments.
    - Promote higher residential density in town centers by right.
- Upgrade sewer and water public infrastructure to support higher residential density.
    - Work to secure funding for upgrades.
- Continue to work to revitalize downtown areas through economic development activities to encourage people to live there.
    - Obtain funding for brownfield assessment and clean-up.
    - Clean and restore sites, including but not limited to vacant mill buildings.
- Address public opposition to new residential development, especially affordable housing.
    - Create public education programs to raise awareness of the need for affordable housing and the benefits of developing housing that is safe, affordable and accessible to populations with special needs.
    - Encourage a broad range of interests to participate in the public development process.
- Encourage a mix of affordable and market rate housing in new development.
    - Revise zoning to require new housing subdivision developments to include a minimum percentage of dedicated affordable housing units. Use density bonuses to encourage creation of additional affordable units.
    - Promote mixed income housing development, including market rate and affordable elder and family housing.
- Reduce energy costs.
- Encourage building owners to do energy upgrades, which will improve energy efficiency and reduce utility costs.
- Offer housing options that have services and schools nearby to reduce transportation costs.

Wisdom Way Solar Village is a great example of mixed income, energy efficient housing in Franklin County.

The Wisdom Way Solar Village in Greenfield:

- Offers rental & homeowner opportunities;
- Is located close to downtown Greenfield;
- Has extremely high energy efficiency (almost no utility bills);
- Is designed to accommodate persons with disabilities (all 1st floors and 2 dedicated units); and
- Is a mixed income village – the price of the home depends on the buyer's income.

While there is no documented history of systematic housing discrimination in Franklin County, towns, regional organizations, and policy makers need to be proactive to prevent a problem arising in the future and to assist residents that are in need of help today. In particular, it is important to address public fears and misconceptions about affordable housing. It is very common for local residents to express the fear that development of new affordable housing will attract undesirable outsiders to their communities and change their neighborhood for the worse. In fact, additional affordable housing is needed by existing Franklin County residents and new residents can be a source of economic and creative vitality for aging communities. There is no evidence that high-quality development of new affordable housing has a negative impact on existing property values or community character. By providing additional affordable housing in town centers, not only will more residents have direct access to the many opportunities provided in these communities, the concentrations of poverty will decrease in the overall population of the region.

HOUSING NEEDS OF SPECIFIC POPULATIONS

Based on the examination of the existing conditions of housing in Franklin County, input from local and regional housing experts, and the results of the FHEA, the following housing needs have been identified for specific populations.

Housing Needs of Low Income Households

It is clear that additional affordable housing is needed for low income households. The waiting lists for subsidized housing are typically at least two years long and the number of households that are homeless or at high risk of homelessness is growing. Many low income households cannot afford market rate rents in Franklin County. This is especially true for extremely low income households earning less than 30 percent of the Area Median Income (AMI). Deep subsidies are required in order to make housing affordable to this population group.

Families headed by single mothers make up the largest portion of households in poverty in Franklin County (35%), yet many of the subsidized apartments available in the region are not large enough for families with more than two children, or contain lead paint. The Community Action *Survey of Low Income Households*, which was completed as part of the public outreach for this Plan, showed that 40 percent of the respondents (who were low income households with the majority living in subsidized housing) said that they did not like their current housing because it was too small. Additional affordable units are needed in the County, and there needs to be a focus on providing units large enough for families. Related to this, a very large constraint to families finding suitable housing is the need to locate affordable rental units that comply with lead paint laws for families with children under six years old. Families with Housing

Choice Vouchers have reported difficulty in locating units that fall within the required payment standards and are lead paint compliant.

Additional affordable units that are created for low income households should be located in areas with public transit and near services, jobs, and education. In addition, new units should be energy efficient to reduce expensive heating costs.

Housing Needs of Elders

As mentioned previously, the size of the population aged 65 and over will increase dramatically over the next 30 years in Franklin County. The current housing stock is not adequate to serve this growing population and their changing housing needs. According to a Franklin County Home Care Corporation survey, 82 percent of elders in the County own their own home. Their average income is $13,000/year. Elders report that keeping their home repaired, as well as safe and warm, is their biggest unmet need. The cost of heat and utilities for an older single-family home heated with oil can easily equal 30 percent of the income of a typical senior household in Franklin County. As people age, they may require modifications to keep their homes accessible. Paying for modifications and repairs on fixed incomes is a burden for low income seniors, who may also have difficulty driving to reach basic services as they age. Winter can be especially hard on seniors in rural areas, bringing the challenges of high heating costs, snow removal, the threat of power outages, and additional transportation hazards. To accommodate these constraints, the region needs additional affordable, energy efficient senior housing located near public transit and basic retail and medical services. According to the Franklin County Regional Housing and Redevelopment Authority, many towns are interested in constructing affordable senior housing in their communities; but lack of funding and infrastructure limitations (mostly sewer) are a major obstacle to new construction. Another option for elder housing is increasing the number of handicapped accessible townhouses, condominiums, and rental apartments in town centers and downtowns. Encouraging the creation of accessory apartments in all communities would enable some elders to remain in their homes and "age in place" by receiving supplemental income and possible maintenance assistance from tenants. Alternatively, younger generations may choose to add accessory apartments to house aging parents or grandparents. Allowing this type of construction by right would support families in their efforts to provide safety, independence and dignity for elders. All new housing for elders should be energy efficient to minimize heating costs.

Housing Needs of the Disabled

Since much of the housing in Franklin County was built prior to 1939, very little is accessible for individuals with disabilities. This is also true of the inventory of subsidized housing units in the County. More housing of all types is needed for persons with disabilities. This includes units accessible without stairs as well as barrier-free units. Accessory apartments can be a good option to allow individuals with disabilities to live relatively independently in the same building as family members. Others may choose to live in apartments with the assistance of aides. Supportive housing with services is needed for members of the community with mental illness to maintain stable housing situations.

Housing Needs of the Homeless

As mentioned previously, homelessness is increasing in Franklin County. A typical homeless family has less than $10,000 in income a year and has significant barriers to maintaining stable housing. These barriers include a lack of education and work experience, no history or poor history of tenancy, criminal history, history of trauma (e.g. from domestic violence or childhood sexual abuse), lack of financial literacy, lack of reliable transportation, and health issues, including mental illness and/or substance abuse. In addition to needing new subsidized rental housing for families

near public transit, the homeless population also requires intensive supportive social services designed to promote family stability and encourage greater economic independence.

CONSTRAINTS

The public participation process and data analysis conducted for this Plan identified major constraints to improved sustainability in Franklin County. This section discusses those housing-related constraints so that recommendations may be identified to address them.

Lack of Funding for Redevelopment

Franklin County's industrial heritage has left it with many vacant or underutilized buildings, many of which are old mills, in its town centers. These buildings are located in good areas for conversion to residential and mixed uses. They are very large structures with sewer and water infrastructure available on site. They are also historical resources for the community and help provide a sense of identity for many of the towns in Franklin County. However, their current state of vacancy makes them in danger of deteriorating. Without funding assistance from the state or federal government to help with redevelopment and brownfield issues, these valuable resources that could provide sustainable housing units may be lost forever.

The scarcity of funding has also prevented affordable senior housing from being constructed in many communities. Funding for long term rent subsidies is needed in addition to funding for construction to make new housing units affordable.

Zoning Limits Infill Opportunities

Many Franklin County communities have zoning that reflects their historical rural residential nature. The predominant zoning in the region allows for residential construction on a minimum of two acres. Outside of the few downtowns and village centers, residential and commercial uses are usually required to be separated. In the downtowns and village centers, residential density for new construction is often limited to an average of four units per acre by right, although the existing construction is much denser than current zoning allows. Multi-family building with more than two units are allowed in most downtowns, but only through the special permit process. This type of zoning limits the ability to build additional housing in areas close to existing services and public amenities, such as schools and libraries. Even though multi-family housing may be allowed, the special permit process can be burdensome and uncertain, so that developers are hesitant to proceed in the face of public opposition. Some towns have been moving to make their zoning more flexible, by allowing accessory apartments and duplexes by right. This is a good first step, but more needs to be done to promote additional housing in the areas where infrastructure and services already exist.

Insufficient Infrastructure to Accommodate Additional Housing

Besides funding, sewer and water infrastructure is the most common and critical constraint in the region's capacity to construct additional housing near downtowns or village centers. Many of the current sewer and water systems cannot handle additional loads without major upgrades, which are extremely costly. More than half of the County's town centers do not have public sewers and rely on septic systems, which require large land areas and thereby constricts possible density.

Lack of Diversity in Housing Stock

The fact that the majority of the housing stock in Franklin County is composed of single-family housing means that certain populations may not be able to find suitable affordable housing for their specific needs. The very low vacancy rental rate is an indicator of an insufficient rental housing stock. There are many ways to increase the number of rental units in the region. These include: converting large single-

family homes to multi-family housing and encouraging accessory apartments. Populations such as the elders, have little choice when they no longer wish to maintain a single-family home. Providing options such as condos and townhomes could assist this population as they age. Housing types such as condos and townhomes also tend to be more affordable options and require less maintenance for those that wish to own in comparison to a single-family home.

As Franklin County's aging housing is updated, energy efficient features should be encouraged to reduce heating costs and reduce the use of fossil fuels.

Aging and Inefficient Housing Stock

Most of the housing units in Franklin County were built before 1939. While these units help provide the County with character, they tend to be very energy inefficient, costly to maintain, and not accessible to persons with disabilities. It is important to preserve and rehabilitate these older housing units, since they are often more affordable than newer housing. Upgrading existing housing is considered to be a more sustainable approach than building new, since it reuses resources. There are a variety of mechanisms to assist low- and moderate-income residents with home repairs. Many of the towns in the region apply for Community Development Block Grant funds for this purpose. CDBG-funded housing rehabilitation programs are managed by the Franklin County Regional Housing & Redevelopment Authority and the Town of Greenfield. Some towns in the region have loan funds available for septic system upgrades. Community Action has programs that assist income-eligible households with weatherization. The Pioneer Valley Planning Association administers a loan program for improvements to help residents with disabilities stay in their homes. Massachusetts also has one of the most progressive and well-funded energy efficiency programs in the nation. Mass Save offers two major programs for various income levels that include free energy assessments, air sealing, and zero-interest loans. Everyone in Massachusetts is eligible, although some homes cannot be upgraded because of existing code conditions.

Public Opposition to New Development

As in many communities across the nation, Franklin County has experienced public opposition to the development of new housing, and especially to new affordable rental housing. Public opposition continues to be a barrier to the construction of much-needed additional housing in the region. Opposition to affordable housing for families is especially problematic. With relatively slow growth and an aging population, keeping Franklin County affordable to young families is important to the economic future and vitality of the region. Increased public education regarding the benefits of development and an open, participative development process can be effective

methods at mitigating public opposition. In addition, towns can require that a certain percentage of affordable housing units be included in new subdivision developments in order to better integrate this housing into residential neighborhoods.

Balancing Development with Preserving Open Space

A very clear message regarding housing emerged from the public participation for this Plan. Participants support the creation of additional housing, but not at the expense of the natural and scenic resources that makes Franklin County so special, nor at the expense of degrading the ecosystem and making the region less sustainable. Recent historical construction trends in the County have included new residential development occurring outside of village centers and in more rural parts of communities, fragmenting open space areas and natural habitats. In addition to fragmenting natural resources, this pattern of residential development can result in higher fiscal costs to Franklin County communities. The cost of providing municipal services to these dispersed areas of development is typically greater than comparable costs in village areas, due to the lower density of development and the greater transportation costs involved. Development of single-family homes along the frontage of rural roads is typically unregulated, and therefore constitutes the path of least resistance for construction of new housing. To counter this trend, communities need to make it easier, more certain and less expensive to build at higher densities in developed areas that have existing infrastructure.

Locating Affordable Housing in the Region

The results of the Fair Housing & Equity Analysis showed that the vast majority of affordable housing (93%) is located in just five of the twenty-six towns in Franklin County. These towns are also the major employment and population centers of the region and as a result have the most services and opportunities. While it makes sense to locate affordable housing near these services, concentrating it in just a few locations means that low income and minority populations tend to become segregated. As new affordable housing is developed in the region, its location must be balanced with a need to be in proximity to services and the need to ensure that concentrations of low income households are not created or expanded. For example, redevelopment of historic and vacant structures could provide a mix of both market rate and affordable housing units.

FUTURE HOUSING NEEDS OF FRANKLIN COUNTY

Projections show that Franklin County's population is going to grow to a total of 33,160 households by the year 2035. There are currently 33,536 housing units. While technically there are currently just barely enough housing units for all of the future projected households, this is not sufficient for future needs for several reasons: the existing supply must be evaluated in the context of desirable vacancy rates, deterioration of existing housing supply, and changing population characteristics (e.g. increasing number of elders). Taking these factors into consideration, a minimum of approximately 35,500 housing units will be needed by the year 2035.[12] An additional 2,000 housing units are needed, at a minimum, to house the region's future population.

Table 2: Future Housing Needs: Franklin County

35,500 Total Housing Units Needed by 2035
4,300 of these units need to be affordable for low income households *(based on the current 12% of the population that is considered very low income)*
8,500 of these units need to be able to accommodate households over the age of 65 *(based on the projection that 24% of the population will be over the age of 65)*
3,100 of these units need to be accessible for the disabled *(based on the current Census estimate that 9% of the population under the age of 65 has a disability)*

[12] Assumes an average 4% vacancy rate and a 2% deterioration rate (based on Census figures of substandard housing).

Because the population of Franklin County will continue to change in composition, the types of housing that will be needed will also change. Table 2 summarizes the future housing needs for various population groups within Franklin County.

Some of the housing needed in Table 2 already exists. For example, there are already 2,086 subsidized housing units in the County. This leaves a future need of a minimum 2,200 units for low income households, which exceeds the total number of new units needed. A portion of this goal could be achieved by renovating existing units and providing subsidies for rental or purchase. A more detailed analysis should be completed in the future to inventory exactly what already exists for these various populations, the conditions of the housing, and the remaining deficit of needed housing.

Table 2 provides a rough estimate of the type of housing required over the next 25 years, but does not specify its form. For example, housing to accommodate households over the age of 65 could come in many forms: traditional senior housing complexes, market rate apartments or condominiums, or accessible single-family homes. The input provided through the public participation for this Plan emphasized that future Franklin County housing should be diverse in form and, most importantly, should focus on moving away from the traditional single-family home to provide more choices to various populations. In addition, input by the public highlighted the desire to prioritize redeveloping and/or rehabilitating current structures rather than constructing new housing.

Residents who participated in the planning process also emphasized that when new housing is constructed, it should be located in or near downtowns/village centers and should be built as infill when possible. Infill is defined as the use of vacant land within a built-up area for further construction or development. There was also a strong desire to have new or redeveloped housing located near public transit.

By placing new housing in these locations, many benefits accrue to the residents, including proximity to services and amenities; cost savings by having to drive less; and additional time available to participate in the community or with their families. There are also benefits to the communities by placing housing in a more centralized manner versus the current dispersed pattern. The largest benefit to communities is the cost savings by not having to provide additional services such as road maintenance, public water, and emergency services over such a wide area. Chapter 10: Land Use and Infrastructure will discuss the cost benefits of more concentrated land use patterns in additional detail. There are also many environmental benefits to a more concentrated housing pattern such as the preservation of open space for recreation, biodiversity, and forests for carbon sequestration, to name a few.

The feedback received from the public also emphasized that all housing should be as energy efficient as possible. Higher energy efficiency lowers utility costs, saves residents money, and keeps spending in the local economy rather than sending it out of the region to purchase fossil fuels. The construction of green buildings, which use key resources like energy, water, materials, and land more efficiently than building just to current code, can be an important step in the direction of increased energy efficiency. Green buildings do cost slightly more to construct, but typically have significant cost savings over the life of the structure compared to an average home. They are also more comfortable and healthy for residents. New buildings, however, will only be a small portion of the region's housing stock. It is therefore important to create incentives for building owners to take advantage of Mass Save and town-based rehabilitation programs and improve the energy efficiency of all existing housing stock.

RECOMMENDATIONS AND STRATEGIES

The following section presents recommendations and implementation strategies to achieve both the goals that arose out of the public participation process and the goals provided by local and regional housing experts. The two sets of goals are based on different perspectives, but are equally important in ensuring the sustainability of housing in Franklin County. The recommendations also take into account the constraints identified in this chapter and work to address them so that the needs of all populations within Franklin County can be addressed. Potential partnering organizations are identified and a key to the abbreviations of the organization names is contained in Table 3. Table 4 lists in detail the recommendations and strategies. Table 5 identifies specific benchmarks to measure progress in housing sustainability.

For many of the recommendations in this chapter, funding is a major requirement. Upgrades to public infrastructure, deep housing subsidies, improving the energy efficiency of the housing stock, and redevelopment of existing structures require a large amount of resources. Coordinating, matching, and assembling funding at both a local and regional scale should be a priority for area organizations in order to realize the goals set forth in this chapter.

Advocating for additional state and federal funding is a necessity to achieving progress towards sustainability. Because the funding needs are so great and actual funding is scarce, regional planners and policy makers will need to start thinking more creatively about lower-cost solutions. The region may need to think differently about how people currently live – for example returning to more multi-generational homes, with accessory apartments for the different generations may become more typical. There may also be a need for units that are significantly smaller than the homes constructed over the past several decades. In general, Franklin County needs to consider a much wider diversity of housing types and living arrangements.

Table 3: Partnering Organizations Key (alphabetized by Organization Name)

Abbreviation	Organization Name
AFT	American Farmland Trust
CISA	Community Involved in Sustaining Agriculture
CRWC	Connecticut River Watershed Council
CTS	Community Transit Services
DCR	Department of Conservation Resources (Massachusetts)
DOER	Massachusetts Department of Energy Resources
FCCC	Franklin County Chamber of Commerce
FCCDC	Franklin County Community Development Corporation
FCHCC	Franklin County Home Care Corporation
FCRHRA	Franklin County Regional Housing & Redevelopment Authority
FCSWD	Franklin County Solid Waste District
FCTS	Franklin County Technical School
FHCC	Franklin-Hampshire Career Center
FHREB	Franklin-Hampshire Regional Employment Board
FLT	Franklin Land Trust
FRCOG	Franklin Regional Council of Governments
FRA	Federal Rail Administration
FRTA	Franklin Regional Transit Authority
GBA	Greenfield Business Association
GCC	Greenfield Community College
KLT	Kestrel Land Trust
MBI	Massachusetts Broadband Institute
Mass CEC	Massachusetts Clean Energy Center
MDAR	Massachusetts Department of Agricultural Resources
MA DPH	MA Department of Public Health
MassDOT	Massachusetts Department of Transportation
MassFBF	MA Farm Bureau Federation
MFPA	Massachusetts Food Policy Alliance
MFA	Massachusetts Forest Alliance
MRPC	Montachusett Regional Planning Commission
MBA	Montague Business Association
MGLCT	Mount Grace Land Conservation Trust
NEFU	New England Farmers Union
NOFA	Northeast Organic Farming Association
NQC of C	North Quabbin Chamber of Commerce
NQCC	North Quabbin Community Coalition
NQW	North Quabbin Woods
OBA	Orange Business Association
PVPC	Pioneer Valley Planning Commission
SOS	Seeds of Solidarity
SFABA	Shelburne Falls Area Business Association
WMECo	Western Massachusetts Electric Company
YES	Young Entrepreneurs Society, Inc.

Table 4: Recommendations and Strategies for Housing	Implementation					Partnering Organization(s)*
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Promote housing affordability						
Rehabilitate existing housing for low and moderate income households	X					Towns, housing authorities, non-profit organizations, homeowners
Support housing rehabilitation loan programs that are available to low and moderate income households	X					Towns, housing authorities, elected officials, homeowners
Rehabilitate non-commercially viable industrial, commercial and institutional properties for market rate and affordable housing	X					Towns, housing authorities, FRCOG, private developers
Construct additional subsidized rental housing units	X					Towns, housing authorities, private developers
Promote the creation of accessory apartments		X				Towns, housing authorities, FRCOG
Encourage the construction of diverse housing types; such as duplexes, condominiums, townhomes, and multi-family units	X					Towns, housing authorities, FRCOG, private developers, real estate community
Obtain additional funding to secure permanent subsidies for extremely and very low income residents	X					Towns, housing authorities, elected officials, advocates for low income residents
Promote the use of Affordable Housing Trusts in municipalities		X				Towns, FRCOG
Advocate for additional funding to provide subsidies and to help redevelop structures for residential use	X					Towns, housing authorities, FRCOG, elected officials, advocates for low income residents
Revise zoning to require a percentage of affordable housing units in new developments.		X				Towns, FRCOG
Encourage towns to use Community Preservation Funds to create new affordable housing opportunities	X					Towns, FRCOG, housing authorities, state agencies

See previous page for the Partnering Organizations abbreviations key

Table 4: Recommendations and Strategies for Housing	Implementation					Partnering Organization(s)
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Promote residential infill near downtowns and town centers						
Support sewer and water infrastructure upgrades to accommodate additional housing units and expand service areas to town centers in a planned, thoughtful manner	X					Towns, FRCOG, state and federal agencies
Revise zoning to facilitate the creation of various housing types and densities, and a mix of residential and commercial uses		X				Towns, FRCOG
Work to educate the public about the benefits of infill in order to mitigate public opposition to new housing development	X					Towns, FRCOG, housing authorities, real estate community
Work with willing landowners to protect agricultural and forest land in outlying areas from development	X					Towns, FRCOG, land trusts
Provide housing options for elder and disabled populations						
Construct new affordable senior housing complexes near town centers		X	X			Towns, housing authorities, FRCOG, FCHCC
Encourage the creation of accessible, affordable condominiums and townhomes	X					Towns, FRCOG
Increase the supply of housing that meets the needs of persons with disabilities	X					Towns, housing authorities, advocates for persons with disabilities
Increase the supply of accessible housing for persons with disabilities to live in and to visit	X					Towns, housing authorities, advocates for persons with disabilities
Assist elders to "age in place" with housing rehabilitation, energy efficiency programs and supportive services to make their homes accessible, affordable and safe	X					Towns, housing authorities, FRCOG, FCHCC
Promote the creation of accessory apartments	X					Towns, housing authorities, FRCOG, private homeowners

Table 4: Recommendations and Strategies for Housing	Implementation					Partnering Organization(s)
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Increase rental housing stock						
Convert vacant or underutilized commercial, industrial and institutional buildings to residential uses		X	X			Towns, housing authorities, FRCOG, private developers
Convert single-family homes to multi-family units	X					Towns, private homeowners
Create accessory apartments	X					Towns, private homeowners
Maintain and expand incentives for de-leading of existing units		X				Towns, elected officials, landlords
Increase energy efficiency of all housing stock						
Support the construction of green buildings	X					Towns, housing authorities, non-profit organizations
Educate renters, landlords, and homeowners about programs that offer financial assistance for home energy upgrades	X					Towns, housing authorities, non-profit organizations
Create incentives and/or regulations so that homes are upgraded		X				Towns, non-profit organizations
Encourage towns to hire a staff person or find volunteers who can offer assistance to those who wish to do energy upgrades to their buildings (examples: Greenfield Energy Smart Homes program, FCHCC's Benefits Counseling program)		X				Towns, housing authorities, non-profit organizations
Provide additional funding for energy upgrades (i.e. PACE financing)	X					Towns, housing authorities, elected officials, banks, non-profit organizations

Table 4: Recommendations and Strategies for Housing	Implementation					Partnering Organization(s)
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Prevent homelessness and assist with the homeless						
Build new supportive rental housing for families with history of homelessness near public transit and basic services	X					Towns, housing authorities, state agencies, advocates for the homeless
Housing for families with history of homelessness should include funding for intensive social services designed to promote family stability and encourage greater economic independence	X					Towns, housing authorities, state agencies, local and regional service providers
Increase coordination between public and private agencies that provide services to homeless families	X					Towns, housing authorities, state agencies and nonprofit service providers
Provide incentives and support for landlords to rent to families with prior evictions	X					Towns, housing authorities, state agencies, elected officials, advocates for low income households
Increase access to GED and job training programs for families with a history of homelessness	X					Towns, housing authorities, FHREB, GCC, nonprofit service providers

BENCHMARKS

To ensure that the recommendations and strategies of this Plan are implemented, Table 5 lists measurable benchmarks that can be assessed regularly. These benchmarks will provide a gauge of whether Franklin County's housing is becoming more sustainable.

SUMMARY

The ability to secure appropriate and affordable housing is a vital element of sustainability in a number of ways:

- It allows residents to live in decent, suitable conditions;
- Residents can more easily access jobs and schools; and
- Provides people with the ability to engage as fully equal members of their community.

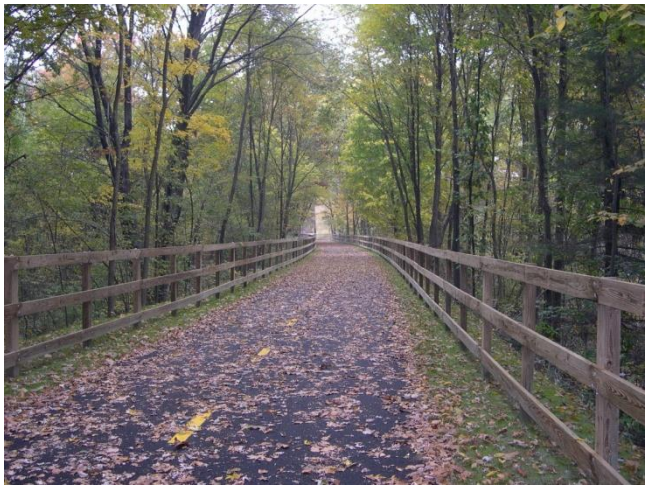
Sustainable housing in Franklin County means providing a choice of housing options; locating housing near services and jobs; ensuring that new and rehabilitated housing is energy efficient; and that it is affordable for all residents. To help make housing affordable in the County, several paths of action are required. More subsidies are needed for extremely and very low income households, services will need to be provided to prevent homelessness, and a larger range of market rate housing types will likely be needed.

Table 5: Housing Benchmarks

Performance Measure	Unit of Measurement	Desired Trend	
Number of affordable housing units within employment centers	Number of housing units	Increase	⇧
Number of census tracts covered by inclusionary zoning	Number of census tracts	Increase	⇧
Number of affordable units in the region with access to transit	Number of housing units	Increase	⇧
Number of homes that receive energy upgrades	Number of housing units	Increase	⇧

SUSTAINABLE FRANKLIN COUNTY

Chapter 5: Transportation



INTRODUCTION

Franklin County is the most rural county in the Commonwealth and as a result, transportation planning and its implementation pose many unique challenges. Its sparse population and large geographical area naturally constrain many modes of travel beyond that of the private automobile. The large area that the transportation network covers also makes it difficult to efficiently provide improvements. In spite of these obstacles, Franklin County has had a very successful record of not only maintaining and improving its transportation system, but also adapting it to be more sustainable. For example, over the last two decades, the County has established the Franklin County Bikeway; created several park-and-ride lots; expanded the public transit system; built the first zero-net energy multi-modal transit center, and more. While these projects have been crucial to promoting sustainability in the region, more needs to occur to ensure that Franklin County remains a livable place economically, environmentally, and equitably. The ultimate goal is to improve mobility and make it more affordable while reducing fossil fuel use and climate change emissions.

This chapter will examine the existing conditions of the transportation system. Much of this information is derived from the recently completed Franklin County 2012 Regional Transportation Plan, which is a comprehensive plan updated every three years with a large public input component. This chapter will analyze the current conditions to determine opportunities, constraints and/or barriers to sustainability in the region and then will make recommendations to improve the transportation system in the County. The public workshops and the surveys conducted as part of the public outreach process for this Regional Plan for Sustainable Development will help inform the chapter by identifying barriers that may exist and recommendations for making the County more sustainable.

The top sustainable transportation goals identified in the public outreach process are: 1) increase availability and use of public transit; 2) restore passenger rail service; and 3) increase bicycle/pedestrian facilities and promote walking and bicycling. These goals will be implemented by many of the specific projects listed in the Recommendations section at the end of this chapter, which have been identified by the Towns and stakeholders in the County.

BACKGROUND

Franklin County has diverse transportation resources including major highways, scenic byways, park-and-rides, and bike paths. This section details current conditions of the various modes of transportation and infrastructure in the region.

Roadways and Bridges

ROADWAYS

Franklin County has nearly 1,700 miles of roadways. The majority of these miles, almost 80 percent, are maintained by the Towns, while the Massachusetts Department of Transportation (MassDOT) owns and maintains approximately 11 percent of the roads. The remaining percentage of roads are either private or classified as unaccepted. The majority (84%) of the total roadway mileage in the County is officially categorized by MassDOT as "rural," with the remaining 16 percent defined as "urban." Because many of the roadways in Franklin County are rural, the traffic volumes on most roads are quite low. However, there is a large variation in traffic volumes within the County. Most roads average less than 100 vehicles per day, while sections of Interstate 91 can have over 30,000 vehicles per day. Other high volume corridors in the County include: Route 2 near the Greenfield Rotary (22,000 vehicles per day), Route 116 in Sunderland and Route 5/10 in Whately, both with traffic volumes of 15,000 vehicles per day. Analysis shows that the two percent decrease in traffic

volumes over the last five years can be attributed to the economic recession and rising gas prices.

Pavement Condition

MassDOT and FRCOG have recently begun a Pavement Management System (PMS) to monitor pavement conditions on roadways throughout Franklin County to prioritize maintenance, rehabilitation, and reconstruction strategies. In 2010, MassDOT and FRCOG's data collection showed that 40 percent of the roadways in the County can be categorized as "good," while 34 percent fall under the "poor" category. The relationship between pavement condition and the cost to repair is not linear. As conditions worsen, the costs to bring the pavement back up to excellent condition increases significantly. Because it is much more costly to reconstruct a roadway, the most cost-effective and sustainable approach would be to properly maintain all roadways before they reach a poor level of condition.

Bridges

Bridges are a critical component of the Franklin County roadway network. The majority of the bridges located on high volume roadways in the County are predominantly under the domain of the State. According to the 2009 National Bridge Inventory (NBI) created by the Federal Highway Administration, there are 49 bridges (or 16%) in the County that are formally classified as "structurally deficient." Bridges are considered structurally deficient if they fall below specific thresholds. They may span a range of conditions, from requiring a minor, but vital repair to a more complete rehabilitation. The NBI also classifies 42 bridges (or 14%) in Franklin County as "functionally obsolete." This term refers to a bridge's inability to fully support the roads they serve due to variables such as limited width or height. This bridge classification helps identify areas where mobility may be decreased as a result of the bridge's condition.

Franklin County Residents Say...

Public participation and outreach emphasized the need to:

- Support expanded alternative transportation options, such as bicycling and park-and-rides;
- Examine how climate change will affect transportation infrastructure;
- Promote bus ridership and its benefits and conveniences; and
- Plan for the changing transportation needs of the growing elderly population in the County.

Roadway Safety

Approximately every three years, the FRCOG analyzes crash data from the Registry of Motor Vehicles for Franklin County to identify intersections that have experienced a high number of crashes. The study identifies the 50 most hazardous intersections and ranks them based on severity of the crashes and traffic volumes. The latest study showed that 26 of the 50 most hazardous intersections are located in Greenfield, which is by far the most populated and densely developed community in the County. Because Franklin County is very rural and the majority of its roadways carry low traffic volumes, the inclusion of an intersection on the most hazardous intersection list does not necessarily mean that an intersection is experiencing a hazardous crash problem. In fact, no Franklin County intersection made it onto MassDOT's "Top 200 High Crash Clusters."

While there may not be severe hazardous safety issues here in the region, there are problem spots that require mitigation. Examples of projects in the County that have been recently completed to improve safety on Franklin County's roadways include: the retrofit of the Route 2 Rotary in Greenfield; the addition of climbing lanes and turning lanes on Route 2 East; the relocation of Route 2 around the Erving

Paper Mill; and the installation of pedestrian safety measures on Route 116 in Sunderland, to name a few.

Freight Transport

Freight transportation is an important issue for Franklin County. The accessibility and efficiency of freight transport plays a vital role in the economy and viability of the region. The major trucking routes in the County are Interstate 91 and Route 2. Other active truck routes in the region include: Route 5/10, Route 47, Route 116, Route 63, and Route 112. Recently, there have been several major roadway improvements that increase the safety and efficiency of trucking in the region. Most notably was the relocation of Route 2 away from the Erving Paper Mill in Erving. Other recent improvements include the addition of climbing lanes and turning lanes on Route 2 East.

The Commonwealth of Massachusetts Commercial Motor Vehicle Center is responsible for permitting the transportation of non-reducible loads, also referred to as "wide loads." If a transporter wishes to move a load of 12 feet or more in width over state highways, they are required to apply for a permit. In Franklin County, wide loads are permitted only on Interstate 91, Route 2, and Route 116. The transportation of wide loads is a growing issue for Franklin County, largely due to the increase in renewable energy powered by wind. Wind turbines have already been installed locally, such as at Berkshire East Ski Resort in Charlemont, and large-scale wind farms have been completed for the Town of Monroe and the neighboring towns of Florida and Savoy. The wind turbines are constructed on-site with very large prefabricated components. These individual components are not only very wide, but can range from 115 to 160 feet in length and must be transported via roadway to often remote areas. For comparison, the average 18-wheeler tractor-trailer ranges in length from 70 to 80 feet. To construct the Berkshire East wind turbine, 17 truckloads delivered parts to the site.[1] As more wind turbines are planned for sites in Franklin County and adjoining regions, the issue of transportation of turbine segments is a large one, especially for the many winding roads in the County that would have difficulty accommodating these trucks.

Scenic Byways

Franklin County's rural landscape, varied topography, and rich history combine to make the region especially beautiful and scenic. As an indication of the region's picturesque resources, five of the seven scenic byways in Western Massachusetts are located in Franklin County. They are: the Mohawk Trail Scenic Byway (Route 2), the Route 112 Scenic Byway, the Route 116 Scenic Byway, the Route 122 Scenic Byway, and the Connecticut River Scenic Farm Byway (Route 63 and 47). To ensure that the many resources that make these routes so special are maintained, Corridor Management Plans have been created for each of the Scenic Byways. These plans are developed with an extensive amount of public participation and their goal is to identify mechanisms that can protect the scenic value of the byway while promoting the byway's tourism potential. Some of these mechanisms include permanent land protection, promotional materials, and way-finding signs along the route. See Chapter 6: Economic Development for more information.

Transit

The Franklin Regional Transit Authority (FRTA) provides public transit services to Franklin County with some supplemental service provided by the Pioneer Valley Transit Authority (PVTA). A total of eight fixed bus routes currently operate within Franklin County. Both the FRTA and the PVTA also provide paratransit and demand responsive service to their respective towns. These services are available to the disabled or elderly who cannot access the fixed route services. Transit routes operated by FRTA are

[1] Broncaccio, Diane, "Tower of Power," *The Recorder*. December 2, 2010.

limited to weekdays and non-holidays, while the PVTA routes do operate on the weekends. The PVTA routes do not operate on major holidays, but do run on minor holidays.

The recently completed *2012 Regional Transportation Plan* showed that there is a large interest in expanding public transit to include additional routes in the County and to extending its service into the evenings and weekends. The 2011 *North County Transit Study* determined that there is sufficient demand to warrant adding a new route along Route 5/10 from

An FRTA bus at the John W. Olver Transit Center offers transportation in Greenfield and neighboring communities.

Greenfield, through Bernardston, and ending in Northfield. The Sustainable Workshops also identified another highly-desired route along Route 116 to provide service to the town centers of Conway and Ashfield.

The workshops and surveys conducted as part of this Plan's public outreach confirmed that there is a large demand region-wide by a range of residents who would like additional transit service in the County. Not only would residents like to see more public transit for environmental reasons; but many residents, particularly low and moderate income households as documented by the Community Action survey, would like additional transit services for economic reasons and to access basic destinations including employment, education, and medical services. Transit is becoming more popular in the County. Between FY2007 and FY2009, the FRTA experienced a 19 percent increase in ridership.

Securing funding for more service is especially difficult, considering that many of the existing routes, including the most popular Route 32 (serving Greenfield to Athol), do not have dedicated long term funding sources. Expanding service to the more rural areas of the County would be difficult to justify due to the costs. Studies have shown that for viable bus service, a minimum residential density of four housing units per acre is needed to support the route with enough riders.[2] The largest obstacle to providing more public transit (additional routes and more frequent service) is the high cost of service for a sparsely populated region.

Rail

Railroads have a long and proud history in Franklin County dating back to the 1840's. There were once four separate railroad companies offering passenger rail service to Franklin County. However, passenger rail service has declined in the County, as it has across the rest of the United States. Currently, Franklin County has no passenger rail stops, although Amtrak does operate two trains that pass through the County as they travel between Washington, D.C. and St. Albans, VT.

The six states in New England have come together to improve passenger rail service in the region. They have created the "New England High Speed Rail and Intercity Rail Network Vision." This Vision recommends a high-speed rail network that will link

[2] Boris S. Pushkarev and Jeffrey M. Zupan. Public Transportation and Land Use Policy. Indiana University Press, Bloomington, IN, USA, 1977.

every major city in New England with smaller cities and rural areas and internationally to Montreal.

Two important passenger rail corridors to Franklin County are: the north-south "Knowledge Corridor" and the east-west passenger rail service through Fitchburg to Boston. The Knowledge Corridor runs from Springfield, MA to White River Junction, VT. In January 2010, Massachusetts was awarded $70 million to make improvements to this rail line to extend and restore passenger service. The funding will be used to relocate the existing Amtrak passenger train service, known as the Vermonter, back to its former route along the Connecticut River Line. The restored alignment adds a stop in Greenfield at the new multimodal Franklin Regional Transit Center. Construction to the rail line should be completed in 2014 and service expected to begin shortly thereafter. It is planned that this corridor will eventually have commuter service to Springfield and beyond to New Haven, Connecticut.

There once was passenger rail service traveling east-west through Franklin County, but it was discontinued in the 1960's. Currently, the closest east-west rail service can be picked up in Fitchburg in order to travel east to Boston. Unfortunately, this east-west route is not part of the "New England High Speed Rail and Intercity Rail Network Vision" and has therefore not received as much attention or funding as the north-south corridor. However, there is definitely a demand for east-west passenger service in Franklin County to employment centers in the east, such as Worcester and Boston.

A more realistic short-term alternative to passenger rail for providing long distance transportation is private bus lines, such as Peter Pan or Greyhound. These two companies currently serve Franklin County with north-south routes and connect the County with Springfield and Hartford. However, ridership is currently very light and the routes are in danger of being discontinued. This form of travel is easy to implement and is affordable to those who might need it the most.

Rail is also important to Franklin County for freight shipping. Franklin County has 93 miles of railroad for freight, including two north-south routes and one east-west route. The East-West Freight Rail Line is the Commonwealth's most important line serving up to five million tons of freight annually between eastern Massachusetts and eastern New York. Several of the rail lines that pass through the County are currently being updated to accommodate larger weights and taller "double-stacked" railcars. MassDOT has projected that the amount of rail freight shipments will double over the next 30 years. This increase could have a significant impact for the region since three major New England rail freight lines pass through Franklin County and there is a significant rail yard in the Town of Deerfield. Shipping freight by rail instead of by truck reduces traffic congestion, greenhouse gas emissions, and pavement impacts and also is much more cost effective.

Pedestrian and Bicycling Facilities

Walking and bicycling are viable sustainable alternatives to the automobile in the region for residents who live and work in close enough proximity. In many cases, the sidewalks and streets that exist in the communities of Franklin County were laid out hundreds of years ago making these historic town centers pedestrian friendly. While these town centers are very amenable to walking, the infrastructure in many locations requires updating to adjust to modern accessibility demands. In other instances, activity centers have developed in areas that were previously not conducive to walking and improvements are required for them to function safely and effectively for pedestrian activity.

Bicycling is very popular in the region. The Franklin County Bikeway is a regional bicycle network that consists of both on and off-road bicycle routes. It covers the entire County and connects most major

town centers and other important community destinations. The central portion of the on-road segments of the Bikeway have been marked with way-finding signs and maps of all the routes are available.

There are challenges associated with bicycling in Franklin County. The varied geography and topography of the region can be an obstacle to bicycling for transportation. The rural landscape of the County generally means that individuals are traveling longer distances to work and to perform routine daily errands. In addition, the hilly topography in some locations means that bicycling can be very physically challenging as well. At the same time, these geographic conditions and topographic features also greatly contribute to the appeal of bicycling and walking in Franklin County. There are many rural roads with low traffic volumes and picturesque rural landscapes that are pleasant for riding. These conditions make it possible to promote bicycle touring and tourism for recreation purposes as an economic development draw for the region.

Bicyclists travel on the Riverside Greenway Bike Path over the Green River.

MassDOT is currently promoting its Complete Streets policy, which has the goal of making streets safe, comfortable, and convenient for travel via automobile, foot, bicycle, and/or transit. This is a policy that should be applied to Franklin County communities as well to ensure that more sustainable modes of travel, such as bicycling and walking, can be a viable option for residents. It involves examining roadways to determine if various accommodations can be made for all users. These accommodations are made on a case-by-case basis and do not necessarily entail widening a road, but could just simply result in re-painting the lines on the roadway or adding sidewalks.

Commuting Trends

The automobile is the primary mode for commuting travel in Franklin County. The most current source of information on commuting patterns within the region is the U.S. Census Bureau's 2006-2008 American Community Survey. Between 2006 and 2008, 89 percent of Franklin County's employed residents commuted to work by car; with 79 percent driving to work alone and 10 percent carpooling. The percentage of Franklin County workers that took transit is small. In 2008, only one percent rode public transit. In Franklin County, an estimated four percent of workers walked to work. In addition, five percent of workers in Franklin County worked from home. Town level data is not available for the 2006-2008 period, but historically many of those that worked from home lived in the more remote hilltowns of the County.

It is anticipated that the employees working from home, also known as telecommuters, will continue to increase in Franklin County in the coming decades. The growth in telecommuting will be driven by the increasing number of technology and information-based jobs that can be conducted from remote locations, such as a worker's home. Other important factors that will promote telecommuting in the region are the ongoing increase in gas prices and the recent and pending expansion of

telecommunications infrastructure and high-speed internet services in the region (see Chapter 6: Economic Development for more information). Fewer commuters on the roadways will help reduce greenhouse gas emissions and lessen traffic congestion.

The U.S. Census Bureau's American Community Survey collects information on where residents work compared to where they live. In 2008, approximately 62 percent of Franklin County residents worked within Franklin County, and the other 38 percent commuted to jobs outside the County. The majority of residents commuting to work outside Franklin County worked in neighboring Hampshire County (20%), though some worked in Worcester County (6%), Hampden County (5%), or Windham County, Vermont (2%).

The most recent commuting data available at the town level is from the 2000 U.S. Census. While this data is older, it is unlikely that there have been significant changes to the commuting patterns within the County over the last decade. Table 1 gives the county of origin for workers commuting to the five towns in Franklin County with the highest levels of employment (Greenfield, Deerfield, Montague, Orange, and Whately). The towns that are the largest sources for workers commuting to Franklin County from outside the County are: Athol, Northampton, and Amherst. For Franklin County residents commuting to jobs outside of the County, two major town destinations are Amherst and Northampton.

Table 1: Commute Patterns of Workers to Major Franklin County Employment Centers, 2000

Town	Total Workers	% of Total Workers Residing in Franklin County	% of Total Workers Residing in Hampshire County	% of Total Workers Residing in Hampden County	% of Total Workers Residing in Worcester County	% of Total Workers Residing in Other Areas
Greenfield	10,509	84.1%	7.0%	2.4%	1.6%	4.9%
Deerfield	3,456	69.3%	18.1%	7.0%	2.0%	3.5%
Montague	2,988	85.4%	5.0%	4.2%	2.0%	3.4%
Orange	2,306	67.9%	2.4%	1.0%	26.5%	1.7%
Whately	1,846	62.9%	25.6%	8.7%	0.7%	2.1%

***This includes self-employed workers and employees working at home. Source: U.S. Census Bureau – 2000 Census, Summary File 3.**

CONSTRAINTS

The public participation process and data analysis conducted for this Plan identified several major barriers to improved sustainability in Franklin County. This section discusses those transportation-related constraints so that recommendations may be identified to address them. A common theme in many of these constraints is the rural nature of the County and the difficulty of creating a sustainable transportation system for such a dispersed population. This barrier to sustainability will require a multi-faceted response including providing creative alternative transportation modes, encouraging denser residential development, and providing education about the energy and economic costs of transportation in a rural area. Another common constraint is the need for additional funding. Legislative action and advocacy will be needed to secure the necessary funding for vital regional projects.

Expanded Transit

The first major and most commonly mentioned constraint is the limited amount of public transit service in the region. A theme that emerged from the Sustainable Franklin County workshops is the need for additional routes to increase the number of communities served by public transit. Participants at the workshops felt that this was very important for environmental and economic reasons. By making public transit available to a larger population, greenhouse gas emissions can be reduced and individual financial savings can occur through lowered fuel costs. The Community Action survey of low and moderate income Franklin County residents also revealed that an expanded transit system would be very beneficial to the region. Many survey respondents cannot afford their own vehicle and as a result are almost entirely dependent on public transportation and taxis. By increasing the number of routes, but more importantly for the respondents, increasing the frequency of bus trips and expanding the schedule to the weekends and evenings, they would be able to more efficiently and effectively travel to jobs, school, daycare, medical appointments and conduct basic shopping.

While expanding public transit routes and schedules in the County is a stated goal, it is equally important to promote bus ridership with Franklin County residents. In a rural county such as this one, people are accustomed to driving their own vehicles and may not be aware of the convenience and benefits of using public transit. An effort to promote the use of buses may be just as important as expanding the routes and frequency of bus runs.

Passenger Rail

Another transportation-related constraint in Franklin County is the lack of passenger rail enabling residents to travel longer distances without having to depend on their cars. A north-south passenger rail service will be returning to Franklin County in the next several years via the "Knowledge Corridor," but an east-west route to Boston is also very important to residents in the region. Passenger rail service would help decrease the cost of transportation, greenhouse gas emissions, fossil fuel use, and provide additional long distance travel options for residents, especially for those without their own vehicles.

CLIMATE CHANGE

Transportation and its Effect on Climate Change

Climate change is a result of global warming, which is largely caused by human activities, specifically the production of greenhouse gases (GHG) caused by burning fossil fuels. While electricity is the largest contributor (33%) of GHG emissions in the United States, the transportation sector comes close with 27 percent of GHG emissions in the United States. It is projected that transportation will continue to account for more than one-third of Massachusetts' total GHG emissions in 2020. Because of Franklin County's rural nature and scattered development patterns, residents are very dependent on their personal automobiles for travel. Providing travel alternatives,

such as public transit or additional park and rides, will be important in helping Franklin County reduce its production of GHGs. Longer term solutions would include guiding housing closer to employment so that people can leave their cars home to walk, bike, or take public transit. In addition, more fuel-efficient automobiles can contribute to the reduction of GHGs.

Climate Change and its Effect on Transportation Infrastructure

The sustainability of Franklin County also depends on preparing for the effects of climate change on the transportation infrastructure. A special report from the Transportation Research Board (TRB), "Potential Impacts of Climate Change on U.S. Transportation," and the Massachusetts Climate Change Adaptation Repot (2011) determined that the following impacts on the transportation system can be expected:

- Increased flooding and inundation of bridges, roads and rail lines;
- Heavier rainfall that will require redesign and replacement of drainage structures to protect roadways in flooding events;
- Prolonged hot days lead to increased risk of wildfire;
- Compromised pavement integrity (hotter weather = softer pavement and increased rutting from traffic);
- Deformed rail lines; and
- Adversely affected bridge operation due to thermal expansion of bridge joints.

These effects will not only impact the performance of the region's infrastructure, but can also have consequences for residents' safety and well-being. Tropical Storm Irene in August 2011 demonstrated the need for appropriate planning to address the consequences of climate change and the increased probability of severe storm events. This storm washed out many critical roads and bridges in the County and throughout the wider region. Route 2, a major east-west route for Franklin County and the Commonwealth was completely closed in West County for several months for significant repairs. Preliminary cost estimates of the damage from this storm on just the municipal public infrastructure are approximately $23 million. To ensure a sustainable future, the County will need to adapt its transportation infrastructure to the consequences of climate change, such as constructing larger culverts for increased rainfalls.

Transportation Needs of the Elders

One population group in Franklin County that has unique transportation needs is the elders. Population projections show that over the next 25 years, the size of the elderly population will grow by ten percent. The trend has important consequences for transportation planning. Studies have shown that, nationally, over 40 percent of people age 75 and older are non-drivers due to either physical or economic constraints. Further, many of the people in this age category who still drive limit their driving and use their cars less than younger drivers. As Franklin County ages, the demand for both fixed public transit and demand-responsive service will increase. However, it will be difficult to meet all of this demand due to the rural nature of the County, especially for residents living outside of town centers. The FRCOG recently completed the *North County Transit Study* and the public outreach performed for that study clearly identified elders in the region are a growing population and that they are worried about how they will travel as they age. In a survey conducted for the Study, over a third of the respondents said that they would be interested in using public transit because they no longer felt comfortable, or could not, drive due to age limitations.

Transportation Needs of the Low Income Population

As mentioned earlier, the low income population in the County also has unique transportation needs. Many cannot afford to own their own vehicle and are dependent entirely on public transit, taxis, or ridesharing.[3] Recent U.S. Census data show that 10 percent of the households located in the Franklin County Environmental Justice Target Areas do not own a vehicle. See Chapter 4: Housing for more information on Environmental Justice Target Areas. Because the majority of low income residents in Franklin County live near existing bus routes, it is important to them that the frequency of service is increased and extended into evenings and weekends.[4] This will enable the low and moderate income residents to more easily access employment and education opportunities and perform basic daily tasks.

Ridesharing is another affordable transportation option that has been gaining in popularity, especially for the more rural residents that cannot access public transit. There are several websites available that are dedicated to matching rides with people who need rides within the Pioneer Valley Region. However, internet access among the low income population may be limited so there must be a way to make this resource more readily available to those that need it the most. Another affordable transportation option is park-and-rides. There are four official park-and-ride lots to facilitate carpooling in the County. They are located in Charlemont, Greenfield, Sunderland, and near the Deerfield/Whately line. There are also plans to create additional lots in Franklin County communities.

[3] U.S. Census, American Community Survey, 2006-2010 Five-Year Estimates.

[4] The FRCOG conducted a Environmental Justice analysis in 2012 and found that low income and minorities are better served by public transit than the general population based on their predominant residences' in or near town centers.

RECOMMENDATIONS AND STRATEGIES

The Regional Plan for Sustainable Development takes an extended view of the actions that must happen to make Franklin County a sustainable community. Some of these longer-term actions require ongoing partnerships that do not currently exist, may be very costly, or may require additional research to implement. However, it is important to include these types of actions in the plan to ensure that they move forward and are ready to be implemented when the partnerships, funding, or additional information are available. Table 2 lists the transportation recommendations and strategies for this Plan.

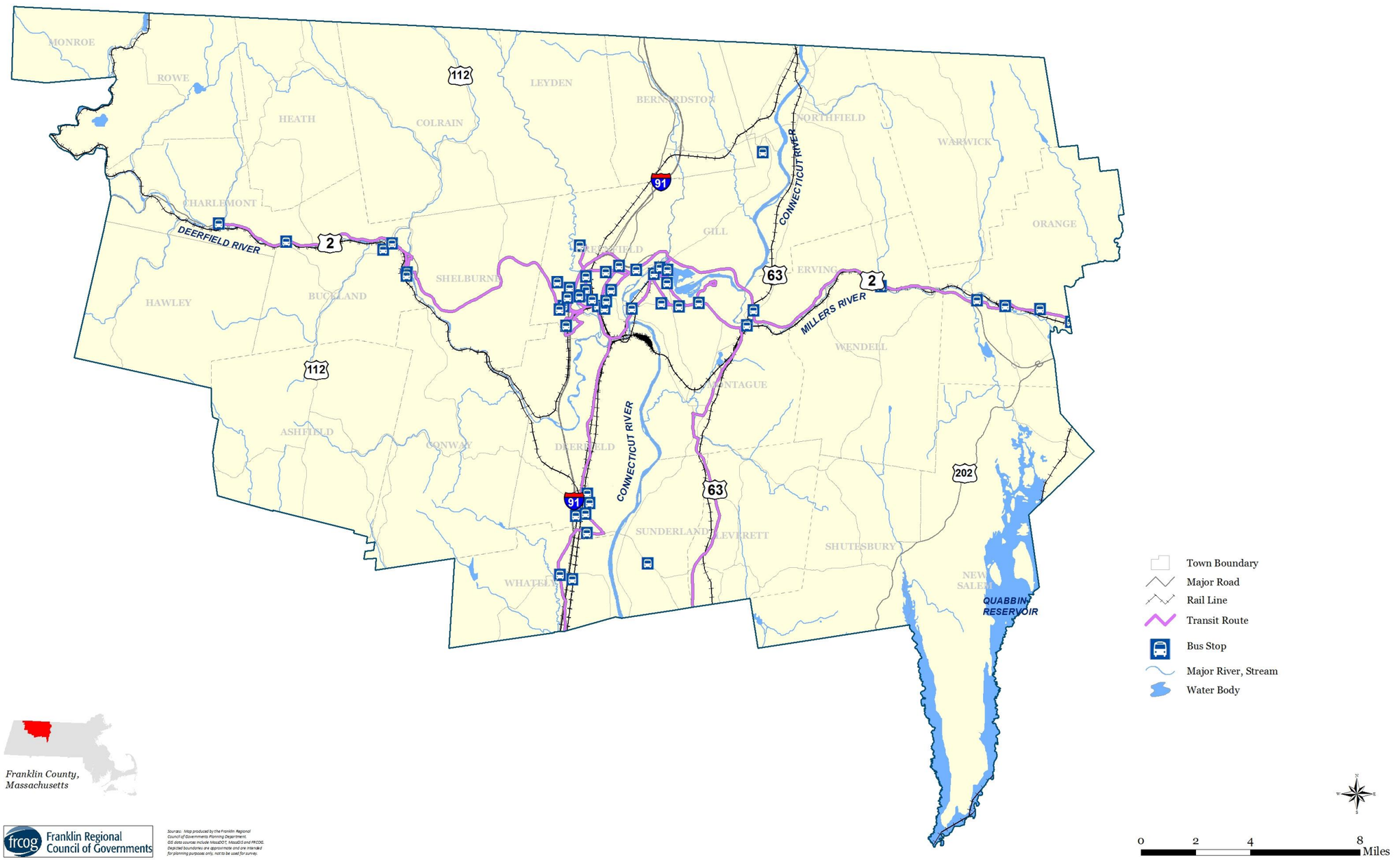
Table 2: Recommendations and Strategies for Transportation	Implementation					Partnering Organization(s)*
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Encourage integrated planning activities that support sustainable development.						
Expand bus service between town centers and dense residential neighborhoods	X	X	X	X	X	FRTA, FRCOG
Increase frequency and extend bus service hours during evenings and weekends		X				FRTA, FRCOG
Reestablish a bus route to Northfield via Route 5/10		X				FRTA, FRCOG
Establish additional connecting bus services modeled after the Community Transit Service in the Athol-Orange area			X			FRCOG, FRTA, Social Advocacy Groups
Create additional park-and-ride lots	X	X				MassDOT, FRCOG, Towns,
Create a parking garage near the Regional Transit Center in Greenfield		X				Town of Greenfield, FRCOG
Advance and promote passenger rail service and/or bus service for the north-south and east-west routes	X		X		X	FRA, FRCOG, PVPC, MRPC
Promote ridesharing		X	X	X	X	FRCOG, UMass
Increase options for walking and bicycling	X	X	X			FRCOG, MassDOT, DCR, Towns
Develop and implement traffic calming and pedestrian improvements on Route 2 through Charlemont		X				MassDOT, FRCOG, Town of Charlemont
Construct a bicycle and pedestrian bridge over the Boston and Maine Railroad tracks on Greenfield Road in Montague		X				MassDOT, FRCOG, Town of Montague
Encourage land use regulations that allow for mixed use and higher density residential development in town centers and other areas served by transit	X	X	X	X	X	Towns, FRCOG
Prioritize needed improvements to meet Americans with Disabilities Act (ADA) regarding pedestrian facilities and work to correct deficiencies	X					MassDOT, Towns, FRCOG
Conduct "Complete Streets" analysis for employment/town centers and surrounding residential neighborhoods		X	X			FRCOG, MassDOT, Towns

*See Page 18 **of Chapter 4: Housing for a key to the Partnering Organizations abbreviations***

Table 2: Recommendations and Strategies for Transportation	Implementation					Partnering Organization(s)
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Promote transportation activities and technologies which conserve energy and reduce travel congestion and vehicle emissions.						
Construct a bikeway to connect the downtowns of Orange and Athol			X			MassDOT, FRCOG, MRPC, Towns of Athol and Orange
Construct an Erving-Wendell Bike Path to connect Erving Center with Farley and Ervingside			X			MassDOT, DCR, FRCOG, MRPC, Towns of Wendell and Erving
Construct a sidewalk to Mohawk Trail Regional School along Route 112 and North Street to Downtown Shelburne Falls		X				MassDOT, Town of Buckland
Promote improved bicycle and pedestrian connections between the towns of Greenfield and Montague		X				FRCOG, Towns of Greenfield and Montague
Develop the Franklin Regional Transit Center as a hub for bus and passenger rail service		X				FRCOG, FRTA, FRA, Amtrak
Install additional bike racks in identified locations	X					FRCOG, Towns, FRTA
Advocate for the accommodation of bicycles on Amtrak trains		X				FRCOG, Chamber of Commerce
Enhance the mobility of people and goods traveling to, from, and through Franklin County.						
Construct a climbing lane on Route 2 West up Greenfield Mountain		X				MassDOT
Implement safety and traffic flow improvements on Route 2 West of the I-91 Greenfield Rotary		X				MassDOT, Town of Greenfield, FRCOG
Promote economic development.						
Promote and market the Scenic Byways and Bikeways	X					FRCOG, MassDOT
Restore and redevelop the pedestrian bridge over the Power Canal to Strathmore Mill in Turners Falls		X	X			Town of Montague, First Light

Table 2: Recommendations and Strategies for Transportation	Implementation					Partnering Organization(s)
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Improve transportation safety.						
Advance the Route 2 East Safety Improvements	X					MassDOT, FRCOG
Identify an off-road bicycle/pedestrian route between Greenfield and Montague		X	X			FRCOG, MassDOT, DCR, Towns of Greenfield and Montague
Implement Complete Streets and Safe Routes to Schools where possible		X	X			FRCOG, MassDOT, Towns of Deerfield, Greenfield, Montague
Maintain rural character.						
Purchase easements, agricultural preservation restrictions, or land in fee from willing landowners to permanently protect areas along Scenic Byways	X					MassDOT, FRCOG, Land Trusts
Support the preservation of existing transportation infrastructure.						
Redesign and replace roadway drainage structures as needed	X					MassDOT, Towns
Reconstruct Route 2 in Charlemont			X			MassDOT
Replace the retaining walls on Route 116 along the South River			X			MassDOT
Rehabilitate the General Pierce Bridge in Greenfield			X			MassDOT
Maintain roadway pavement condition in "good" status when possible	X					MassDOT, Towns
Upgrade bridges and culverts where roads cross over waterways	X					MassDOT, Towns
Implement climate change adaption projects to enhance and protect transportation infrastructure.						
Create a climate change and adaptation plan for the major watersheds		X				FRCOG
Evaluate the impacts of climate change and the natural fluvial processes of the surrounding watershed when designing new road and bridge projects or upgrades/replacements of roadway drainage and stabilization structures, bridges, and other stream crossings		X				FRCOG, MassDOT
Inventory the existing conditions of roadway drainage structures, bridges, and other stream crossings		X				FRCOG, MassDOT
Participate in discussions with MassDOT about climate change adaption strategies		X				FRCOG, Towns

Map 5-1 : Transportation Summary



Franklin County, Massachusetts

Franklin Regional Council of Governments

Sources: Map produced by the Franklin Regional Council of Governments Planning Department. GIS data sources include MassDOT, MassGIS and FRCOG. Depicted boundaries are approximate and are intended for planning purposes only; not to be used for survey.

BENCHMARKS

The goals of the Regional Plan for Sustainable Development are long-term outcomes toward which programs or activities are directed. In order to ensure that the transportation goals of this Plan are implemented, the following benchmarks are suggested as milestones to measure progress towards making Franklin County a more sustainable place. The benchmarks are data-driven and can be evaluated in various contexts over time. To do this, data on the benchmarks will be collected and evaluated by FRCOG staff at regular intervals to establish trends. The transportation-related benchmarks can be viewed in Table 3..

SUMMARY

Franklin County's population and geography pose many challenges to creating a sustainable transportation network. However, there are numerous measures that can be taken at different levels to make Franklin County more sustainable. By encouraging people to live in locations closer to their work, shopping, and entertainment; use park and ride lots; walk and bicycle; and use existing public transportation – we can begin to reduce transportation costs, mitigate environmental impacts, improve our physical health, and more.

Table 3: Transportation Benchmarks

Performance Measure	Unit of Measurement	Desired Trend	
Per capita vehicle miles traveled (VMT)	Percent change of VMT	Decrease	⇩
Transportation emissions for the region	Percent change of emission levels	Decrease	⇩
Transit usage	Level of ridership in persons	Increase	⇧
Pedestrian/bike infrastructure	Change in miles of infrastructure	Increase	⇧
Number of low and very low income households within a 30 minute transit commute of employment centers	Percent change of the number of households	Increase	⇧
Proportion of commute trips made by public transit, walking, and bicycling	Percent change in mode share	Increase	⇧
Number of affordable units in the region with access to transit	Number of housing units	Increase	⇧

SUSTAINABLE FRANKLIN COUNTY

Chapter 6: Economic Development

INTRODUCTION

The purpose of economic development planning is to forward policies, programs, and projects that encourage economic opportunity for all. This often encompasses activities to encourage job creation, provide job training, foster public and private sector investment in a community, and improve the quality of life. Planning for sustainable economic development requires consideration of how policies, programs and projects impact our communities now and for future generations.

Key elements of sustainable economic development planning are developing strategies that build on local strengths and enhance the connections between people and places. Through public workshops and surveys conducted as part of the public outreach process for this Regional Plan for Sustainable Development, three top economic development goals were identified to promote a sustainable economy.

Top Sustainable Economic Development Goals:

1. Redevelop vacant or underutilized industrial/commercial buildings or sites.
2. Support sustainable economic development in the region.
3. Promote and invest in specific business sectors including manufacturing, agriculture and clean energy.

Other economic development goals that were highly ranked related to supporting "buy local" efforts and retaining local businesses, and increasing jobs in employment centers or near transit services.

This chapter examines the current conditions of the regional economy and determines any constraints or barriers to developing a more sustainable economy. The chapter also highlights key implementation strategies to achieve the goals of this chapter and identifies benchmarks to measure the region's success at meeting these goals.

BACKGROUND

This section reviews the conditions that contribute to how the regional economy functions. These conditions include a review of employment centers, labor force characteristics, and organizations that support workforce and business development.

Regional Employment Centers

Franklin County, like many areas in New England, has most of its economic activity concentrated in village centers or industrial and commercial areas. The scenario planning workshops reaffirmed the desire to target economic development activities in these locations that already have infrastructure (water, sewer, roads, etc.) and transit services. At the same time, efforts to retain agriculturally-based businesses and support home-based businesses were also encouraged.

Transportation infrastructure, including transit services, bicycle and pedestrian facilities, and parking, is essential to accommodate workers and customers and to serve the needs of residents. A mixture of housing, business and transportation is one formula for creating an environment that fosters robust economic activity and increases sustainability.

Every town in Franklin County has its own community center, whether it consists of a village center with only a few municipal buildings and a country store, or a thriving downtown. Some of these community centers are also regional centers of employment and economic activity. These include the downtowns of Greenfield, Turners Falls, and Orange, and the village centers of South Deerfield and Shelburne Falls. These centers include retail and service businesses and governmental institutions, as well as housing. They also attract workers and customers from surrounding communities. The village centers of Bernardston, Northfield, Sunderland

and the shared village center of Ervingside and Millers Falls also have a mix of uses and the potential to increase their level of economic activity. See Chapter 10: Land Use and Infrastructure for more details.

Various efforts to revitalize and reenergize the region's employment centers are underway. In Greenfield, there has been a significant amount of investment in downtown buildings leveraged through a collaboration of leaders from the public sector, business community, and private property owners. Turners Falls and Shelburne Falls have seen an active arts and cultural community emerge through the participation of individuals, support by local government and businesses, and through the leadership of organizations such as Turners Falls RiverCulture and the Greater Shelburne Falls Area Business Association. Spurring investment in vacant and underutilized buildings takes some creativity. Given the lower cost of commercial/industrial rental rates in the region, the cost of redevelopment cannot often be recouped through market lease rates. Public resources are needed to support redevelopment efforts and are a necessary catalyst. Successful downtown revitalization takes the cooperation of residents, businesses, property owners, and public officials working together, and requires an entity or individual to dedicate time and support to moving collaborative economic development projects forward.

In addition to these downtowns, there are areas with concentrated commercial or industrial uses. For example, the Greenfield Corporate Center on Monson Street is a commercial office complex that houses a variety of tenants. The Venture Center, operated by the Franklin County Community Development Corporation, is a small business incubator that houses small offices and light industry operations. The Route 5 and 10 corridor in northern Whately and South Deerfield is home to several large manufacturing and office operations, as well as the Yankee Candle Company flagship store. The commercial area west of the I-91/Route 2 rotary in Greenfield, has two areas that include national business operations. Other concentrated uses in defined areas are the campuses of large educational institutions, such as private boarding schools including Deerfield Academy and Northfield Mt. Hermon School. The former Northfield campus of the Northfield Mt. Hermon School is presently vacant and owned by the National Christian Foundation. The Foundation is seeking a new owner for the 217-acre property. The future of whether the site will be used more intensively than in the past is not known at this time. Depending on the potential reuse of the property, it may significantly impact the economy of Northfield and Franklin County as a whole.

South Deerfield has been identified as an existing Town Center in which mixed use development is encouraged and recently completed a Complete Streets and Downtown Livability Plan.

Greenfield is in the midst of its Sustainable Master Planning process. Its downtown has also been identified as an existing Town Center in which mixed use development is encouraged.

Table 1: Priority Development Sites for Economic Development

Existing Centers:	Emerging Centers:
Downtown Greenfield	Bernardston Village Center
Downtown Orange	Ervingside and Millers Falls Village Center
Turners Falls	Sunderland Village Center
Shelburne Falls (Buckland, Shelburne)	
South Deerfield/North Whately	

Having planned industrial park land is very important to guide the siting of similar uses to areas that have been designated for economic development purposes by their community, as opposed to locating in areas that may be in conflict with residential uses. The six industrial parks in Franklin County are also host to several major employers in the region, most of which are in the manufacturing sector.

There are six planned industrial parks in Franklin County, located in the towns of Deerfield, Greenfield, Montague, Orange and Whately. The Randall Pond Industrial Park in Orange is the newest park, and has the most land available for development. Of the remaining parks, a few have been completely developed or only have a few remaining small developable parcels. It is estimated that over 1,800 jobs are located in these industrial parks. New planned industrial park land is needed to provide space for businesses seeking to locate or expand in the region.

Village centers and downtowns, commercial office areas and planned industrial parks each offer different types and sizes of location for businesses. It is important to have a mix of sites for businesses to locate and grow, depending on the type of business it is. The redevelopment and reuse of existing structures and previously disturbed land, whether a vacant mill or underutilized commercial building, also contributes to this mix of spaces. Often these properties have existing infrastructure (i.e. roads, water, sewer, electricity), and their redevelopment allows the region to grow while still preserving natural areas. Sometimes the redevelopment of these properties is complicated by the concern for the potential of hazardous contamination remaining from the previous use of the site. These sites are referred to as "Brownfields." The FRCOG has an active Regional Brownfields Program supported by state and federal resources to assess and clean-up these sites. More information about Brownfields is included in Chapter 8: Natural Resources.

The Commonwealth of Massachusetts instituted M.G.L. Chapter 43D to allow municipalities to choose to designate one or more areas, pending formal application and state approval, as Priority Development Sites. Towns that have Chapter 43D designation may have priority consideration for select state grant programs (e.g. Brownfields, CDAG, and PWED) for related applications and will also have their Chapter 43D areas included in state marketing efforts. Eleven Chapter 43D designations have been approved in six towns (Bernardston, Deerfield, Gill, Greenfield, Montague, and Orange).

Considering the regional landscape described and the need for a variety of spaces, primary existing and emerging employment centers (listed in Table 1) have been identified as Priority Development Sites and targeted for further economic development. These are specific areas where infill and redevelopment will be encouraged. See Chapter 10: Land Use and Infrastructure for an in-depth assessment and maps of these areas.

Workforce Characteristics

Labor Force Characteristics

The labor force is defined as the pool of individuals who are 16 years of age and over, and are either employed or who are actively seeking employment. Persons not actively seeking employment, such as enrolled students, retirees, or stay-at-home parents, are excluded from the labor force. According to the American Community Survey 2006-2010 Five Year Estimates, 68.1 percent of the population 16 years and over are in the labor force. This statistic is referred to as the participation rate.

The participation rate is available from the same data source by sex and by age group. The male participation rate was 84.4 percent, which was consistent with the state (85.2%) and national rates (83.1%). The female participation rate for Franklin County was 79.1 percent, which was higher than the state (76.9%) and national rates (72.4%).

In almost every age cohort, the participation rate for Franklin County residents was higher than the state and nation. This means that more Franklin County residents are able to work and are working in the region, which is a healthy sign for the region. However, this high rate may also be indicative of several issues, such as lower wages being offered and an increased need for two income households. In addition, there may be a greater need for seniors to have to work past retirement age due to financial need.

The workforce population can be divided into four general age cohorts: under 25 years of age, 25-44 years of age, 45-64 years of age, and 65 years of age and over. The size and participation rate of these age cohort populations should be considered when conducting economic development planning. The participation rate for the population under 25 years of age was 66 percent for Franklin County, which was much higher than both the state (60.8%) and national rates (59.9%). The participation rate for 25-44 years of age was 86.7 percent for Franklin County, and 85.1 percent for the state and 82.6 percent for the nation. The participation rate for the 45-64 age cohort was 78.3 percent for Franklin County and 78.6 percent the state, which was higher than the national rate of 73.5 percent. The participation rate for the population aged 65 years and over was 17.2 percent for the county and 17.6 percent for the state, which was also higher than the 15.6 percent for the nation.

An important trend over time is the significant increase in the size of older workforce cohort of individuals age 45-64. Residents between the ages of 45 to 64 comprise roughly 40 percent of the total workforce-aged population. This percentage is higher than the state (33.4%) and national (32.9%) rates for this cohort. This high percentage is a reflection of the "Baby Boom" generation (born from 1946 to 1966) getting older. The circumstance of having an increasingly older work force presents the region with opportunities and challenges. The large older work force in the region has the work experience employers are seeking. However, as technological advances impact many industries, particularly the manufacturing businesses in the County, these older workers will need to be flexible and have access to resources for training and education to diversify their skill set.

As Baby Boomers continue to age, the County population is expected to become increasingly older. It is estimated that the population over the age of 65 will increase by 77 percent over the next 30 years, to account for almost a quarter of the County population, compared to roughly 14 percent currently.[1] Implications of this trend on economic development include an increasing need for health care and other services that cater to seniors. Additionally, the children of the Baby Boomers may feel the pressure of caring for both their aging parents and their own children, potentially impacting their ability to fully participate in the labor force. Finally, as

[1] Ibid.

the Baby Boom generation reaches retirement age, job vacancies will occur. However, postponement of retirement for financial, career or other personal reasons is increasing. Often members of this age group can be a valuable resource of experienced, part-time workers. From a business perspective, the development of new senior-oriented business ventures to serve this demographic group may also be successful.

Not reflected in the Franklin County data is the large population of 16-24 year olds located in neighboring Hampshire County, due to the many higher educational institutions located there. This large group may be a current source of temporary part-time workers under 25 years of age, as well as a consumer pool for targeted business ventures. As these students graduate, they are a significant workforce pool for potential employers seeking college educated, entry-level employees. By creating appropriate employment opportunities and continuing to offer an appealing quality of life, the region will be able to retain a greater number of younger workers.

Employment Levels

Over the last decade, the size of the labor force in Franklin County has fluctuated, and has generally declined since 2006. This decrease in the size of the labor force is likely attributable to the leveling off of population growth, as well as individuals ceasing to be counted in the labor force due to retirement, being discouraged from pursuing active employment, or pursuing educational opportunities instead.

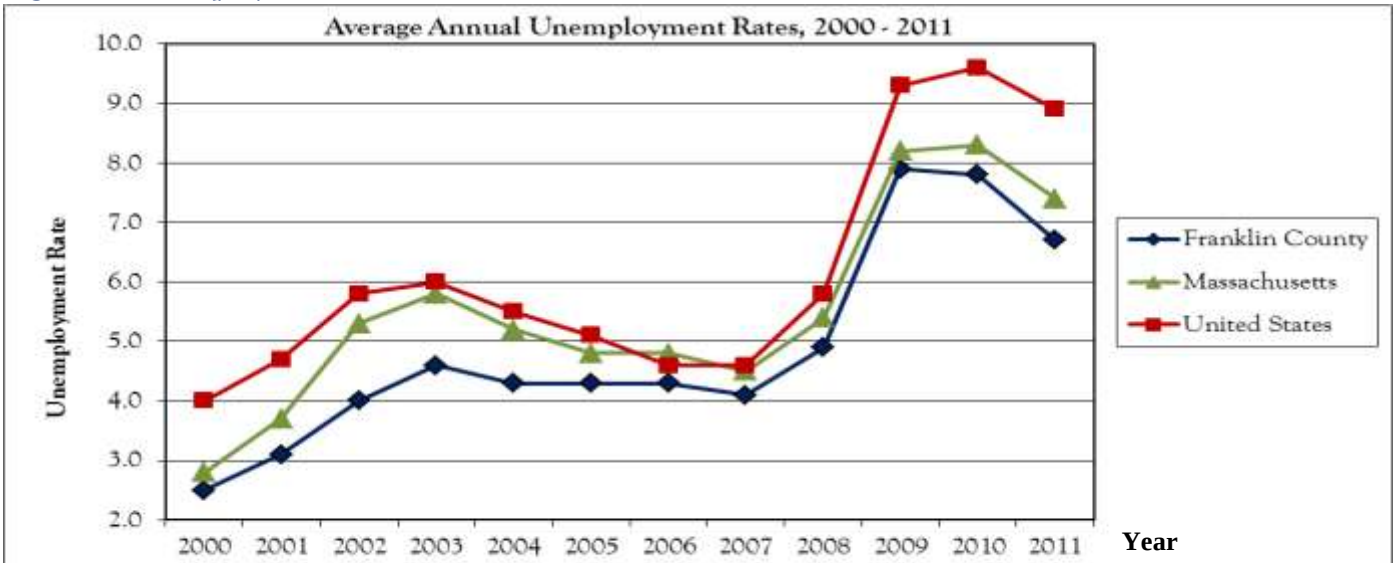
The unemployment rate describes the percentage of people in the labor force who are presently not employed, but who are actively seeking employment in a given time period. This statistic is often used as a gauge of economic prosperity or distress. Over the last decade, Franklin County's annual average unemployment rate has fluctuated between a low of 2.5 percent in 2000, to a high of 7.9 percent in 2009.[2] Over this period, the County's unemployment rate has been consistently lower than that of the state or nation (see figure on following page). Nevertheless the recent high unemployment rates have impacted the region negatively. Certain communities, such as Orange, Montague and Shelburne, are experiencing significantly higher rates of unemployment than the County. It is important to note that the unemployment rate does not reflect the issue of "underemployment," which includes workers with low paying jobs or jobs without benefits, or workers who have multiple jobs. Underemployment in Franklin County has been a chronic problem.

There are many factors that may influence whether a person can find employment, in addition to the availability of jobs. As noted above, changing technologies require employees to continually develop their skills to remain competitive in the labor force. Education and training opportunities must be available that provide the needed skills that employers are looking for in the region. Competition for entry level jobs from more experienced workers who are out of work has meant that many youth in the region have not been able to find their first jobs as teenagers. Consequently, young adults may lack basic employability skills such as time management and workplace expectations.

Not only do jobs, training and education opportunities need to be available, they must also be accessible, particularly to low and moderate-income households. It is critical that there is affordable housing near employment centers, reliable transportation (such as regular transit services), and affordable, quality child care.

[2] Massachusetts Department of Workforce Development: Local Area Unemployment Statistics program; and U.S. Bureau of Labor Statistics

Figure 1: Unemployment Rates



Sources: MA Executive Office of Labor and Workforce Dev.: Local Area Unemployment Statistics program; and U.S. Bureau of Labor Statistics, 2012.

Income & Wages

Overall, Franklin County residents experience much lower incomes and wages than the state averages, and comparable or slightly higher levels than the nation. The poverty rate is generally higher than the state rate and lower than the national rate. While the poverty rate is lower than the nation's, the cost of living in Franklin County is higher than the national average due to transportation and housing costs. In general, given the high cost of living in the Northeast and the existence of underemployment and low wages, it is very challenging for many residents to survive economically.

Per capita income is determined by dividing the total amount of income earned in an area by the number of residents, including a portion of the population that might not be generating income such as children and the elderly.[3] According to the latest federal data, the per capita income for Franklin County was $27,544 which was considerably lower than the state's per capita income estimate of $33,966, and comparable to the national per capita estimate of $27,334.[4]

According to the U.S. Bureau of Economic Analysis (BEA), between 2000 and 2010, Franklin County consistently had one of the lowest per capita incomes of the 14 counties in Massachusetts. Despite the lower income level, over the same period of time, incomes in Franklin County grew at a higher rate (44%) than the state (34%) and nation (32%).

In 2010, an estimated 11.3 percent of Franklin County residents had incomes below the federal poverty level, which is higher than the state rate of 10.5 percent, and lower than the national rate of 13.8 percent. Approximately 28 percent of Franklin County households headed by a single mother had incomes below the poverty level in 2010, a much higher rate of poverty than other family types. In some communities, the poverty rate for single mother

[3] The per capita income statistic is primarily used for comparison purposes, and is not a reflection of the actual per household or per worker income.

[4] 2006-2010 American Community Survey (ACS) Five Year Estimates.

households, with incomes below the poverty level, is even higher.

There are many types of income in addition to wages from a job. Other income could come from investments, Social Security benefits, disability payments, pensions and retirement funds, unemployment benefits, and child support. Some public benefits that may be of significant cash value to households, but that are not considered actual income in census and other data, include Medicaid, Woman, Infants, and Children nutrition program (WIC), Head Start, Fuel Assistance, and the Supplemental Nutrition Assistance Program (SNAP). It is important to note that for lower income households that are experiencing a rise in household income, they may come to a point where they will no longer be eligible for certain public benefits, and actually find themselves worse off financially as their increased income does not cover the value of those benefits.

Average wage per job information is the amount of wages and salaries paid out divided by the number of jobs that pay wages and salaries. In short, this data describes information on a per job basis, and not on a per resident basis. Similar to the annual personal per capita income information, the average wage per job in Franklin County is consistently less than the state and national average according to the U.S. Bureau of Economic Analysis (BEA). In fact, Franklin County has consistently had the lowest average wage per job of all fourteen counties in Massachusetts since 2000.

The Massachusetts Executive Office of Labor and Workforce Development compiles data on the annual average weekly wage for all industries. The data shows that Franklin County's wages are significantly less than the state averages. In 2010, the Franklin County average annual weekly wage was 63 percent of the state's average wage. The state data shows that since 2001, the gap between state and Franklin County wages has grown, as the state's average wage has increased by roughly 29 percent, while Franklin County's average wage has increased by 24 percent.

Table 2. Annual Average Weekly Wage

Year	Franklin County	State	Difference between State and County
2001	$549	$865	$316
2002	$557	$865	$308
2003	$569	$891	$322
2004	$600	$941	$341
2005	$612	$963	$351
2006	$629	$1,008	$379
2007	$670	$1,063	$393
2008	$677	$1,092	$415
2009	$678	$1,082	$404
2010	$682	$1,112	$430
% Change	24.2%	28.6%	N/A

Source: Massachusetts Executive Office of Labor and Workforce Development, ES-202 data.

While per capita incomes in the County have grown at a higher rate than the state and nation in the last decade, the average wage per job has not. This may indicate that people are working multiple jobs, or more hours at their jobs, to compensate for lower wages in the region. Wages should also be compared with the cost of living. In regions with a lower cost of living, lower wages per job may be expected. In Franklin County, housing rents and sale prices are typically lower than in the eastern part of the state. Even so, in 2010 an estimated 50 percent of renters and 34 percent of homeowners in Franklin County were "cost-burdened" by housing costs (spending more than 30 percent of their household income on housing).[5] In addition, other household costs, such as transportation and child care, may be higher in

[5] Ibid.

Franklin County than other regions due to the rural geography. Increasing the average wage per job in the County, along with adding new jobs that pay a "living wage," is critical to making the region more affordable. Further details on the cost of living in Franklin County can be found in Chapter 4: Housing.

Size of Employers

As of 2010, 95 percent of all Franklin County private sector establishments had fewer than 50 employees[6], which is consistent with state and national trends. The establishments identified as "major" employers are often more recognizable in a community as they grow or confront difficult times. However, the impact of small businesses in the greater economy cannot be overstated. It may be estimated that approximately half of all jobs in private sector establishments in Franklin County are in firms with fewer than fifty employees. Access to technical assistance, financing, workforce training and other resources is important to sustain and encourage their growth.

Using information collected from the Franklin Regional Council of Governments, the Franklin County Chamber of Commerce and the MA Department of Labor and Workforce Development, a list of the largest employers was created. The following table identifies employers estimated to have greater than 250 employees. These major employers are predominantly in the manufacturing, health care and education sectors. This listing includes both public and private sector employers. Please note that the table includes full-time, part-time and per diem employees within its estimated range of employees.

[6]County Business Pattern data does not include workers employed by the public sector or workers who are self-employed.

Table 3. Major Employers

Employer Name	Primary Locations	Estimated Range of Employees*
Yankee Candle Company, Inc.	Deerfield, Whately	1,000 – 4,999
Pelican Products Inc.	Deerfield	500 – 999
Baystate Franklin Medical Center	Greenfield	250 – 499
Deerfield Academy	Deerfield	250 – 499
Farren Care Center, Inc.	Montague	250 – 499
Greenfield Community College	Greenfield	250 – 499
Northfield Mt. Hermon School	Gill	250 – 499
Town of Greenfield **	Greenfield	250 – 499

*** Includes full-time, part-time and per diem employees.**
**** Estimated employment includes municipal department and school employees**
Source: MA Department of Workforce Development: 2012 Largest Employers by Area; FRCOG: 2012 Franklin County Regional Transportation Plan.

Regional Clusters

Regional clusters are specific economic groupings of businesses and institutions with some similarity in industry, operation, or technology, and which are generally located within a defined geographic area.

In recent years, economic development strategies have highlighted the importance of cluster development through leveraging the unique competitive advantages of an individual region for the purpose of generating economic activity locally as well as across state and country borders. The growth and success of cluster development generates economic growth at the regional level, while also contributing to a stronger, more diversified national economy.

The clustering of ventures can be mutually beneficial in a number of ways, such as developing a labor force with a common skill set, establishing cluster-specific

support services, and fostering the creation of trade organizations or research institutions that serve to enhance a cluster. A concentration of entities within a cluster may lead businesses to collaborate in ways they may not have considered before, or intensify competition which may pressure firms to increase their productivity, efficiency, or creativity.

The regional clusters each have a particular asset or strength that is unique to either the greater Pioneer Valley region or exclusively to Franklin County, and present a competitive advantage for potential growth in the region. Activities that lead to business development and job growth in these clusters will help sustain and grow the regional economy. Several of these clusters fall within the manufacturing, agriculture, and clean energy industry sectors, identified in the *Sustainable Franklin County Goals Survey* as sectors to promote and invest in.

MANUFACTURING

Manufacturing is the largest employment sector located in Franklin County. The proportion of jobs in manufacturing in Franklin County has consistently been much greater than the state or nation. For example, according to federal 2009 County Business Pattern figures, 20 percent of those employed in the private sector in Franklin County were in manufacturing. This is a much greater percentage than the state (8%) and the national average (10%). This sector also offers the highest average wages, in comparison to other large employment sectors like health care and social assistance, and retail trade. Within the manufacturing sector, there are specific clusters with a strong presence in Franklin County (such as food processing and plastics manufacturing) or in the greater Western Massachusetts region (such as precision machining and metal products manufacturing).

Precision Machining and Fabricated Metal Products

The greater Connecticut River Valley area has been a historical center for precision machining and fabricated metal products. The precision machining sector includes the manufacture of tools, dies, and levers. Fabricated metal products include items made from stamping, welding, or bending metals to create end products, such as wires or containers. The different types of metal product manufacturing often require similar skill sets for workers and raw materials. This cluster has a high concentration in Franklin County and Western Massachusetts compared to the nation at large. There have been reports that these companies continue to seek a qualified workforce as they need to hire additional workers or replace retiring employees.

Plastics, Polymers and Film Manufacturing

One of the prominent manufacturing sub-sectors is plastic, polymer and film production. From maple syrup containers to industrial cases and protective films for the defense industry, this sector's businesses serve a variety of industries. The region also has a research institute specific to this sector at the University of Massachusetts at Amherst, which contributes innovation and a skilled workforce to this industry. Similar to the Precision Machining and Metal Fabrication cluster, this cluster has a high concentration in Franklin County and Western Massachusetts compared to the nation at large, and continues to seek qualified workers.

Food Processing and Specialty Food Product Manufacturing

Businesses in the food processing and specialty food product manufacturing cluster include larger scale operations, such as Lightlife Foods, to the small start-up operations using the Western Massachusetts Food Processing Center, operated by the Franklin County Community Development Corporation. In addition to these businesses, the cluster is also supported by local farming operations that provide the raw materials and a workforce that is certified in food production. While not a large economic sector in terms of jobs, the agricultural, forestry and fisheries industry plays a vital role in the region's quality of life and sustainability. Recent efforts to create a more

sustainable and secure food system relate strongly to this cluster and its assets. Further information about the agriculture and forestry industries can be found in Chapter 8: Natural Resources.

Green Economy

The "green economy" encompasses a variety of businesses and perspectives. Businesses that advance new technologies to promote clean energy generation or reduce greenhouse gas emissions are part of the green economy. But so are businesses that seek to retrofit homes and businesses to be more energy efficient. Businesses may choose to participate in the green economy for the opportunity to address environmental concerns, to enter into new markets, to pursue cost savings, or for a combination of reasons. Recognizing these opportunities, the Commonwealth of Massachusetts and Franklin County seek to support the development of the green economy. Franklin County is fortunate to have a growing number of businesses in this sector from photovoltaic installers to green building contractors.

Renewable Energy Technology and Generation

The region has produced several organizations related to the development of environmental technology, renewable energy, and sustainability. The catalyst for these groups is not only the earth-friendly benefits for implementing such technologies and programs, but also the growth potential of this business sector. State programs, like the Green Communities program, encourage the development of this sector. Half of all Franklin County communities have been designated as "Green Communities" by the Commonwealth, and allow "by right" (i.e. no Special Permit required) solar electric generating installations or renewable energy research and development or manufacturing facilities. More information about Green Communities is included in Chapter 7: Energy.

Green Construction

As the green economy has gained momentum in the region, a specific cluster within this industry has emerged with a focus on promoting and implementing on-site sustainable energy generation, energy efficiency, and related green construction. Workforce development programs are targeting green construction training programs and job placement. Several public sector and private sector initiatives have developed to encourage the growth of the green economy. For example, the Franklin/Hampshire Regional Employment Board is a leader in green economy workforce development through their green career coaching network and Northern Tier Energy Sector Partnership. The Renewable Energy and Energy Efficiency certificate and degree programs developed at Greenfield Community College contribute to the region's knowledge and skill base in this industry. Greening Greenfield is a volunteer group consisting of residents, businesses and local government, who work to create a sustainable and vibrant place to live. They have launched campaigns to encourage businesses and households to reduce their energy consumption by ten percent, and regularly coordinate educational and networking events open to the public.

Information and Technology Infrastructure

For a long time, Franklin County has lacked a robust, accessible telecommunications infrastructure. This led to a lack of basic broadband service for many areas, which hindered economic development, educational and employment opportunities. Fortunately, due to the consistent and coordinated efforts of many partners, an unprecedented level of investment in telecommunication infrastructure is underway in Franklin County and Western Massachusetts. This investment includes the deployment of the *Axia MassBroadband 123* network, which will deploy an advanced, redundant fiber optic "middle mile" (the backbone that connects local areas to the global system) network throughout the region.

As this advanced telecommunications infrastructure is deployed, a unique junction of "middle mile" fiber

optic networks will be located in Franklin County. This fiber system will become a significant asset that could be leveraged to create technology infrastructure services, such as an interconnection facility with a small data center in Greenfield, or an innovation-oriented business incubator space. These facilities would correspond to other projects in the Pioneer Valley under development, such as the Springfield Data Center and the Green High Performance Computing Center in downtown Holyoke.

Work to extend "last mile" access to advanced broadband services, will result in significantly improved connectivity for homes, businesses, and institutions. This connectivity will help support individuals' access to education and job opportunities. Businesses will be able to develop and compete more efficiently using broadband services to access customers and new markets, shop for materials and services, complete government reporting requirements, and more.

Presently, most establishments in the information technology (IT) fields are of relatively small scale. Assets and networks have been developed to nurture these start-ups and micro-businesses who require advanced broadband access or are in IT fields. With the region's limited access to broadband, these efforts have been essential in supporting these firms. For example, Hidden-Tech[7] is a network of IT-related micro-businesses (many of which are home-based companies) who have created a framework for these professionals to collaborate, market services and engage in professional development.

Another example is the Bridge of Flowers Business Center, a micro-business incubator in the center of Shelburne Falls that is home to entrepreneurs and telecommuters from West Franklin County. The Center has professional office space, communal office amenities, and access to high speed internet services. Other business incubators in the region, such as the FCCDC's Venture Center in Greenfield and the Orange Innovation Center in downtown Orange, also have office space available for IT intensive businesses and micro businesses, as well as other businesses in different fields (like small scale manufacturing) and for larger-sized companies. As a more robust technology infrastructure is deployed, businesses in all fields and of all sizes will benefit from this access to a next generation telecom network. The development of more micro-businesses and start-ups in IT-related fields, in particular, are anticipated.

Education Services

Much of the region's workforce is employed in educational institutions and organizations located within and surrounding Franklin County. Within an hour's drive are over 20 colleges and universities as well as a cluster of independent schools and professional educational institutions. In addition, organizations dedicated to curriculum development or related educational services are also in the region.

A concentration of independent schools attracts students from across the country and the world. The relationships these schools have with the greater community are important to both the institutions and the towns and businesses in the area. In addition, relatives visiting students contribute to the tourism base and there is the potential for students to return or remain in the area upon graduation. All these elements contribute to the economic strength of the area.

Natural and Cultural –Based Tourism

The natural, cultural, and historic assets of the region provide a variety of attractions and activities to encourage tourism. By promoting a planned, coordinated tourism effort, a rural region may use its unique assets to bring dollars from visitors into its

[7] More information about Hidden-Tech is available at: www.hidden-tech.net

The Route 116 Scenic Byway is one of five Scenic Byway projects in Franklin County which help to encourage tourism and preserve land along the corridors.

economy, while at the same time preserving what is important to the community.

Franklin County's natural and cultural landscape in particular has created a cluster of attractions, services and marketing activities that highlight the region's rural and scenic amenities. Outdoor recreation activities, agri-tourism, and scenic byway designation, have capitalized on these assets, which attract visitors from surrounding areas as well as contribute to the region's quality of life.

In Franklin County, the FRCOG coordinated five scenic byway projects to encourage tourism as well as the preservation of these corridors. Once a byway is designated, an oversight committee is formed and a corridor management plan is created for the byway, which inventories assets, develops strategies to enhance and preserve its special qualities, and identifies important projects. Once formal state or federal designation has been given to a scenic byway, the FRCOG has been able to pursue funding to implement these identified projects. Funded projects over the years have included: the creation of the Sunderland Scenic Turnout Area on Route 47, informational kiosks on Route 2, Upper Pioneer Valley Visitors Center improvements, and over 271 acres of land protected.

In addition, the FRCOG is working with neighboring regional planning agencies to develop a comprehensive promotional campaign to market the multiple scenic byways designated throughout Western Massachusetts. The Western Massachusetts Scenic Byway Promotional Campaign will include the development of marketing tools, logos, way-finding signs, and websites for all seven byways. The project began in 2011, and is estimated to take two years to complete. The project will provide an opportunity to market and promote the region's recreational and cultural attractions and provide tourists with information on lodging and other amenities.

Franklin County has a wealth of heritage and cultural tourism assets. These resources include established attractions, such as Historic Deerfield or Shelburne Falls Bridge of Flowers, as well as particular events, such as Cider Days, Green River Music Festival and the Garlic and Arts Festival. These resources attract a high volume of visitors. For example, the Bridge of Flowers is estimated to have 36,000 visitors annually and the Green River Music Festival averages an estimated 10,000 attendees.

There are several active organizations that continue to successfully develop and coordinate events and programs that appeal to residents and attract visitors, such as the Franklin County Chamber of Commerce, Turners Falls RiverCulture, and Greater Shelburne Falls Area Business Association. In addition Franklin County is home to the Yankee Candle Company flagship store in South Deerfield, which attracts approximately 1.5 million visitors a year making it one of the greatest destination points in Massachusetts.

In addition, local residents and visitors are attracted to the region to enjoy the outdoor recreational opportunities that are abundant here, such as hiking,

fishing, canoeing, kayaking, rafting, mountain and road biking, ziplines and skiing. Communities that are host to these attractions are seeking ways to generate greater economic activity from visitors (such as visitors spending money on dining, shopping, and accommodations) and create a supportive infrastructure for visitors without negatively impacting the community character or natural resources themselves.

Natural resources based tourism activities include public outdoor recreation resources, such as state parks and bikeways, well as private businesses that provide services or have established attractions, such as river rafting outfitters, ziplines and skiing. It has been estimated that the Charlemont-based businesses of Berkshire East, Crab Apple Whitewater and Zoar Outdoor collectively attract between 120,000 to 145,000 visits annually for their downhill skiing, snow tubing, ziplines, white water rafting, kayaking and canoeing instruction, plus their own retail store and lodgings. The two new zipline attractions were created in recent years by Berkshire East and Zoar Outdoor. This year, these two operations and the Warfield House in Charlemont have joined the New England Mountain Bike Association to collaboratively develop an extensive new mountain biking trail system. Events, such as the annual Berkshire Highlands Pentathlon that combines several outdoor sports, was developed for the purpose of building on West Franklin County's reputation as a center for natural resources-based tourism and to extend the season of visitors to begin earlier in the spring and extend later into the fall or winter with limited snowfall. As climate change impacts weather patterns, the attractions and events that extend the season will be important for these outdoor recreation based businesses to continue to be sustainable.

In the North Quabbin region there are continued efforts to encourage outdoor recreation -based tourism as well, such as through promotional activities by the North Quabbin Woods initiative and private companies. The River Rat Race for example, is a canoe race on the Millers River from Athol to Orange that attracts over 250 participants and thousands of spectators annually.

The Connecticut, Deerfield, and Millers Rivers are recognized as tremendous tourism assets due to their scenic beauty and outdoor recreation opportunities. Improving sites for safe and convenient access to the rivers will enhance resident and visitor experience of the rivers. For example, the Town of Sunderland is seeking to further develop bicycle, pedestrian and boat access facilities in the village center for the benefit of residents as well as to attract tourists. Also, the Town of Orange has created the Riverfront Park on the Millers River that provides canoe and kayak access.

There are considerable discussions underway about ensuring access to the Connecticut River for outdoor recreation purposes. Presently, FirstLight Power is undergoing it's federal re-licensing process for its hydroelectric facilities located on the River. FirstLight Power maintains several facilities along the Connecticut River available to the public, including the Northfield Mountain Recreation and Environmental Center, the Turners Falls fish ladder, and the Barton Cove campground and canoe/kayak rentals. Advocates are encouraging greater access to the River for outdoor recreation purposes.

In 2011, the FRCOG prepared a brief summary highlighting strategies implemented in other regions to support the growth of outdoor recreation tourism. The summary notes that while the quality of the natural environment plays a key role in drawing visitors to rural areas, natural amenities alone are not enough to bring tourists to a region. Tourists to rural areas are increasingly looking for a broader experience that combines outdoor recreation with quality accommodations, shopping and cultural opportunities. Access provided by sufficient infrastructure such as roads, trails, parking, and signage, must be in place, as well as supporting

businesses including lodging, restaurants, and equipment stores or rental services. Marketing and promotion activities including web-based materials, maps, guidebooks, and advertising are also needed. In addition, training may be needed for area businesses in order to support, and capitalize on, the recreation industry.

Creative Economy/Artisans

The region is home to many workers who are employed in occupations and at establishments in the creative economy. These workers include independent writers and artists, as well those employed in firms that produce crafts or media content. The region's rural landscape and the quality of life, as well as its affordable cost of living, have allowed many artisans to pursue their careers professionally or start businesses.

A recent analysis of creative economy data demonstrated a higher proportion of artists in Franklin County, relative to other areas of the state. Concentrations of photographers, potters, glassblowers and woodworkers have been identified in the region. Specific assets in the region that support this cluster include entities that provide training in the arts, such as the Hallmark Institute of Photography, and those that conduct activities and services to help grow the market, such as Turners Falls RiverCulture and North Quabbin Woods.

The New England Foundation for the Arts (NEFA) created a database, called CultureCount, to attempt to capture information about cultural organizations by geography. Individual artists, non-profit organizations, and businesses are requested to submit information voluntarily to populate this database. This data can then be searched by geography, category, and discipline. NEFA has also developed a calculator to demonstrate the economic impact of cultural organizations to a Massachusetts community or county. Using this tool, it was determined that for FY2003 in Franklin County, the cultural organizations had a $20 million local economic impact. While this

Photos courtesy of Basecampphoto.com

The annual Creative Economy Summit focused in 2013 on presentations and workshops that benefit the art and culture, business and municipal community and that promote innovative cross-sector, cross-community intersections.

model does not provide for more updated figures, it does demonstrate the contribution of the creative economy to the greater economy. Anecdotal evidence of this type of economic impact can be found with the Double Edge Theatre and Farm Center in Ashfield, which is estimated to attract 2,500 audience members and hundreds of students that train at the Center each year. These visitors shop, dine and stay locally. A partnership has emerged amongst the Theatre and businesses to cross promote their services and products to visitors and patrons.

Local and regional artist cooperatives and organizations have become increasingly more connected to one another and the greater community. The Fostering the Arts & Culture in Franklin County Project and Partnership and the Turners Falls RiverCulture program are two great examples. Fostering the Arts & Culture Project was created through a collaboration of artists, Double Edge Theatre, Franklin County Chamber of Commerce, Franklin County Community Development Corporation, Greenfield Business Association, Greenfield Community College, Turners Falls RiverCulture, and Greater Shelburne Falls Area Business Association. The Project has championed the importance of this cluster, which has been highlighted in four Creative Economy Summits. The summit held in 2012 had over 200 attendees for the two-day event in downtown Greenfield to discuss this economic sector and to develop strategies for how to further support it across the greater region.

Turners Falls RiverCulture is a partnership between the arts, cultural organizations and business in the Turners Falls area. RiverCulture works to support and strengthen cultural and creative industries by hosting and promoting events and marketing the area and its attractions. In 2011, RiverCulture won the Massachusetts Cultural Council's Commonwealth Award, which honors exceptional achievements in arts and culture.

In 2012, Shelburne Falls was the first Franklin County community designated by the Massachusetts Cultural Council as a "Cultural District." These districts are home not only to a cluster of cultural facilities and activities, they are also recognized as a walkable area and an area of economic vitality.

There is also strong interest in supporting the Creative Economy in the North Quabbin area through cultivating more cultural activities and supporting the development of outlets for local artists to sell their products. North Quabbin Woods, a project of the North Quabbin Community Coalition, promotes the sale of local artisan wood products and other fine arts and crafts through their retail store in Orange and their online catalog.

Workforce Development

A workforce development system seeks to support the success of businesses and organizations as well as individual workers. Programs are created to assist job seekers and those currently employed to gain the skill level required by the region's employers. The goal is for these individuals to attain or retain employment that offers a living wage to support themselves and their families.

The workforce development organizations and institutions in Franklin County strive to develop resources and curriculums that are responsive to the current and future needs of businesses and individuals. These entities include the Franklin-Hampshire Regional Employment Board, Franklin-Hampshire Career Center, Greenfield Community College, Franklin County Technical School, and other educational institutions and business development organizations.

Workforce Training Organizations and Activities

Workforce Development Agencies

The Franklin-Hampshire Regional Employment Board (FHREB) is one of sixteen workforce investment boards across the Commonwealth. The FHREB is the policy-making authority for developing workforce skills for the Hampshire and Franklin County region. The FHREB provides services to support local employers, job seekers and workers seeking new skills, and is a leader in regional economic development activities. As part of their function, the FHREB coordinates a variety of initiatives that provide workforce training, placement programs, and other services. These initiatives utilize both state and federal funding opportunities.

The Franklin-Hampshire One-Stop Career Center operates from locations in Greenfield and Northampton and a satellite office in Orange. The Career Center offers services to job seekers, such as job search assistance, career counseling, workshops (i.e. preparing resumes, developing interview skills), access to computers and other resources, as well as unemployment insurance services. The services available to employers include applicant pre-screening, job posting, targeted mailings, and recruitment activities. Employers are also offered information and assistance about various state and federal government programs, such as training grant programs and tax credit opportunities.

Some of the FHREB initiatives target specific industries or populations. The Franklin Hampshire Science, Technology, Engineering, Mathematics (STEM) Project[8] provides outreach, career coaching, training, and job placement services for underemployed adults, dislocated workers, veterans, and youth interested in STEM careers.

The FHREB and Greenfield Community College have been pioneers in nurturing the green economy cluster. The FHREB demonstrated this commitment by launching a green career coaching network for Western Massachusetts and leading the Northern Tier Energy Sector Partnership (NTESP). The NTESP integrated education and training efforts in the renewable energy and energy efficiency field among many partners, including community colleges, workforce investment agencies, technical and vocational educational institutions, economic development groups and private businesses. Funded by a federal Department of Labor grant, the NTESP established a workforce development system that encompassed training and job placement activities. As of June 30, 2012, the NTESP helped 165 unemployed, under-employed and incumbent workers to complete job training programs and helped 50 unemployed workers to secure jobs, exceeding the goals of the program. By its conclusion at the end of 2012, NTESP exceeded its job placement goal.

As the funding for the NTESP ended in 2012, Greenfield Community College implemented the Workforce Development Transformation[9] program through a federal Department of Labor grant. The program is focused on clean energy, health care, and advanced manufacturing sectors. Its purpose is to shorten the time to graduate, increase graduation rates and increase job placement success for participating graduates.

A partnership of the Franklin County Community Development Corporation, Just Roots (a non-profit organization based in Greenfield), Greenfield Community College and FHREB, has been awarded a federal grant to conduct a community food project that connects workforce training and the local food system. This project allows the FHREB to supervise

[8] More information about the Franklin Hampshire STEM Project is available at http://franklinhampshirereb.org/keyinitiatives.

[9] More information about the Workforce Development Transformation program is available at http://web.gcc.mass.edu/marketing/2012/06/11/gcc-ramps-up-workforce-development-transformation-program/

Just Roots was awarded a federal grant, in partnership with others, to conduct a community food project that connects workforce training and the local food system

and train youth workers on the Just Roots community farm, while GCC supervises interns from their new Farm and Food Systems program (see below) at the farm. The FHREB and GCC are unique in their support of the agricultural sector, compared to other workforce investment boards and community colleges.

Higher Educational Institutions

Greenfield Community College has a main campus and satellite downtown center located in Greenfield. With a for-credit student enrollment of nearly 2,500 students in fall 2012, the college offers sixteen Associate Degree programs and thirteen certificate programs. Two recent degree programs have been developed specifically to support the green economy and agricultural sectors. The Renewable Energy/Energy Efficiency program offers both an Associate's Degree and a certificate program, and offers classes on green construction techniques and sustainable energy generation systems. The Farm and Food Systems program has been launched to educate students on issues related to sustainable farming, food security, and local food advocacy.

In the greater region surrounding Franklin County, there are over a dozen colleges and universities, including the University of Massachusetts at Amherst. These institutions are a major educational resource for residents who are able to access them, and also serve as employers for many Franklin County residents.

In its capacity as a research institution, the University of Massachusetts (UMass) may be a source of spin-off entrepreneurial ventures. Leadership at the University encourages efforts to increase research and development activities. As research and development are conducted, future workers are trained and entrepreneurs created that may some day have their own businesses in the field. Pursuing opportunities

between these university-led endeavors and increasing spin-off businesses in Franklin County should be continued.

The two other higher educational institutions in Franklin County include the Hallmark Institute of Photography and the Conway School of Landscape Design. The Hallmark Institute is a 10-month intensive professional photography school in Turners Falls. Its complex of educational buildings is located in the Airport Industrial Park, and feature state of the art facilities using the latest technology. The presence of Hallmark's instructors and students contribute to the region's growing creative economy cluster.

The Conway School of Landscape Design (CSLD) offers a 10-month intensive graduate program in sustainable landscape planning and design. The graduates of this program also contribute to the region's creative workforce. The school has an impact on the region through its community service program, which has students work on design or planning projects under the guidance of instructors for a negotiated fee for municipalities and non-profit organizations. For example, CSLD completed a "Foodshed Analysis" for the Natural Resources Chapter of this Plan.

Secondary Educational Institutions

Local schools provide the education and skill foundation for future employees and business leaders. Schools are also a significant consideration to business leaders when they are deciding where to locate their companies, and to skilled workers who are considering relocation. Funding for public and higher educational institutions has been strained in recent years due to local and statewide budget constraints. Within Franklin County, there are eight public high schools, including one charter school and one vocational-technical high school. As is often the case for vocational- technical high schools, Franklin County Technical School (FCTS) has the highest percentage of graduates directly entering the workforce compared to all other Franklin County high schools. The technical programs offered at FCTS include construction trades, automotive, culinary arts, machining, health care, computer programming, and more.

There are also four private high schools, three of which offer educational opportunities for boarding students as well as commuting students. These institutions attract students to the region, many of whom come from across the country and the world. A new private educational institution, Kemsley Academy, has opened at the former Lake Grove at Maple Valley School campus in Wendell. The school serves Chinese and other international students studying in America.

Workforce Needs and Impediments for Specific Populations

Community Action of the Franklin, Hampshire, and North Quabbin Regions conducted a survey of adults with low and moderate incomes in Spring 2011. The report created from the survey results identified several key challenges related to job readiness and job development. A copy of the complete report is available in the appendices.

One significant item of note from the survey was that relatively few respondents said they were unemployed because of a lack of jobs in their line of work (11%). Transportation problems (19%), insufficient education or training (13%), not enough experience (11%), and child care problems (8%) were other concerns identified. The single largest reason for being unemployed, by far, was disability (63%), followed closely by health issues (36%).

As the most rural area of the Commonwealth, there are challenges for agencies that deliver services as well as for the residents seeking those services. Limited public transportation services, limited access to broadband, and the geographic distance to access resources are all significant challenges. For example,

while Greenfield Community College offers many quality programs, there are gaps in what is offered. Advanced technical training in health care, business, and information technology is available at other community colleges or institutions in the Pioneer Valley, but they are located beyond the feasible daily public transportation routes presently available for many Franklin County residents.

Cluster-Specific Workforce Needs

Through the Community Action survey report and information provided by the FHREB, several industry cluster-specific workforce needs were identified. Manufacturing, healthcare, and education services should remain the region's top priority economic development clusters, since they employ significant numbers of people, have the greatest potential for a living wage, and are drivers of the regional economy.

The retail trade and food service sectors are large employers and growing. While they are often not high wage jobs, they do offer many entry-level positions which may provide a starting point for some specific populations, such as youth, people with low levels of education, people with limited English proficiency, or people with disabilities.

While relatively small in terms of employment size, the agricultural, forestry and wood products, and green economy sectors are growing and directly support environmental and community sustainability aims. There is interest in continuing to support this sector by developing resources to enhance the workforce in these fields and by creating infrastructure assets that will allow businesses in this sector to flourish. Examples of potential assets include developing local processing facilities for meat, dairy or grain; expanding cold storage capacity for local produce, and creating cluster-specific training institutions.

Business Development

Franklin County has many examples of successful, locally grown businesses. Many of these businesses started in entrepreneurs' homes and barns, and grew with community support. Some of these ventures grew to become major employers, while others are part of the region's small and micro -sized businesses that sustain the regional economy. Access to infrastructure that supports entrepreneurship and small business development is essential to creating a robust local economy. Important resources include access to business technical assistance, alternate financing, networking and marketing programs, and a variety of available commercial and industrial space. In addition, towns can support home-based businesses by updating their zoning.

Business Development Organizations

Entrepreneurship training and support services are available through the Franklin County Community Development Corporation (FCCDC) and the Young Entrepreneurs Society, Inc. (YES). The FCCDC has been the starting point for many successful businesses in the area for over thirty years. The FCCDC offers a suite of services for entrepreneurs and business owners, including lending and business technical assistance. Business technical assistance takes the form of workshops and trainings, as well as direct counseling. All of these services are either free or offered for a nominal cost. Workshops may address general interest in how to start a business, to specific topics such as marketing, financing, or government regulations. One of their most successful programs is the 12-week, 36-hour business planning class. This course offers an opportunity for entrepreneurs to complete a business plan for either a new venture or for an established business. At times, the FCCDC has tailored its programs to focus the curriculum to a targeted group, such as artists or farmers.

The FCCDC offers office or light industrial space at their Venture Center business incubator located in Greenfield. The facility has flexible spaces to accommodate phased growth and creates a community atmosphere to foster business growth. Also at their Greenfield location, the FCCDC operates the

Western Massachusetts Food Processing Center (FPC). Completed in 2001, the FPC provides both physical facilities and professional technical support to assist food products entrepreneurs. The facility includes a commercial kitchen, storage space with a loading dock, and co-packing functions. Since opening, over 80 businesses have utilized the facility.

Many of these businesses create specialty food products that use local agricultural ingredients and have formed relationships with farmers in the region. The region has a successful history in creating large scale food producers that have gone on to become major manufacturing employers in the region, such as Lightlife Foods in Montague. The FCCDC plays a supportive role to allow new businesses to achieve this level of growth. In addition to business planning assistance, the FCCDC offers services for a fee to assist in recipe development and nutritional analysis, which is necessary to move a product into the marketplace. As these businesses grow, they graduate from using the FPC to develop their own facilities and increase employment opportunities.

A great example of a successful graduate is Real Pickles. Started as a home-based business in 1999, the business owners began using the FPC to produce their line of naturally fermented products. As their business grew, they became a full-time tenant of the Venture Center and increased their usage of the FPC. By 2010, they utilized the FCCDC lending program to secure financing to purchase and redevelop a property of their own to be their office and production headquarters.

The FPC is a unique asset in the region that also draws users from the Boston metropolitan area and neighboring states. In 2009, the FCCDC initiated a pilot venture to purchase local produce for processing and freezing, which is then sold to schools and institutions in the region. This venture supports the agricultural industry by creating a new market for local farmers, and at the same time, provides quality local food to consumers and school children. The impacts of Tropical Storm Irene in August 2011 reduced the amount of vegetables available for the freezing project. However, this concept has been proven through the pilot stage, and is ready to be expanded. Further investment in the equipment and facility is necessary to take the venture to the next stage.

The mission of YES is to empower young people (ages 13-24) in Franklin County and the North Quabbin region to be active and economically productive community members through entrepreneurship, job readiness and financial life skills education. Through their Biz Venture series, YES coordinates business plan competitions, a summer camp, and many more activities throughout the year. The organization operates out of the YES BizLoft, a property in downtown Orange that houses their offices and educational spaces, and a full service copy shop. YES proposes to renovate the building's upper floor to create office space to incubate small businesses and provide much needed professional offices for lease in the downtown.

Buy Local Efforts

Efforts that promote the purchase of locally-produced goods and encourage residents to shop at locally-owned businesses contribute to the development of a sustainable regional economy. Buying locally helps to maintain and grow employment in the region; keeps more dollars in the regional economy; cuts down on environmental impacts such as emissions from transporting goods over long distances; and creates more vibrant, healthy downtowns and village centers where locally-owned businesses are often concentrated.

The definition of "local" can vary based on a product or service, or the goal of an initiative. For instance, there are organizations that work to build collaboration and "buy local" efforts for the Pioneer Valley region, or the North Quabbin region. Then there are community-specific efforts that focus on a downtown or village area. Statewide efforts also exist,

such as the Associated Industries of Massachusetts' BuyMass.org program which seeks to create a business-to-business network to connect suppliers and customers.

Listed below are some of the existing initiatives in Franklin County and the greater Western Massachusetts region that support locally-produced goods and locally-owned businesses.

Agricultural and Forest Products

There are many venues for consumers to purchase locally-produced food and wood products in Franklin County. Farmers markets (now including winter markets), farm stands, craft fairs and agricultural fairs have been an integral part of Franklin County's culture for generations. These venues provide consumers direct access to an array of locally-made products, in an atmosphere that promotes a sense of community and connection to the region's natural resources.

Many stores in the region sell local products on a regular basis that is convenient for shoppers. The Franklin Community Co-op, which operates Green Field's Market in Greenfield and McCusker's Market in Shelburne Falls, the Leverett Village Co-op, and the North Quabbin Community Co-op located in the Orange Innovation Center in downtown Orange, are member-owned cooperatives that sell produce and value-added products from local farms, businesses and artisans. These markets are supported by the community through membership fees and volunteer work.

On the supply side, the Pioneer Valley Growers Association is a farmer-owned cooperative that distributes produce from a number of Franklin County farms to grocery stores and farm stands throughout New England, expanding the definition of "local" to encompass the greater region. As mentioned previously, growth in local specialty food products in recent years has been greatly facilitated by the development of the FCCDC's Western Massachusetts Food Processing Center. The Center's "Extended Season" program works with local farms to freeze and store produce that is then sold to local schools and institutions during the off-season.

The Commonwealth Quality Label identifies products that are sustainably grown, harvested and processed in Massachusetts.

Marketing campaigns are another way to reach a wide audience to promote local businesses and products. At the state level, the Commonwealth Quality brand, designed by the Massachusetts Department of Agricultural Resources, serves to identify products that are grown, harvested and processed in Massachusetts using practices that are safe, sustainable and don't harm the environment.[10] Producers are identified by a Seal of Commonwealth Quality, and can be found through a search engine on the program's website. Currently there are a handful of Franklin County farms and forestry operations enrolled in the program.

[10] Commonwealth Quality website: http://www.mass.gov/agr/cqp/index.htm.

Local Hero is the longest-running "buy local" program for farm products in the country.

Several agricultural and forest products "buy local" efforts closer to home have been immensely successful. Community Involved in Sustaining Agriculture (CISA), based in Deerfield and serving the Pioneer Valley, launched the Local Hero public awareness and marketing campaign in 1999. According to CISA's website, the program has since become the country's longest running and most comprehensive "buy local" program for farm products. In addition to marketing local farms, businesses that document significant efforts to purchase and promote locally grown products are eligible to be labeled as a "Local Hero," making the connection between growers, producers, and businesses that sell directly to consumers. To date, more than 204 farms, 50 restaurants, 32 grocery stores, six landscape/garden centers, 11 specialty producers, and 15 institutions have enrolled in the program.[11]

North Quabbin Woods, a project originated by New England Forestry Foundation and managed by the North Quabbin Community Coalition, seeks to revitalize the economy of the North Quabbin region, including the Franklin County towns of Orange, Warwick, Wendell, Erving, and New Salem, through the sustainable use of the region's forests. The project works to market locally made wood products on their website and at the North Quabbin Woods shop in downtown Orange. Workshops, wood products displays, and media coverage also raise awareness of the economic, social, and environmental role forests play in the region.[12]

Promoting Locally-owned Energy Sources

Energy is another commodity that may be produced locally, at varying scales and from various methods. There are growing opportunities for consumers to access locally generated and/or owned energy. These opportunities often highlight access to energy that is generated from renewable resources. Efficient use of energy is also being explored, such as through combined heat and power systems. More information about energy is included in Chapter 7: Energy.

Co-op Power Franklin County is a member-owned energy cooperative dedicated to developing locally-owned sources of sustainable energy. Currently the organization's largest project is developing the Northeast Biodiesel plant located in the Greenfield Industrial Park. The plant will make up to 1.75 million gallons per year of biodiesel from recycled vegetable oil for home heating and transportation use.

Supporting Locally-Owned Businesses

In addition to "buy local" initiatives that focus on locally-produced goods, efforts also exist that focus on supporting locally-owned businesses and establishments in our region. Pioneer Valley Local First is a volunteer organization that works to educate residents, businesses, and community organizations about the benefits of shopping at locally-owned, independent stores, and banking at local banks. Each holiday season, the Shift Your Shopping campaign

[11] Community Involved in Sustaining Agriculture (CISA) website: http://buylocalfood.org/page.php?id=15.

[12] North Quabbin Woods website: http://www.northquabbinwoods.org/project.

aims to encourage consumers to do their holiday shopping at local independent businesses.[13]

In June 2012, the radio station WRSI "The River," based in Northampton and Brattleboro, VT initiated a new "buy local" effort called the Cash Mob. The radio station asked its listeners to identify a local business that they thought was worthy of a sudden, coordinated influx of shoppers to be organized by the station. Over 100 people participated in the first cash mob at Wilson's Department Store in Greenfield on June 7 from 4:30 to 5:30 p.m., providing the store both a boost in revenue and media coverage. The station is planning future Cash Mobs at businesses located throughout its listening area.[14]

Several efforts in the region promote businesses and events in a downtown or village center. The Greenfield Business Association (GBA) issues Greenfield Dollars, a local currency designed for use at local businesses in Greenfield. The purpose of the currency is to strengthen the local economy by distinguishing local businesses that accept the currency and building stronger relationships between businesses and citizens.[15] The North Quabbin Chamber of Commerce offers gift certificates for sale that can be spent at a variety of participating businesses in their area. Turners Falls RiverCulture is a partnership of leaders in the arts, culture, business, and community in Turners Falls who are working to promote and enhance the cultural offerings of the village to residents and visitors. The local "consumption" of art and culture translates into real economic impact for the village in the form of business generated by people spending time downtown. Additional goals are to support artists and craftspeople in town, and to create a vibrant and desirable place for people to live, shop, and establish a business.[16]

Access to Childcare and Early Education

Child care and early education (infant and toddler care, pre-school, and before and after school programs) is increasingly being recognized as an important component of local and regional economic development. Access to quality, affordable child care and early education opportunities benefit economies in several ways. It allows parents to work and increases their productivity through less absenteeism and a better ability to focus knowing that their children are being well-cared for. For the same reasons, businesses are better able to attract and retain employees if quality, affordable and convenient child care is available. Additionally, child care and early education helps prepare children for school. Research has shown that children who participate in child care and early education programs have a better chance of succeeding in primary and secondary school, are less likely to drop out, and are less likely to be reliant on social welfare as an adult. And finally, child care and early education is an industry in itself, generating income and providing jobs.

According to the U.S. Census, in 2010 there were 3,410 children under the age of five living in Franklin County. Approximately ten percent of the labor force in the County has children under the age of six, with 70 percent of these workers part of a household where all parents work (whether a single parent or couple).

Formal child care in the region is provided through private and non-profit child care and early education centers as well as home-based programs. Providers are licensed through the Massachusetts Department of Early Education and Care (EEC). Some parents also rely on informal care, such as relatives, friends, or neighbors, especially if working night or weekend shifts. As of May 2012, there were a total of 113

[13] Pioneer Valley Local First website: www.pvlocalfirst.org.
[14] WRSI The River website: http://wrsi.com/.
[15] Greenfield Business Association website: http://www.greenfieldbusiness.org/.
[16] Turners Falls RiverCulture website: http://www.turnersfallsriverculture.org.

licensed child care providers in Franklin County, with a total capacity of 1,454. It should be noted that not all providers with a current license are necessarily still operating, and not all providers choose to fill to capacity for a variety of reasons. Therefore the total capacity of formal child care in the region is likely less than this number. Currently child care capacity in the region is considered to be adequate, however the capacity for care for children under the age of 15 months is significantly less, and has been identified as an issue in the region.[17]

While overall capacity may not currently be an issue in the region for pre-school and school age children, the ability of parents to pay for quality child care is an ongoing problem. Community Action of the Franklin, Hampshire, and North Quabbin Regions serves as the resource and referral agency for parents looking for child care in Franklin County. This free service includes a database of licensed center-based and family child care providers in each town within the region. The EEC website also links to a database of licensed providers in the state. Community Action also serves as the largest provider of licensed child care in Franklin and Hampshire Counties, providing care for over 630 children from low income families through Early Head Start and Head Start programs.[18] A voucher program for income-eligible families is available through several state agencies that can be used to help pay for center-based or family child care, however there is a waiting list due to limited funding availability. Recently, Community Action staff have seen more parents trying to work split shifts, or have one parent forego working and stay at home, in order to save on child care expenses. In addition to the cost of child care, finding child care that is convenient to either work or home can be a challenge, particularly if parents are relying on public transportation.

Integrating child care into economic development strategies can help overcome some of the obstacles to developing new facilities, while also supporting broader economic and community development goals. Locating child care facilities near mixed use developments, housing, employment centers, industrial parks, and transit routes can translate into less time spent by parents driving to and from home, child care, and work, thereby increasing quality of life and decreasing the amount of traffic and congestion on local roads. Integrating child care facilities into new development or redevelopment projects can leverage public funds to help overcome the initial capital costs of building a facility. Finally, while center-based child care is exempt from zoning regulation in Massachusetts, family-based child care, which typically provides the majority of infant care, can be either encouraged or discouraged through local zoning regulations.[19] Fortunately, many towns in Franklin County allow "By Right" small home-based child care businesses.

Greenfield Community College offers both a certificate and an Associate's Degree in Early Childhood Education. The certificate program provides the courses required by the EEC for licensure as head teachers in licensed early education settings.

[17] Community Action of the Franklin, Hampshire, and North Quabbin Regions, June 2012. Infant capacity per provider is limited based on available licensed staff.

[18] Ibid.

[19] *Child Care and Sustainable Community Development: The Importance of Ensuring Adequate Child Care in Planning Practice.* American Planning Association, 2011.

CONSTRAINTS

The public participation process and data analysis conducted for this Plan identified several major constraints that are acting as barriers to improved sustainability in Franklin County. This section discusses those economic development-related constraints so that recommendations may be made to rectify the issues.

Workforce

- Older members of the workforce may need further training to remain employable. Some workers may have difficulties transitioning after years in one job or function.
- Due to high demand for all jobs, youth are not getting their first jobs as teenagers, which makes it more difficult for them to be hired as a young adult.
- The need for specific skills training for a particular profession, as well as a broader education that promotes general problem solving and life-long learning. Lack of resources makes it difficult to offer both.
- Average wages in the region are low and not growing as fast as other areas of the state. The region is unaffordable to many earning average wages due to the housing and transportation costs in the region.
- Quality childcare remains unaffordable to many families, limiting their ability to fully participate in the workforce, or forcing parents to choose lower quality care that is not always reliable and may not provide their children with the stimulation and early learning the parents desire.
- Employment, educational opportunities, and child care are frequently inaccessible via public transit.
- In general, state and federal funds for social services, job training and education, child care subsidies, housing subsidies, transit, etc. are becoming less available. As a result, access to support services is becoming increasingly limited.

Property Development/Redevelopment

- High cost of redevelopment of historic downtown structures is often not able to be recouped through competitive local lease/rental rates.
- Limited funding to support redevelopment of vacant or underutilized commercial and industrial buildings, including Regional Brownfields Program grants, Tax Credit and incentive programs, and staff support to implement projects.
- Limited municipal staff capacity to pursue funding sources and implement collaborative projects and programs.
- Limited appropriate land (near existing infrastructure, appropriately zoned, accessible to transit services, and not impacting sensitive environmental areas) available for industrial park development.
- Limited resources to fund marketing, design, and engineering studies necessary to pursue infrastructure grant funding.
- Limited resources for expansion or upgrades to sewer and water infrastructure, and stormwater management.
- In some communities, zoning bylaws need to be updated to support sustainable economic development principles, such as allowing mixed use development and infill projects.

Regional Clusters

- Limited resources to sustain existing entities and expand their capacity in their efforts to foster the growth of regional clusters, such as the Fostering the Arts & Culture in Franklin County Project and Partnership.
- Reduction or elimination of incentives to install renewable energy generation projects will impact feasibility of these projects.
- Limited understanding of available manufacturing careers by high school students and adults seeking new job opportunities.

- Limited availability of suitable industrial park land for manufacturers to locate or expand.

Business Development

- Decline in the availability of government grant funds to expand technical assistance programs for businesses.
- Limited resources to fund local and regional business association, cluster development, and marketing initiatives.
- Very limited access to venture funding, angel investing or other capital (that is not a loan) for start-up businesses and cooperatives.

LOCATIONS FOR ECONOMIC DEVELOPMENT & REDEVELOPMENT

Based on the responses from the Scenario Planning Workshops and Survey, there is strong support for locating new housing near jobs and transit services, and to protect farmland and forests. As a result, economic development and redevelopment efforts should be primarily targeted to existing and emerging regional employment centers and where infrastructure is located.

RECOMMENDATIONS AND STRATEGIES

The Regional Plan for Sustainable Development takes an extended view of the actions that must happen to make Franklin County a sustainable region. Some of these longer-term actions may require partnerships that do not currently exist, may be costly, or may require additional research to implement. Regardless of such potential barriers, it is important to include these types of actions in the plan to ensure that they move forward and are ready to be implemented when the partnerships, funding, or additional information are available.

Based on responses from the Scenario Planning Workshops and survey, there was strong support for ensuring county-wide broadband access and for sewer/water infrastructure upgrades in select communities. As indicated by the goals, there is strong support for brownfields redevelopment, village center revitalization, and site preparation to create developable industrial park properties. The current industrial parks are home to over 1,800 jobs. Increasing the amount of developable land available in planned industrial parks will support manufacturing and other industries, as well as steer development away from prime farmland or forested areas. Increasing access to transit services and child care facilities for employees located in employment centers, including both industrial parks and town centers, is recommended. Table 4 presents the complete Recommendations and Strategies.

Table 4: Recommendations and Strategies for Economic Development	Implementation					Partnering Organization(s)*
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Support activities to enhance job skills and access to employment in regionally significant clusters and industries						
Marketing campaign to promote career awareness for K-12 students, particularly in regional clusters and growing industries	X					Franklin-Hampshire Regional Employment Board (FHREB), Franklin-Hampshire Career Center (FHCC), North Quabbin Community Coalition (NQCC), K-12 schools
Support for creating job connections - internships, job-employer matchmaking, etc. – between prospective employee and employer	X					FHREB, FHCC, Greenfield Community College (GCC)
Develop and improve adult vocational education facilities to allow dislocated and older workers to attain skills to transition to new careers		X				FHREB, GCC, Franklin County Technical School (FCTS)
Develop system to better connect youth with employment, internship, and/or volunteer opportunities. Such a system requires cultivation and maintenance of relationships with employers, and career awareness for youth such as conducted by a school and Career Center career development counselors	X					FHREB, FHCC, GCC, Young Entrepreneurs Society, Inc. (YES), Community Action Youth Programs
Develop stronger working relationships between employers, community colleges and FHCC/FHREB to implement Just-In-Time job training to allow workers to be agile in adapting to new skills required by employers	X					FHREB, FHCC, GCC
Implement Workforce Development Transformation program and strengthen FHCC and GCC pathways for training and career development support	X					FHCC, GCC
Develop program to meet gaps in healthcare career ladder	X					FHREB, FHCC, GCC
Explore the feasibility of developing child care facilities in new developments or redevelopment projects, especially at employment centers such as industrial or business parks, and near transit hubs		X				Community Action of Franklin, Hampshire and North Quabbin Regions (Community Action), Franklin Regional Council of Governments (FRCOG)

*See also Page 18 of Chapter 4: Housing for a key to the Partnering Organizations abbreviations

Table 4: Recommendations and Strategies for Economic Development	Implementation					Partnering Organization(s)
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Create a center for residents to access multiple public assistance, and health and human services		X				Franklin County Regional Housing & Redevelopment Authority (FCRHRA), Community Action
Create a Center for Middle Skills Development to support access to training and education for individuals who have completed their secondary education but are not pursuing college degrees			X			GCC, FHREB, FHCC, FCTS, K-12 schools
Develop programs to forge a stronger connection between the region's industrial heritage and the current manufacturing sector's needs for mentoring, skills training and fostering of innovation		X				GCC, FHREB, FHCC, FCTS, K-12 schools, Museum of Our Industrial Heritage
Support and expand immigrants' access to English language education and the tools necessary to achieve and maintain economic independence and stability in this country		X				Center for New Americans, Community Action, FHCC, The Literacy Project
Support and expand access to resources that promote stability in the workforce, i.e. access to food, shelter, and heat; quality child care; financial management education; transportation; acquisition of basic employability skills; and affordable medical and mental health care		X				Community Action, FCHRA, FHREB, FHCC, FRTA, GCC
Support activities that redevelop vacant or underutilized commercial and industrial properties						
Support continuation of FRCOG Regional Brownfields Program	X					Franklin Regional Council of Governments (FRCOG)
Support the redevelopment and reuse of historic structures, particularly those located in village centers, such as the Strathmore Mill, Putnam Hall, First National Bank Building, Sweetheart Inn, Railroad Salvage building	X					FRCOG, Towns
Support activities that revitalize and more intensely use downtowns and village centers						
Support rezoning of the village centers for mixed use development, encompassing commercial, light manufacturing, artisan, and residential uses	X					FRCOG, Towns

Table 4: Recommendations and Strategies for Economic Development	Implementation					Partnering Organization(s)
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Target investment expansion or upgrades of water, sewer and/or stormwater management systems in village centers		X	X			Towns
Maintain an inventory of vacant commercial and retail spaces (for lease or purchase) to be used by business associations when entrepreneurs are seeking locations to start-up businesses	X					Greater Shelburne Falls Area Business Association (SFABA), Greenfield Business Association (GBA), Montague Business Association (MBA), Orange Business Association (OBA)
Support for enhancements to downtowns to make them attractive to residents and visitors, such as streetscape improvement projects, or events/activities to enjoy	X					FRCOG, Towns, Franklin County business associations, FCC of C
Support development of the Olive Street parking structure in Downtown Greenfield to serve the revitalized Bank Row area and accommodate intermodal transportation connections	X					Town of Greenfield, FRCOG
Support a coordinated revitalization effort for Downtown Orange, such as through the creation of a Downtown Master Plan and/or creation of an Orange Redevelopment Authority		X				Town of Orange, North Quabbin Chamber of Commerce, FRCOG
Support revitalization in the Millers Falls and Ervingside shared village center, including supporting the reuse of the vacant and underutilized properties.						Town of Erving, Town of Montague, FRCOG
Support activities to develop planned industrial park properties in suitable locations						
Increase land for industrial park development that is near existing infrastructure, appropriately zoned, and accessible to transit services, and not impacting sensitive environmental areas	X					FRCOG, Town of Greenfield, Town of Montague, Town of Orange
Continue to monitor the availability of developable industrial park land in Franklin County	X					FRCOG
Conduct freight rail siting inventory to determine current locations of underutilized access	X					FRCOG

Table 4: Recommendations and Strategies for Economic Development	Implementation					Partnering Organization(s)
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Support the preparation of existing industrial park parcels to become "shovel ready"	X					FRCOG, Town of Greenfield, Town of Montague
Support the redevelopment of sites for planned industrial park purposes at the Bendix site in Greenfield and Turnpike Road in Montague	X					Town of Greenfield, Town of Montague
Support the expansion of Randall Pond Industrial Park in Orange		X				Town of Orange, Orange Economic Development and Industrial Corporation
Support the development of a new planned industrial park in Bernardston at the designated Chapter 43D site, adjacent to I-91 and the village center			X			Town of Bernardston
Support the re-use of disturbed land for the purpose of new planned industrial park development in Northfield				X		Town of Northfield
Support agricultural, forestry and fisheries sector in Franklin County						
Support for North Quabbin Woods to sustain their activities to promote forest-based recreation and woodworking businesses	X					NQCC
Support agricultural business infrastructure - such as processing and storage facilities	X					Community Involved in Sustaining Agriculture (CISA), Franklin County Community Development Corporation (FCCDC), FRCOG
Agriculture sector workforce training, such as sustainable agriculture, food systems, and animal first aid		X				FCCDC, FHREB, GCC, Seeds of Solidarity, North Quabbin Food Coop
Implement initiatives identified by Pioneer Valley Grows	X					Pioneer Valley Grows
Develop a Forest Wood Products institute or center of higher education to enhance the skills of local woodworkers and wood product manufacturers					X	Massachusetts Forest Alliance (MFA)

Table 4: Recommendations and Strategies for Economic Development	Implementation					Partnering Organization(s)
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Support growth of creative economy cluster						
Support initiatives that advance the creative economy sector across the region, such as the Fostering the Arts & Culture in Franklin County Project and Partnership and their activities such as Creative Economy Summit, trip itineraries, Buzz on Biz, workshops, etc	X					FCCDC, Franklin County Chamber of Commerce (FCCC), Greenfield Business Association (GBA), GCC, Turners Falls RiverCulture, SFABA, NQCC
Sustain Turners Falls RiverCulture	X					Town of Montague, Turners Falls RiverCulture
Encourage artists, craftspeople and others employed in occupations and businesses in the creative economy to participate in the New England Foundation for the Arts' CultureCount database		X				Fostering the Arts & Culture in Franklin County Project and Partnership
Create shared artist studio and creative business work spaces in downtowns and village centers		X				Towns
Support for North Quabbin Woods to sustain their activities to locally crafted wood products and fine arts		X				NQCC, NQC of C
Support growth of educational services cluster						
Better connect independent education institutions and institutions of higher education to local businesses and locally produced products	X					FCCC, FCCDC, Independent Schools
Support growth of green economy cluster						
Support the implementation of programs that promote skill development and access to green sector jobs, such as the Northern Tier Energy Sector Training Partnership and Workforce Development Transformation	X					FHREB, FHCC, GCC, Community Action Youth Programs
Increase participation in the Green Communities program and formal designation of Franklin County municipalities as Green Communities	X					FRCOG, Towns

Table 4: Recommendations and Strategies for Economic Development	Implementation					Partnering Organization(s)
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Increase support for networks and groups promoting the green economy sector and that is helping to build the market for this sector, such as the Western Mass Green Consortium and Pioneer Valley Sustain Network	X					Western Mass Green Consortium, Pioneer Valley Sustain Network
Support for the assessment of the energy grid to determine potential increases in renewable generation capacity and explore the potential for innovative energy systems in communities		X				FRCOG, Local Utility Companies
Support the engagement of businesses in implementing energy efficiency practices to reduce their own costs and help build a market for this cluster	X					Business Associations, GCC, Town Energy Committees
Support growth of information and technology infrastructure cluster						
Support the establishment of an Interconnection Facility and Data Center in Greenfield	X					FRCOG, Town of Greenfield
Support investment in "last mile" infrastructure that connects the Massachusetts Broadband Institute's *AXIA MassBroadband 123 network* to homes, businesses and institutions		X				Massachusetts Broadband Institute (MBI), Service Providers and Network Builders, FRCOG
Establish Innovation District designation to promote a geographic area's commitment to fostering business development in information and technology intensive businesses		X				FRCOG, Towns
Provide technical assistance to help businesses to leverage advanced services available from the creation of a robust, high capacity broadband infrastructure		X				MBI, FCCDC
Provide technical assistance on zoning updates to support the provision of broadband services to businesses, institutions, and home-based business	X					FRCOG, Towns
Develop business incubator and shared enterprise space that promote innovation and information technology businesses	X					Orange Innovation Center, FCCDC

Table 4: Recommendations and Strategies for Economic Development	Implementation					Partnering Organization(s)
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Support the growth of natural and cultural -based tourism cluster						
Implement the Western Massachusetts Scenic Byway project's marketing plan	X					FRCOG, Scenic Byway Committees
Assess tourism services infrastructure, such as current marketing programs, service providers, and existing collaborations		X				FCCC, FRCOG, SFABA, North Quabbin Woods, GBA, Turners Falls RiverCulture
Coordinate marketing of natural resource based tourism opportunities, attractions and events for a broader market, including visitors using the future passenger rail service		X				FCCC, SFABA, North Quabbin Woods, GBA, Turners Falls RiverCulture
Develop tourism infrastructure assets, such as parking, public bathrooms, boat ramps/put-in areas, and signage		X				FCCC, FRCOG, Towns
Develop a shuttle service to access outdoor recreation opportunities from public parking areas and/or the John W. Olver Transit Center		X				*To be determined*
Establish a regional performing arts center space for use by Greenfield Community College, Pioneer Valley Symphony, and others			X			GCC, FCCDC, FCCC, FRCOG
Enhance promotion of region for bicycle touring based tourism.		X				FCCC, SFABA
Coordinate tourism information at John W. Olver Transit Center for use by transit and passenger rail travelers.		X				FCCC
During the federal re-licensing process for FirstLight Power's hydropower facilities, encourage greater access to the Connecticut River for outdoor recreation purposes	X					Connecticut River Watershed Council (CRWC), FRCOG
Support activities that promote access to sustainable transportation						
Expand public transit for workers to access job opportunities, such as through new northern and southwestern routes and expanded evening and weekend hours for services		X				FRCOG, Franklin Regional Transit Authority (FRTA), Community Transit Services (CTS)

Table 4: Recommendations and Strategies for Economic Development	Implementation					Partnering Organization(s)
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Continue to implement transportation planning projects that promote the safe and efficient transportation of goods and people, and encourage bicycle, pedestrian and multi-rider modes of transportation	X					FRCOG, FRTA, CTS
Support the development and growth of locally-owned businesses, cooperatives and non-profit organizations that offer job opportunities and provide goods and services for residents						
Continue to support and to expand the FCCDC's business technical assistance and lending programs that support entrepreneurship, business development and growth, such as provided by the FCCDC and other entities	X					FCCDC
Continue to support and to expand the offering of workshops and other educational opportunities that target small businesses	X					FCCDC, FCCC, North Quabbin Chamber of Commerce (NQC of C), Business Associations
Provide support to help locally-based cooperatives and worker owned businesses to start and grow		X				FCCDC
Continue to support the Young Entrepreneur's Society, Inc. (YES, Inc.) and their development of the YES BizLoft project to create micro-business incubator space	X					YES, Inc.
Support the development of business incubation facilities that target specific industry clusters, such as the creation of a woodworking and wood products business incubator with a shared workshop facility			X			FRCOG, North Quabbin Woods
Support buy local efforts at personal, institutional, and business to business level						
Encourage participation in regional and statewide "buy local" initiatives, such as CISA's and North Quabbin Woods' programs, and the statewide MassItsAllHere.com and BuyMass.org programs	X					CISA, NQCC, FCCC, North Quabbin Chamber of Commerce, Business Associations
Develop and implement a branding campaign for products produced at the FCCDC's Western Massachusetts Food Processing Center		X				FCCDC

Table 4: Recommendations and Strategies for Economic Development	Implementation					Partnering Organization(s)
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Support application of sustainable business practices						
Support expansion of the Shelburne Falls Village Center Composting Collaborative model	X					SFABA, Franklin County Solid Waste District (FCSWD)
Support the distribution of education materials on sustainable business best practices, on topics such as recycling, use of environmentally friendly materials and processes, and implementing energy efficiency improvements		X				FCCC, SFABA, NQCC, MBA, OBA
Identify shared needs and the cooperative use of resources and facilities, such as a shared forklift at an industrial park to a shared vegetable cold storage facility for use by farms and food producers	X					FRCOG, FCCDC, FCCC

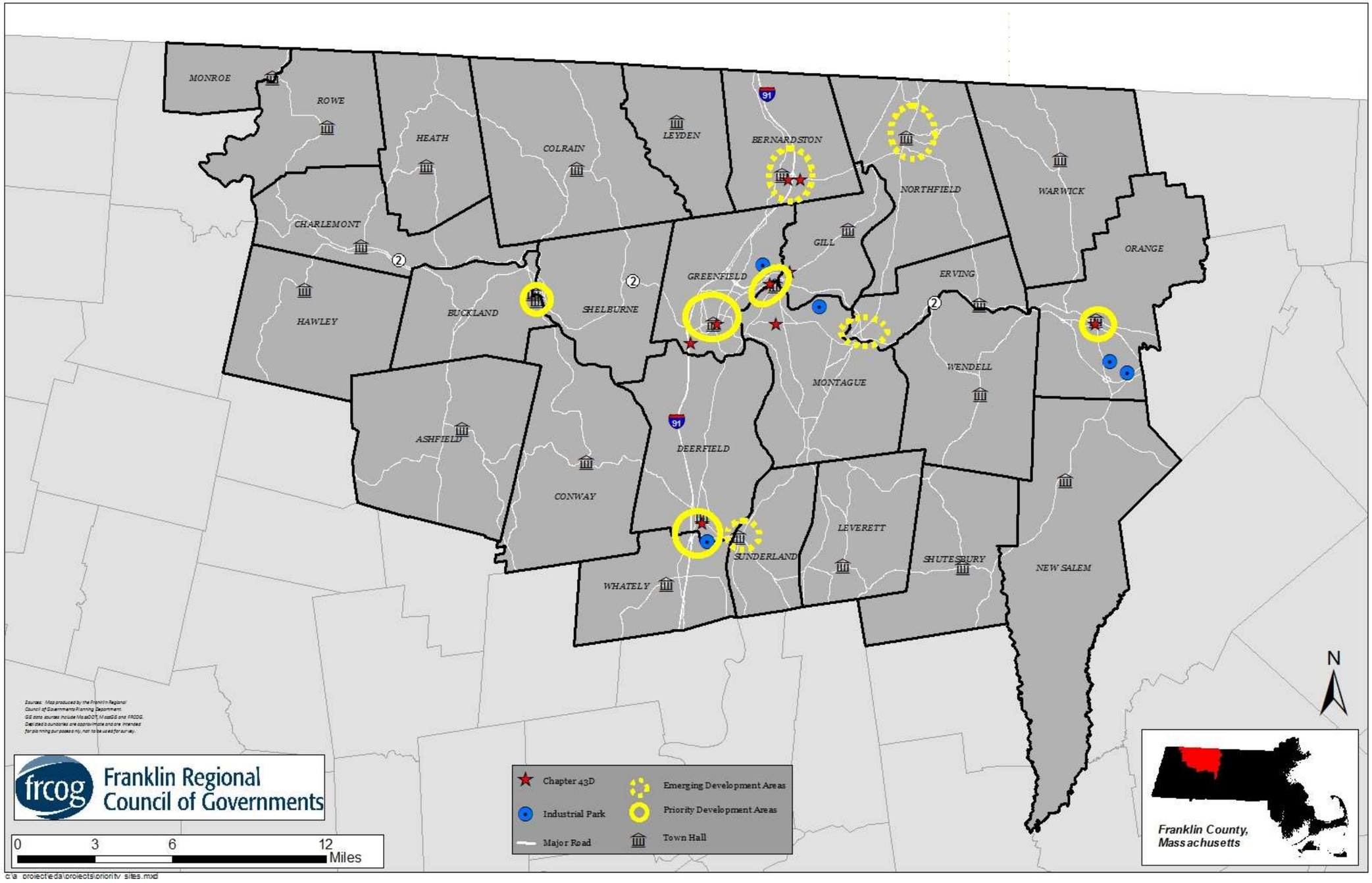
BENCHMARKS

The goals of the Regional Plan for Sustainable Development are long-term outcomes toward which programs or activities are directed. In order to ensure that the economic development goals of this Plan are implemented, the following benchmarks are suggested as milestones to measure progress towards making Franklin County a more sustainable place. The benchmarks are data-driven and can be evaluated in various contexts over time. To do this, data on the benchmarks will be collected and evaluated by FRCOG staff at regular intervals to establish trends.

TABLE 2. Economic Development Benchmarks

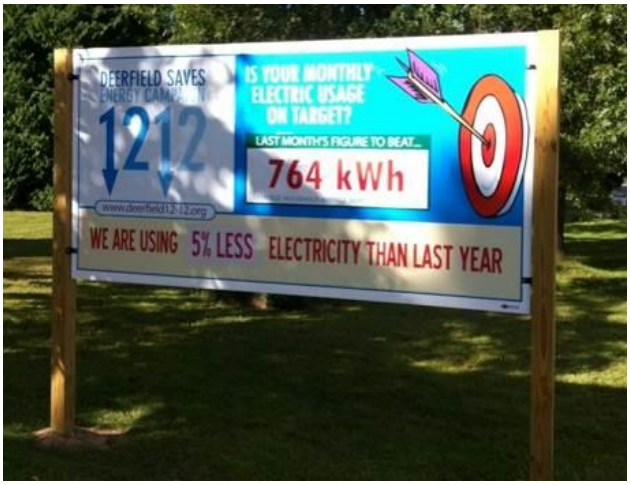
Performance Measure	Unit of Measurement	Desired Trend	
Reinvest in existing commercial and industrial centers	Sites	Increase	⇧
Change in the share of commercial and industrial facilities constructed on vacant or underutilized infill sites	Sites	Increase	⇧
New job opportunities created as a result of reuse of existing commercial and industrial centers	Jobs	Increase	⇧
Investment in existing commercial and industrial facilities	Dollars	Increase	⇧

Map 6-1: Economic Development Priority Areas



SUSTAINABLE FRANKLIN COUNTY

Chapter 7: Energy



INTRODUCTION

Energy is an essential part of our daily lives, from the food we eat and the water we drink to the electricity and fuels we use in our homes, businesses and vehicles. Extraction, transportation, refinement and combustion of fossil fuels all have impacts on our environment, economies, national security, and quality of life. Fossil fuels are our main source of energy and are a limited resource. As such, dependence on them is not sustainable over the long term. The clean and renewable energy movement is active and growing in the region. In fact, our region is a leader in the nation, and we are in an excellent position to maintain this momentum and take the next steps towards a more sustainable future. These actions will align with the Massachusetts Clean Energy and Climate Plan for 2020 that presents ambitious, yet attainable efforts to cut climate change emissions by 25% by 2020 and 80% by 2050.[1] These goals will be achieved by targeting buildings, electricity use and supply, and the transportation sector.

Our vision is to create a Sustainable Franklin County that is robust and resilient to the effects of climate change, while actively reducing greenhouse gas emissions in the region and improving energy self-reliance. This will be achieved by decreasing energy use while replacing fossil fuels with local energy production.

Through public workshops and surveys conducted as part of the public outreach process for this Regional Plan for Sustainable Development, three top energy goals were identified to promote a sustainable region.

The goal of this chapter is to develop an energy plan for Franklin County that accepts responsibility for Franklin County's portion of the State's Clean Energy and Climate Action Plan for 2020. The chapter is organized to present readers with a sense of how energy and sustainability are connected and highlights a select group of regional energy achievements. Some basic energy definitions are presented for readers who may be new to the energy conversation and those definitions are followed by some background information about emissions and climate change. Following the discussion of the local and global impacts of emissions, documentation of Franklin County's emissions is presented. From there, the chapter drills down to more specific aspects of emissions; energy use and energy sources. The chapter culminates with a discussion of some of the barriers to a green power future and ends with a set of action items for progress.

Top Sustainable Energy Goals

1. Promote energy conservation and efficiency;
2. Increase the quantity of locally-produced clean energy; and
3. Reduce the use of fossil fuels.

ENERGY & SUSTAINABILITY

Energy is intricately connected to the three pillars of sustainability: community livability, the environment and economic development. High costs for home heating, electricity, and water directly impact housing affordability because inefficient housing results in more money being spent on utilities. If the utilities or associated housing costs are not affordable, residents may be forced to sacrifice money otherwise spent on food, healthcare, or other essential needs. Furthermore, inefficient housing can also lead to uncomfortable and unhealthy living conditions such as extreme heat/cold and poor indoor air quality.

Land use trends such as sprawl result in increased transportation related energy expenditures and less opportunity for the use of alternative forms of transportation such as public transit, walking, and

[1] Massachusetts Office of Energy and Environmental Affairs, Massachusetts Clean Energy and Climate Plan for 2020, December 2010.

bicycling. The condition of aging and inefficient infrastructure – whether it is water, sewer, or telecommunications infrastructure – has direct impacts on increased energy use. Reliance on foreign fuels can negatively impact the regional **economy** as the majority of the money spent on those fuels leaves the region at a time when more local jobs and economic resiliency are needed in Franklin County. Losing prime farmland and forests to development reduces the region's ability to cope with increased emissions, extreme weather events, and climate change and decreases our food self-sufficiency. Failure to preserve cultural and scenic landscapes can result in increased sprawl and unsustainable development patterns, which can lead to increased energy used for transportation, and reduced tourism, sense of place, and quality of life. These are just some of the ways in which energy is interconnected with every other chapter of this plan.

REGIONAL ENERGY SPOTLIGHT

Massachusetts has been named the leading state on the East Coast for clean energy innovation, investment, employment, and jobs[2] and Franklin County has been a strong contributor to that title. Additionally, in 2012 Massachusetts was recognized as being first in the nation in improved energy efficiency, according to the American Council for an Energy-Efficient Economy (ACEEE).

At the regional and local levels, Franklin County has an impressive portfolio of energy related accomplishments. The work done by tireless volunteers, town committees and professionals has helped establish the region as a leader in green, clean and renewable energy. The following section highlights just two of our energy related regional accomplishments.

[2] A Future of Innovation and Growth: Advancing Massachusetts' Clean Energy Leadership, Clean Edge, April 2010, Massachusetts Clean Energy Center.

Through the Green Communities Program, to date, more than half of all municipalities in Franklin County have been designated and have committed to reducing energy use by over 29,225 MMBTUs of energy. This is equivalent to taking over 226 homes off the grid, permanently.

- The **Pioneer Valley Clean Energy Plan** was published in January 2008. It provides a critical benchmark of the region's energy profile and a plan to become more energy self-sufficient. The plan focused on four clean energy goals that have been highlighted and woven into this plan and include:
    - Reduce energy use
    - Replace fossil fuels
    - Reduce global climate change emissions
    - Create local jobs

The first three goals are highlighted and supported in this chapter while the last goal is addressed by the Chapter 6: Economic Development. The Pioneer Valley Clean Energy Plan was a crucial step in planning for energy in the Pioneer Valley and continues to influence policy.

- The Green Communities Division of the *Massachusetts Department of Energy Resources* (DOER) was created in 2008 by the Green Communities Act. The goal of the division is to "guide all 351 cities and towns along a path of enhanced energy efficiency and renewable energy toward zero net energy." The **Green Communities Program** has helped municipalities across the Commonwealth achieve significant reductions in energy use and improve energy efficiency in buildings and vehicles. The Green Communities Division also administers the Green Communities Grant Program which awards grant

funding for energy efficiency improvements in municipal facilities to communities meeting a set of five criteria. Among these criteria are a commitment to reduce municipal energy use by 20 percent within five years of signing onto the program; adoption of the Stretch Energy Code to improve building efficiency; and providing as-of-right siting for some forms of renewable energy generation or clean energy research, development, or manufacturing. In meeting these requirements, municipalities across the state are not only reducing municipal energy use, but are also decreasing energy use in non-municipal buildings. To date, 15 of the 26 Franklin County communities have been designated Green Communities and they have received over $2 million dollars in grant funding and committed to reducing municipal energy consumption by at least 29,225 MMBTUs. This is the equivalent of taking over 226 homes off of the grid, permanently[3]. These funds have helped improve energy efficiency and created local jobs in Franklin County.

- The **John W. Olver Transit Center** is the nation's first zero-net energy transit center. Since its opening in May 2012, it has received accolades worldwide promoting it as a model for future development. This facility is designed to maximize energy efficiency and produce enough renewable energy to meet its annual operating needs. To do so, designers, engineers and architects incorporated numerous livability and sustainability elements into the design and construction of the building. The ultimate goal – a regional intermodal transportation center that maximizes functional public space, increases public transportation options, and minimizes the use of limited resources.

3 Massachusetts Department of Energy Resources (DOER), Green Communities Division.

The Pioneer Valley Clean Energy Plan, Green Communities Program and the zero-net energy John W. Olver Transit Center are just a few examples of the many accomplishments occurring throughout the region. Energy champions exist in every Franklin County community and they are working every day to spread awareness about energy related issues. Local energy committees are leading efforts to improve energy efficiency in their communities through outreach efforts, workshops, clean and renewable energy tours, audits, and roundtable discussions. The Franklin County energy committees meet regularly to share ideas and continue the advancement of conservation and efficiency throughout the County and have achieved many results. The combination of efforts at the individual and local levels along with the adoption of policies and implementation of strategies identified herein will help guide Franklin County towards a more sustainable energy future. Each of these components is critical to achieving success. By replacing fossil fuels with green energy and reducing energy use, Franklin County can achieve significant gains in building energy resiliency and reducing climate change emissions.

ENERGY TERMS AND DEFINITIONS

Energy can be a very complex topic, so it is important to understand some of the terms that will be used throughout this chapter. [4] This is a short list of terms that are based on definitions provided by the U.S. EPA, unless otherwise noted.

- **Biofuel:** A type of fuel produced from plants or other forms of biomass. Examples include ethanol, biodiesel, and biogas.

[4] United States EPA, A Student's Guide to Global Climate Change website, < http://www.epa.gov/climatechange/kids/glossary.html>, accessed June 5, 2012.

- **Biomass:** Material that comes from living things, including trees, crops, grasses, algae, animals, and animal waste.
- **Carbon Dioxide:** A colorless, odorless greenhouse gas. Carbon dioxide (CO_2) is being added to the atmosphere, mostly by burning fossil fuels and is the main cause of climate change.
- **Clean Energy:** Renewable energy resources that are inexhaustible resources, many of which produce no air emissions during generation, and include sun, wind, water, biomass (both from plants and other organic material), fuel cells and other sources.[5,6]
- **Combined Heat and Power (CHP):** Also known as cogeneration, CHP is an efficient, clean, and reliable approach to generating electric power and thermal energy from a single fuel source.
- **Emissions:** The release of a gas (such as carbon dioxide) or other substances into the air.
- **Fossil Fuels:** Fossil fuels are fuels containing carbon – coal, oil and gas – that were formed over millions of years through the decay, burial and compaction of rotting vegetation on land, and of marine organisms on the sea floor. Burning fossil fuels is the major way in which humans add to the greenhouse gases in the atmosphere.
- **Geothermal:** Heat from inside the earth.
- **Greenhouse Gas (GHG):** Also known as 'heat trapping gases,' greenhouse gases are natural or manmade gases that trap heat in the atmosphere and contribute to the greenhouse effect. The three greenhouse gases that are emitted during the combustion of fossil fuels are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O).
- **Green Power:** The subset of renewable energy that represents those renewable energy resources and technologies that provide the highest environmental benefit. The US EPA defines green power as electricity produced from solar, wind, geothermal, biogas, biomass, and low-impact small hydroelectric sources.
- **Hydroelectric:** The energy derived from moving water to produce electricity.
- **Methane**: A colorless, odorless greenhouse gas. It occurs both naturally and as a result of people's activities. Methane (CH_4) is produced by the decay of plants, animals, and waste as well as other processes. It is also the main ingredient in natural gas.
- **Nitrous Oxide**: A colorless, odorless greenhouse gas. Nitrous Oxide (N_2O) occurs both naturally and as a result of people's activities. Major sources include farming practices (such as using fertilizers) that add extra nitrogen to the soil, burning fossil fuels, and certain industrial processes.
- **Nonrenewable Sources:** Natural resources that cannot be produced, regrown, or reused fast enough to keep up with how quickly it is used. Fossil fuels such as coal, oil, and natural gas take millions of years to develop naturally. Uranium, the main fuel for nuclear power plants, is also a nonrenewable fuel.
- **Renewable Resource:** A natural resource that can be produced, regrown, or reused fast enough to keep up with how quickly it is used. Wind, tides, and solar energy

[5] Massachusetts Clean Energy Center (CEC), What is Clean Energy Webpage, < http://www.masscec.com/index.cfm/page/What-is-Clean-Energy/pid/11139>, accessed 9/10/12.

[6] Some definitions of Clean Energy may include Nuclear Power. To clarify, the Pioneer Valley Clean Energy Plan does NOT include nuclear power as a clean energy source.

are in no danger of running out and can be consumed by people virtually forever.

- **Solar Energy:** Energy from the sun, which can be converted into other forms of energy such as heat or electricity.

ENERGY, EMMISSIONS, GLOBAL WARMING, AND CLIMATE CHANGE

Most of the energy we use for heating and cooling our homes and businesses, running our appliances and machinery, and transporting ourselves and the products we need or want come from fossil fuels - coal, oil and natural gas.

All fossil fuels contain carbon, which is released to the atmosphere as carbon dioxide (CO_2) when they are burned. Coal releases the most CO_2 and natural gas releases the least. But they all release too much. This is because atmospheric CO_2 is a powerful greenhouse gas (GHG), which means that it traps heat in Earth's lower atmosphere, altering Earth's energy balance.

While CO_2 has received significant attention as its contribution to global warming, new research is also highlighting the role of methane (CH_4) to global warming. Methane is a principal component of natural gas and is released in significant quantities through the process of obtaining natural gas by cracking shale (a.k.a. "fracking"). Methane is also formed and released to the atmosphere by biological processes occurring in anaerobic environments, such as diseased trees. Once in the atmosphere, methane absorbs terrestrial infrared radiation that would otherwise escape to space.

Without the "natural" greenhouse effect Earth would be a frozen planet, but the human induced "enhanced" greenhouse effect may irreparably change the natural environment in which human civilization has emerged and upon which human civilization depends.

Before the industrial revolution, the concentration of CO_2 in the atmosphere was 280 parts per million (ppm).[7] Today it is over 392 ppm and rising rapidly.[8] The atmospheric concentration of CO_2 has never been above 300 ppm over at least the last 800,000 years.[7]

This rapid rise in atmospheric CO_2 is causing global temperatures to rise at rates unprecedented in human history. Earth's climate sensitivity is such that 450 ppm is expected to yield a temperature increase of 2°C – the internationally accepted "safe" limit.[7, 9] By century's end a temperature rise of 6°C is possible, equivalent to the temperature rise from the last glacial period to the present.[7] Since carbon dioxide is very persistent in the atmosphere, its impacts will be with us for centuries to millennia to come.

When temperatures reach critical tipping points, there are many natural feedback loops which will release additional GHGs. One of these feedbacks is CO_2 emissions from the oceans and land vegetation as they flip from being carbon sinks, which absorb CO_2, to carbon sources, which emit CO_2. Other feedbacks include CO_2 emissions from wildfires and the decay of boreal forests as the permafrost beneath them melts. Methane, which is 25 times more powerful as a GHG than CO_2, is also being released from melting permafrost and from methane hydrates, which are a form of frozen methane on the ocean floor.

Also, changes in Earth's albedo, or reflectivity, due to melting sea ice, ice caps, glaciers, and snow pack allow land and water to absorb much more solar radiation, significantly contributing to Earth's temperature rise.

The impacts of global warming, and resulting climate change, will be profound. Global warming is already

[7] Global Climate Change Impacts in the United States, U.S. Global Change Research Program.
[8] Mauna Loa Observatory, Hawaii, National Oceanic and Atmospheric Administration, Earth Systems Research Laboratory, Global Monitoring Division.
[9] Intergovernmental Panel on Climate Change, Fourth Assessment Report (2007).

In 2008, the largest emitters of carbon dioxide (CO_2) emissions were the transportation and building sectors.

causing dramatic changes in Earth's climate, and these changes are predicted to accelerate over the coming decades. Much of the natural environment will not be able to adapt to these rapid changes. Species extinctions, already at levels far above the natural background rate, will accelerate. Heat waves, drought, and heavy rainfall events will become more common, causing wildfires, desertification, flooding, and erosion. Tropical storms and hurricanes will become more powerful. Sea levels will rise, resulting from both warming oceans and melting ice caps and glaciers, impacting coastal ecosystems, fresh water aquifers, coastal cities and other coastal infrastructure. Ocean temperature rise and acidification from CO_2 absorption may push many coral reefs and ocean fish populations to extinction.

Current climate models do not provide detailed projections at the scale of Franklin County. However, over this century, under Business-As-Usual emissions scenarios, the climate of Franklin County may transition to one more like that of the Carolinas today. Generally we can expect less snow, more heavy precipitation and flooding, longer dry seasons, more wildfires, and hotter temperatures. Our maple, beech, and birch forests will transition to oak and hickory.

Water management, agriculture, power generation, transportation, community development and much more will all need to adapt to those changes which are now inevitable, and we must significantly reduce future GHG emissions.

To mitigate GHG emissions, we must first reduce our energy demand and increase our energy efficiency. These changes are the cheapest and fastest mitigation measures, but they will not be sufficient. It is imperative that we transition from fossil fuel sources of energy to sustainable non-fossil fuel sources.

The worst climate change projections need not occur. We can change the way we produce and use energy. We can change the way we transport ourselves and other materials. We can change the way we build, heat, cool and illuminate our homes, offices, and factories. We can change the way we produce things. We can change the way we grow our food. We have the knowledge, technology, and skills. We can learn to live on the earth sustainably.

CARBON EMISSIONS INVENTORY

As previously documented, carbon dioxide (CO_2) is the primary greenhouse gas accounting for about 84 percent of all U.S. greenhouse gas emissions from human activities.[10] Gaining an understanding of carbon emissions, the most significant contributor to global warming, in Franklin County is critical. A joint partnership between two government agencies, the National Aeronautics and Space Administration (NASA) and the Department of Energy (DOE), to quantify fossil fuel carbon dioxide (CO_2) has resulted in the Vulcan Project. The Vulcan Project is a "valuable tool for policymakers, demographers, social scientists and the public at large."[11] This project is directly beneficial to the Regional Plan for Sustainable Development because it includes carbon emissions data for Franklin County and the Pioneer Valley from 1999 to 2008. Additional data analysis for subsequent years will be performed as the data becomes available.

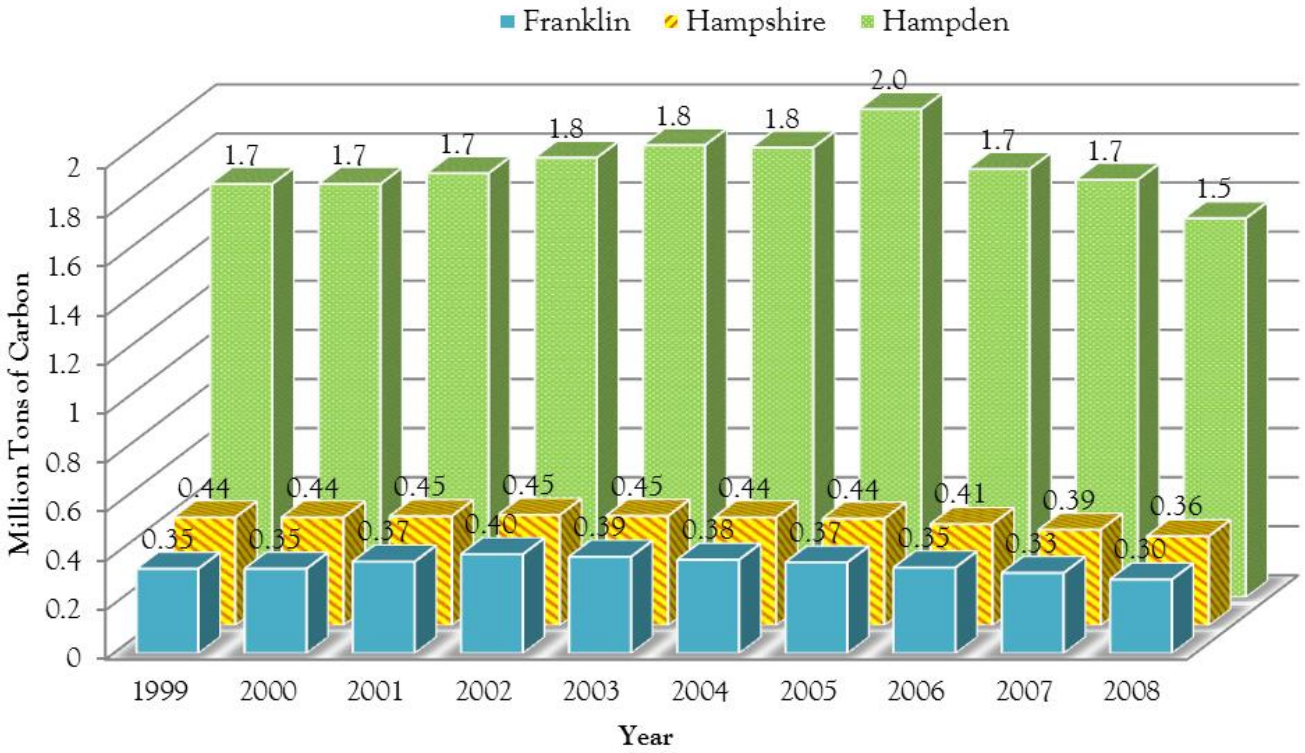
[10] US EPA, Greenhouse Gas Emissions Webpage, www.epa.gov/climatechange/ghgemissions/gases/co2.html , accessed August 2012.
[11] Vulcan Project, About Project Vulcan website, http://vulcan.project.asu.edu/, accessed August 2012.

The breakdown of carbon emissions, by category, has been compiled for the Pioneer Valley region. This level of detail is not available for Franklin County but a snapshot of the surrounding Pioneer Valley can be indicative of what is happening in Franklin County. In 2008, it appears that the largest carbon emissions came from the transportation sector (45%). Electricity production (21%) and the residential sector (19%) represent the next largest carbon emitters. The industrial and commercial sectors represent the smallest emitters of carbon emissions in the Pioneer Valley. However, if we look at energy use in buildings, which includes energy for heat, electricity, lighting, and appliances, buildings are likely tied with transportation as the largest carbon emitters.

More specific data is available for Franklin County which shows carbon emissions over time, between 1999 and 2008. Franklin County's carbon emissions were lower in 2008 than in 1999 which would appear to be good news. Furthermore, Franklin County's total carbon emissions are lower than neighboring counties of Hampshire and Hampden counties, as shown in Figure 1.

A closer look at the data has revealed two trends that are not cause for celebration. Comparing year 1999 data to year 2008 carbon data in isolation would show that carbon emissions decreased during this time.

Figure 1: Pioneer Valley Carbon Emissions by County, 1999-2008



Source: Vulcan Project: http://vulcan.project.asu.edu/, August 2012

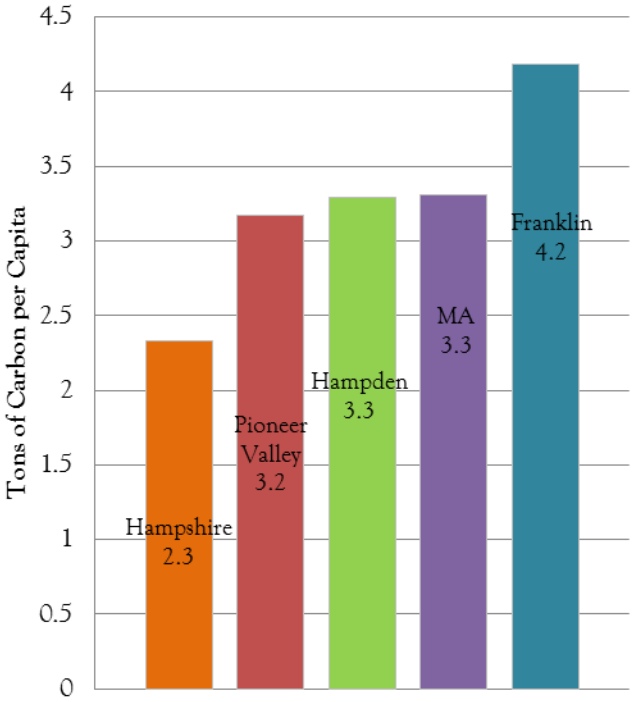
However, between 1999 and 2008 carbon emissions increased significantly before dropping back down, as shown in Figure 1. Carbon emissions jumped from 0.345 million tons of carbon in 1999 and 2000 to 0.404 million tons of carbon in 2002. Following 2002 carbon emissions began to slowly decline each year and finally reached a low of 0.301 million tons of carbon in 2008. Franklin County needs to actively and consistently be reducing its carbon emissions each year.

While Franklin County exhibited the lowest overall carbon emissions among the three Western Massachusetts counties, it is also the least populated.

To be able to make a direct comparison across counties, carbon emissions can be expressed in terms of carbon emissions per capita. When expressed in this manner, Franklin County's carbon emissions are the highest of the three counties and are also higher than the statewide average, as shown in Figure 2. This is likely a direct result of the amount of driving we do in Franklin County. With a high rate of carbon emissions per capita and a growing number of registered motor vehicles, emissions will continue to be a challenge for Franklin County. As previously discussed, emissions have a direct impact on climate change and global warming. At the local level, emissions directly impact the air quality and public health of our residents in Franklin County.

In 2008, Franklin County's carbon emissions, per capita, were higher than Hampden and Hampshire Counties as well as the statewide average.

Figure 2: Pioneer Valley Carbon Emissions per Capita, 2008



Source: Vulcan Project: http://vulcan.project.asu.edu/, August 2012

In keeping with the Massachusetts Clean Energy and Climate Plan for 2020,[12] Franklin County must make a commitment to reducing emissions within the same parameters as the statewide plan. This would mean that Franklin County would strive to reduce greenhouse gas (GHG) emissions by 25 percent below 1999 levels by 2020 – on the way toward an 80 percent reduction in emissions by 2050. The intent of these statewide goals is to achieve annual reductions in carbon emissions each year. Franklin County's carbon emissions trends have not traditionally decreased. Therefore, the first goal for Franklin County carbon emissions is to reduce carbon emissions each year. The next question becomes, 'by how much?'

Since 1990 emissions data is not available at this time for Franklin County, 1999 was used as the baseline. Between 1999 and 2008, Franklin County achieved an overall reduction of nearly 13 percent of carbon emissions. To meet the 2020 goal, Franklin County must achieve an additional reduction of approximately

[12] Massachusetts Office of Energy and Environmental Affairs, Massachusetts Clean Energy and Climate Plan for 2020, December 2010.

12 percent below 1999 levels. Long-term, Franklin County must aim to reduce carbon emissions by 80 percent below 1999 levels by 2050. To achieve these targets, Franklin County will need to act quickly to reduce carbon emissions and should look to targeting transportation and building emissions first and foremost. The most significant elements of reducing Franklin County's carbon emissions are also the top goals for energy in Franklin County and they are:

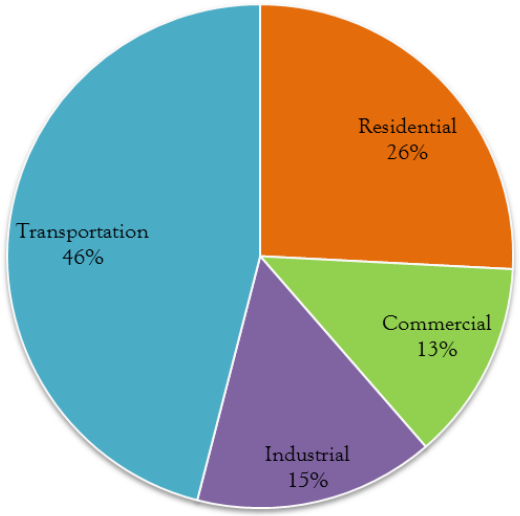
- **Reducing energy consumption.** Using less energy will automatically result in fewer emissions.
- **Improving energy efficiency.** Reducing the amount of energy that is wasted will directly reduce energy consumption.
- **Reducing dependence on fossil-based fuels.** Fossil based fuels are the largest emitters of carbon emissions. Reducing dependence on fossil based fuels by replacing fossil fuel use with green energy will decrease emissions in combination with reduced consumption.

Carbon emissions and energy use are intricately connected. The more energy we use from fossil fuels, the greater emissions will be. The next section presents Franklin County's energy demand.

ENERGY USE IN FRANKLIN COUNTY

It is projected that U.S. energy demands will increase by more than one-third by 2030, with electricity demand alone rising by more than 40 percent. Massachusetts has the fourth highest electricity prices in the country.[13] The financial and environmental costs of energy are expected to increase dramatically, resulting in increased financial burdens on households and businesses and making it more difficult to attain clean air and a healthy environment.[14] This means that the current average amount a household spends on energy of $4,600 per year will likely increase unless significant energy conservation is realized by households and businesses.[13] To prepare for decreased energy supplies, more volatile energy costs and the effects of emissions and climate change, Franklin County needs to gain an understanding of its current and historical energy use.

Figure 3:Franklin County Energy Consumption, by Sector (2010)

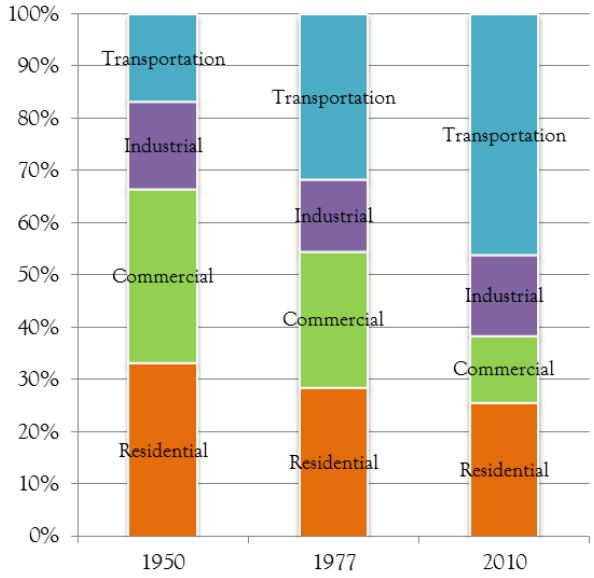


Source: UMass Amherst, Fall 2011 Landscape Architecture and Regional Planning Graduate Studio.

[13] Massachusetts Office of Energy and Environmental Affairs, Massachusetts Clean Energy and Climate Plan for 2020 Public Presentation, accessed online on 1/9/2013, <http:///www.mass.gov/eea/docs/eea/energy/2020-clean-energy-plan-presentation.pdf>

[14] US DOE and US EPA, National Action Plan for Energy Efficiency, July 2006.

Figure 4: Historical Energy Use in Franklin County, by Sector



Source: UMass Amherst, Fall 2011 Landscape Architecture and Regional Planning Graduate Studio.

The last time a comprehensive analysis of energy use was conducted at the regional level for Franklin County was in 1979 in the Franklin County Energy Study.[15] An updated comprehensive Energy Use Baseline Inventory would be ideal and is a primary recommendation of this chapter. However, such an endeavor requires resources that are beyond the scope of this Plan, however it would be incredibly advantageous for the region to develop a Climate Action Plan to more accurately document baseline energy data and establish an adaptation plan for the impacts of climate change on the region. Therefore, while this chapter of the Plan presents an energy use overview for the County, the focus is on identifying strategies for a more sustainable energy future for Franklin County. To do so, we must first gain a general understanding of our past and present energy use.

In 2010, Franklin County used approximately 14.1 Trillion British Thermal Units (BTU) of energy. The majority (46%) of energy use, as shown in Figure 3, was consumed by the transportation sector. Residential energy use was the next largest consumer of energy in Franklin County, accounting for approximately 26 percent of the County's total energy use. The industrial and commercial sectors used approximately 15 percent and 13 percent, respectively.

As shown in Figure 4, energy consumption by sector has changed significantly over time with the greatest increase occurring in the transportation sector that grew from 17 percent of total energy use in 1950 to 46 percent of the total energy use in 2010. To better understand the cause(s) for this increase, vehicle registration was examined. A comparison between 1975 and 2010 was made which revealed a surprising statistic. During this time there was a modest population increase of 8,035 people, whereas the number of registered motor vehicles increased significantly by 28,913 vehicles. In other words, the number of registered motor vehicles increased at more than 3.5 times the rate of population increase during this time.

Between 1990 and 2010, the number of registered motor vehicles increased by 23,532 while population only increased by 1,280 people.

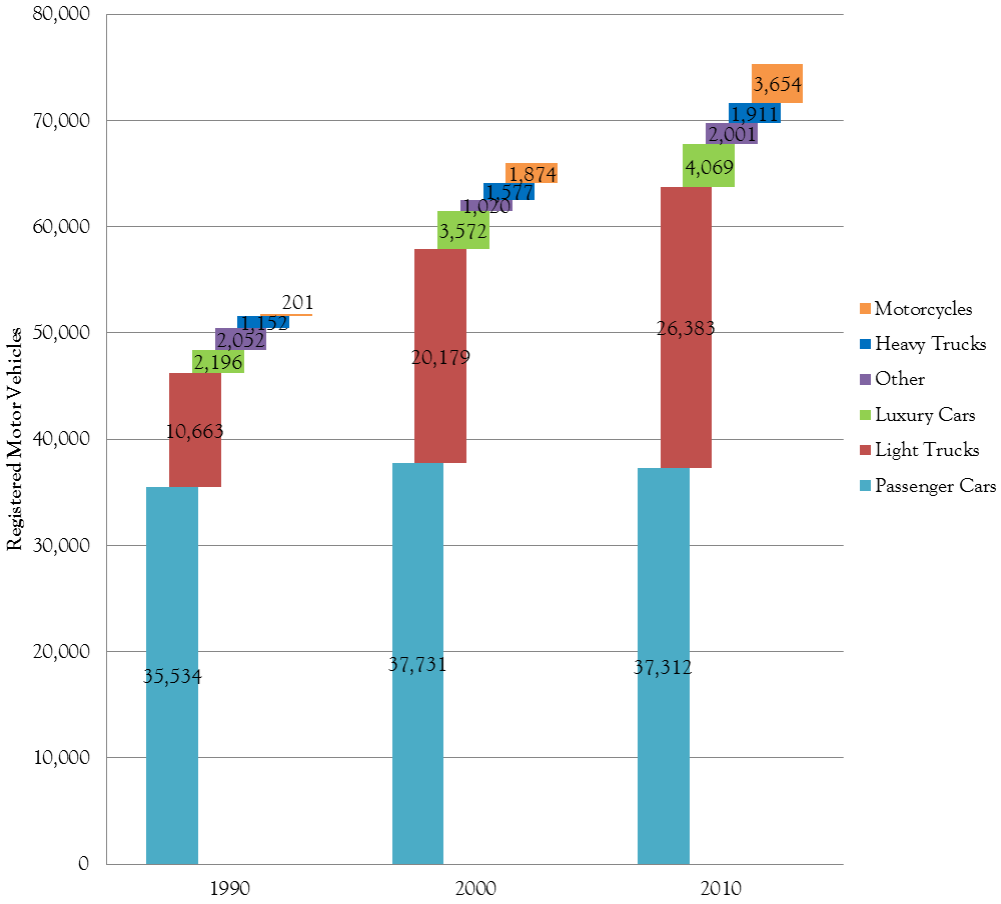
There may be several reasons for this trend. Rural sprawl and the development of land located away from town and urban centers results in more travel. Commuters are driving more than ever as homes are located further away from employment centers, where housing prices are typically lower. Other social factors may also be contributing to this trend including the growth of women in the workforce and more women

[15] University of Massachusetts Amherst Future Studies Program, Franklin County Energy Study: A Renewable Energy Future, April 1979.

driving than in the 1950s. Furthermore, the use of personal automobiles for single occupancy travel (versus family trips) has become more common.

While fuel efficiency standards have improved between 1950 and 2010, there are significantly more vehicles on the road than ever before in Franklin County. Furthermore, the composition of vehicle types has changed over time with a large shift from passenger cars to light trucks (vans, mini-vans, pickups and sport utility vehicles). Light trucks typically have lower fuel efficiency than passenger cars, resulting in increased fuel consumption and emissions. Figure 5 shows how this changed between 1990 and 2010. This increase in registered motor vehicles, combined with an increase in the percentage of light trucks has accounted for the majority of this increase in transportation sector energy use. In short, there are more vehicles on the road than ever before, many of which are larger, less fuel efficient models. If five percent of these registered motor vehicles (passenger cars and light trucks) were replaced with more fuel-efficient vehicles, such as replacing a 20 MPG vehicle with a 30 MPG vehicle, that would save the owner of the vehicle $813 annually and Franklin County an estimated $2.6 million each year.[16] This is more money in the wallets of residents and business owners that can be saved or spent in the local economy.

Figure 5:Registered Motor Vehicles in Franklin County, by Type (1990-2010)

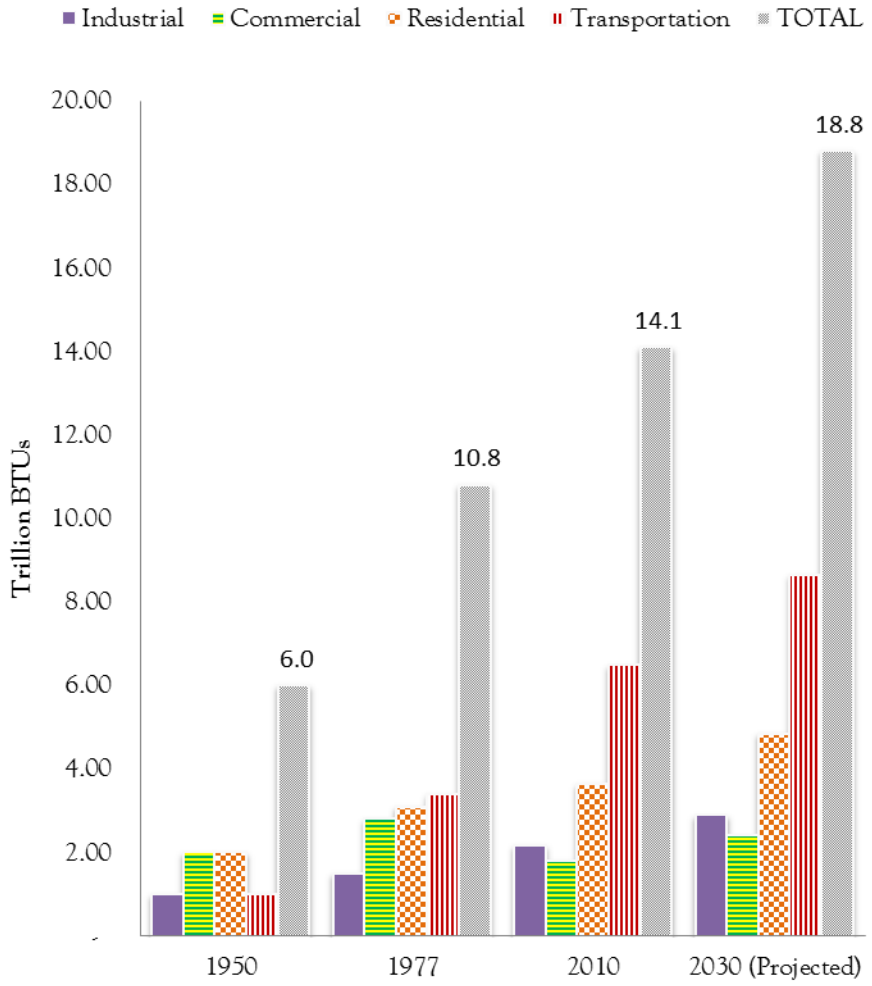


Source: Massaschusetts Registry of Motor Vehicles

Given this huge increase in energy use and emissions in the transportation sector, it is the most obvious area to target for energy and emissions reductions. Specific strategies identified in Chapter 5: Transportation in this Plan are aimed at achieving these reductions.

[16] U.S. Department of Energy, Choosing A More Efficient Vehicle webpage, accessed 1/9/2013, <www.fueleconomy.gov/feg/choosing.shtml>

Figure 6: Historical and Projected Energy Consumption



Source: UMass Amherst, Fall 2011 Landscape Architecture and Regional Planning Graduate Studio.

The commercial sector has seen the greatest decrease in energy use, as a percentage of the county's over all energy use. In 1950 the commercial sector accounted for approximately 33 percent of the overall energy use and decreased to 26 percent and 13 percent in 1977 and 2010, respectively. This is attributed to a decline in the size of the commercial sector more so than reductions in energy use in this sector, over time. The residential sector also decreased between 1950 and 2010, though not as much as the commercial sector. Between 1950 and 2010, residential sector energy use decreased from 33 percent of the overall to 26 percent. Industrial sector energy remained between 14 percent and 17 percent between 1950 and 2010. These decreases in percentage of energy use, by sector, are attributed mostly due to the increasing share of the transportation sector's role in energy use and emissions since 1950.

In addition to shifts in energy consumption, by sector, overall energy use has also changed over time. More specifically, energy use has grown steadily in Franklin County, as shown in Figure 6. In 1950, Franklin County consumed 6.0 Trillion British Thermal Units (BTU) of energy and by 2010 this amount had more than doubled to an estimated 14.1 Trillion BTUs. The EIA estimates that U.S. energy demands will increase by more than one-third by 2030. If Franklin County continues to follow national trends that will result in an annual projected energy use of 18.8 BTU by 2030.

Population data was examined since energy consumption has more than doubled in Franklin County since 1950. The results of this comparison between energy use and population show that energy use has increased much faster than population between 1950 and 2010. While energy use more than doubled, population growth only increased by about 35 percent. If Franklin County continues to follow

national trends, it will result in a projected increase in energy use of 33 percent while population is only expected to grow by less than seven percent.

To put these figures into perspective, residential energy use was compared to the number of households in the county to gain a better understanding of average energy use per household. The national average energy use per household in 2010 was 89.6 MMBTU but the Northeast average was higher at 107.6 MMBTU per household, which may be attributed to higher home heating requirements. Franklin County ranked right in line with the Northeast average at 107.8 MMBTU per household. Franklin County's residential energy consumption rates are consistent with those of the Northeast and the Massachusetts statewide average (109.8 MMBTU/HH). National data also demonstrates slightly higher energy consumption rates in rural areas versus urban areas, which also impacts much of the region's energy use. Residential energy consumption in Franklin County is close to the state and regional averages. Furthermore, Franklin County residential energy use (MMBTU/HH) has decreased between 1980 and 2010, from 115.6 to 107.8 MMBTU/HH. This reduction in residential energy intensity is a positive trend for Franklin County. To maintain this downward trend, Franklin County will need to continue to reduce residential energy use. Otherwise, if Franklin County were to increase energy consumption at the projected rate of 33 percent by 2030, average residential energy consumption per household could jump to nearly 145 MMBTU per household. Increasing energy consumption trends are not sustainable for Franklin County.

While there are obvious environmental incentives for reducing energy consumption in Franklin County, there are just as many financial incentives. Among them is the ability to keep more money in the local economy and more money in the pockets of residents and businesses. In fact, it is estimated that the statewide annual cost savings for residential, business, and municipal energy customers will be $6.3 billion by 2020.[17] More specific to Franklin County, energy conservation measures in homes and businesses will have an immediate impact on our local economy. For example, if a quarter of all Franklin County households did four simple things (install programmable thermostats, replace 15 traditional light bulbs with energy saving bulbs, used an electric power strip to turn off electrics when not in use, and added landscaped trees around the home) Franklin County would save over $3 million each year. That money would stay right here in Franklin County, instead of flowing out of the region and the state.[18]

In summary, this section documents that the percentage of energy used by each sector has changed over time due to population, land use and cultural changes. These changes have been coupled with a documented trend of increasing energy use over time.

The Pioneer Valley Clean Energy Plan outlined the goal to reduce our region's energy consumption to 2000 levels by the end of 2009 and reduce that by 15 percent between 2010-2020 while supporting the growth of new business and industry.[19] Consistent with this goal, Franklin County will aim to reduce the region's energy consumption by 15 percent below 2010 levels by 2020.

Reducing the County's energy consumption will also play a significant role in reducing the region's carbon and GHG emissions. In order to achieve a 25 percent reduction in GHG emissions by 2020 and an 80 percent reduction in greenhouse gas emissions by

[17] Massachusetts Office of Energy and Environmental Affairs, Massachusetts Clean Energy and Climate Plan for 2020 Public Presentation, accessed online on 1/9/2013, <http:///www.mass.gov/eea/docs/eea/energy/2020-clean-energy-plan-presentation.pdf>

[18] U.S. Department of Energy, Top 11 Things You Didn't Know About Saving Energy At Home: Summer Edition webpage, accessed 1/9/2013, < http://energy.gov/articles/top-11-things-you-didnt-know-about-saving-energy-home-summer-edition>

[19] Pioneer Valley Clean Energy Plan, January 2008.

2050, energy use has to stabilize and then immediately decline. Achieving these emissions targets cannot be realized without reducing energy consumption. Strategies to reduce energy consumption must address all aspects of our energy use.

GREEN POWER AND FOSSIL FUELS

In order to achieve a sustainable energy future in Franklin County, we need to reduce energy consumption and GHG emissions. Energy efficiency measures and behavior modification as well as the implementation of new technologies (e.g. improvements in vehicle mpg ratings and renewable energy) will help reduce consumption and GHG emissions. While the reduction of the consumption of fossil fuels will have a significant impact on Franklin County's GHG emissions, we also need to replace the fuel used with green power in Franklin County. This will not only cut GHG emissions, but will also have many added benefits to the regional economy and energy resiliency.

When assessing the "greenness" of an energy source, all aspects of the energy must be included, from extraction, to delivery and use. The energy industry is just starting to be held accountable for GHG emissions.

Franklin County has a long history of developing green energy and marketing it throughout the state. For example, the canal built in Turners Falls in 1798 for river travel, was reconstructed in 1869, along with a dam, for power generation, which was used directly by the mills along the canal. In 1914, the Cabot hydro plant was built. It was the first electricity generated to be sold for commercial purposes. Today that plant has a 50MW capacity. Combined with hydro plants on the Deerfield and Millers Rivers, Franklin County has the capacity to generate 110MW. Today that power is owned by several multinational companies and sold to the New England Power Pool. It is interesting to note that our hydro capacity is over twice Franklin County's electric needs. Hydropower, with its many dams and generating facilities, has environmental impacts on fish and other wildlife. Efforts to overcome some of those drawbacks have resulted in fish ladders, which often do not achieve all of their desired results.

The Pioneer Valley Clean Energy Plan has the goal of siting sufficient new capacity to generate the equivalent of 28.7 MW of clean energy annually in the Pioneer Valley by the end of 2009 and another 59.1 MW by 2020[20]. Franklin County's population is approximately ten percent of the Pioneer Valley's. Assuming that Franklin County is responsible for 10 percent of Pioneer Valley's goal would translate into a regional target of siting 2.87 MW of capacity by the end of 2009 and an additional 5.9 MW of capacity by 2020.

How is Franklin County progressing towards achieving these goals? Since there is no regional database for Franklin County, progress was estimated using data provided by the Massachusetts Clean Energy Center's (MassCEC) project databases. While this data only represents projects that received funding through MassCEC it reveals that Franklin County is making excellent progress.

First, let's examine the goal to site 2.87 MW of capacity by the end of 2009. An analysis of all projects contained in the MassCEC project database for Franklin County completed before 2009 shows that with these projects alone, Franklin County has surpassed this target. Where the target was 2.87 MW of new capacity in Franklin County, the estimated amount sited was at least 3.18 MW of capacity.

The second goal, to site an additional 5.9 MW capacity by 2020, has already been surpassed. The same database shows that Franklin County has already sited 18.8 MW of capacity since the beginning of

[20] The Pioneer Valley Clean Energy Plan presents these targets in terms of million kilowatts per year. They were converted into MW using EPA conversion factors.

2010. This is largely due to the addition of four major projects which consist of the following:

- Berkshire East Wind Turbine (2011) - 0.9 MW capacity;
- Northfield Mountain First Light & Power Solar Farm (2011) – 2 MW capacity;
- Greenfield Landfill Solar Farm (2012) – 2 MW capacity; and
- Hoosac Wind Power Project, Monroe Portion Only (2012) – 13.5 MW capacity.

Again, the data only represents projects contained in the MassCEC project databases. A thorough inventory of all green power projects in the County may reveal even greater progress towards achieving these goals. The region has emerged as a leader in green power with more projects in the pipeline.

Siting for new green power will require investments in infrastructure as well as revisions to local zoning and permitting requirements. As these technologies become more common and more of the impacts are known, communities will be able to make more informed decisions. Ensuring that the proper regulations are in place will help accomplish this objective while protecting and enhancing our communities and the environment.

OBSTACLES TO SUSTAINABLE ENERGY

Despite the many energy related accomplishments in Franklin County, there are still obstacles, such as limited public awareness, social attitudes, cultural norms, new and emerging technologies and the relative immaturity of certain technologies. Furthermore, many people may support green power as a concept but have concerns about the proper siting of large scale facilities. The following obstacles are just a sample of some of the real and perceived barriers in Franklin County, as mentioned throughout the Sustainability Workshops:

- **Proper Siting**. There are limited areas zoned for large-scale industrial facilities including renewable energy electric generating facilities. Consequently, towns are working to identify suitable locations and appropriate siting standards for large-scale solar or wind facilities. In addition, many towns are working to streamline land use regulations for on-site small scale renewable energy facilities that can support a home, farm or business.

- **Implementing Recommendations in Residences.** A surprising, yet common, challenge has been getting residents to sign up for an energy efficiency program (such as MASS SAVE) and in executing the recommended improvements. Pre-weatherization obstacles such a knob and tube wiring, asbestos and vermiculite, and existing moisture problems often impede the HEAT loan and subsequent weatherization services for households served through the residential MASS SAVE program. It is up to the home owner to have repair and abatement issues resolved prior to securing a HEAT Loan and having the MASS SAVE work completed. In addition to out-of-pocket costs that households may be unable to afford, there can also be a lack of experience in securing contractors who can do the mitigation services. Most applicants have little or no experience securing bids or estimates for this type of home repair.

  On the low-income side of the program there is repair money available through the Community Action network to take care of many of these pre-weatherization obstacles at no cost to the customer. The Community Action agency takes care of all bidding and job specifications and can generally use a combination of federal and utility efficiency

funds as long as the repairs lead directly to the installation of energy improvement materials.

- **Funding.** Funding has almost always been a constraint for residents, businesses, and municipalities. While an investment in energy efficiency upgrades will result in energy savings, they are often not implemented because of high capital costs and long payback periods as well as uncertainty about the future price of energy. The major obstacle is knowing about existing funding and follow-through. Implementing programs, such as MASS SAVE and the HEAT Loan Program and Energy Performance Services Contracts that provide funding to help defray the upfront costs, will be critical in moving forward.

- **Renter Constraints.** As shown in the Housing Chapter of this Plan, there are many residents who rent in Franklin County. Furthermore, given the quality and age of the rental housing stock there are concerns about energy efficiency. Renters typically have little opportunity to make energy efficiency upgrades in rental units. In order to move towards a more sustainable Franklin County, energy efficiency programs will need to be implemented that target rental units to improve the quality, safety and efficiency of the rental housing stock.

- **Transportation.** People are driving more than ever before. As cities become more expensive, rural communities can become more popular as people move away from urban centers in search of more land and lower housing costs. More fuel efficient vehicles and policies that guide development towards employment centers can reduce transportation fuel consumption.

CONCLUSIONS

Franklin County has made significant strides in the fields of clean and renewable energy, which have established a strong foundation for future work. However, there is much more work to be done to reduce dependence on fossil fuels and GHG emissions while also creating jobs and improving the economy. If successful, the payback for the County will be significant.

If, however, Franklin County continues with 'business as usual' energy consumption, we will experience negative impacts to our economy, environment, and quality of life. A more sustainable future for Franklin County requires us to strive to reduce energy use related to transportation as well as residential and commercial energy consumption in buildings.

The goals in this Plan align with the Massachusetts Clean Energy and Climate Plan for 2020 and the Pioneer Valley Clean Energy Plan. Reducing GHG emissions can be achieved through reductions in energy use as well as with replacing fossil fuels with green power sources for energy. Reaching these targets will be achieved primarily by addressing the building energy consumption, electricity sources and reductions in the transportation sector, as demonstrated in Figure 7.[21] To move towards a more sustainable future, Franklin County must achieve the following:

- **GHG Emissions:** Franklin County must achieve an additional emissions reduction of approximately 12 percent below 1999 levels by the year 2020. Long-term, Franklin County will aim to reduce carbon emissions by 80 percent below 1999 levels by 2050.
- **Energy Use:** Franklin County will aim to reduce the region's energy consumption by 15 percent below 2010 levels by 2020; and

[21] Massachusetts Office of Energy and Environmental Affairs, Massachusetts Clean Energy and Climate Plan for 2020, December 2010.

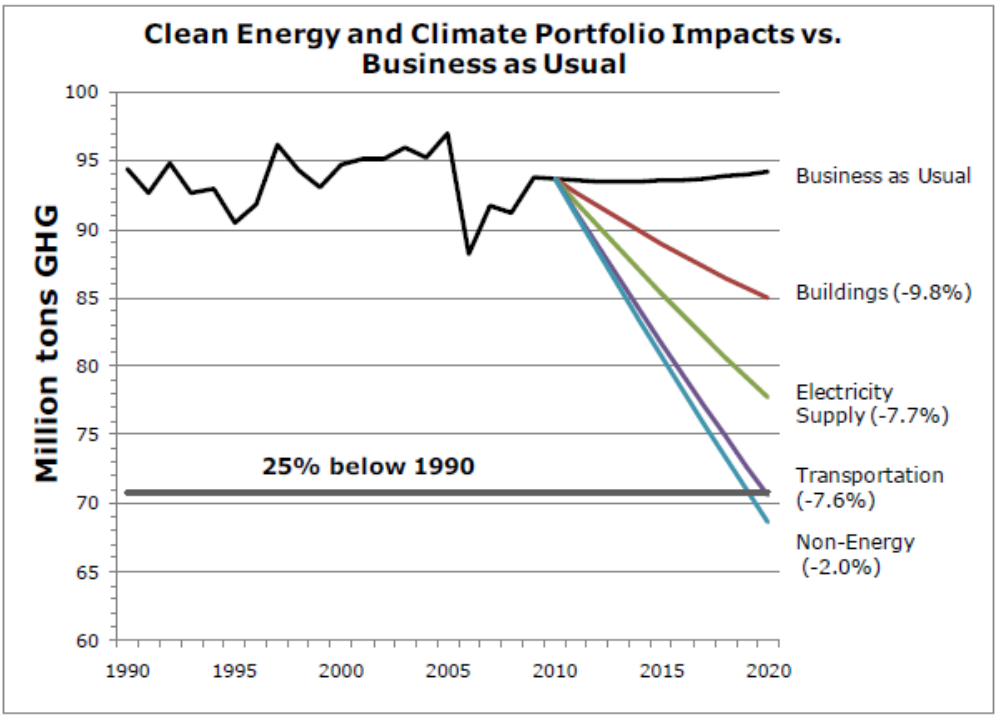
- **Green Power:** Continue to site additional green power across Franklin County that replaces fossil fuel use.

The following recommendations and strategies presented in this Plan support the move towards a self-sufficient energy future for Franklin County. This is a future that envisions decreased energy consumption and lower emissions as well as a diversify of clean energy sources, increased energy efficiency, and improved resiliency to the impacts of climate change. A more sustainable energy future for Franklin County is urgently needed and will result in increased energy security with positive implications for the environment, economy, and livability.

RECOMMENDATIONS AND STRATEGIES

The following table summarizes the strategies and recommendations to continue Franklin County's path toward a more sustainable energy future. Many of the recommendations presented herein will relate to and have an impact on other chapters of this Plan.

Figure 7: Massachusetts' emissions reductions by sector



Source: Massachusetts Clean Energy and Climate Action Plan for 2020

Table 1: Recommendations and Strategies for Energy	Implementation					Partnering Organization(s)*
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Reduce energy consumption across all sectors – transportation, residential, commercial and industrial – without sacrificing quality of life or economic opportunities						
Establish comprehensive energy use and emissions baseline inventories		X				FRCOG, Towns, MassCEC, DOER
Expand efficient transit service throughout the County	X	X	X	X	X	FRTA, FRCOG
Increase frequency and extend transit service hours during evenings and weekends		X				FRTA, FRCOG
Advance and promote passenger rail service and/or bus service for the north-south and east-west routes	X		X		X	FRTA, FRCOG, PVPC, MRPC
Promote ridesharing		X	X	X	X	FRCOG
Increase options for walking and bicycling	X	X	X			FRCOG, MassDOT, DCR, Towns
Invest in energy efficient mass transit options and low-carbon fuels		X	X			FRTA, MassDOT, FRCOG
Implement an Alternative Transportation Marketing Campaign	X	X				FRCOG, MassRIDES, MassDOT
Encourage telecommuting and flexible working for municipal employees	X	X	X			Towns
Develop a regional energy use campaign that educates and addresses user behavior	X	X				FRCOG, Towns, Energy Committees, Regional Energy Committee
Offer priority/free parking for Ultra Low Emissions Vehicles	X	X				Towns
Restrict idling throughout the County	X	X	X	X	X	Towns, Schools, Businesses, and Hospitals
Increase the number of Green Communities	X	X				Towns, DOER, FRCOG
Increase the use of solar hot water and electricity in homes and businesses		X	X			Housing Authorities, Towns
Decrease average daily time for street light operation	X	X				WMECo, National Grid, Towns
Install LED and induction lighting (street lights, facility lights, etc.)	X	X	X			Towns, Schools, Businesses, and Hospitals
Offer push mowers to residents at subsidized rates		X				Towns

See Page 18 of Chapter 4: Housing for a key to the Partnering Organizations abbreviations

Table 1: Recommendations and Strategies for Energy	Implementation					Partnering Organization(s)
	In Progress/ Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Improve energy efficiency so as to reduce wasted energy						
Increase the number of Green Communities	X	X				Towns, DOER, FRCOG
Increase the number of communities adopting the Stretch Energy Code	X	X				Towns, DOER, FRCOG
Extend and enhance financing for energy efficiency improvements for homes, rental housing and businesses		X	X	X	X	Towns, MASS SAVE, Community Action, Housing Authorities, Franklin County Home Care
Increase the number of Towns with Energy Committees	X	X				Towns, FRCOG, Regional Energy Committee
Develop tree planting efforts to reduce Heat Island Effect in Town Centers	X	X				Towns
Require disclosure of energy efficiency at point of residential and commercial sale		X				Realtors, Local Realty Associations
Develop strategies to incentivize energy efficient appliances in residential and commercial properties		X	X			Towns, MASS SAVE, Utilities
Develop a county-wide marketing strategy for weatherization programs and workshops	X	X				Towns, Energy Committees, Regional Energy Committee
Provide a system of recognition for new construction and renovations which voluntarily exceed minimum standards for energy conservation		X	X			Chamber of Commerce, Regional Energy Committee
Establish small business grants for energy efficiency upgrades		X	X	X	X	Business Associations, Towns
Encourage greater participation in energy efficiency and conservation programs		X	X			Community Action, MASS SAVE, Towns
Continue to retrofit energy efficiency measures to public housing	X	X	X			Community Action, Housing Authorities
Reduce the impacts of emissions and extreme weather events						
Promote urban tree planting to increase shading and to absorb CO_2		X				Towns, Energy Committees
Implement green yard campaigns and eliminate the use of chemicals/pesticides and fertilizers in lawns and parks		X				Towns, Energy Committees
Maintain healthy forests		X	X	X	X	DCR, Towns
Adopt Low Impact Development (LID) Bylaws in Towns		X	X			Towns
Protect land dedicated to food production	X	X	X	X	X	Towns, MDAR, CISA, Land Trusts

Table 1: Recommendations and Strategies for Energy	Implementation					Partnering Organization(s)
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Reduce waste						
Implement a pay-as-you-throw collection for non-recyclable trash	X	X				Towns
Implement community-wide organics and yard debris collection and composting	X	X				Towns
Offer rain barrels and composting bins to residents at a subsidized rate		X				Towns, Franklin County Sewer & Water District
Adopt a water conservation ordinance		X				Towns
Implement free household electronic/hazardous waste disposal programs	X	X				Towns
Install water-saving toilets and showers in municipal buildings and public housing		X				Housing Authorities, Towns
Promote water conservation activities in homes and businesses	X	X				Towns, Housing Authorities, Energy Committees
Site new green energy and support the local economy						
Offer incentives to foster renewable energy installations in the community		X	X			Towns
Adopt a 'buy local' purchasing policy in schools and municipalities		X				Towns, Schools
Promote community clean energy use through green power purchasing or on-site renewable technologies	X	X	X	X	X	Towns, MassCEC
Create a website outlining sustainability issues and providing information on local green businesses, jobs and training opportunities		X				GCC, FHREB

BENCHMARKS

In order to ensure that the energy goals of this Plan are implemented, the following benchmarks are suggested as milestones. The benchmarks are data-driven and can be evaluated in various contexts over time.

TABLE 2: Energy Benchmarks

Performance Measure	Unit of Measurement	Desired Trend	
Carbon Emissions	Percent change of emission levels	Decrease	
Overall Energy Use	Percent change	Decrease	
Residential Energy Use	Change in MMBTU/HH	Decrease	
Per Capita Vehicle Miles Traveled (VMT)	Percent change of VMT	Decrease	
Transportation Emissions	Percent change of emission levels	Decrease	
Green Power Facilities	Change in kWh	Increase	
Green Communities	Number of Green Communities	Increase	
Community-Wide Energy Programs	Number of Communities with Programs	Increase	
Stretch Energy Code	Number of Communities Adopting	Increase	
Energy Efficiency Upgrades	Number of Buildings with Completed Projects	Increase	

SUSTAINABLE FRANKLIN COUNTY

Chapter 8: Natural Resources

INTRODUCTION

From the fertile soils of the Connecticut River Valley to the mixed hardwood forests of West County, Franklin County's natural resources support its citizens in myriad ways. Farmlands provide fresh, local produce and offer sources of employment. Forestlands also contribute to the local economy with sustainably managed products such as lumber and maple syrup, by protecting clean drinking water, and by offering food sources through foraging and hunting. The County's rivers and mountains draw tourists to enjoy river rafting, skiing, and sightseeing and contribute to the area's economic vitality. The area's natural resources as a whole offer critical habitat to wildlife and offer important ecological functions such as carbon sequestration and storm water filtration.

Because Franklin County's natural resources are so abundant, many services or benefits may be provided by a single parcel of land. For instance, a forested hillside could provide critical wildlife habitat, a source for lumber, an aquifer recharge area, and an excellent hiking location. The abundance and variety of the County's resources make it challenging to measure an area of land's true value and to determine how to prioritize land for protection. For the purposes of this Plan, mapping shows the locations of critical natural resources, the areas where multiple natural resources intersect, and what areas in the County are currently protected from development or should potentially be prioritized for protection.

This chapter examines the existing conditions of some of the County's primary natural resources in relation to sustainability. Much of the information presented is compiled from regional watershed plans, open space and recreation plans, the Franklin County Regional Water Supply Study and local and regional hazard mitigation plans. In addition to existing conditions, this chapter examines constraints and barriers to sustainability and makes recommendations to sustainably protect, preserve and utilize Franklin County's natural resources. These recommendations draw, in part, upon the results of the public surveys and workshops.

Abundant natural resources in Franklin County include fertile farmland flanked by forest.

BACKGROUND

Franklin County's natural resources make up a diverse ecosystem with many essential components. This ecosystem is constantly responding to changes, including climate change impacts. For the purposes of this Plan, several natural resource-related topics that are critical to sustainability will be examined. These include aquifer recharge areas, prime farmland and forestland, critical habitat needed for biodiversity, surface waters and fisheries, and wetlands and floodplains. These particular topics were chosen, in part, based upon the results of the Goals Survey.

Top Three Natural Resources Goals

1. Protect farmland and local food supplies
2. Protect.forests
3. Protect drinking water supplies and reduce water usage

Farmland

General Description

As the cost of fossil fuels continues to rise and the demand for fresh, local foods increases, farming in Franklin County is undergoing a renaissance. According to the USDA's 2007 Census for Farmland,[1] although the average size of farms has decreased by 16 percent since 2002, the number of farms has increased by 26 percent and the amount of land in farms has increased by seven percent during the same time period. More community-supported agricultural ventures and more farmers' markets, even throughout the winter months, are being supported by Franklin County residents. People in the region feel strongly about protecting their farmland. As noted in the Public Participation chapter, one of the most common guiding principles employed by participants of the Sustainability Workshops was to protect farmland. Additionally, the results of the Sustainable Franklin County Goals Survey showed that protecting farmland and local food supplies is the top natural resource-related goal for survey respondents.

To examine whether Franklin County has the land resources needed to support this increasing demand for local food – and to achieve some level of food self sufficiency or self reliance – the Conway School of Landscape Design (CSLD) was selected to undertake an analysis of Franklin County's farmland. In their report, *Franklin County Farmland and Foodshed Study*, a student team addresses five questions relating to food self-sufficiency and farmland in the County:

1. How much farmland would Franklin County require to meet its residents' nutritional needs?
2. How much farmland is there currently in Franklin County, and where is it located?
3. Does Franklin County have enough farmland to achieve self-sufficiency?
4. Where is there potential for additional farmland in Franklin County?
5. Should Franklin County strive for complete food self-sufficiency?

The CSLD Study also looks at farmland protection and offers recommendations for further study. Key findings of the study are summarized in this section. The complete study is available in this Plan's Appendices and on the CSLD website.[2] Also cited in this section are findings from the Community Involved in Sustaining Agriculture (CISA) *Scaling Up Local Food*.[3] Several farmland recommendations and strategies stem from these publications.

Farmland Needed for Self Sufficiency

To determine how much farmland the County needs to meet its residents' nutritional needs, the CSLD Study utilizes the *New England Good Food Vision.* This existing foodshed analysis, by Brandeis University professor Brian Donahue, Ph.D., is applied to the County. The amount and type of farmland needed for the County to achieve complete food self-sufficiency is shown in Table 1.

Table 1: Farmland Needed for Self-Sufficiency

Farmland Type Needed	Farmland Acreage Needed
Cropland	26,492
Pasture	16,200
Orchard	2,386
TOTAL	**45,078**

Source: Franklin County Farmland and Foodshed Study 2012

Existing Farmland and Self Sufficiency

The amount of farmland needed for self sufficiency is then compared to the amount of existing farmland in the County. The CSLD Study mapped the location and acreage of existing cropland, pasture, and orchard in the County. The County's farmland covers about eight percent of the total land mass, with over half its cropland located in the Connecticut River Valley (see

[1] www.agcensus.usda.gov/Publications/2007/Online_Highlights/County_Profiles/Massachusetts/index.asp

[2] http://issuu.com/conwaydesign/docs/franklincounty20120522_hires

[3] http://buylocalfood.org/page.php?id=61

Map 8-1). As shown in Table 2, there is nearly the same amount of existing farmland in the county as that which would be needed for complete food self sufficiency. However, much of the existing farmland is used for food or cash crops sold and consumed outside of Franklin County. So, while there is enough existing farmland to support self sufficiency in theory, major changes in the types and quantities of crops, as well as their markets, would be necessary in order to achieve food self sufficiency.

Table 2: Farmland Needed and Existing Farmland

Farmland Type Needed	Farmland Acreage Needed	Existing Farmland Acreage	Balance
Cropland	26,492	23,750	-2,742
Pasture	16,200	12,320	-3,880
Orchard	2,386	1,180	-1,206
TOTAL	**45,078**	**37,250**	-7,828

Source: Franklin County Farmland and Foodshed Study 2012

Potential Additional Farmland

To achieve food self-sufficiency, additional land could be converted to farmland. The CSLD Study analyzes the location and acreage of agriculturally suitable soils in the County, which make up 51 percent of the County's soils (Map 8-2). Only about 15 percent of these soils are currently being farmed. There are nearly 44,000 acres of agriculturally suitable soils that could potentially be developed for additional farmland. Some of these areas include parcels that are adjacent to existing farmland and that are currently forested but were previously farmed. See Map 8-3 for potential areas for additional farmland.

Self-Sufficiency Versus Self-Reliance

Ultimately, the CSLD Study suggests a model of Franklin County self-reliance – rather than self-sufficiency – which would offer a more balanced alternative to remaining dependent upon an increasingly unstable global food system. In this scenario, the County would grow or raise all its own vegetables, dairy and meat, and about 40 percent of all its grain and fruits. Farmland needed to support food self reliance is shown in Table 3.

Table 3: Farmland Needed for Self Reliance

Farmland Type Needed	Farmland Acreage Needed	Existing Farmland Acreage	Balance
Cropland	16,547	23,750	**+7,203**
Pasture	16,200	12,320	-3,880
Orchard	1,193	1,180	-13
TOTAL	**33,940**	**37,250**	**+3,310**

Source: Franklin County Farmland and Foodshed Study 2012

Protecting Farmland in the County

Development pressures in Franklin County are not as strong as in other parts of the state and country; however, protecting farmland is vital to the long term sustainability of the County. Growing pressures of climate change and rising fuel and transportation costs will increase demand for a local and regional food system. Planning for these changes by protecting more farmland will help ensure future Franklin County generations will be food secure.

The CSLD study examines the amount of permanently protected farmland in the County. Approximately 25 percent of the County's farmland acres–or 9,390 of 37,250 total acres–is permanently protected (Map 8-4). Agricultural Preservation Restrictions (APRs) account for 80 percent of this permanently protected farmland. Both APRs and Chapter 61A are important tools for farmland protection. The Study suggests employing additional strategies for farmland protection on the local and regional level such as transfer of development rights, modifications to zoning at the local level, and the Massachusetts Community Preservation Act. See Recommendations and Strategies at the end of this section for more information.

Climate Change and Farmland

Climate change is expected to bring with it more extreme and less predictable weather conditions, such as heavy rains, flooding, and milder winters. Such

changes could restrict the ability of farmers to grow certain types of crops and some crops could become unsuitable to grow. Pest and weed problems could become more pronounced, putting pressures on farmers to use more pesticides and herbicides. More extreme flooding could damage once prime locations for farming in river valley areas, as more frequent flooding washes away valuable top soils and/or deposits sand, silt, and debris from upstream (see inset below).

Climate change, coupled with higher fuel costs, may make sourcing products from other parts of the world economically untenable and may result in higher demand for local food products.

Flooding and Farmland

Tropical Storm Irene struck the County in 2011 and serves as a dramatic example of the impacts of flooding on farmland. The storm dumped up to 10.65 inches of rain, and caused an estimated $5 million in damage to 6,300 acres of farmland in the Pioneer Valley. Much of the County's best farmland is also floodplain and, as such, is vulnerable to repeated inundation and erosion. Some of the impacts from Irene include silt and debris deposited on farm fields, crop and farm product losses, minor to complete loss of topsoil, and damage to infrastructure such as irrigation equipment and greenhouses.

Farms and Forests

Most Franklin County farms have a mix of farmland and forest land. It is important that the farmer focus on his or her forested land to help insure the prosperity of the farm operation as a whole. Adjacent forest can provide income through timber harvesting, maple syrup production, or can provide shade for grazing cattle. Efforts to protect farms and farmland should include the forested tracts of farms as well.

Constraints to Farming and to Protecting Farmland

- High costs for new and existing farmers include purchasing farmland and equipment.
- There are pressures to develop farmland.
- Changes in crops and markets is economically challenging to farmers.

A Whately farm field is planted with crops in the spring.

- Many acres of productive farmland in the County are also floodplain lands (see inset to left).
- Infrastructure needs as identified by CISA in *Scaling Up Local Food* include:
    - Meat and poultry slaughter and processing facilities.
    - Dairy processing facilities including milk bottling and dairy products.
    - Storage facilities.
    - Expanded facilities for aggregation, basic processing, freezing and packing.
    - Distribution and delivery services.
    - Logistic services that coordinate ordering, delivery, and invoicing.
    - Grain processing facilities and equipment.

"To achieve self-sufficiency, Franklin County needs additional agriculture infrastructure – the businesses, services, buildings, and skilled workforce to process, store, and distribute local foods."

Franklin County Farmland and Foodshed Study

Table 4: Recommendations and Strategies for Farm and Farmland	Implementation					Partnering Organization(s)
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Support town, regional, and state policies that help make farms and farming economically viable.						
Support statewide efforts to make Massachusetts inspection programs for meat, poultry, and dairy meet USDA guidelines and, thus, eliminate the need for federal inspection.	X					MAFBF, CISA, Town Ag Commissions, NEFU
Encourage towns to make public space available for farmers markets.		X				FRCOG, CISA, Town Ag Commissions
Support the development of statewide guidelines for food handling and storage of products at farmers markets.		X				FRCOG, CISA, MA DPH, MDAR, Town Ag Commissions, FBF, NEFU
Help facilitate the acceptance of Supplemental Nutrition Assistance by farmers' market.		X				FRCOG, CISA, MDAR, Town Ag Commissions, Community Action
Encourage towns to offer the option for residents to pay an extra amount on their tax bill to support such efforts as double food stamps at farmers markets, farmland protection, and other programs.	X					FRCOG, Towns, Community Action
Support additional funding of state programs such as MDAR's Farm Viability Enhancement Program.	X					FRCOG, Towns, CISA, AFT
Encourage the formation of food policy councils at the local and/or regional level.		X				FRCOG, , Town Ag Commissions, Massachusetts Food Policy Alliance, Farmers
Encourage regional programs that utilize transfer of development rights to help protect farmland.		X	X	X		FRCOG, Land Trusts, Towns

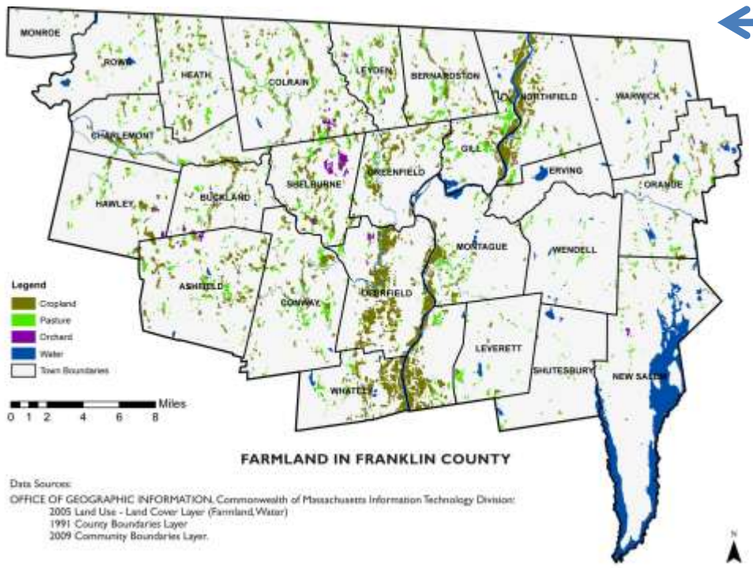
*See Page 18 **of Chapter 4: Housing for a key to the Partnering Organizations abbreviations***

Table 4: Recommendations and Strategies for Farm and Farmland	Implementation					Partnering Organization(s)
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Promote locally produced farm products and assist farmers in successful farming ventures.						
Support land leasing program that matches new farmers with existing idle farmland.	X					FRCOG, Land for Good, MDAR, Land Trusts, Town Ag Commissions, Farmers
Support collaborations between land trust and regional food system planning as a way of identifying shared goals, strategies, and potential projects.	X					Land Trusts, FRCOG, other regional planning agencies, CISA
Expand support of buy local farm products such as Local Hero and other efforts.	X					CISA, MDAR, FRCOG, Town Ag Commissions
Expand support of Farm to School efforts including such programs as school garden programs.	X					CISA, MDAR Farm to School Project, FCCDC, MA Farm to School Network, FBF, NEFU, SOS
Promote programs that encourage consumers to buy local farm products such as MA Commonwealth Quality Program.	X					MDAR Commonwealth Quality, Town Ag Commissions
Increase sales of local farm products to local and regional institutions.		X				FBF, NEFU, FCCDC, Area School Districts and Higher Education, Hospitals, Town Ag Commissions, Farmers
Encourage towns to provide at low or no cost the use of a phone line to enable SNAP food stamps at farmers markets.		X				FRCOG, CISA, Town Ag Commissions, Community Action

Table 4: Recommendations and Strategies for Farm and Farmland	Implementation					Partnering Organization(s)
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Support the expansion of food and farming related infrastructure and services.						
Expand the County's capacity to process locally raised meat, grains, and other products.		X	X	X	X	MDAR Division of Agricultural Markets , Farmers, FBF, NEFU, CISA, Town Ag Commissions
Reduce the agricultural usage of freshwater, and use greywater systems where appropriate.		X	X			MDAR, Town Ag Commissions, Farmers
Increase the County's capacity for dairy bottling and production.		X				FBF, NEFU, MDAR, CISA
Increase food storage capacity including large-capacity root cellars, refrigerators, and freezers.		X	X			FCCDC, FBF, NEFU, MDAR
Increase the County's capacity for food aggregation and distribution services.		X	X			FBF, NEFU, MDAR, FCCDC
Support initiatives that help fund season-extending methods such as greenhouses and storage facilities.	X					NOFA, FBF, NEFU, MDAR, FCCDC
Support efforts to obtain funding to expand current food processing capabilities in Franklin County.		X				FRCOG, FCCDC, MDAR
Increase the County's capacity for such logistical services as ordering, invoicing, and delivery.		X	X			FRCOG, FBF, NEFU, MDAR, FCCDC
Encourage the use of solar photovoltaic systems for farmers to offset their energy costs through local zoning and incentive-based programs.	X					MDAR Energy Program, Towns
Expand composting programs for businesses, towns, and homeowners.		X	X			FRCOG, MDAR Agricultural Composting Program, Franklin County Solid Waste, Town Departments of Public Works

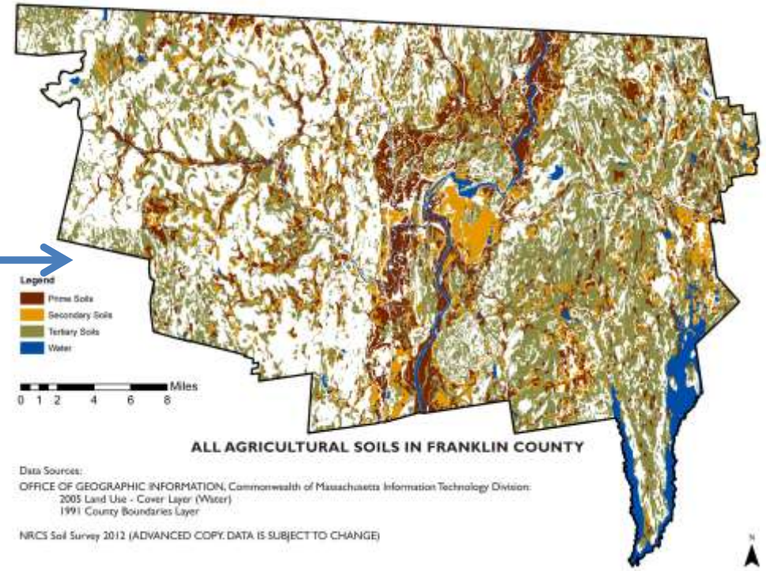
Table 4: Recommendations and Strategies for Farm and Farmland	Implementation					Partnering Organization(s)
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Support efforts that increase food security for Franklin County and the region.						
Support farmers' efforts to grow a wider diversity of food crops, including drought-tolerant food crops for this region.	X					NOFA, Ag Commissions
Promote efforts to provide elders with fresh, local food, such as the CISA Senior FarmShare program.		X				CISA, Ag Commissions, FCHCC
Collaborate with other agencies and organizations working on food security planning efforts.	X					FRCOG, Towns, Regional Planning Agencies
Expand the number of low-income and elder Community Supported Agricultural models to increase access to fresh, local and affordable food.		X	X	X	X	CISA, NOFA
Support additional research, studies and plans to help develop a successful regional food system.						
Obtain funding to conduct quantitative analysis of land use patterns and current and potential food production capacity throughout the County.		X				FRCOG, CISA
Obtain funding for analysis of the food access concerns of low and moderate income, elders, and rural residents.		X				FRCOG, Food Bank of Western Mass, FCHCC
Obtain funding to conduct an inventory and assessment of Franklin County's town's board of health rules and regulations for selling meat, poultry, and dairy.		X				FRCOG, Town Boards of Health
Support the creation of uniform regional guidelines and best management practices for selling meat, poultry, and dairy which individual town boards of health could adopt.		X				FRCOG, Town Boards of Health
Obtain funding to support the creation of regional strategic and/or comprehensive food systems plans.		X				FRCOG

Maps 8-1 through 8-4: Farmland Detail



Map 8-1: Existing Farmland

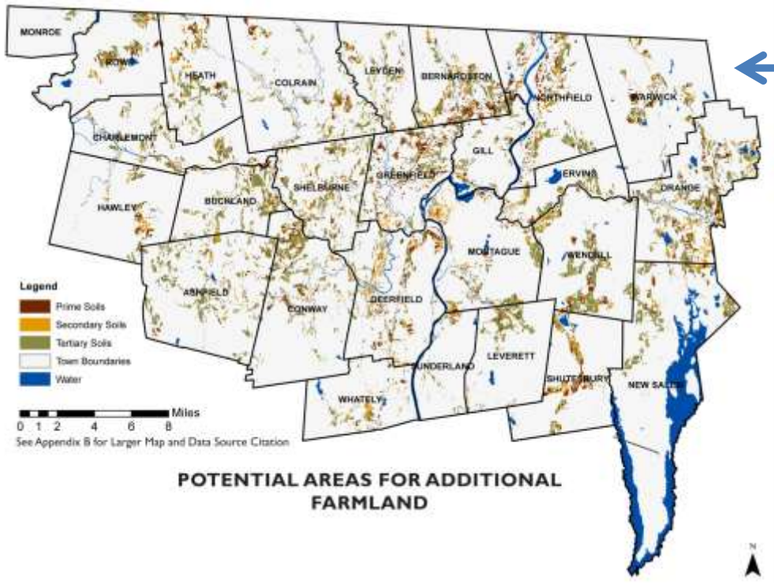
- **CROPLAND**: About half of all cropland is located along the Connecticut River Valley. East County has the least cropland.
- **PASTURE**: Over half of all pasture is in West County.
- **ORCHARD**: Nearly all orchard land is in West County.



Map 8-2: Agricultural Soils

Patterns of soil types mirror patterns of farmland types.

- **PRIME SOILS**: Soils with sustained high yields for cropland are located mostly along the Connecticut River Valley
- **SECONDARY SOILS**: Soils which support a fair range of crops are distributed throughout the county with a concentration along the Connecticut River.
- **TERTIARY SOILS:** Soils most suitable for pasture or orchard are mostly concentrated in East and West Counties.

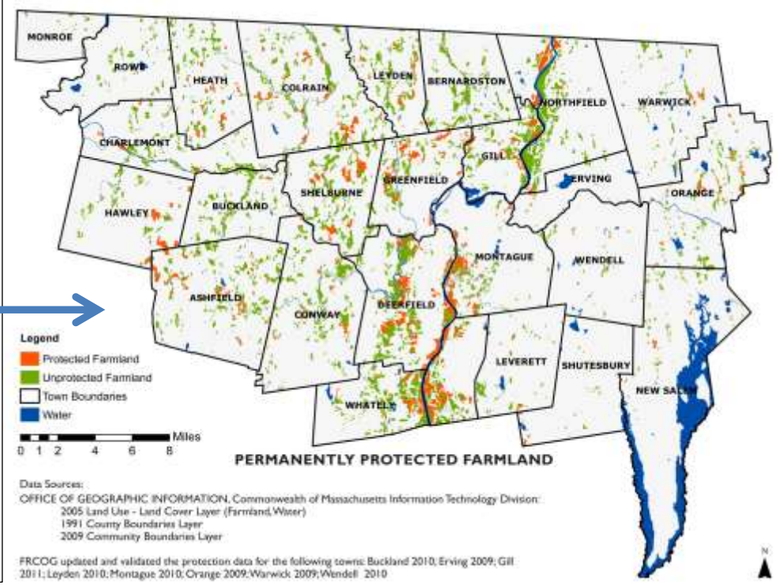


Map 8-3: Potential Additional Farmland

- Nearly one half of the areas identified as potential additional farmland are tertiary soils which would best support pastures and orchards.
- About one third of all potential additional farmland made up of prime or secondary soils are located in West County.

Map 8-4: Permanently Protected Farmland

- Approximately 25 percent of the county's farmland acres is permanently protected –9,390 acres of 37,250 total acres. The farmland shown in green to the right is unprotected.
- 80 percent of the permanently protected farmland in Franklin County is protected under Agricultural Preservation Restrictions.



Map 8-5: Farmland Summary

Franklin County, Massachusetts

frcog Franklin Regional Council of Governments

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Farmland Summary

Undeveloped Agriculturally Suitable Soils are those potential agricultural areas determined to be the highest priority for protection. The methodology used to define these areas is detailed in the *Franklin County Farmland and Foodshed Study*. In summary, all land with agriculturally suitable soils that is not already farmed or developed **and** are not permanently protected are prioritized for protection. There are approximately 43,937 acres of agriculturally suitable soils in the county that could potentially become farmland and should be prioritized for protection.

- Town Boundary
- Major Road
- Major River, Stream
- Water Body
- Undeveloped Agriculturally Suitable Soils

Forest

General Description

Forests make up approximately 77 percent of the total acreage in Franklin County, according to 2005 Mass GIS land use data. According to Mass DCR, there are 3.2 million acres of privately owned forest land in Massachusetts and 285,000 acres of State Forests and Parks. Large blocks of contiguous forest provide critical habitat for many wildlife species (see Critical Habitat section of this chapter), offer recreational opportunities such as hiking, hunting, and wildlife viewing, and provide forest products such as lumber, firewood, and maple syrup. Forests also provide important green infrastructure functions such as air and water purification, and carbon sequestration.

According to the USDA Forest Service's 2010 Assessment of the Forest Resources of Massachusetts, Franklin County is made up of two primary forest types: Transition Hardwoods, comprised primarily of red oak, black birch, white pine and hemlock, and Northern Hardwood, comprised primarily of sugar maples, white ash, paper birch and hemlock.

Efforts underway to preserve forests include the New England-wide Wildlands and Woodlands initiative to retain at least 70 percent of the region in forestland and regional conservation strategies by land trusts such as Franklin Land Trust and Mount Grace Land Conservation Trust, and Kestrel Trust as well as efforts at the local level, such as the recent establishment of the Gill Town Forest.

Protecting Forests

Given that forestland covers about three quarters of Franklin County, it may seem there is little reason to conserve forests. In fact, forests offer many benefits, making their protection and responsible management important to the region. A strategy for protecting forests is the Chapter 61 Program, which provides a tax break to owners of forestlands as long as the land remains in the specified use. Another strategy is forest management (see inset below).

Forests important to protect include unfragmented forests, old-growth forests, and forests that support rare and endangered plant and animal species. Forests along rivers and streams are also a priority to protect for their important habitat, water recharge functions, and bank stabilization. Forests located on soils good for timber production should also be protected. Although preservation efforts focus on large unfragmented tracts of forest, smaller forests offer many ecological benefits, such as carbon sequestration and stormwater management.

Protecting forests through forest management

Benefits of forest management include providing a sustainable source of wood products, increasing the diversity of habitats for wildlife, and offering places for recreation. A thinned maple stand can help increase maple syrup production (left). Periodic harvesting of trees allows new seedlings to grow, providing early transitional forest habitat (center), and offers a local sustainable energy source (right) which contributes to local economic development.

Climate Change and Forests

According to the Massachusetts Climate Change Adaptation Report 2011, climate change impacts to New England forests could include changes in forest structure, more frequent droughts associated with forest fires, and invasive insects and diseases. Specific examples include:

- ***Decline in Maple Syrup Production***

A Cornell College study on climate change and maple syrup production forecasts maple production will decline in the Northeast, mostly after 2030.

- ***Deterioration of Eastern Hemlocks***

The Eastern hemlock is threatened by the woolly adelgid, an invasive insect that destroys hemlock. Spread of this insect has been held at bay due to its intolerance to cold weather, but as temperatures rise, hemlock stands in New England are becoming vulnerable to this insect.

- ***Spread of Invasive Plant Species***

Glossy buckthorn, Japanese barberry and Asian bittersweet are examples of non-native species that have invaded New England forests. Increases in temperature and rainfall will help make conditions favorable for more invasive species to move north into the region.

Sustainable forestry practices, such as planting and selectively harvesting trees, can increase the ability of forests to sequester carbon. Sustainable forestry practices also provide employment, support rural communities, and encourage landowners to retain their woodlots rather than selling them.

Constraints to Protecting Forests

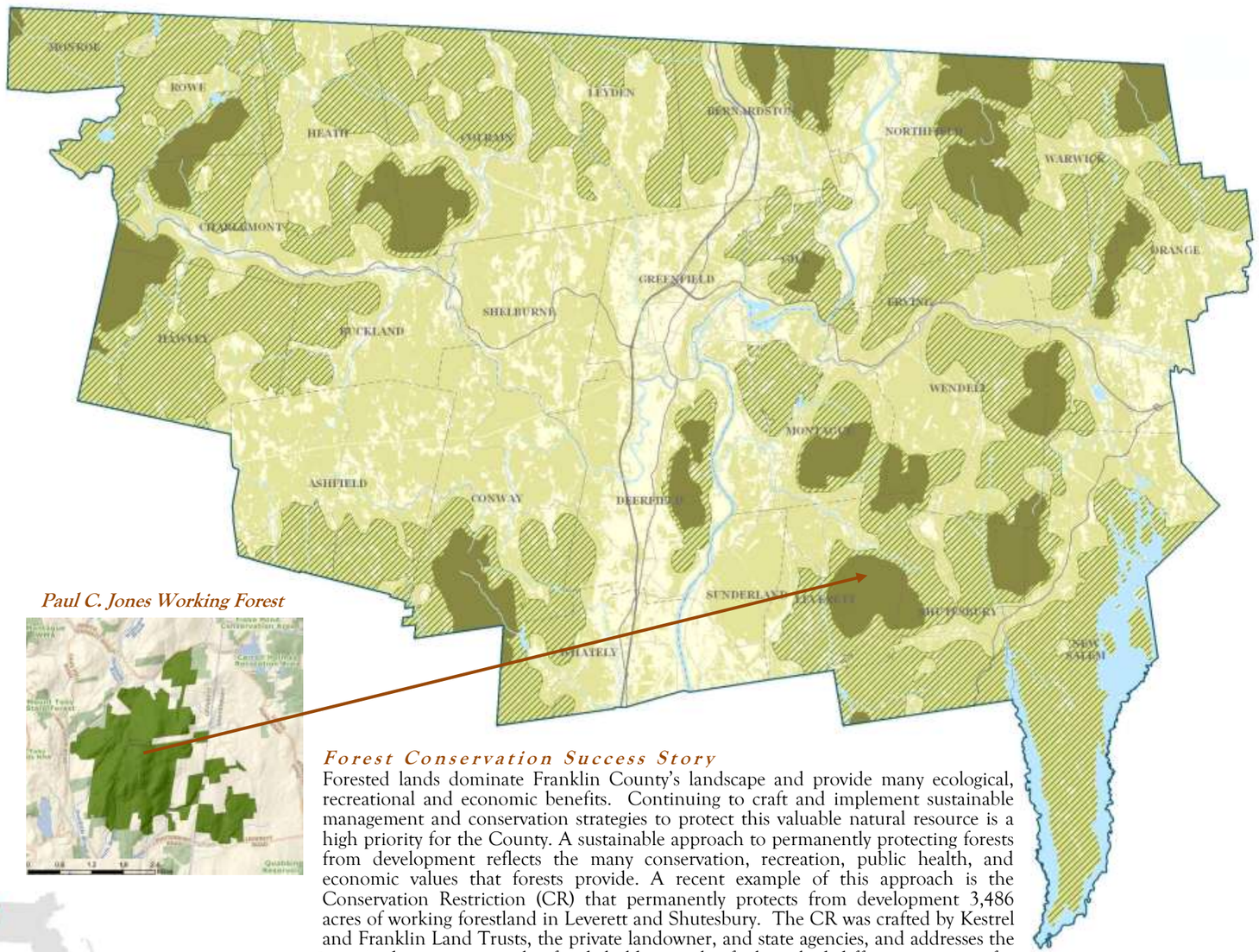
- Conversion of forests to residential uses causes fragmentation of forests by roads and power lines.
- Markets for low-grade wood, such as pulp and pellets, are lacking in Franklin County.
- More education about the benefits of working forests is needed.
- Invasive species and diseases threaten existing forests.
- Older woodstoves are not efficient and present issues in generating air pollution.

Table 5: Recommendations and Strategies for Forests	Implementation					Partnering Organization(s)
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Support initiatives that protect large areas of unfragmented forestland and that promote local forest products.						
Protect large and/or unfragmented blocks of forest from development.	X					FLT, MGLCT, KLT, Wildlands and Woodlands, Mass Audubon Society
Consider providing incentives to land owners for forest stewardship and management.	X					Towns, State
Pursue goal of no net loss of forests with the exception of converting forest to farmland.		X	X	X	X	Wildlands and Woodlands
Promote programs to buy local forest products such as MA Commonwealth Quality Program.		X	X			Massachusetts Forest Landowners Association (MFLA)
Advocate for working woodlands to support sustainable and profitable woodlands.		X	X			MFLA
Support initiatives that utilize invasive trees and slash for fuel for small scale combined heat and power for some municipal, industrial, and commercial buildings.		X				MFLA
Support public attendance in woods walks for education in sustainable forestry practices.	X					MFLA, MWC, DCR

*See Page 18 **of Chapter 4: Housing for a key to the Partnering Organizations abbreviations***

Table 5: Recommendations and Strategies for Forests	Implementation					Partnering Organization(s)
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Continue supporting Conservation Restriction as a means of preserving woodlands.	X					Town Conservation Commissions, FLT, MGLCT, KLT
Encourage more enrollments in Chapters 61 and 61A.	X					DCR, MDAR, Town Conservation Commissions
Educate forest landowners about proper management for firewood and timber.		X	X			MFLA
Support a goal of local energy production to heat homes including using locally produced firewood and pellets.		X				MFLA
Support initiatives to help homeowners purchase energy-efficient woodstoves and to encourage use of firewood as a locally produced energy source.		X				MFLA, Mass Department of Environmental Protection
Encourage broader public recognition of completed preservation projects through the use of signs.	X					FLT, KLT, MGLCT

Map 8-6: Forest Priority Protection Areas



Paul C. Jones Working Forest

nklin County, ssachusetts

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2 4 8 Miles

Forest Conservation Success Story

Forested lands dominate Franklin County's landscape and provide many ecological, recreational and economic benefits. Continuing to craft and implement sustainable management and conservation strategies to protect this valuable natural resource is a high priority for the County. A sustainable approach to permanently protecting forests from development reflects the many conservation, recreation, public health, and economic values that forests provide. A recent example of this approach is the Conservation Restriction (CR) that permanently protects from development 3,486 acres of working forestland in Leverett and Shutesbury. The CR was crafted by Kestrel and Franklin Land Trusts, the private landowner, and state agencies, and addresses the perceived competing goals of stakeholders, each of whom had different priorities for the forest land values they wanted protected. Ultimately, the stakeholders had the same overarching goal – to permanently protect this important working landscape from development. Under this CR, the Paul C. Jones Working Forest will continue to support local jobs, offer wildlife habitat and recreational opportunities, and provide recharge to aquifers.

Forest Summary

With roughly three quarters of Franklin County lands comprised of forest, the region has an opportunity to prioritize and protect large contiguous blocks of unfragmented forest. Some forests are located on prime agricultural soils. These forests, especially those bordering existing farmland, could be converted to farmland. Using Harvard Forest's Wildlands and Woodlands (www.wildlandsandwoodlands.org/) balanced approach, the majority of forests could be voluntarily protected from development and could continue to provide wildlife habitat, purify water supplies, supply forest products, and offer spaces for recreation. A small percent of forest could be conserved as "wildlands", large landscape reserves with minimal human impact and left to be shaped only by natural processes.

Priority Protection Areas

BioMap2 Forest Core – shown in solid dark green – identify the best examples of large, intact forests that are least impacted by roads and development, providing critical "forest interior" habitat for numerous woodland species. Forest core minimum sizes range from about 500 acres in eastern Massachusetts and major river valleys, to over 2,000 acres in the western Massachusetts highlands.

- Town Boundary
- Major Road
- Major River, Stream
- Water Body
- 2005 Land Use Forest
- BioMap2 Forest Core
- BioMap2 Landscape Blocks

*The Division of Fisheries and Wildlife interior forest GIS dataset identifies extensively forested portions of the Massachusetts landscape where forest cover is relatively un-fragmented by human development. Other natural features such as wetlands and open water are included in this dataset as non-fragmenting features.

AQUIFER RECHARGE AREAS

General Description

Drinking water is one of the County's most valuable resources. Without a safe and sustainable supply of drinking water, the ability for people to live in the County would be threatened. Aquifers, the underground storehouses for water, are a primary source of drinking water in Franklin County. Aquifers can be confined between layers of clay or rock or can be unconfined, receiving recharge water directly from precipitation or surface water. Areas critical for supporting aquifers and drinking water supplies – aquifer recharge areas – are the areas of land through which water passes to recharge an aquifer. These areas can be directly above an aquifer or miles away.

Because aquifers may exist across multiple towns and because the extent of aquifers can be difficult to determine, they can be vulnerable to undetected contamination. Under the Massachusetts Department of Environmental Protection's (DEP) Drinking Water Program, towns developing a new large public drinking water supply or expanding an existing well must adopt local water supply protection measures meeting DEP approval. The DEP process for developing new public water systems involves a step-by-step exploratory and development procedure. But for existing drinking water sources, many aquifers do not have adequate controls. Many Franklin County towns are 100 percent dependent upon private wells, while others have limited public water supplies. Often, little is known about the aquifers that supply private wells and there is a potential for contamination of an aquifer to go undetected.

Potential threats to aquifer recharge areas include failing septic systems, leaking underground storage tanks on residential and commercial sites, landfills, and pesticide and herbicide runoff. Franklin County residents and business owners would likely be interested in protecting an aquifer recharge area if they understand that their drinking water originates from aquifers and if they understand the sources of potential contamination.

In 2003, the FRCOG produced the Franklin County Regional Water Supply Study, which assessed the short- and long-term capacity of community water supplies to support growth in the region, identified potential community water supply sources, and identified water supply issues and recommendations, some of which are included in this Plan. The Study concluded that "Franklin County can sustain its drinking water supplies through implementing land protection, emergency source development, water conservation, and growth management." This assessment relies on the ability of the region and its individual towns to implement measures to sustain its drinking water supply, such as identifying and protecting future water supply sources, adopting best management practices for uses within aquifer recharge areas, and encouraging reduction in water use.

Protecting Aquifer Recharge Areas

The 2003 Franklin County Regional Water Supply Study includes a map of Potential Water Supply Areas for the County. These potential water supply areas were determined by applying a list of criteria and identifying areas which are located over high yield aquifers and which are free from restricted land uses and other constraints. The areas identified on Map 8-7 are areas where development should be limited.

Climate Change and Aquifers

According to the MA Climate Change Adaptation Report 2011, potential impacts to drinking water supplies due to climate change could include decreased summer water supply, higher demands on public water supplies, and more extreme flooding due to increased winter precipitation in the form of rain. A decrease of snowfall in winter could decrease snowpack melt and the infiltration needed to recharge aquifers. Less predictable rainfall in the summer could place higher demands on public water supplies, especially for irrigation.

Natural resources function at a broad landscape-scale level but the reality of private land ownership and 26 town boundaries challenge landscape-level approaches to conservation and stewardship.

CONSTRAINTS IN PROTECTING AQUIFER RECHARGE AREAS

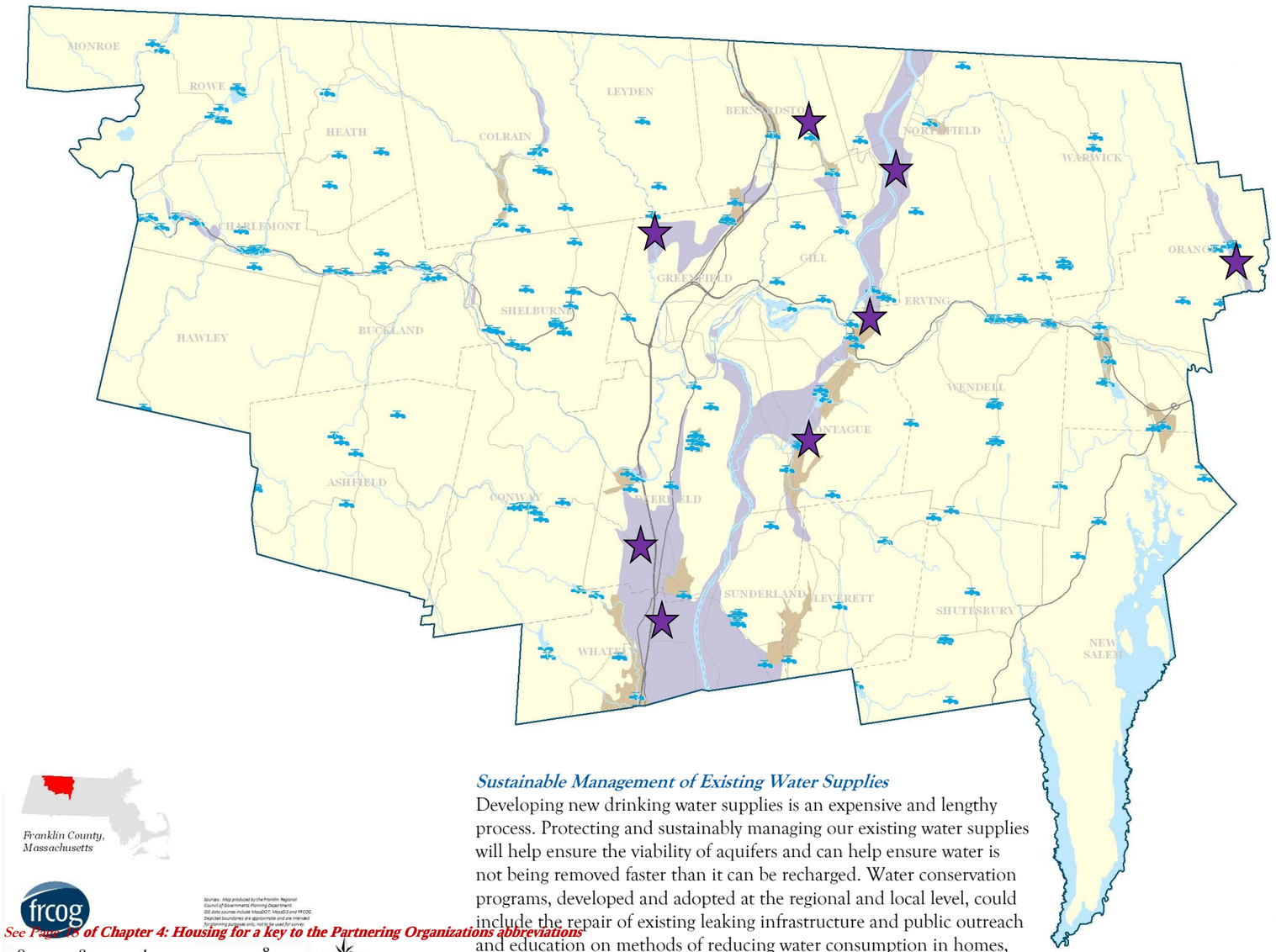
- Existing and potential sources of drinking water are vulnerable to contamination.
- There is a lack of a regional approach to protect potential drinking water supplies, which are often located in more than one town.
- Gaps in protection exist at the local level because some existing water supplies were approved prior to DEP source protection regulation.
- Aquifers are vulnerable to large scale contamination and lack of alternate local emergency supply sources in the event of contamination.
- There is a lack of knowledge about the aquifers that supply existing private wells.
- No regional program to test existing private well water and high cost to individuals for testing could mean that contamination could go undetected.

RECOMMENDATIONS AND STRATEGIES FOR AQUIFER RECHARGE AREAS

Table 6: Recommendations and Strategies for Aquifer Recharge Areas	Implementation					Partnering Organization(s)*
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Encourage regional and local initiatives that identify and protect existing and potential drinking water supplies.						
Inventory existing public water supplies, identify gaps in protection and encourage towns to adopt DEP standards or other model bylaws for aquifer protection.		X	X			FRCOG, Town Boards of Health, MA DEP
Create a regional emergency water supply plan that includes climate change mitigation and adaptation.		X				FRCOG, Town Boards of Health, Town Water Supply Districts
Create a regional groundwater protection plan.		X				FRCOG, MA DEP
Identify and develop safe yield measurements for high yield aquifers.		X				MA EOEA, U.S. Geological Survey (USGS)
Follow up the 2003 Franklin County Regional Water Supply Study by assessing the amount and location of lands to be protected to ensure sustainable drinking water supplies.		X				FRCOG, Towns
Confirm that town centers and other areas identified as potential population growth areas have adequate water supplies to support increased population.		X	X			FRCOG, Town Boards of Health, Town Water Supply Districts
Encourage region-wide decrease in water usage through public education in water reduction practices.	X					FRCOG, Town Boards of Health, Town Conservation Commissions
Encourage broader public recognition of completed preservation projects through the use of signs (such as the Forever Farmland Initiative marks completed farmland preservation projects).	X					Towns

See Page 18 of Chapter 4: Housing for a key to the Partnering Organizations abbreviations

Map 8-7: Aquifer Recharge Areas



Franklin County, Massachusetts

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Sources: Map produced by the Franklin Regional Council of Governments Planning Department. GIS data sources include MassDOT, MassGIS and FRCOG. Depicted boundaries are approximate and are intended for planning purposes only, not to be used for survey.

0 2 4 8 Miles

See Page 18 of Chapter 4: Housing for a key to the Partnering Organizations abbreviations

Sustainable Management of Existing Water Supplies

Developing new drinking water supplies is an expensive and lengthy process. Protecting and sustainably managing our existing water supplies will help ensure the viability of aquifers and can help ensure water is not being removed faster than it can be recharged. Water conservation programs, developed and adopted at the regional and local level, could include the repair of existing leaking infrastructure and public outreach and education on methods of reducing water consumption in homes, businesses and agricultural operations.

Future Water Supply Sites

Securing a safe drinking water supply is a high priority for Franklin County. Two methods the region can pursue simultaneously are 1) the identification and protection of the aquifers that could supply future community water supplies and 2) demand management of existing water supplies.

In 2003, the Franklin County Regional Water Supply Study identified areas with the potential for siting future community water supplies, based upon their location within high yield aquifers and the lack of constraints within a 400-foot radius (Zone 1 Recharge Area) of the proposed wellhead. Constraints may include groundwater contamination zones and restricted land uses such as industrial and commercial.

Priority Protection Areas

★ Potential future water supply sites

These 2003 findings highlight that, as a result of Geographic Information System (GIS) analysis, only eight potential drinking water supplies were identified in Franklin County. Some of these are located in population centers, which could further complicate siting, given the goal of concentrating future development in town centers. However, until tests are performed to determine capacity of the potential sources and the extent of the aquifer recharge areas (Zone II), their viability is not known. Further, an inventory of existing land uses would need to be conducted to determine whether any uses conflict with the protection of Zone II recharge areas.

Given that developing a new drinking water supply source is an expensive process, towns may take other proactive measures to protect future potential drinking water supply areas. For example, towns can adopt aquifer protection overlay districts, which would prevent certain uses that could potentially jeopardize future water supply development.

- Town Boundary
- Major Road
- Major River, Stream
- Water Body
- Public Water Supply *
- Zone II Water Recharge Area
- Aquifer

CRITICAL HABITAT

General Description

Franklin County contains vastly diverse habitats, ranging from woodland wetlands to farm field edges to rocky ridgelines. As diverse as its habitats, the methods for determining which habitats are critical to sustaining the County's natural resources are as numerous. For the purposes of this Plan, the two existing methods that will be utilized are Massachusetts Department of Fish and Game's Natural Heritage and Endangered Species Program (NHESP) Priority Habitat classification and mapping and the NHESP/The Nature Conservancy (TNC) BioMap2.

Identification and mapping of NHESP Priority and Estimated Habitats is based on the known geographical extent of habitat for all state-listed rare species, both plants and animals, and is codified under Massachusetts Endangered Species Act (MESA). Alteration of any habitat within Priority Habitats is subject to regulatory review by the Natural Heritage and Endangered Species Program. Priority Habitat maps are used for determining whether or not a proposed project must be reviewed by the NHESP for MESA compliance.

BioMap2

In 2010 NHESP and The Nature Conservancy launched *BioMap2: Conserving the Biodiversity of Massachusetts in a Changing World.* This project is a comprehensive biodiversity conservation plan for the state to protect biodiversity in the context of climate change. BioMap2 supersedes NHESP's original BioMap and Living Waters and identifies two complementary layers, Core Habitats and Critical Natural Landscapes. Core Habitats are areas that are critical for the long-term persistence of rare species and diverse natural communities and ecosystems. Critical Natural Landscapes are large blocks of landscape that are minimally impacted by development and which provide habitat for wide-ranging native species.

Protecting Critical Habitat

There are several regulatory measures in place in the state to protect critical habitat including:

- **Natural Heritage and Endangered Species Program (NHESP) Priority Habitat** protects habitats of state-listed rare species in Massachusetts.
- **Massachusetts Endangered Species Act** (MESA) protects rare species and their habitats by prohibiting the "take" of any plant or animal species listed as Endangered, Threatened, or Special Concern by the MA Division of Fisheries and Wildlife.
- **Wetlands Protection Act** protects areas in and around wetlands – and the species that rely on them – by prohibiting alterations that would have short or long term adverse effects on the wetland habitats.

NHESP Priority Habitat and MESA are subject to regulatory review by the Natural Heritage and Endangered Species Program. The Wetlands Protection Act is administered at the local level by Conservation Commissions. Using the mapped extents of BioMap2 and NHESP Priority Habitats, land in Franklin County can be better prioritized for protection and stewardship. These areas are shown on Map 8-8: Critical Habitat.

Climate Change and Critical Habitat

According to the MA Department of Fish and Game, it is likely a changing climate could exacerbate the current rate of habitat loss in the state. Some of the expected impacts on critical habitat include:

- Changes in composition and structure of ecosystems.
- Loss, simplification, and fragmentation of habitats.
- Increased prevalence of weed and pest species.
- Degradation of water quality and alteration of hydrology.

CONSTRAINTS IN PROTECTING CRITICAL HABITAT

- Large number of smaller parcels of land results in the fragmentation of habitat.
- Implementing complex regulations by volunteer members of conservation commissions is challenging.
- BioMap2 lacks regulatory status.
- Areas of critical habitat for wildlife could also be desirable for residential, recreational, and other competing uses.
- Private land owners may not want critical habitats such as vernal pools identified on their properties.

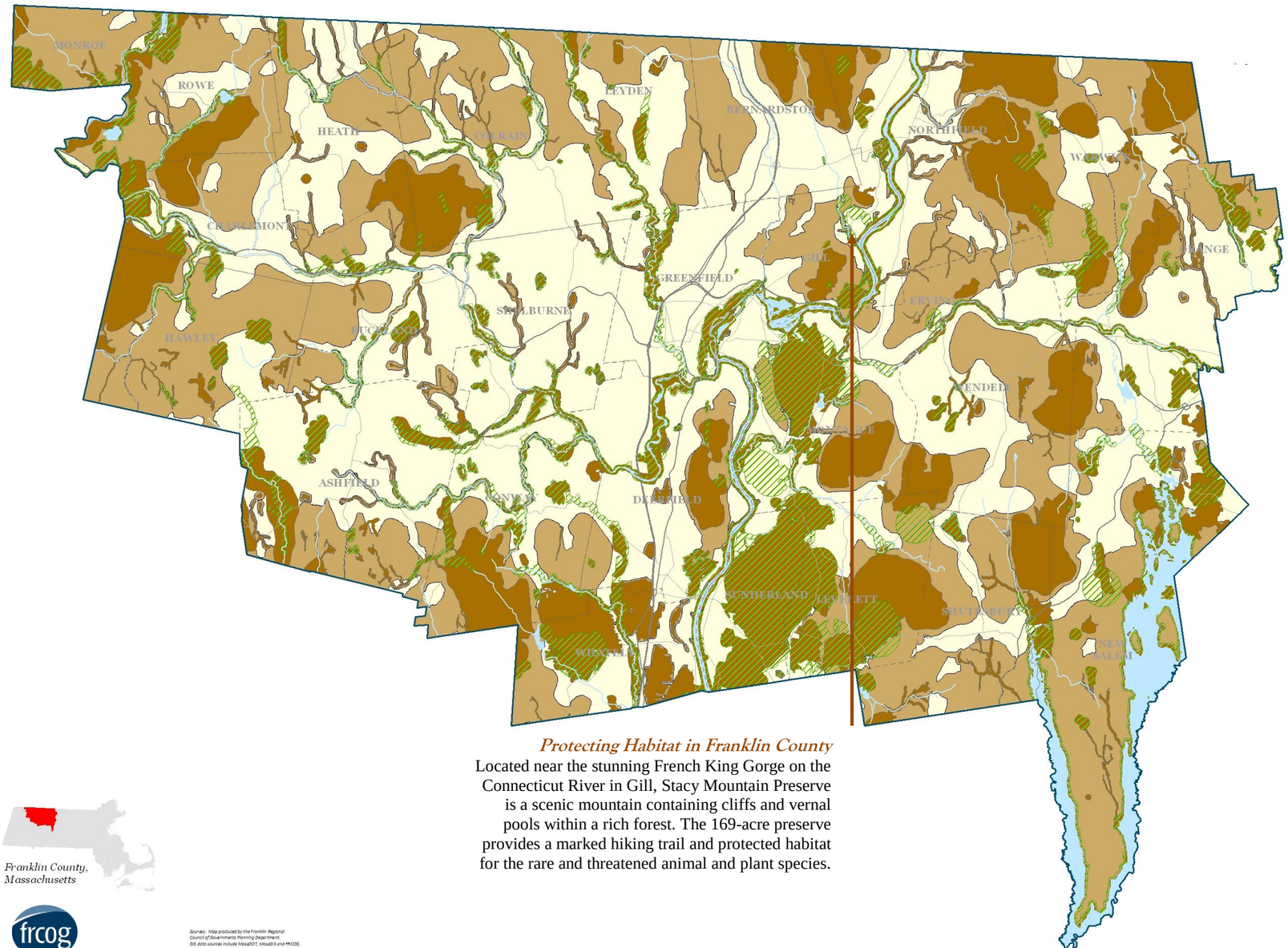
Habitat diversity and preservation is critical for the survival of many animal species.

RECOMMENDATIONS AND STRATEGIES FOR CRITICAL HABITAT

Table 7: Recommendations and Strategies for Critical Habitat	Implementation					Partnering Organization(s)*
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Preserve areas identified as critical habitat, especially those adjacent to already protected land.						
Support public outreach and education efforts in areas such as critical habitats and species, such as those offered by land trusts, New England Wildflower Society, Pioneer Valley Institute.	X					New England Wildflower Society, Pioneer Valley Institute, NHESP
Encourage the identification of vernal pools through programs such as Deerfield River Watershed Association.		X				NHESP, Deerfield River Watershed Association
Support ecosystem restoration projects for habitat connectivity.	X					Connecticut River Watershed Council (CRWC), FRCOG
Protect critical water resources such as river corridors, watersheds, and wetland systems that serve to connect natural systems.	X					CRWC, Land Trusts
Support efforts to continue to inventory critical habitat for NHESP.		X	X			FRCOG, NHESP, Town Conservation Commissions
Support work for watershed associations to inventory nonfunctional culverts and conduct habitat assessments near culverts.		X	X			UMass Extension, CRWC

See Page 18 of Chapter 4: Housing for a key to the Partnering Organizations abbreviations

Map 8-8: Critical Habitat



Critical Habitat Summary

Priority Habitats, Core Habitats and Critical Natural Landscapes exist throughout Franklin County. An approach to protection would be to prioritize those areas where Priority and Core Habitats occur together. These areas represent land which is critical for the long-term persistence of rare species and diverse natural communities and ecosystems and land which is subject to regulatory review by the Natural Heritage & Endangered Species Program

Priority Protection Areas

- Areas where Priority Habitat and BioMap2 Core Habitat overlap
- NHESP Priority Habitat areas
- BioMap2 Core Habitat areas

- Town Boundary
- Major Road
- Major River, Stream
- Water Body

0 2 4 8 Miles

Protecting Habitat in Franklin County

Located near the stunning French King Gorge on the Connecticut River in Gill, Stacy Mountain Preserve is a scenic mountain containing cliffs and vernal pools within a rich forest. The 169-acre preserve provides a marked hiking trail and protected habitat for the rare and threatened animal and plant species.

Franklin County, Massachusetts

frcog

Sources: Map produced by the Franklin Regional Council of Governments Planning Department. GIS data sources include MassDOT, MassGIS and FRCOG. Depicted boundaries are approximate and are intended for planning purposes only, not to be used for survey.

SURFACE WATERS AND FISHERIES

General Description

Franklin County lies primarily within the Connecticut River, Deerfield River, and Millers River watersheds, with small areas within the Chicopee and Westfield watersheds (Map 8-9). The Connecticut River is New England's longest river, measuring 410 miles from its source to the sea, and is bordered by steep wooded riverbanks in the northern part of the County and by flat, fertile agricultural land in the central and southern parts of the County. Along with supporting farming, the River plays an important role in the region's economy through myriad recreational opportunities and by supporting vital habitats for wildlife. The watershed of Connecticut River mainstem includes all or parts of 13 of the County's 26 towns. Among the Connecticut River's many tributaries, the Deerfield and Millers River are its two main tributaries in Franklin County.

The Deerfield River is approximately 70 miles long, and flows from Vermont to its confluence with the Connecticut River in Greenfield. The River's steep gradient makes it ideal for hydroelectric facilities; as a result there are 11 hydroelectric facilities along the Deerfield River mainstem (see Chapter 7:Energy for more information). The steep gradient is also ideal for recreational opportunities such as river kayaking and rafting.

The Millers River Watershed is located in north-central Massachusetts and is 51 miles long, from Ashburnham to its confluence with the Connecticut River in Montague. Most of the land within the Watershed is forested, much of which is in public and quasi-public ownership, and supports a variety of recreational activities such as boating, fishing, swimming, and birding.

Franklin County is rich with many other water bodies, including streams, ponds, lakes, and wetlands, which contribute to drinking water supplies, irrigate crops, provide food sources through fishing, and support industrial processes and energy generation. They also provide habitats for wildlife, support recreational activities, and are the backbone of many cultural and historic resources in the region.

Land use development patterns, both historic and current, have affected water quality and quantity in the Connecticut, Deerfield, and Millers Rivers and many of their tributaries. Impacts from the operation of dams, pumped storage facilities, water supply withdrawals, and wastewater discharges have resulted in changes to the natural flow regime and water quality of these water bodies. Changes in the duration, frequency, and magnitude of river flow can affect habitats and wildlife and can affect the quality of water available for human use. Other general issues impacting water bodies in the County include aging infrastructure such as culverts, stormwater runoff, nonpoint source pollution including runoff from roads and agricultural lands, and river bank erosion.

An effort to restore high-quality coldwater habitat is underway on the Green River. The project involves removing two dams in downtown Greenfield and is part of a larger project to remove or provide fish passage at two other upstream dams in future phases. When complete, the project will restore critical coldwater habitat and fish passage through the entire length of the Green River.

Protecting Surface Waters

The various functions of surface waters are protected by laws and regulations administered by state agencies, primarily the MA DEP. Some laws are administered at the local level, such as the Wetlands Protection Act and Rivers Protection Act, and are enforced by town Conservation Commissions.

Plans such as the 2004-2008 Deerfield River Watershed 5-Year Watershed Action Plan, the 2004-2009 Millers River 5-Year Watershed Action Plan, as well as organizations such as the Connecticut River

Watershed Council and the Deerfield River Watershed Association, have identified issues and recommendations for various water bodies. Some of the findings and recommendations from these sources are included at the end of the chapter.

Shown in Tropical Storm Irene's aftermath, Shelburne Falls is an example of development occurring along a river.

Historically, New England towns developed along rivers and streams, which provided transportation, power and food to townspeople. Land along water bodies continues to be attractive to people who value the scenic and recreational importance of waterfront properties. But this development pattern can mean that structures close to rivers and streams can be vulnerable to flooding and that lack of vegetated buffers between developed areas and rivers allows more runoff from roads and parcel surfaces that could impact water quality. As we consider ways to infill existing town centers and to rehabilitate vacant mill buildings, careful consideration will have to be given to those places that are located near water bodies or in floodplains, given the potential for more frequent or severe flooding caused by climate change.

Climate Change and Surface Waters

Fluvial (related to river) erosion hazards including streambank erosion could increase due to climate change. More frequent and severe flooding could inundate low-lying areas and floodplains and could alter or divert stream and river channels, potentially causing significant erosion, catastrophic bank failure, and pollution. Fluctuating temperatures in winter months could increase the likelihood of increased rainfall and less snow and snow pack, altering patterns of early spring melting and water body recharge.

CONSTRAINTS TO PROTECTING SURFACE WATERS AND FISHERIES

- Invasive plant species colonize along river banks and alter habitat and food sources for wildlife.
- Variations in flow and bank erosion due to hydroelectric facilities cause erosion and changes in habitat and wildlife.
- Hot water discharges from Vermont Yankee could threaten some cold water aquatic species.
- Non-point source pollution impacts water quality.

WETLANDS AND FLOODPLAINS

General Description

Wetlands are areas where water covers the soil, or is present either at or near the surface of the soil all year or for varying periods of time during the year, including during the growing season. Water saturation largely determines how the soil develops and the types of plant and animal communities living in and on the soil. Wetlands may support both aquatic and terrestrial species. The prolonged presence of water creates conditions that favor the growth of specially adapted plants and promote the development of characteristic wetlands soils. Wetlands in the County vary in types including open wet meadows, vernal pools, forested and shrub swamps, and bogs.

Functions of wetlands include recharging of groundwater, slowing or storage of flood waters, and filtering of degraded water. Often nutrient rich, wetlands can support diverse plant and animal communities. Much like wetlands, floodplains also function as storage areas for flood waters.

The Wetlands Protection Act protects wetlands and the public interests they serve, including flood control, prevention of pollution and storm damage, and protection of public and private water supplies, groundwater supply, fisheries, and wildlife habitat. These public interests are protected by requiring a careful review of proposed work that may alter wetlands. The law protects not only wetlands, but other resource areas, such as land subject to flooding (100-year floodplains), riverfront areas (added by the Rivers Protection Act), and land under water bodies, waterways, and fish runs. Individual towns must adhere to the Wetlands Protection Act and can adopt more stringent controls. Conservation Commissions enforce the Wetlands Protect Act at the local level.

Despite existing protections, development is not restricted in floodplains, unless a town adopts a floodplain bylaw that specifies restrictions.

Wetlands are scattered throughout Franklin County, with a concentration of wetlands located along the Connecticut River Valley corridor in Whately and Deerfield (Map 8-9). Riparian corridors and floodplains are also located throughout the County. Some floodplains, such as that of the Connecticut River, are broad and flat, while others along more hilly terrain in West County tend to be more narrow. Floodplains are critical for flood water storage and wildlife habitat but are also attractive for development, given their more easily developable soils and location along often scenic water bodies.

Riparian Corridors and Floodplains

Riparian corridors include rivers and streams and their adjacent lands and floodplains. Riparian corridors are particularly vital to the protection of both upland and aquatic species. These areas are especially high in ecological diversity due to the continuously changing conditions where water interacts with adjacent lands and floodplains and due to the convergence of many species along transition zones between aquatic, floodplain, and upland habitats. Maintaining a rich diversity of riparian and floodplain vegetation is essential to the long term viability of diverse animal species that rely upon the habitat. Some issues threatening the health and diversity of riparian corridors and floodplains in Franklin County include dense colonizations of Japanese knotweed, replacement of naturally vegetated riparian areas with manicured landscapes, runoff from lawns and roadways, and lack of vegetated buffers at the edge of agricultural fields.

Climate Change and Wetlands and Floodplains

Climate change and periodic weather cycles have many impacts on wetlands and floodplains including:

- Increased periods of droughts causing reduced stream flow into wetlands, fragmentation of floodplains from main rivers, and a decline in ecosystem diversity.
- Increased rain, especially in winter, causing the enlargement of floodplain areas and prolonging the duration of flooding.
- Sediment inundation of floodplains causing the reduction of agricultural viability of some floodplains.
- Droughts and heavy rainfall causing permanent alterations to the conditions of wetlands and associated plant and wildlife species.

The Deerfield River flowed into surrounding floodplains during Tropical Storm Irene, depositing silt and debris on farmland and recreational fields.

CONSTRAINTS

In addition to the challenges related to climate change, other constraints to the sustainable stewardship of wetlands and floodplains include:

- Many small parcels of privately owned land contain wetlands or floodplains and are fragmented from larger ecosystems.
- Local Conservation Commissions often lack adequate staffing to implement regulations.
- Many towns allow development in floodplains.
- Lack of accurate mapping of inundation areas and erosion hazards.

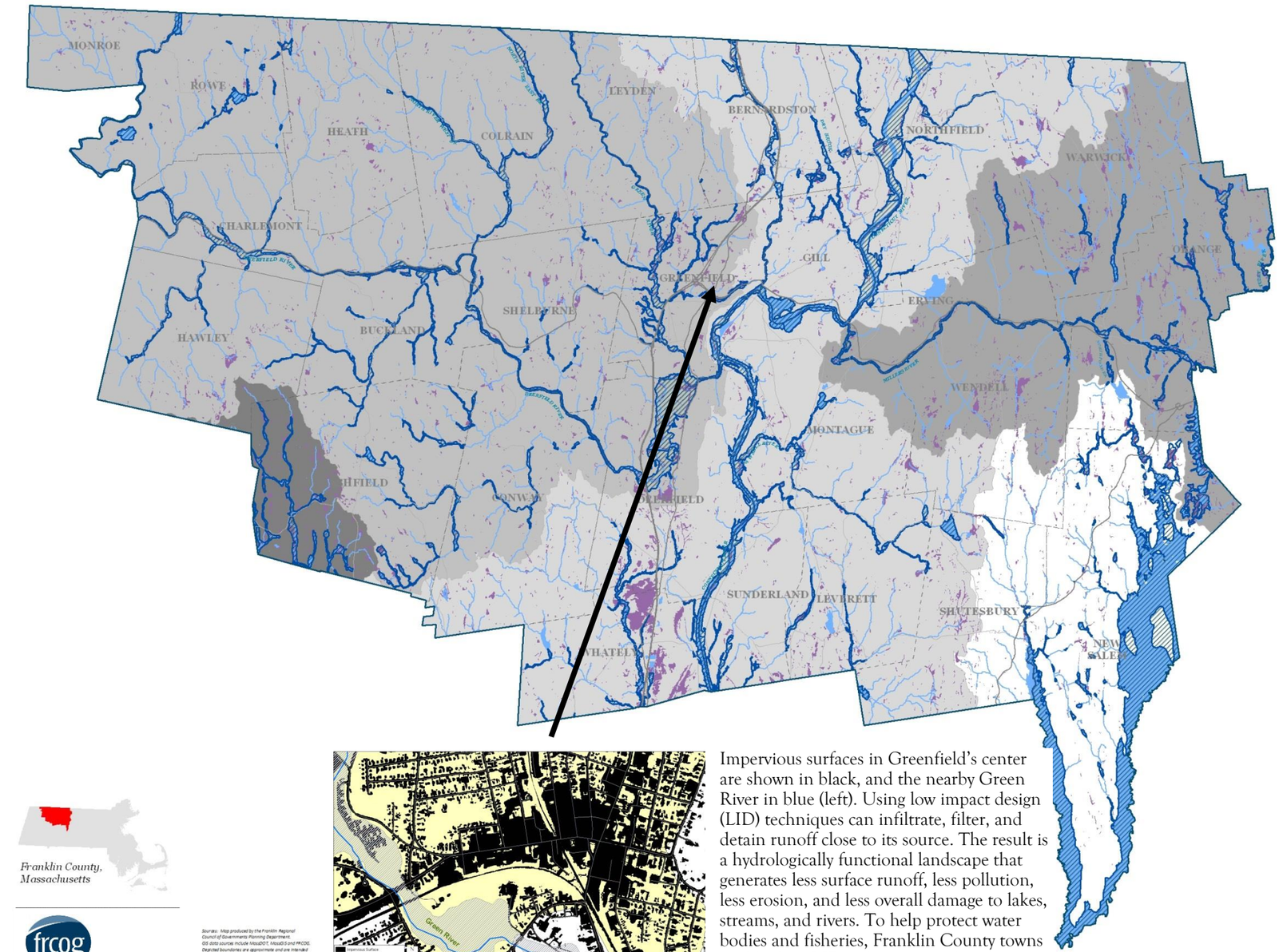
RECOMMENDATIONS AND STRATEGIES FOR WETLANDS AND FLOODPLAINS

Table 8: Recommendations and Strategies for Wetlands And Floodplains	Implementation					Partnering Organization(s)*
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Preserve areas identified as critical water habitat, especially those adjacent to already protected land.						
Support ecosystem restoration projects for watersheds, wetlands, rivers and habitat connectivity.	X					FRCOG, CRWC, Other Watershed Associations, MA DCR, Massachusetts Department of Wildlife and Fisheries (DWF) Division of Ecological Restoration (DER), MA DEP, Massachusetts Corporate Wetlands Restoration Partnership
Promote sustainable water and stormwater management to mitigate the effects of climate change.	X					FRCOG, MA DEP, US Environmental Protection Agency (EPA)
Protect and restore land along water bodies to protect water quality.	X					MA DCR, Massachusetts Department of Wildlife and Fisheries (DWF) Division of Ecological Restoration (DER), Land Trusts, MA DEP,
Support efforts to identify and mitigate sources of non-point pollution.	X					FRCOG, MA DEP, US EPA
Develop total maximum daily loads and implement water quality management plans to maintain or improve water quality.		X	X			MA DEP, US EPA

See Page 18 of Chapter 4: Housing for a key to the Partnering Organizations abbreviations

Table 8: Recommendations and Strategies for Water Resources	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	Partnering Organization(s)
Encourage regional and local initiatives that ensure the protection of wetlands and important flood storage areas.						
Update FEMA floodplain maps.		X				FEMA
Identify and assess fluvial erosion hazards.		X	X			FRCOG, EPA
Support more training and technical assistance for Conservation Commissions.	X					FRCOG, Massachusetts Association of Conservation Commissions
Support the adoption of floodplain bylaws or floodplain management ordinances that adequately restrict or prohibit development in floodplains.		X	X			FRCOG, Town Conservation Commissions, Town Select Boards
Support research and programs that restore floodplains and wetlands.	X					MA DCR, Massachusetts Department of Wildlife and Fisheries (DWF) Division of Ecological Restoration (DER
Support efforts to implement agricultural best management practices to protect riparian areas and water quality.		X				Town Conservation Commissions, MDAR
Protect and restore riparian areas.	X					FRCOG, CRWC, Other Watershed Associations, MA DCR, Massachusetts DWF

Map 8-9: Water Resources



Water Resources Summary
Protecting our water resources in Franklin County is challenged by the sheer abundance of rivers, streams, wetlands, and floodplains and large number and types of ownership of land adjacent to water resources. Individual towns can help protect the integrity of water bodies and floodplains by passing floodplain zoning bylaws limiting uses within floodplains or restricting development altogether.

Priority Protection Areas
- 100-year floodplain
- Riparian corridors
- Areas adjacent to impermeable surfaces to serve as green infrastructure

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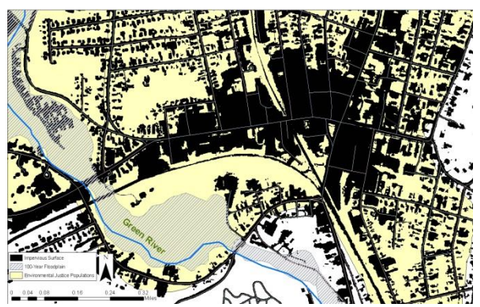
Sources: Map produced by the Franklin Regional Council of Governments Planning Department. GIS data sources include MassDOT, MassGIS and FRCOG. Depicted boundaries are approximate and are intended for planning purposes only, not to be used for survey.



Impervious surfaces in Greenfield's center are shown in black, and the nearby Green River in blue (left). Using low impact design (LID) techniques can infiltrate, filter, and detain runoff close to its source. The result is a hydrologically functional landscape that generates less surface runoff, less pollution, less erosion, and less overall damage to lakes, streams, and rivers. To help protect water bodies and fisheries, Franklin County towns could adopt LID techniques in their zoning bylaws.

BROWNFIELDS IMPACTS ON NATURAL RESOURCES

General Description

An approach to natural resource protection which also has economic development value is the clean-up and reuse of brownfields. According to HUD, brownfields are "abandoned, idled, or underused properties where expansion or redevelopment is complicated by the presence or potential presence of contamination". Brownfields sites can include abandoned industrial facilities, mill buildings, and other business that may have dealt with hazardous or polluting substances. These sites can pose potential risks to public health and the environment if hazardous substances have been released into the soil or groundwater. Identification of hazardous substances leading to clean-up benefits natural habitat areas and water quality since many brownfields sites in our region are located near rivers or other natural resources.

In addition to protecting natural resources, reusing brownfields sites supports sustainable development principles and encourages the most efficient use of infrastructure and municipal resources. Reusing brownfields sites also decreases the need to convert prime farmland or forestland. Many brownfields or suspected brownfields sites in Franklin County have existing infrastructure such as foundations, buildings, and parking, which could be redeveloped. Existing sites are often located near or in town centers or close to existing transportation lines and water and sewer infrastructure.

To redevelop brownfields sites, an environmental assessment is conducted to determine whether there are hazardous substances present, and if so, how they can be removed or mitigated. Both the state and the region, working with the federal government, have programs to protect the public health and the environment, as well as to encourage the redevelopment of Brownfields into economic use. The Commonwealth established the Massachusetts Brownfields Act which offers incentives, such as tax benefits, financing and insurance opportunities, to developers that reuse abandoned or underutilized sites that have been cleaned up to appropriate environmental standards.

A successful brownfields project includes the Upper Mill Building on the North River in Colrain (before and after).

As of 2011, the FRCOG has identified 80 brownfields sites in Franklin County and, through multiple grant awards from the EPA, the FRCOG Brownfields Program has funded environmental site assessment activity or provided clean-up resources to 52 sites in 17 Franklin County towns as of 2013. Many of the sites evaluated under previous EPA brownfields assessment grants have led to clean-up or reuse. For example, one of the sites assessed with EPA Brownfields funding is now the home of a new intermodel transit center

serving the region. Located in downtown Greenfield, the transit center has been designed as a net-zero energy building.

Constraints

Despite the challenges listed below, there are many potential benefits to brownfields reuse. Reusing brownfields supports sustainable development by encouraging mixed use development in town centers which have water, sewer and transportation infrastructure. Impediments to brownfields reuse can include:

- Access to resources to fund assessment and cleanup activities
- Site owner liability concerns
- Challenging market conditions to support the cost of redevelopment

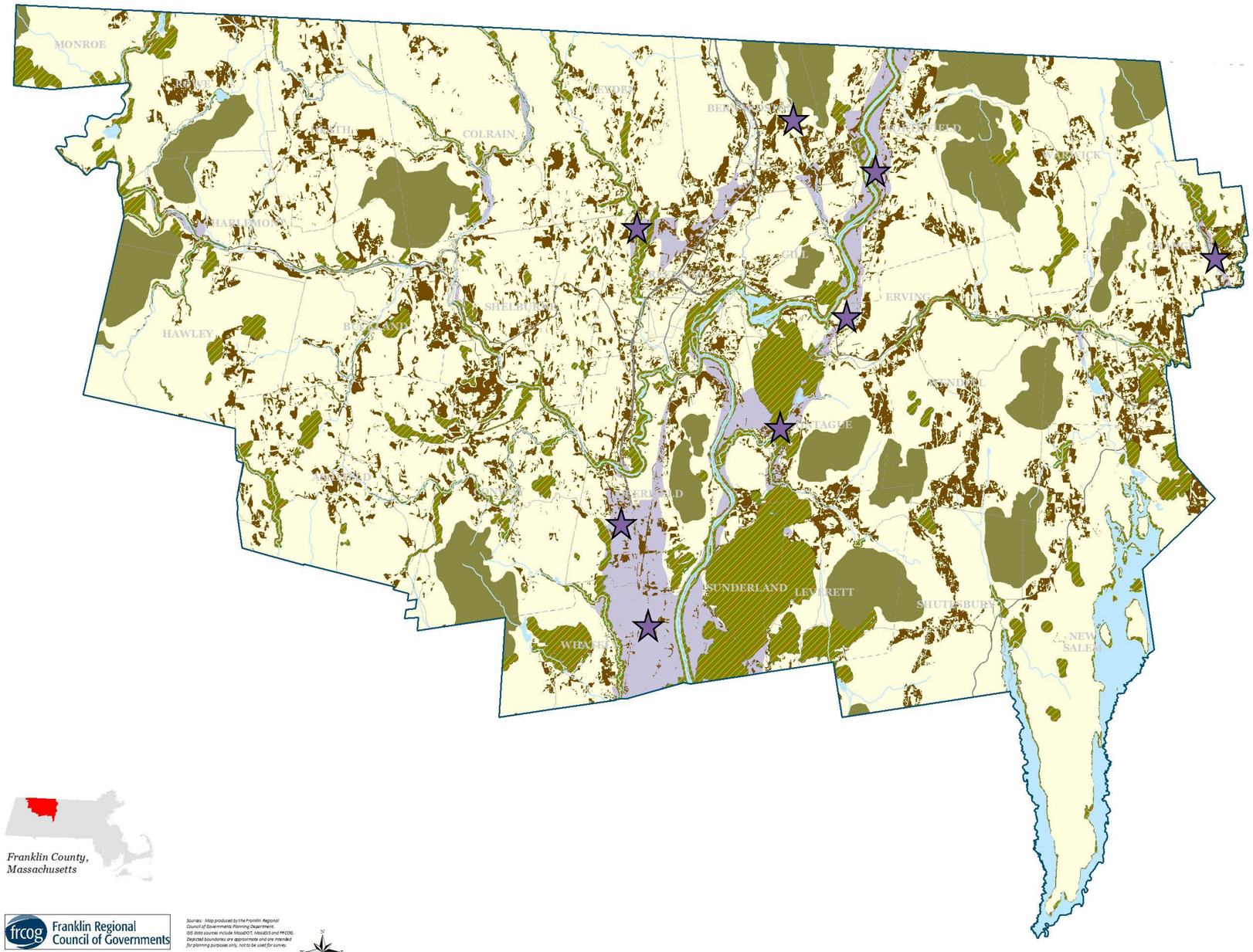
GENERAL NATURAL RESOURCE CONSTRAINTS

Constraints to the sustainable protection of natural resources in the County are many. Some general constraints include the large number of smaller parcels of land under private ownership and the limitations of current zoning to protect important natural areas. Although not as strong as in other parts of the country, development pressures can also negatively impact the protection of natural resources, if the financial incentive to sell land for development is greater than that of placing land under protection.

Lack of funding for protection of open space, farmland and forests has also constrained the ability of the County to protect natural resources. However, one recent initiative is the Landscape Partnership Grant Program, a $4 million State grant program that encourages non-governmental organizations already pursuing large landscape-scale land protection investments to partner with the state and local communities. Another initiative is the Land Conservation Tax Credit Program, for landowners who voluntarily donate qualifying conservation land to a municipality, the state or a nonprofit conservation organization. Other general constraints to natural resource protection include:

- Data deficiencies and lack of adequate inventory and analysis of natural resources.
- Limited local funding sources for land conservation.
- Limited knowledge of the resource protection and tax benefits of the Chapter 61 tax reduction programs.
- Open Space and Recreation Plan (OSRPs) requirements are often difficult for small towns to meet due to small, often volunteer committees and due to lack of sufficient funding to the FRCOG to meet all the planning needs of Franklin County towns.
- Perception that initial due diligence funds such as appraisals and title review are an impediment to land conservation.
- Limited awareness of the options available to landowners for land conservation.
- Inconsistent support from towns and cities for the protection of land.
- Lack of town volunteer coordinators to support volunteers on multiple boards.
- Lack of long-term town Open Space and Recreation Committees to implement OSRPs.
- Lack of ongoing funding for the implementation of town OSRPs.
- Limited public knowledge of the Payment in Lieu of Taxes (PILOT) Program.

Map 8-10: All Priority Protection Areas



Franklin County, Massachusetts

Franklin Regional Council of Governments

0 2 4 8 Miles

Sources: Map produced by the Franklin Regional Council of Governments Planning Department. GIS data sources include MassDOT, MassGIS and FRCOG. Depicted boundaries are approximate and are intended for planning purposes only, not to be used for survey.

Natural Resources Summary

Many areas defined in the preceding maps as Priority Protection Areas are shown on this map and are those areas most vital to sustainable natural resources in Franklin County.

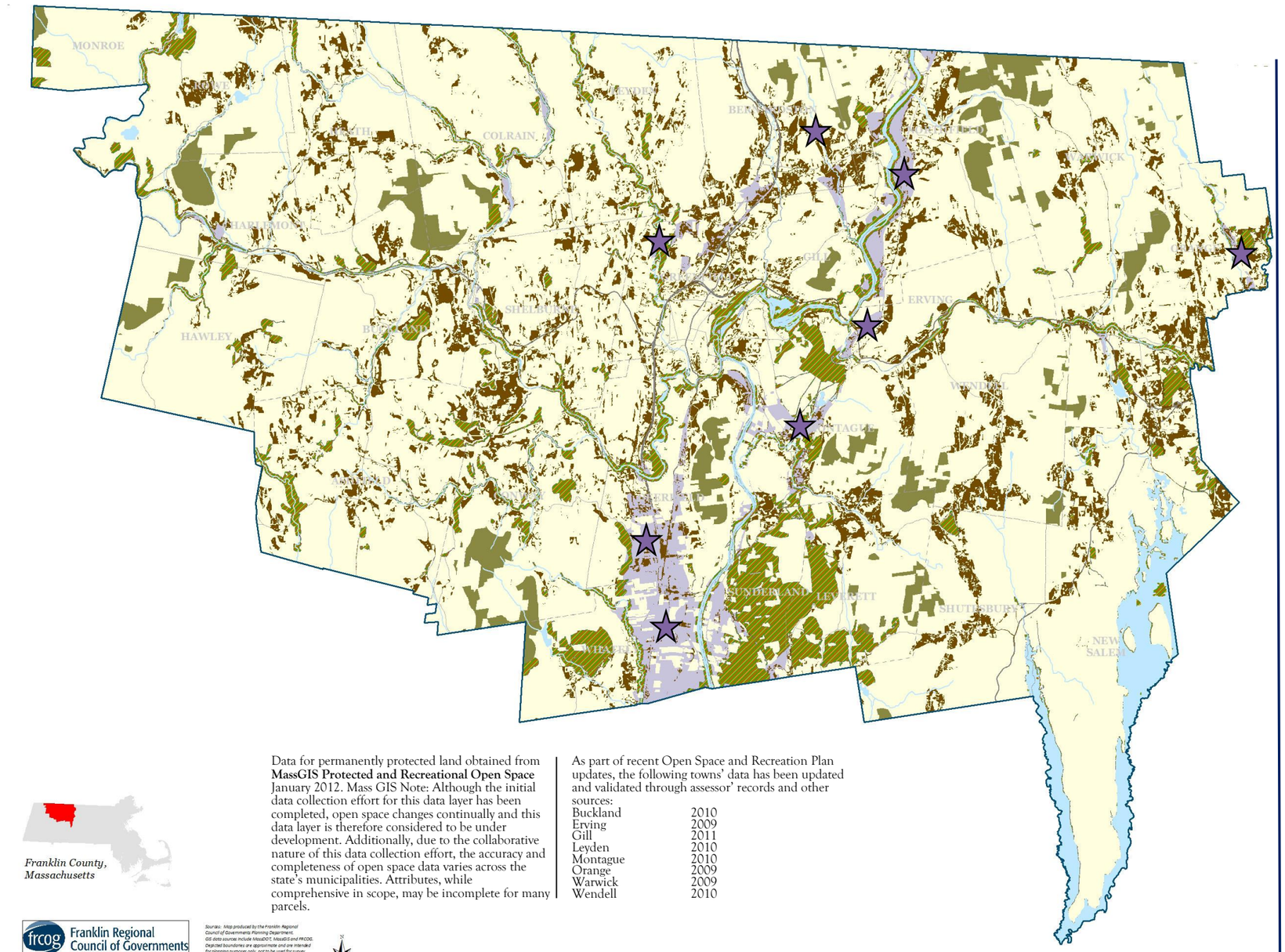
Priority Protection Areas are distributed throughout the County, with concentrations along the Connecticut River Valley. Nearly all the aquifers and the Priority and BioMap2 Core Habitats are located in the Connecticut River Valley. These areas can also be subject to development and are especially important to preserve and protect.

Because natural resources exist across municipal borders, any future local and regional planning efforts should incorporate this analysis and should consider impacts on Priority Protection Areas. See Map 8-11 for Priority Protection Areas that are unprotected.

Priority Protection Areas

- Town Boundary
- Major Road
- Major River, Stream
- Water Body
- Agriculturally Suitable Soils
- BioMap2 Forest Core
- Priority & BioMap2 Core Habitats
- Aquifer
- Potential Future Water Supply Site

Map 8-11: All Unprotected Priority Protection Areas



Unprotected Areas Summary

This map shows all areas defined as Priority Protection Areas (see Map 8-10) that are not currently developed and are not currently protected. These areas represent lands that have the greatest potential to help sustain natural resource diversity and sustainability in the County.

Much of Franklin County's aquifers and large swatches of Priority and BioMap2 Core Habitats, located along the Connecticut River Valley have the potential to be protected.

Towns, land trusts, and other agencies and organizations can utilize this information to help guide development and protection priorities on the local and regional level.

Priority Protection Areas

- Town Boundary
- Major Road
- Major River, Stream
- Water Body
- Undeveloped Agriculturally Suitable Soils
- Undeveloped BioMap2 Forest Core
- Undeveloped Priority & BioMap2 Core Habitats
- Undeveloped Aquifer Areas
- Potential Fugure Water Supply Site

Data for permanently protected land obtained from **MassGIS Protected and Recreational Open Space** January 2012. Mass GIS Note: Although the initial data collection effort for this data layer has been completed, open space changes continually and this data layer is therefore considered to be under development. Additionally, due to the collaborative nature of this data collection effort, the accuracy and completeness of open space data varies across the state's municipalities. Attributes, while comprehensive in scope, may be incomplete for many parcels.

As part of recent Open Space and Recreation Plan updates, the following towns' data has been updated and validated through assessor' records and other sources:

Buckland	2010
Erving	2009
Gill	2011
Leyden	2010
Montague	2010
Orange	2009
Warwick	2009
Wendell	2010

Franklin County, Massachusetts

frcog Franklin Regional Council of Governments

Sources: Map produced by the Franklin Regional Council of Governments Planning Department. GIS data sources include MassDOT, MassGIS and FRCOG. Depicted boundaries are approximate and are intended for planning purposes only, not to be used for survey.

0 2 4 8 Miles

SUMMARY NATURAL RESOURCE BENCHMARKS

The overall goals for the region's natural resources are mostly long-term efforts with multiple strategies. In order to measure the success of the natural resources goals some suggested benchmarks are shown in following table. The benchmarks are predominantly data-driven and can be measured over time. To do this, data on the benchmarks will be collected and evaluated by FRCOG staff at regular intervals to establish trends.

Table 9: Natural Resource Benchmarks

Performance Measure	Unit of Measurement	Desired Trend	
Aquifer Recharge Areas			
Land protected for future drinking water supplies	**Percent change in acres protected**	**Increase**	
Bylaw for aquifer protection	**Percent change in town adoption**	**Increase**	
Household water usage	**Percent change in gallons per year**	**Decrease**	
Farmlands			
Permanently protected farmland	**Percent change in acres protected**	**Increase**	
Acres used for producing human food	**Percent change in acres**	**Increase**	
Food produced and consumed in the County	**Percent change in food sold locally**	**Increase**	
Agricultural irrigation with suitable greywater	**Percent change in gallons of water used**	**Increase**	
Forests			
Permanently protected forests	**Percent change in acres protected**	**Increase**	
Demand for locally produced forest products	**Percent change in sales**	**Increase**	
Critical Habitat			
Permanently protected critical habitat	**Percent change in acres protected**	**Increase**	
Brownfields			
Brownfields sites identified for redevelopment or remediation (especially in low-income or minority communities)	**Percent change in sites identified**	**Increase**	
Surface Water and Fisheries			
Comprehensive regional water, air and land use plans	Change in number of regional plans	Increase	
Comprehensive regional water, air and land use plans adopted by local towns.	Change in number of towns adopting regional plans	Increase	
Wetlands and Floodplains			
Low impact design to manage stormwater runoff	Percent change in town adoption	Increase	
Non-point source water pollution	Percent improvement in water quality	Increase	

SUSTAINABLE FRANKLIN COUNTY

Chapter 9: Cultural Resources

INTRODUCTION

Franklin County has a rich cultural heritage with countless cultural resources providing evidence of the character and history of the region. The culture of a place and its people can be discovered through its landscapes, structures, objects, festivals and more. For the purposes of this Plan, ***cultural resources are defined as follows***:

Places: A special place that helps define the character of a community or reflects its past such as a village center, landscape, river corridor, park, farm, archaeological site, Native American site, trail, or scenic road.
Objects: A special object of historic, scientific, educational, or social importance such as an artifact, historic record, photograph, map, cemetery, or mill site.
Creations: Special art or event that offers evidence of the traditions and creativity of people such as music, dance, arts and crafts, food, festivals, or special event.[1]

BACKGROUND

Franklin County has worked to identify and protect its cultural resources through many local and regional planning efforts. Obtaining the funding needed to restore and reuse the County's historical buildings for mixed uses is a priority for residents, as is protecting its agricultural lands and fostering arts and culture.

Given the diversity of cultural resources in Franklin County, this chapter of the Plan endeavors to describe the types of cultural resources Franklin County possesses, to highlight several exceptional resources, and to provide a summary of cultural resources documented in previous planning efforts. This chapter also discusses the impact of climate change on cultural resources and will identify constraints, recommendations, and potential projects to protect cultural resources.

PLACES IN FRANKLIN COUNTY THAT ARE CULTURAL RESOURCES: Types of places that most define the character of Franklin County include its village centers, river corridors, farms, and scenic landscapes.

VILLAGE CENTERS were mostly settled in the mid to late 1700s and are often located on rivers, mainly for power and transportation, because of rich agricultural soils, and later for industry and tourism. Village centers were also established in agricultural areas. Most village centers have in common their historic homes, churches, and mill buildings, often clustered near a village common and located on a main road. Over two- thirds of the County's village centers are on the National Register of Historic Places. One such place is Historic Deerfield, which focuses on the history of the Connecticut River Valley.

RIVER CORRIDORS shape the County in numerous ways, influencing human activities, providing wildlife habitat, offering recreation, food, power, and transportation and providing humans with a deep connection to the natural world. They can be flat and broad, such as the Connecticut River Valley or narrow and hilly, such as those of the hilltowns.

FARMS in Franklin County reflect the agrarian heritage of the region and offer idyllic views of farmland tucked into forests. Behind these idyllic views is the reality of hard-working farmers, diversifying their crops and working to meet the growing demand for locally-grown food in the County. Farms provide connections to the agricultural history of the County and an opportunity for economic development for the region.

SCENIC LANDSCAPES in Franklin County are often comprised of farms and forest, sometimes located alongside rivers. They often contain village centers and, in many cases offer scenic views of nearby ridge lines and mountains. Five routes in Franklin County – Routes 116, 112, 122, the Mohawk Trail (Route 2), and Connecticut River Scenic Farm Byway (Routes 47 and 63/10) – have been designated Scenic Byways by the State, making them eligible for various funding sources.

[1] Definition is developed from MA Heritage Landscape Program, Federal Emergency Management Agency, National Scenic Byway Program, and USDA Natural Resource Conservation Service definitions.

Cultural resources include bridges, such as the French King Bridge in Erving/ Gill, and cemeteries such as this one in Ashfield.

OBJECTS IN FRANKLIN COUNTY THAT ARE CULTURAL RESOURCES: Types of objects of historic, scientific, educational, or social importance that are most common in Franklin County are found in town historical societies, museums, libraries, town offices, and town-owned or private land. They include historic maps and photographs, archives, stone walls, cemeteries, bridges, cisterns, mill remnants, private homes, municipal buildings, antiques, and much more.

Bridges range from the iconic pedestrian Bridge of Flowers in Shelburne Falls to the historic Bissell Bridge in Charlemont to the cantilever arch style French King Bridge that spans the Connecticut River between Gill and Erving. There are 293 bridges in Franklin County, many of which are historically and culturally significant. Repairing and preserving (where possible) the County's bridges is important for the County's historic and cultural heritage as well as for the safety and well-being of its citizens. See Chapter 5: Transportation for more information.

CEMETERIES exist in all Franklin County towns. Some are owned by towns while others are on private property. All cemeteries are important cultural resources and contain evidence of the history of a community, display the work of skilled stone carvers, and document the evolution of funereal iconography. Historic cemeteries and burial grounds present preservation challenges, including the need for maintenance and repair of damaged headstones, deteriorated walks and enclosures, and aging and hazardous trees.

CREATIONS: Types of artistic or creative things or events that demonstrate the traditions or values of Franklin County include arts and crafts and events and festivals.

Arts and Crafts – and the artists who create them – are a vital part of Franklin County's economy. Artisans work from home studios and from art galleries, form artists networks, and contribute to the local economy. Crafts of Colrain, RiverCulture Project, and Old Deerfield Craft Fairs are just a few of the many arts and crafts-related projects that draw residents and tourists alike to the County. Other arts and crafts-based groups in the County include community and school choruses and theatre groups.

Events and Festivals As with other cultural resources in Franklin County, there is a rich and diverse list of events and festivals, too numerous to mention. Examples of these types of cultural resources include the North Quabbin Garlic and Arts Festival, Ashfield Fall Festival, Festival of the Hills in Conway, Sunderland Fall Festival, and Rowe Historical Society's Walk to Historic Fort Pelham, as well as many other street fairs, powwows, and craft fairs. Most events and festivals in the County rely upon volunteers and donations.

Creative Economy in Franklin County

The FRCOG's Greater Franklin County 2012 Comprehensive Economic Development Strategy (CEDS) Annual Report addresses the impact the creative economy has had on the region's economy. The creative economy sector includes independent writers and artists, as well those employed in firms that produce crafts or media content. The report finds that artists and craftspeople who grow and expand their businesses in Franklin County provide employment and mentoring opportunities. The revenues they earn circulate within the community longer than if the business had ownership from outside the area. In addition, this industry is generally environmentally friendly and contributes to the overall character of the community without significantly using town resources. Galleries, studio space, public art and events, all add to a downtown's vitality and are a visible contribution to a community.

While the concentration of artisans in the region has been acknowledged for a long time, a statistical assessment titled "The Creative Economy of the Pioneer Valley" was published by the FRCOG and Pioneer Valley Planning Commission. This inventory of the creative economy sector in the three-county, Pioneer Valley region demonstrated that parts of the Pioneer Valley have increasingly higher concentrations of creative workers than the state and the nation, and that the types of cultural enterprises vary widely within the region. The report creates a baseline for understanding the dimensions of the Pioneer Valley's creative economy. This data is being used to inform stakeholders when exploring policies and programs.

According to New England Foundation's CultureCount calculator that demonstrates the economic impact of cultural organizations to a Massachusetts community or county, it was determined that for FY2003 in Franklin County, cultural organizations had $20 million local economic impact. While this model does not provide for more updated figures, it does demonstrate the contribution of the creative economy to the greater economy.

In the past year, the Fostering the Arts & Culture in Franklin County Project hosted its third Creative Economy Summit. Over 200 people attended the two-day summit in downtown Greenfield to discuss this economic sector and to develop strategies for how to further support it across the greater region. More information about this event and the organizations and initiatives that are supporting the creative economy is included in the CEDS report and some recommendations from the report are included at the end of this chapter and in Chapter 6: Economic Development.

Environmental Threats to Cultural Resources

Many of the County's cultural resources could be vulnerable to damage due to flooding, which is anticipated to increase due to climate change. Native American artifacts and sites could be at risk of flooding as could bridges and historic mill buildings. Village centers, many of which were settled on rivers and which are also often designated as historic districts, are especially vulnerable to flooding. The buildings and other structures within village centers are often quite old and of historical significance and can contain historic archives, maps and other objects which serve as a record of the town's history. Franklin County's towns are challenged to find funding to help flood-proof older buildings and/or to move cultural resources to areas less prone to flooding. Other impacts of climate change will include increased frequency of major storms including rain and snow storms, as well as microbursts.

Cultural resources can be vulnerable to flooding, as was seen during Tropical Storm Irene, which knocked the Eunice Williams Covered Bridge in Greenfield from its footings.

Another environmental threat to cultural and historic resources is acid rain, which not only impacts cemetery and historical markers, but which damages historic trees and stone buildings.

PRESERVING CULTURAL AND HISTORIC RESOURCES

Input from the Sustainable Communities Goals Survey help to define those cultural resources goals that are most important to Franklin County residents.

Top Three Cultural Resource Goals:

- Foster the growth of arts and culture
- Support our agricultural heritage
- Preserve rural & scenic landscapes*
- Revitalize & preserve historic town centers*

*Tied for third place

Many planning efforts in Franklin County include inventory, assessment, and prioritization of cultural resources for preservation. These include:

Heritage Landscape Inventories (HLIs): The MA Department of Conservation and Recreation program identifies, documents, and plans for the protection of vital heritage landscapes. Six Franklin County towns completed HLI Reconnaissance Reports in 2008 and 2009. Goals of the program are to help communities identify a wide range of landscape resources, particularly those that are significant and unprotected, and to provide strategies for their preservation. Areas identified as Priority Heritage Landscapes in those reports are shown on Map 9-1.

Open Space and Recreation Plans (OSRPs): Twenty-two Franklin County towns have completed OSRPs, 11 of which are in need of updating. One requirement of the MA Division of Conservation Services is to identify and map scenic resources and unique environments. Some cultural resources that have been identified in local OSRPs include ridgelines, archaeological districts, agricultural landscapes, historic districts, archives of newspapers, and Native American sites.

Community Development Plans (CDPs): Community Development Plans are intended to help towns to identify their future growth. Funded by the Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA), a CDP is a comprehensive inventory of the town's natural, agricultural, cultural and recreational resources as well as a blueprint for their stewardship and conservation.

Master Plans: Master Plans are long-range planning documents designed to provide a blueprint for a community's future and to guide development in a way that supports residents' vision for the future. Master planning often examines and evaluates many community assets and characteristics, including natural resources and open space, community facilities and services, housing, historic and scenic resources, economic development, transportation, capital improvements, and land use and zoning. Several Franklin County towns have master plans but most are not recent. The master planning process can require substantial monetary and time investments that most of our rural communities cannot afford, without assistance from grants and other funds.

Scenic Byway Plans: The Massachusetts Legislature designates state scenic byways in the Acts of 2004, Chapter 291, Section 65. These distinctive roadways have been recognized by the Commonwealth in order to preserve and enhance existing resources and to generate new possibilities for economic growth. Financial support for Scenic Byways is provided through the National Scenic Byways Program. In order to be eligible for funding, these byways must meet certain eligibility criteria based on their archaeological, cultural, natural, recreational, historic and scenic qualities. Five routes in Franklin County have been designated Scenic Byways.

Hazard Mitigation Plans: Hazard mitigation planning focuses on pre-disaster planning and emphasizes actions that can be taken before a natural disaster occurs. The local and regional Hazard Mitigation Plans for Franklin County identify resources that are at risk of being impacted by natural hazards. In 2010, FEMA put an

added emphasis on natural hazards impacts on cultural and historic resources. By 2013, 24 out of 26 Franklin County towns will have up-to-date Hazard Mitigation Plans with specific cultural and historic resources called out. These updated plans will help the towns qualify for mitigation and disaster relief funding.

National Register of Historic Places: The National Register of Historic Places is the official list of the Nation's historic places worthy of preservation. Authorized by the National Historic Preservation Act of 1966, the National Park Service's National Register of Historic Places is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect America's historic and archeological resources. This designation is honorary in nature and does not provide protection except for demolition delay review for buildings. However, the location of a property within a National Register District does reflect its historic significance. There are currently 48 properties, areas or structures in Franklin County on the National Register. They include bridges, village districts, churches, town commons, schools, and houses.

Community Preservation Act (CPA): The CPA allows communities to create a local Community Preservation Fund to raise money through a surcharge of up to 3 percent of the real estate tax levy on real property for open space protection, historic preservation and the provision of affordable housing. The act also creates a state matching fund, which serves as an incentive to communities to pass the CPA. To date, Conway, Deerfield, Leverett, Northfield, Shutesbury, Sunderland, and Whately have adopted the CPA.

Local Historic Districts

A Local Historic District is established by a community to protect the distinctive characteristics of important areas, and to encourage new structural designs that are compatible with the area's historic setting. Once a local historic district is established, a commission is appointed to review all applications for exterior changes to properties within the district. This design review process assures that changes to properties will not detract from the district's historic character. The review criteria are determined by each city and town and are specific to each local historic district. Currently there are no local historic districts in the County.

There are many other programs and resources currently available to assist communities in preserving cultural resources, however funding for many of these has been reduced or eliminated in recent years. These programs and resources include:

Massachusetts Cultural Districts Initiative: This new initiative was launched by the Massachusetts Cultural Council (MCC) in 2011. The initiative encourages Massachusetts communities to strengthen their sense of place and stimulate economic activity. A cultural district is defined by the MCC as "a specific geographical area in a city or town that has a concentration of cultural facilities, activities, and assets. It is a walkable, compact area that is easily identifiable to visitors and residents and serves as a center of cultural, artistic and economic activity. The Massachusetts Cultural Council recognizes that each community is unique and that no two cultural districts will be alike."

Towns can apply for designation by forming a cultural district partnership with other organizations and stakeholders. The 5-year designation can bring with it Massachusetts Cultural Council funding that might benefit the planning and implementation of cultural districts. Shelburne Falls is the first to have a designated Cultural District in the County. This designation could help attract additional visitors to the village and region.

Capital Facilities Fund: A recent passage of a modified bill in the state allows small towns and rural communities with historic buildings that also serve as cultural centers to receive capital improvement money from the Capital Facilities Fund administered through the Massachusetts Cultural Council. This fund no longer imposes a 50,000 square foot minimum for buildings, making it easier for rural towns to qualify. Given that many town halls are among the most historic buildings in their communities and often double as the cultural facility, this legislation may assist towns in rehabbing these important structures.

National Endowment for the Arts (NEA): Our Town Creative PlaceMaking:

NEA offers competitive grant funding for creative placemaking projects that contribute to the livability of communities and to their beauty and sustainability, with the arts at their core. "Our Town" invests in creative and innovative projects in which communities, together with their arts and design organizations and artists, seek to improve their quality of life, encourage greater creative activity, foster a stronger sense of place, and revitalize economic development.

Massachusetts Historic Rehabilitation Tax Credit (MHRTC)

Administered by the Massachusetts Historical Commission, the MHRTC helps enable the rehabilitation, reuse and revitalization of historic properties in the state. Using these tax credits, historic structures have been rehabilitated to create quality affordable and market rate housing, community centers, commercial and office space, performing arts venues, and restaurants, and helps drive economic development.

CONSTRAINTS TO PROTECTING CULTURAL RESOURCES

While there is the desire to preserve and enhance cultural resources in Franklin County, participants of the fall workshops indicated one of the top constraints to doing so is funding. Lack of funding is the top constraint among several others which were identified throughout the planning process. The constraints identified include:

- Need for funding to inventory and map cultural resources locations.
- Need for funding for the preservation and restoration of important cultural resources, including historic buildings, sites, artifacts, and other resources.
- Vulnerability of many cultural resources to the impacts of climate change and extreme weather events, especially flooding.
- Development pressures on scenic landscapes such as farmland and ridgelines.
- Age of many cultural resources.
- Challenge of retrofitting old structures to meet current building codes and requirements for access.
- Challenge of rehabbing historic structures while meeting energy efficiency goals.
- Impacts of acid rain and other elements on gravestones, historic buildings and markers and other cultural and historic resources.
- The challenge of staffing all-volunteer commissions and boards related to cultural and historic resources limits towns' abilities to complete projects such as inventory and documentation of resources.

Whately's historic buildings and cemeteries are valuable cultural assets for the town and the region.

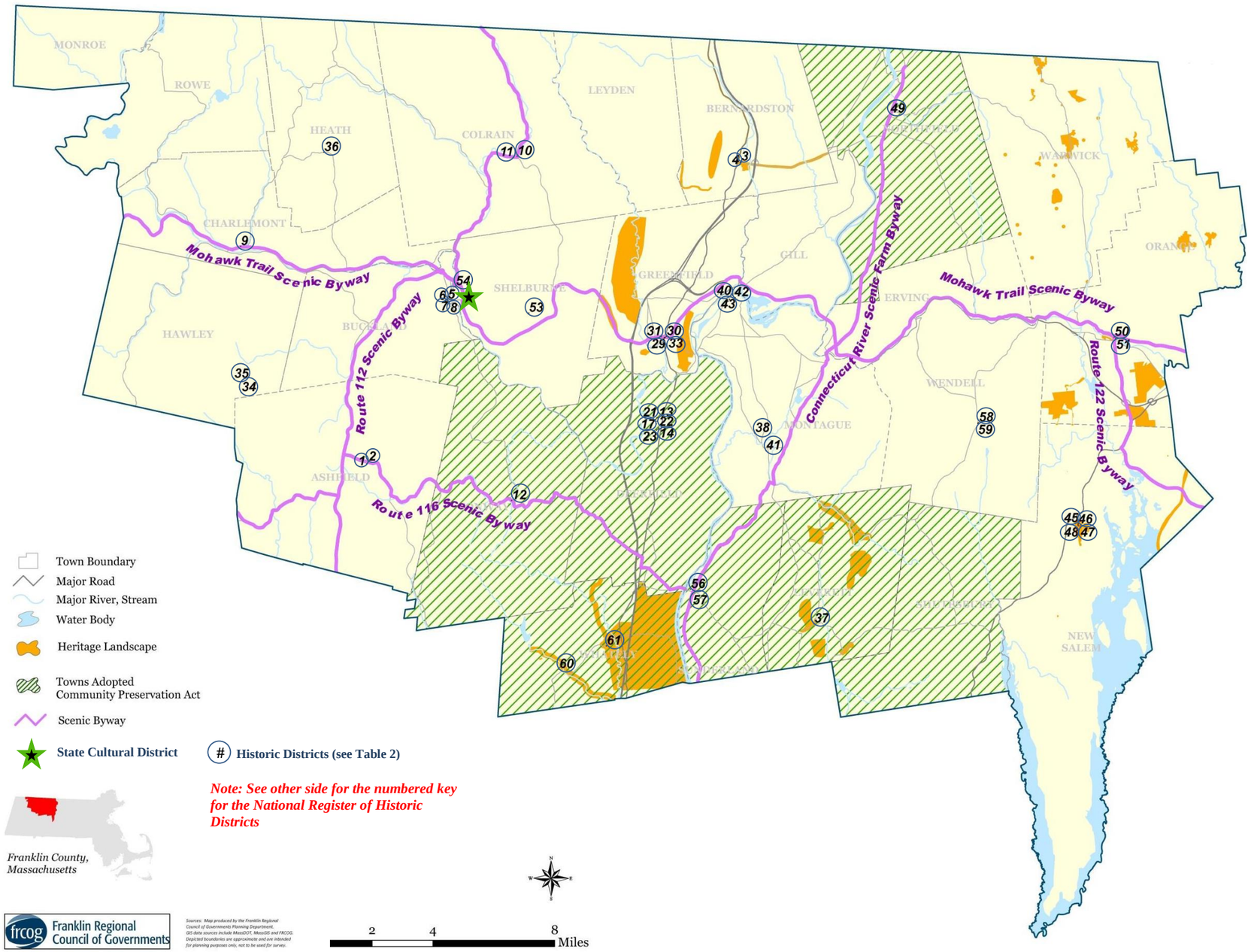
Table 1: Recommendations and Strategies for Cultural Resources	Implementation					Partnering Organization(s)*
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Encourage regional and local initiatives that identify and protect existing cultural and historic resources.						
Provide technical assistance to towns for assessing, inventorying, mapping, and planning for cultural and historic resources.		X				FRCOG, MHC
Support efforts to pursue funding, potentially through an NEA grant, to plan and implement creative placemaking projects.		X				FRCOG, Local Cultural Councils, Historical Commissions
Pursue funding to support the updating of town Open Space and Recreation Plans, which expire after seven years of their last update.	X					FRCOG, Town Open Space and Recreation Committees, DCR
Pursue funding to support the updating or creation of town Master Plans.	X					FRCOG, Towns
Pursue funding to help support local cultural councils, historical commissions, and other primarily volunteer organizations that work to protect and preserve cultural and historic resources in the region.		X	X			FRCOG, Local Historical Commissions
Support the development of a safety-net for professional artists in the event of a disaster and/or emergency (such as Craft Emergency Relief Fund in Vermont).		X	X			RiverCulture, Local Cultural Councils
Support activities that redevelop vacant or underutilized historic properties.						
Conduct a regional inventory and assessment of historic buildings, and support local Historical Commissions to maintain and update this inventory.		X	X			FRCOG, Local Historical Commissions
Support the redevelopment and reuse of historic structures, particularly those located in village centers, such as the Strathmore Mill, Putnam Hall, First National Bank Building, Sweetheart Inn, and Railroad Salvage building for such mixed uses as apartments, retail, commercial, office space, and artist studios and living spaces.		X				FRCOG, Private Investors/ Developers, Massachusetts Cultural Council (MCC), MassDevelopment, Community Preservation Committees
Host regional workshops that focus on historic preservation options and programs, including using the Massachusetts Historic Rehabilitation Tax Credit.	X					FRCOG, Massachusetts Historical Commission, Local Historical Commissions

*See Page 18 **of Chapter 4: Housing for a key to the Partnering Organizations abbreviations***

Table 1: Recommendations and Strategies for Cultural Resources	Implementation					Partnering Organization(s)
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Support the growth of the creative economy.						
Integrate the arts, cultural and historic resources into planning for economic development at the local and regional level.	X					FRCOG, Towns
Help sustain the North Quabbin Woods program and Turners Falls RiverCulture, projects that promote and enhance cultural activities.	X					Massachusetts Cultural Council, Local Cultural Councils, Franklin County Chamber of Commerce, NQ Chamber of Commerce
Encourage artists, craftspeople and others employed in occupations and businesses in the creative economy to participate in the New England Foundation for the Arts' CultureCount database.	X					Local Cultural Councils
Create shared artist studio and creative business work spaces in downtowns and village centers.		X	X			Private Investors/ Developers
Support initiatives that advance the creative economy sector across the region, such as the Fostering Art and Culture Project and their activities such as Creative Economy Summit, trip itineraries, Buzz Events, workshops, etc.	X					FRCOG, RiverCulture, Franklin County Chamber of Commerce, SFABA, NQ Chamber of Commerce
Encourage the use of www.artistlink.org to connect artists with available studio spaces.	X					Local Cultural Councils, Franklin County Chamber of Commerce, SFABA
Seek funding to create and maintain a cultural resource database which captures information on artists and events in the region.		X				FRCOG
Promote cultural resources "branding" on a regional level that captures the essence of Franklin County.						
Create a heritage trail that links one rural town to the next through their cultural and historic resources such as through the Scenic Byway Marketing Program.		X	X			FRCOG, Massachusetts Cultural Council, Local Cultural Councils and Historical Commissions
Promote the Fostering Art and Culture Project as a means to encourage regional branding and collaboration to extend the creative economy's impact on the entire region.	X					Franklin County Chamber of Commerce, SFABA

Table 1: Recommendations and Strategies for Cultural Resources	Implementation					Partnering Organization(s)
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Promote the marketing plans for designated hub areas of Franklin County, identified in the Fostering Art and Culture Project as North Quabbin, Turners Falls, Deerfield, Shelburne Falls, and Greenfield.		X	X			Franklin County and North Quabbin Chambers of Commerce, SFABA
Help promote the work of Museums10 collaborative, which fosters life-long learning through art, culture, science, and history.		X				Franklin County Chamber of Commerce, SFABA
Support efforts of indigenous groups (organizations or tribes) to develop an appreciation and understanding of their rich heritage in the region.						
Continue to identify and prioritize for protection Native American cultural and historic resources in local, regional, and Scenic Byway plans in the region.	X					FRCOG, Towns
Support the creation of a heritage tourism program and/or facility focusing on the importance of Native American peoples' place in the region.		X	X			Franklin County Chamber of Commerce, SFABA, Towns
Support education and outreach related to cultural and historic resources.						
Pursue funding to digitize historic photos and documents for the purposes of preservation and sharing.		X				FRCOG, Massachusetts Cultural Council, Towns
Promote courses available to the public such as cemetery and historic marker preservation, and preservation restrictions for homes and scenic areas.	X					Greenfield Community College, MHC
Support classroom curricula for elementary and high school students including local historical and cultural focuses.	X					Local Historical Commissions and Cultural Councils, School Administrators, Teachers
Encourage utilization of programs that use local high school, college, and university interns to help towns with cultural and historical projects such as documentation and inventory of resources.	X					Local Historical Commissions, Local Cultural Councils, School Administrators, Teachers
Support tours of historic buildings that have been rehabilitated, particularly those that have been retrofitted with energy efficient features to demonstrate sustainability.		X				Franklin County Chamber of Commerce, Local Energy Committees, NESEA
Encourage the collection of oral history narratives to capture important stories from elders.		X	X	X		Local Historical Commissions, Local Cultural Councils

Map 9-1: Cultural and Historic Resources



Cultural and Historic Resources Summary

Mapping cultural and historic resources at the regional level helps to identify patterns which may be utilized to help prioritize areas for protection. Patterns can also be useful to help create historic and cultural tours of Franklin County. The existing Scenic Byways, shown in purple, could serve as the basis for such tours and could link various cultural hubs throughout the region.

Scenic Byways travel throughout Franklin County, intersecting with one another and connecting towns with similar resources together. For example, Scenic Byways connect many of the National Register Historic Districts to each other, helping to make the Districts easily accessible to visitors.

Mapping important cultural and historic resources can also help to identify those that could potentially be at risk to such hazards as increased flooding associated with climate change, such as those located along rivers and other water bodies. Mapping and assessing these cultural and historic resources is a first step toward planning for their protection. A more detailed region-wide mapping and assessment of cultural and historic resources, with funds to maintain such an assessment, is one of the strategies recommended in this chapter.

Native American cultural and historic resources are also a vital part of the region. Due to their often sensitive nature, Native American resources are not identified on this map, however, this plan includes a recommendation and strategies to help promote and protect indigenous resources in the region.

Table 2: National Register of Historic Districts: Map Key for Previous Page

Number	Town	NRDIS	Location*	# of Properties or Resources in District
1	**Ashfield**	Ashfield Plain	Along Main and South Streets, adjacent to Buckland and Norton Hill Roads	169
2		Hall, Alvan Store**	457 Main Street	2
3	**Bernardston**	Powers Institute**	28 Church Street	3
4		Powers Institute Historic District	Church Street	5
5	**Buckland**	Shelburne Bridge	Bridge Street over Deerfield River	1
6		Buckland Odd Fellows Building	1-5 State Street	1
7		Buckland Town Hall**	17 State Street	1
8		Shelburne Falls Historic District	Bridge and State Streets - Buckland/Shelburne	9
9	**Charlemont**	Charlemont Village Historic District	Main St between South and Harmony Streets	114
10	**Colrain**	Colrain Center Historic District	Main, Greenfield, and Jacksonville Roads, Streeter Lane, River and Colburn Streets	94
11		Griswold Memorial Library**	12 Main Street	1
12	**Conway**	Conway Center Historic District	5-38 Academy Hill Road, 8-98 Main Street and 1-59 Elm Street	54
13	**Deerfield**	Allen House**	104 Old Main Street	1
14		Deerfield Old Town Hall**	12 Memorial Street	1
15		Deerfield Old Town Office Building**	14 Memorial Street	1
16		Field House**	The Street (Old Deerfield Road)	1
17		First Church of Deerfield**	71 Old Main Street	1
18		Higginson-Childs House**	The Street (Old Deerfield Road)	1
19		Hinsdell, Ebenezer-Williams, Ebenezer House**	Old Main Street	1
20		Hoyt, David House**	Old Main Street	1
21		Moors, Rev. John Farwell House**	103 Old Main Street	1
22		Old Deerfield Village Historic District	The Street (Old Deerfield Road)	52
23		Wells, Ebenezer - Thorne House**	52 Old Main Street	1
	Erving	None		
24	**Gill**	Riverside Archaeological District	Gill/Greenfield	12
25		Turners Falls Historic District	(Montague/Gill) Turners Falls, roughly bounded by L, 9th, 7th, and J Streets, the Connecticut River, Avenue A, and 1st Street	1
26	**Greenfield**	East Main-High Streets Historic District	Bounded by Church, High, East Main, and Franklin Streets	75
27		First Franklin County Courthouse**	15 Bank Row	1
28		First National Bank and Trust of Greenfield**	9 Bank Row	1
29		Garden Theatre Block	353-367 Main Street	1
30		Leavitt-Hovey House	402 Main Street	1
31		Main Street Historic District	Main Street at Court Square and Bank Row, bounded on west by Chapman Street and on east by Hope Street	53
32		Riverside Archaeological District	Gill/Greenfield	12
33		U. S. Post Office - Greenfield Main Branch	442 Main Street	1
34	**Hawley**	East Hawley Center Historic District	East Hawley, Plainfield, Buckland, and Ashfield Roads	23
35		First Church-East Hawley Church	East Hawley Road	1
36	**Heath**	Heath Center Historic District	East Main and West Main Streets, Avery Brook, Taylor Brook, and Bray, Colrain Stage, Ledges, and South Roads	86
37	**Leverett**	Leverett Center Historic District	Amherst, Montague, Depot and Shutesbury Roads	97
	Leyden	None		
	Monroe	None		
38	**Montague**	Alvah Stone Mill	400 Greenfield Road	20
39		Carnegie Public Library**	Avenue A	1
40		Crocker Bank Block**	52-54 Avenue A	1
41		Montague Center Historic District	Center, Main, North, School, and Union Streets	234
42		Opera House Block**	85 Avenue A	1
43		Turners Falls Historic District	(Montague/Gill) Turners Falls, roughly bounded by L, 9th, 7th, and J Streets, the Connecticut River, Avenue A, and 1st Street	280
44	**New Salem**	New Salem Academy**	Academy Drive	1
45		New Salem Common Historic District	South Main Street	43
46		New Salem First Congregational Church	26 South Main Street	1
47		New Salem Old Academy Building	3 Academy Drive	1
48		New Salem Third Congregational Church**	22 South Main Street	2
49	**Northfield**	Main Street Historic District	Main Street from Moody Street to Route 10	148
50	**Orange**	Orange Center Historic District	Bounded by North Main, East Main, East River, South Main, West River and West Main Streets	44
51		Peace Monument - It Shall Rise Again**	Memorial Park	1
	Rowe	None		
52	**Shelburne**	Buckland-Shelburne Bridge	Bridge Street over Deerfield River	1
53		Hill Cemetery and Parson Hubbard House Historic Dist	Old Village Road	5
54		Shelburne Falls Historic District	Bounded by the Deerfield River, Bridge Street, Route 2, and Arms Cemetery	360
	Shutesbury	None		
56	**Sunderland**	Graves Memorial Library**	111 North Main Street	1
57		Sunderland Center Historic District	Main Street from Old Amherst Road to French's Ferry Road	180
	Warwick	None		
58	**Wendell**	Central Congregational Church**	Morse Village Road	2
59		Wendell Town Common Historic District	Depot, Lock's Village, Montague, and Morse Village Roads	32
60	**Whately**	West Whately Historic District	Conway, Day Hill, Haydenville, Poplar Hill, Webber, and Williamsburg Roads	129
61		Whately Center Historic District	Chestnut Plain and Haydenville Roads	98

*Locations are approximate. For exact locations of National Register Historic Districts and for information on National Register Individual Properties, please consult Massachusetts Historical Commission.

**Under preservation restriction. Please consult Massachusetts Historical Commission for more information.

BENCHMARKS

The overall goals for the region's cultural and historic resources are mostly long-term efforts with multiple strategies. In order to measure the success of the cultural resources goals some suggested benchmarks are shown in Table 3. The benchmarks are predominantly data-driven and can be measured over time. To do this, data on the benchmarks will be collected and evaluated by FRCOG staff at regular intervals to establish trends.

TABLE 3: Cultural and Historic Resource Benchmarks

Performance Measure	Unit of Measurement	Desired Trend	
Towns with up to date Hazard Mitigation Plans.	Percent change in towns	Increase	
Properties listed on National Register of Historic Places	Percent change properties	Increase	
Properties rehabilitated and reused for mixed use development	Percent change in properties	Increase	
Participation in CPA	Percent change in number of towns	Increase	
Towns with up to date Master Plans and /or Open Space and Recreation Plans.	Percent change in number of towns	Increase	
Amount of CPA funding to towns.	Percent change in dollar amount.	Increase	
Amount of arts councils funding.	Percent change in dollar amount.	Increase	
Number of Cultural Districts or Heritage Trails in Franklin County.	Percent increase in number of each.	Increase	
Attendance level of cultural events.	Percent increase in attendance.	Increase	
Acres of land under Agricultural Preservation Restrictions.	Percent increase in acres.	Increase	
Historic structures protected by Preservation Restrictions.	Percent increase in structures.	Increase	

SUSTAINABLE FRANKLIN COUNTY

Chapter 10: Land Use and Infrastructure

INTRODUCTION

This chapter examines the existing patterns of land use and current conditions of the region's infrastructure. It includes information from the recently completed Franklin County 2012 Regional Transportation Plan and from the Greater Franklin County 2012 Comprehensive Economic Development Strategy (CEDS) Annual Report.

In addition, the Land Use and Infrastructure Chapter synthesizes the findings of the other chapters of this plan. Many of the topics of this plan and the goals for each are interrelated and depend upon strategic land use and infrastructure planning.

In addition to this information, the results of the Goals Survey and the Sustainability Workshops influence the recommendations and strategies of this chapter. The top land use and infrastructure goals identified in the survey are:

TOP THREE LAND USE GOALS

1. Prioritize redevelopment of vacant or underutilized structures and properties
2. Locate new businesses in town centers or near transit services
3. Coordinate new development with existing transportation, water and sewer infrastructure

TOP THREE INFRASTRUCTURE GOALS

1. Protect and expand "green infrastructure" to reduce flooding, purify air and water and decrease energy use for cooling
2. Improve broadband internet access
3. Maintain or upgrade sewer and water infrastructure

Suggestions from the public workshops for infrastructure improvements include water and sewer upgrades for many towns and region-wide broadband access. Common suggestions for transit infrastructure improvements include county-wide east-west passenger rail, expanded public transit service to Bernardston/Northfield and Conway/Ashfield, and pedestrian and bike paths. Some of the more popular potential projects related to infrastructure identified during the public workshops include county-wide passenger rail, expanding transit services, and food processing infrastructure. This chapter also identifies constraints and barriers to sustainability as it pertains to land use and infrastructure and makes recommendations to increase sustainable development patterns and improve infrastructure.

BACKGROUND

The geographic center of the region is the Connecticut River Valley, which has a broad flat expanse offering unparalleled agricultural soils and beautiful scenic vistas. The Connecticut River bisects the region with the Berkshire foothills to the west, and the Pelham hills and the Quabbin Reservoir to the east. Flowing into the Connecticut River are the Deerfield River to the west and the Millers River to the east. These rivers and the Quabbin Reservoir are the principal water features in the landscape.

The topography of a region often dictates the use of the land. In fact, common land use patterns can be observed throughout Franklin County. In the hilltowns, village centers are often found clustered along rivers, and roads travel along rivers and streams. The steep slopes in many of the hilltowns pose limitations for siting large-scale developments and in some areas can present constraints with respect to transportation access. In many places in the hilltowns, the terrain, floodplains, and exposed bedrock also constrain the potential for installation of community-scale sewer systems.

In the plains of the Connecticut River Valley, although village centers formed along rivers, they also sprung up in agricultural areas. Not surprisingly, this area contains most of the existing large-scale development and most of the land zoned for these purposes. However, the Valley also contains much of the prime farmland in the region, and such

development may impact this resource so vital to the agricultural economy.

Existing Land Use and Development Patterns

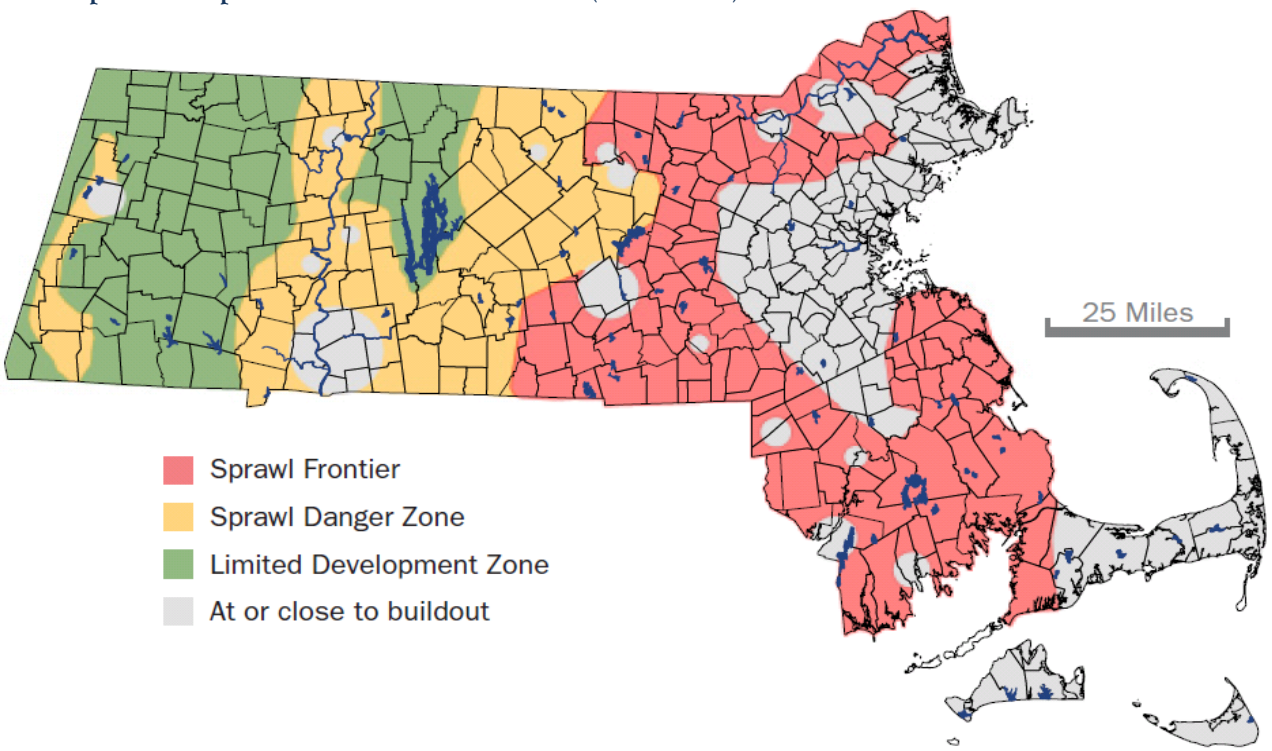
Franklin County has seen an increase in residential land use over the last 40 years, with forestland and farmland being lost to residential land use. This trend is similar at the statewide level, with residential growth trends steering away from a village center model and spreading diffusely across Massachusetts' landscape. According to the MA Executive Office of Environmental Affairs, from 1950 to 1990, the state's population grew by 28 percent while the amount of developed land in the state grew by 188 percent.

In more recent findings, the 2009 Mass Audubon report, *Losing Ground: Beyond the Footprint*, development patterns and their impact on nature in Massachusetts are analyzed. As shown in Map 10-1, a significant portion of Franklin County lies within Mass Audubon's "Sprawl Danger Zone", classified as such based upon the important ecological resources poised to be lost to development should more significant sprawl continue to expand into the region.

Coupled with sprawl is the loss of agricultural lands, which are especially vulnerable to development pressures in part because they are already cleared and leveled and typically have soils suitable for septic systems. *Losing Ground* identifies two towns along the Connecticut River – Deerfield and Hatfield – as among 20 towns and cities in the state with the most acres of agricultural land converted to development. Once converted to residential or other land use, farmland is all but lost to future food production. *Losing Ground* identifies the loss of farmland as a statewide issue.

In general, increases in residential land use in Franklin County has not been concentrated in existing town centers or population centers, but has

Map 10-1: Losing Ground: Beyond the Footprint, Mass Audubon, 2009
Development Impact Zones in Massachusetts (1999-2005)



instead been strung along rural roadsides. This pattern is due, at least in part, to large lot zoning as well as the Approval Not Required (ANR) provision of the Subdivision Control Law, Chapter 41 of Massachusetts General Law, which allows land owners to develop land for residential use as long as it meets frontage and access requirements.

The results of this pattern of development over a twenty year period are illustrated in Maps 10-2 and 10-3. Development has spread out along rural roads and outlying areas. The impacts of this type of sprawling residential development can include:

- Loss of farmland and forest.
- Fragmented wildlife habitats.
- Increased costs for municipalities for road maintenance, infrastructure, and services.
- Decline of town centers and loss of community connection.
- More fossil fuel used for transportation.

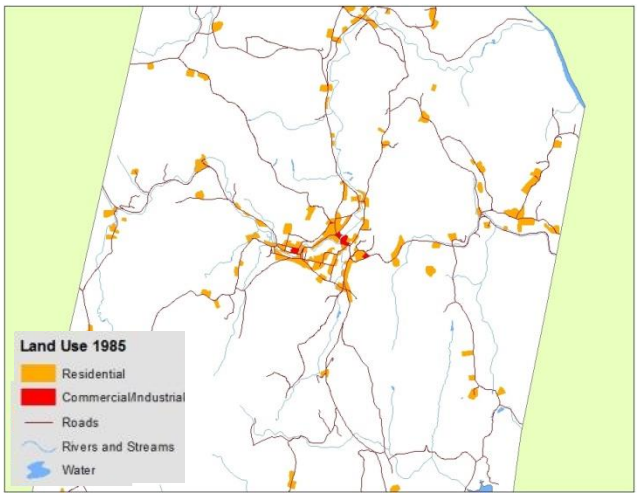
The most recent land use data available for Franklin County is derived from 2005 MassGIS data. In 2005, MassGIS changed the technology and methodology used to collect land use data. Although exact comparisons to previous years are not possible, due to this change, it is possible to make general statements about land use change. Between 1999 and 2005, farmland decreased by about 11 percent During the same time, the amount of forest land use stayed nearly the same, while commercial/industrial land increased by about 12 percent.

Franklin County's total land mass is 463,511 acres. According to 2005 Mass GIS data, about 77 percent (357,910) acres) of Franklin County was forested, nearly 8 percent (36,073 acres) of Franklin County was in agricultural use, about 7% (33,112 acres) was classified as water and wetlands, and approximately 4 percent (18,983 acres) was in residential use. Commercial and industrial (2,178 acres), urban open land (2,072 acres), open land (8,164 acres), recreation (1,717 acres) transportation (2,167 acres), mining and other developed land uses (1,136 acres) made up the remaining land uses in Franklin County.

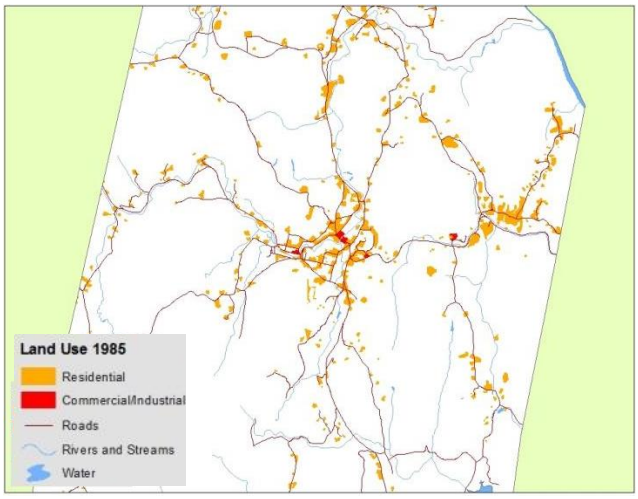
Population Growth and Development Trends

As stated in the Housing Chapter, population in the County has slowly, but steadily grown over the last 40 years. See page __ for more information. Projections show that the County's population will undergo a growth rate of seven percent between 2010 and 2035.

Map 10-2: Residential Land Use 1985



Map 10-3: Residential Land Use 2005



With the projected growth rate, approximately 3,500 households will need to secure housing in Franklin County, with at least some housing resulting in new development. Continuing to locate new residential development in outlying rural areas will exacerbate the impacts to towns and to critical natural resources. Alternatives to sprawling residential development include infill and concentrating growth in town centers, near employment centers, and on transit routes where existing infrastructure can support the growth. Diversifying housing stock to include more accessory apartments, multi-family dwellings and mixed use buildings can also help alleviate the pressure to develop more land.

Permanently Protected Land

In response to development pressures and concerns about their ability to handle future potential growth, a number of Franklin County communities, including Buckland, Erving, Gill, and Orange have revised their zoning bylaws in recent years to direct growth to areas within their towns with the highest current levels of development and the best infrastructure (water, sewer, roadways) to accommodate new growth. Towns have also worked to encourage other areas to remain undeveloped farmland and forestland. In particular, land conservation organizations in the region, such as the Franklin Land Trust and the Mount Grace Land Conservation Trust, have protected a considerable amount of private farm and forestland in the region through the direct purchases of land.

Because the number of acres of land undergoing permanent protection continues to grow, it is difficult to quantify and/or compare the total amount of acres protected in Franklin County. On the local level, when a town updates its Open Space and Recreation Plan (OSRP), land protected under Conservation Restrictions and Agricultural Preservation Restrictions is updated. But on the regional and state level, data can be several years old.

Farmers face challenges finding affordable land to farm, as development pressures drive up the cost of farmland.

Protecting Farmland and Farm Infrastructure

In 2012, Mount Grace Land Conservation Trust piloted *Campaign for Affordable Farms / Red Fire Farm Project*, an effort to increase access to affordable whole farms (land and infrastructure). The initiative addresses the urgent need for permanently protected farms – and farm infrastructure – that are affordable to those wanting to farm them. This conservation project will help establish procedures and a range of models, building on the work of Equity Trust, which can be applied to farms throughout the region.

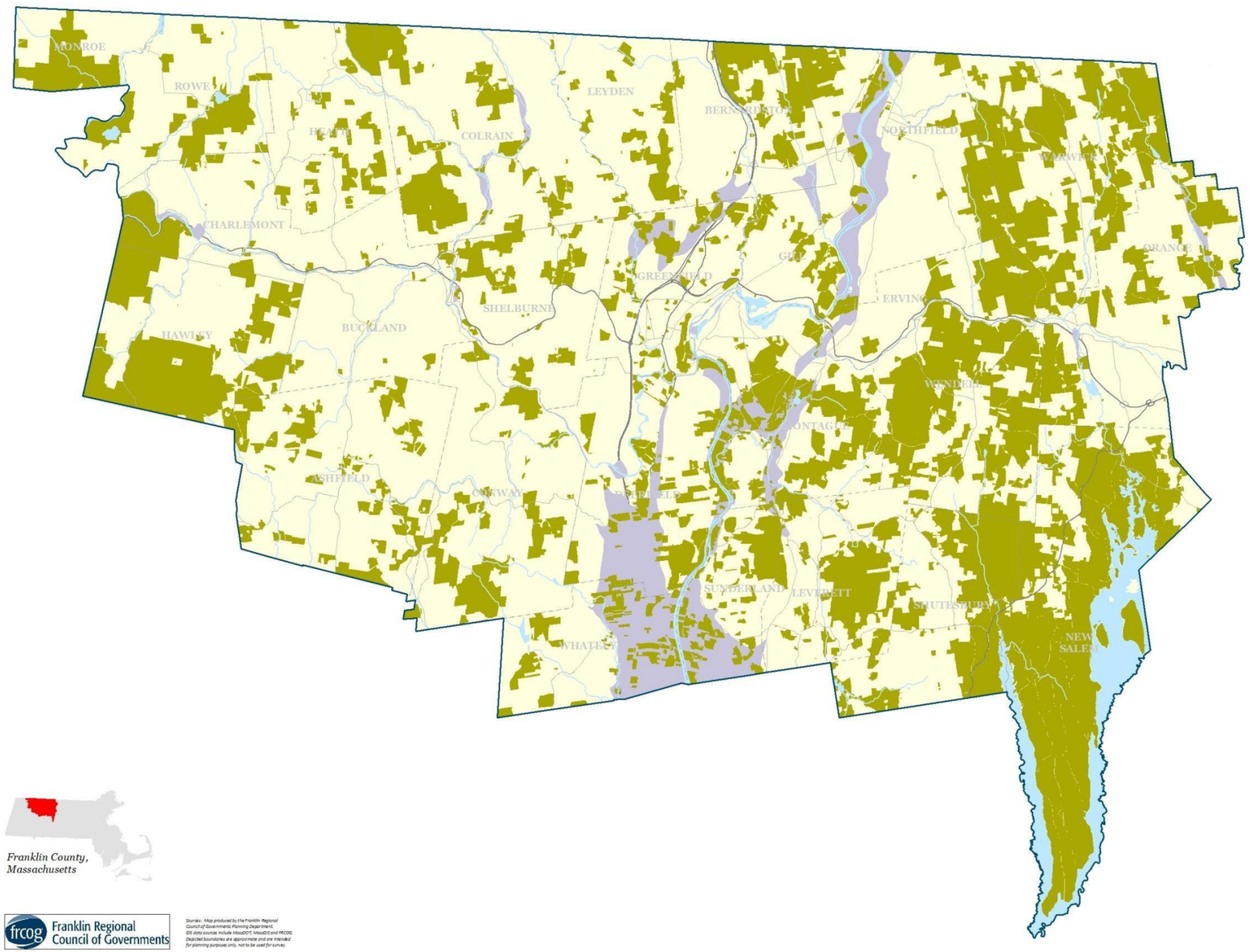
Access to affordable land is currently one of the biggest challenges facing farmers today. In Massachusetts, the Agricultural Preservation Restriction (APR) Program has gone a long way towards permanently protecting farmland. While APRs can dramatically reduce the cost of agricultural land, there has been no equivalent tool in place to ensure that whole farms, including the necessary buildings and infrastructure, are affordable into the future.

Map 10-4 shows all land permanently protected in Franklin County. According to Mass Audubon's *Losing Ground,* of Franklin County's 463,734 acres, nearly 26 percent (or 120,221 acres) are permanently protected. Between 1999 and 2005, 19,169 acres were permanently protected. Map 10-4 also shows the patterns of protection. The eastern part of the county, which includes land in the Quabbin Reservoir, has the highest percentage of permanently protected land in Franklin County. The westernmost part of Franklin County has some significant areas of protection. The Connecticut River Valley has the smallest percentage of permanently protected land in the region, even though it has the largest acreage of valuable agricultural soils.

With the perennial challenge of limited funds available for land protection, often an obstacle to land conservation, prioritizing the most valuable land in terms of sustainability is an approach that can help agencies and organizations focus their efforts. In the Natural Resources Chapter, land was prioritized for protection based on whether it contained one or more of the following types of assets: Undeveloped Agriculturally Suitable Soils, Undeveloped BioMap2 Forest Core, Undeveloped Priority Habitats and BioMap2 Priority Habitats, Undeveloped Aquifer Areas, and Potential Future Water Supply Areas. Permanently protecting land with these types of assets is critical to the sustainability of the region. This Chapter takes into consideration these priority protection areas when making recommendations for potential development areas.

The western part of Franklin County contains some significant areas of protected land, including land in Monroe.

Map 10-4: Permanently Protected Land



Permanently Protected Land Summary:
As part of recent Open Space and Recreation Plan updates, the following towns' data has been updated and validated through assessor' records and other sources: Buckland (2010), Erving (2009), Gill (2011), Leyden (2010), Montague, (2010), Orange (2009), Warwick (2009), and Wendell (2010).

Data for permanently protected land in the remaining towns was obtained from 2005 Mass GIS Protected and Recreational Open Space. Mass GIS notes that "although the initial data collection effort for this data layer has been completed, open space changes continually and this data layer is therefore considered to be under development. Additionally, due to the collaborative nature of this data collection effort, the accuracy and completeness of open space data varies across the state's municipalities. Attributes, while comprehensive in scope, may be incomplete for many parcels."

- Town Boundary
- Major Road
- Major River, Stream
- Water Body
- Permanently Protected Open Space
- Undeveloped Aquifer Areas

Franklin County, Massachusetts

Franklin Regional Council of Governments

Sources: Map produced by the Franklin Regional Council of Governments Planning Department. GIS data sources include MassDOT, MassGIS and FRCOG. Depicted boundaries are approximate and are intended for planning purposes only, not to be used for survey.

Existing Infrastructure

Successful and sustainable growth in the region will depend, in part, upon robust infrastructure. The following section discusses the condition of existing infrastructure and identifies potential challenges to areas identified as priority development.

Franklin County Residents Say…

The most common infrastructure needs identified during the public Sustainable Franklin Workshops:

- Water and sewer infrastructure improvements in many towns;
- County-wide broadband access;
- East-west passenger rail; and
- County-wide bike paths.

Water and Sewer

Water and sewer infrastructure, as well as the ownership and management of it, varies from town to town in Franklin County. Most Franklin County residents rely on private wells for drinking water and private septic systems for sewer. However, some towns have public water and/or sewer service, typically serving the town center and any industrial or commercial areas. Where water supplies are concerned, there are 17 public water supplies in Franklin County with some towns having more than one. The Town of Deerfield, for example, has two separate water supply districts, each owned and operated by a separate entity and each with different water supply sources. The Town of Gill has only one water supply district, however the water is supplied by the Town of Greenfield. Where public sewer is concerned, there are 11 public sewer districts and/or facilities in Franklin County. For example, the Town of Montague is served by two separate wastewater treatment facilities, one of which is located in Ervingside. Because of the many different ownerships and structures of public water and sewer supplies, there are sometimes challenges in maintaining clear lines of communication between these entities and the municipal governments.

In 2003, the Franklin County Regional Drinking Water Supply Study was completed by the FRCOG. The Study assesses the short- and long-term capacity of 17 community water supplies to support growth in the region. Additional information on the Study, as it pertains to aquifers, is contained in the Natural Resources Chapter. As the Study pertains to drinking water supply infrastructure, it examines 17 public water supplies/districts. The study found that seven of the water supplies/districts may be potentially constrained from supporting additional demand for new water needs such as an incoming high volume water user (e.g. school, industrial use, or food processing facility). The study also found that, of the 17 public water suppliers, only four had working emergency water back up, although seven communities had emergency agreements with other suppliers.

Where demand was concerned, the key finding of the study is that future demand is most influenced by changes in per capita use and population, both of which can be impacted through conservation and planning. Along with working to identify potential drinking water supplies, discussed in the Natural Resources Chapter, the study makes recommendations for demand management and conservation. They include:

- Identifying water conservation measures that could be implemented town-wide.
- Proactively protecting land within recharge areas and sub-watersheds.
- Identifying and repairing faulty water lines.
- Protect aquifer areas that could provide future drinking water supplies.

Water and Sewer Survey

A critical part of any plan for sustainable development is determining whether existing infrastructure can support such development. In many cases, towns and/or public water or sewer providers maintain their own records of the condition and location of their infrastructure, often not in digitized form. As such, a survey and digitized mapping project was undertaken as part of the RPSD to update sewer and water infrastructure information and location. The survey

concentrates on the towns identified as having Priority Development Areas or Emerging Development Areas. Information on additional towns was gathered as time and budget permitted. A summary of water and sewer information for each Priority and Emerging Development Area can be found on Maps 10-5 through 10-13. The Franklin County Public Water and Sewer Survey is anticipated to be completed in 2013.

Each water or sewer district which participated in the survey will receive an updated, digitized map showing the location of the water and/or sewer lines and infrastructure for planning purposes. In order for this information to maintain its usefulness, regular updating of data and maps will be needed at the local and regional level. As such, one of the recommended strategies at the end of this chapter is to seek funding to provide for the regular updating of water and sewer data and mapping.

Water and Sewer Survey: Key Findings

- ✓ Most water and sewer maps are in paper format, some with hand drawings, and most departments and districts do not have an up to date system wide map.
- ✓ The largest challenge for both water and sewer departments and districts is the age of the infrastructure, and finding funding for maintenance and repairs.
- ✓ Inflow and Infiltration (I&I) is an issue for all of the priority towns identified, contributing between 25% - 50% of average daily flow to wastewater treatment facilities.
- ✓ Some of the smaller departments and districts are challenged by the increasing complexity of system operations and reporting requirements and regulations.
- ✓ There are very few plans for expansion of lines. Sewer and water districts, in particular, are confined by legal boundaries that often already encompass the existing service area.
- ✓ Major users are schools, large residential complexes, and industrial businesses.

Telecommunications and Broadband

Telecommunications infrastructure includes systems that provide telephone, television and broadband internet services. In many areas of Franklin County, the quality or access to services through the current telecommunications systems are inadequate for present day needs. Issues of reliability, affordability and access have been obstacles for individuals, businesses, and institutions in this region for many years. Fortunately, significant efforts are underway to address this situation and support access equity throughout Western Massachusetts.

There are different types of technologies that may provide broadband service to a home or business, such as through cable television systems, Digital Subscriber Lines (DSL), wireless broadband, and fiber-optic systems. Some residents and businesses may use a satellite broadband connection; however, this technology has limitations. In 13 towns of Franklin County, the local cable television franchise is equipped to transmit broadband services to residences and businesses connected to the system. Twelve of these 13 towns are served by Comcast and one is served by Time Warner. In 22 Franklin County towns, areas of the community may access DSL services transmitted over copper telephone lines. However, access to these services may only be available in limited areas. Of these towns, nine of them only have DSL available within a finite area and no cable television broadband at all.

In addition, there are another four towns with no access to DSL or cable broadband at all. Broadband services may be transmitted by fixed or multi-point wireless facilities (such as through a Wireless Internet Service Provider or mobile cell phone system). For example, the Town of Warwick has created the Warwick Broadband Service, which is a fixed wireless broadband service for subscribing households and businesses.

Even in communities that have one or multiple broadband service systems established, there remain gaps in access to these services. These issues of quality telephone service, access to broadband services, and

advanced infrastructure deployment has been a top priority for community and regional leaders for many years. For the traditional, private-sector business model, one of the greatest barriers for potential service providers was the lack of access to "middle mile" infrastructure that connects unserved areas to the greater global telecommunications network. In 2008, the Massachusetts Broadband Institute (MBI) was established by Governor Deval Patrick and the state legislature for the purpose of tackling the broadband access issue across the Commonwealth.

With state and federal funding, the MBI is constructing the AXIA MassBroadband 123 network, a publicly owned, open access middle mile network throughout western and north-central Massachusetts. This network will deploy over 1,200 miles of fiber-optic cable and connect over 1,200 community anchor institutions (such as town halls, police departments, schools, and medical centers). As of January 2013, 29 service providers have signed on to use the network. The construction of the network will be completed in summer 2013. This network will allow service providers to offer services and connect to "last mile" technologies (such as fiber optic, copper telephone wires, coaxial cable or wireless technologies) to reach homes and businesses throughout the region. These last mile technologies may include existing systems or new systems to be constructed. Some communities are exploring funding their own last mile systems to transmit broadband and other telecommunications services. For example, the Town of Warwick currently operates their own wireless broadband network from the top of Mt. Grace. The Town of Leverett has committed municipal funding and is presently in the process of designing and constructing a "last mile" fiber optic network throughout their community.

To identify the status of broadband access, the MBI has created an online tool to search for broadband access by technology and by location. The online tool also includes the option for residents to take a survey to report on the broadband availability at their address.

Utilities Infrastructure

The infrastructure that delivers energy to our homes and businesses, whether electric, natural gas, oil, or renewable energy, relies upon a complex system of transmission lines or conduit. As more and more alternative energy projects are introduced into the market, grid capacity and aging infrastructure present challenges to the system. The following section describes the utilities available to our towns and some of the current challenges that are being encountered.

Electricity

Electricity infrastructure is made up of an intricate system through which private companies generate and distribut the electricity used in Franklin County. Electricity is transported at high voltages across transmission lines to substations. There, the electricity is transformed to a lower voltage and delivered over distribution lines to homes and businesses. A strong delivery system is vital to our region's safety, security and economic prosperity. Increasingly complex technology and high-performance products are driving energy demand to new levels and placing an increasing strain on the local electric delivery infrastructure.

In 1998, Massachusetts restructured the energy industry to deregulate power generating facilities. The Commonwealth continues to regulate the transmission and distribution systems provided by the local utility companies. There are two primary transmission and distribution power utilities that serve the region: Western Massachusetts Electric Company (a division of Northeast Utilities) and National Grid. National Grid serves 11 towns and WMECO serves 16 towns in Franklin County. Portions of the Town of Erving are served by both companies.

Impacts from recent storms in the region have helped demonstrate the fragility of the electricity infrastructure and the need for utilities to shore up their emergency preparedness plans. The October 29, 2011 "Halloween Snow Storm" dumped as much as two feet of heavy, wet snow in Western Massachusetts, felling trees and power lines throughout the region. It took up to a week for electricity to be restored in some

areas after the storm hit. Many people, especially those living in rural areas, were particularly hard hit.

A 2008 ice storm caused power outages in Ashfield due to downed trees and power lines.

Franklin County is no stranger to power outages. Given the area's susceptibility to severe ice and snow storms, as well as micro bursts and other wind-related storms, downed trees and power lines frequently occur in the area. This issue is cited in most of the local Hazard Mitigation Plans in Franklin County, with recommendations to encourage undergrounding of power lines whenever possible. While the up front costs for undergrounding power lines can be substantial, the long term savings in maintenance and avoidance of business disruptions can help offset that cost.

Electric Generation, Transmission, and Distribution

Two of the greatest challenges to connecting renewable energy sources to the grid are carrying capacity and fluctuating power flows. The "grid," refers to the electric grid which is a network of transmission lines, substations, transformers and other infrastructure that delivers electricity from the power plant to homes and businesses. The existing electric grid was built in the 1890s and has been improved upon as technology advanced. Although the electric grid is considered an engineering marvel, it is being stretched to its capacity.

In order to produce more electricity from clean, renewable resources and move away from fossil fuel use, the nation needs to build thousands of miles of new transmission lines over the next 20 years to connect more renewable resources to electricity demand centers. A 21st-century "smart grid" will have to balance fluctuating power flows from wind and solar generation, small-scale distributed sources, and plug-in electric vehicles.

Natural Gas

Infrastructure to distribute natural gas is available in five Franklin County towns: Deerfield, Greenfield, Montague, Sunderland, and Whately. The system is owned and operated by Berkshire Gas Company, headquartered in Pittsfield, Massachusetts. The natural gas distributed by Berkshire Gas Company is provided through the Tennessee Gas Pipeline Company, which has a system extending from Texas to New England. Investments being made in this national infrastructure are expected to increase future capacity in Western Massachusetts.

Presently, access to the natural gas distribution system is available at two of the industrial parks in Franklin County: the Airport Industrial Park in Turners Falls and the Deerfield Industrial Park in South Deerfield. For customers that do not have access to this infrastructure, there are other fuel distribution companies that deliver to on-site storage containers for natural gas and propane.

POTENTIAL DEVELOPMENT

Priority Development Areas

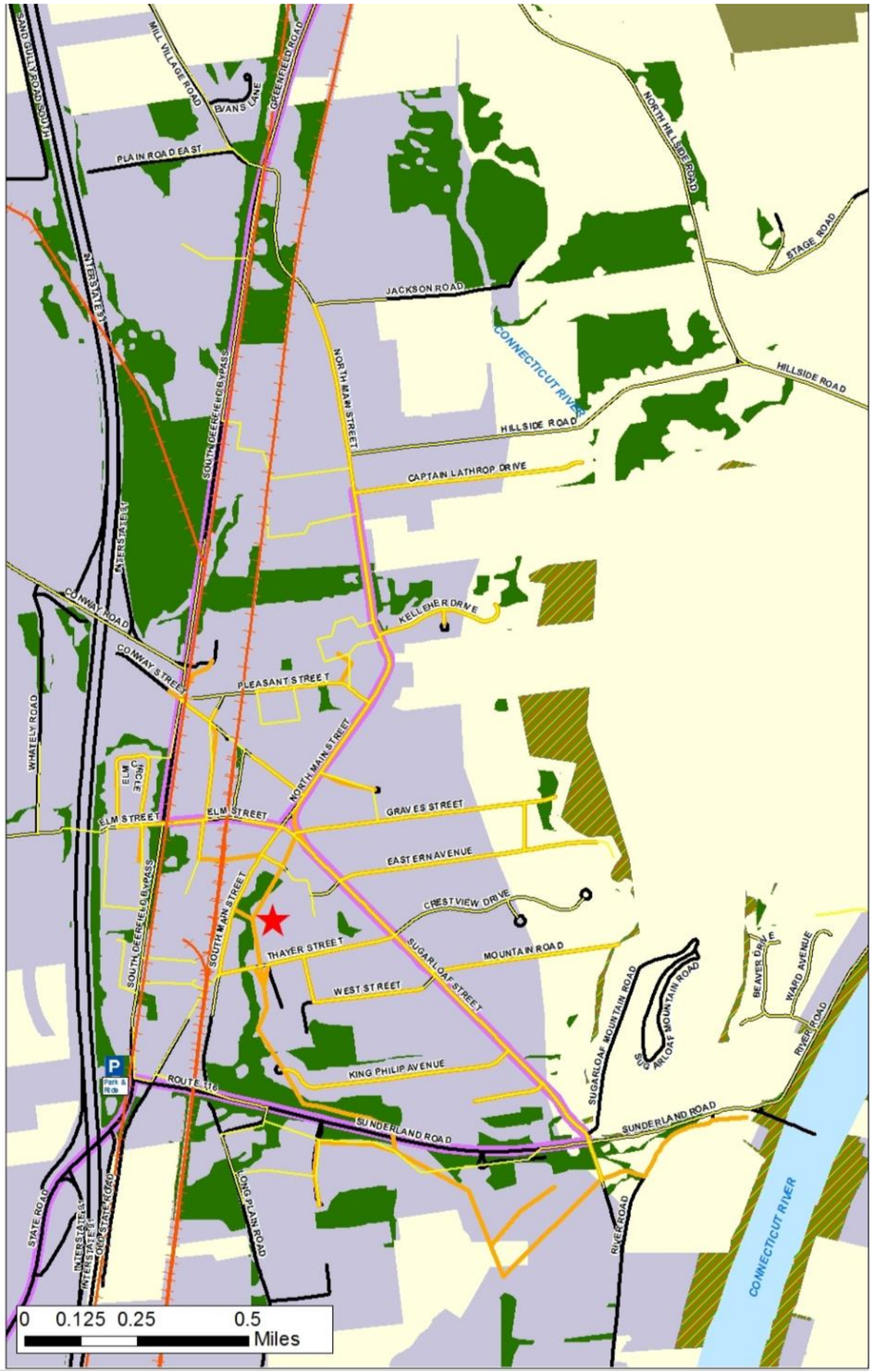
As described in previous chapters, there is strong support for locating new housing near jobs and transit services, and to protect farmland and forests. There is also strong support for the redevelopment of Brownfields and vacant or underutilized mill buildings and other properties. As such, this section targets economic development and redevelopment efforts to existing and emerging regional employment centers, referred to as Priority Development Areas. Existing regional employment centers include Deerfield, Greenfield, Orange, Shelburne Falls, and Turners

Falls. Emerging regional employment or development centers include Bernardston, Northfield, Sunderland, and Millers Falls/Ervingside.

Maps 10-5 through 10-13 show each of these nine areas, with the locations of any capital improvement projects and/or redevelopment/infill projects that have been identified by the municipalities. Important features such as roads, rail, public transit, water and sewer lines, farmland, and Priority Protection Areas are also shown. Potential advantages and constraints are identified for each Priority Development or Emerging Development Area. Although decisions to move forward with any proposed development ultimately lie in the hands of individual municipalities and investors, this section endeavors to illustrate the potential for Franklin County to make strategic investments in infrastructure and support sustainable development and land use patterns.

In addition to the recommendations for the Priority Development Areas and Emerging Development Areas, this plan encourages all towns to direct appropriate development to their town centers and/or population centers, whether residential or commercial, provided that the development is located outside of floodplains. The redevelopment of underused or vacant buildings should be a priority.

Map 10-5: Priority Development Area: South Deerfield Center



Potential Priority Development

- Chapter 43D Site
- Town Boundary
- Major Road
- Rail Line
- Transit Route
- Major River, Stream
- Water Body
- Undeveloped Agriculturally Suitable Soils
- Undeveloped BioMap2 Forest Core
- Undeveloped Priority & BioMap2 Core Habitats
- Undeveloped Aquifer Areas
- Water Line
- Sewer Line

The Town of Deerfield has been examining the potential for development and conservation in the South Deerfield Village Center through several planning processes, including a HUD Sustainable Communities funded Complete Streets and Downtown Livability Plan, a market analysis and conceptual site design of the former Oxford Foods site, and an Open Space and Recreation Plan update.

Redevelopment/Infill Development Projects

Routes 5&10 Industrial Corridor: Infill development in the Industrial Corridor could accommodate new or expanded commercial/industrial uses.

South Deerfield Revitalization: The goals for South Deerfield Village Center, as articulated in the Complete Streets and Downtown Livability Plan, are to maintain the character of the community, while fostering economic development and improving the livability for its residents.

Former Oxford Food Site: This Town-owned, 16-acre property has been cleared of structures and has access to water, sewer, and natural gas infrastructure. The property could accommodate a mix of commercial, industrial and/or housing uses. The Town is seeking a developer for the site.

Implications Due to Increased Development

Encouraging infill, new development or redevelopment can spur revitalization, but can also pose concerns in need of being addressed. The following are advantages and challenges that may relate to such projects.

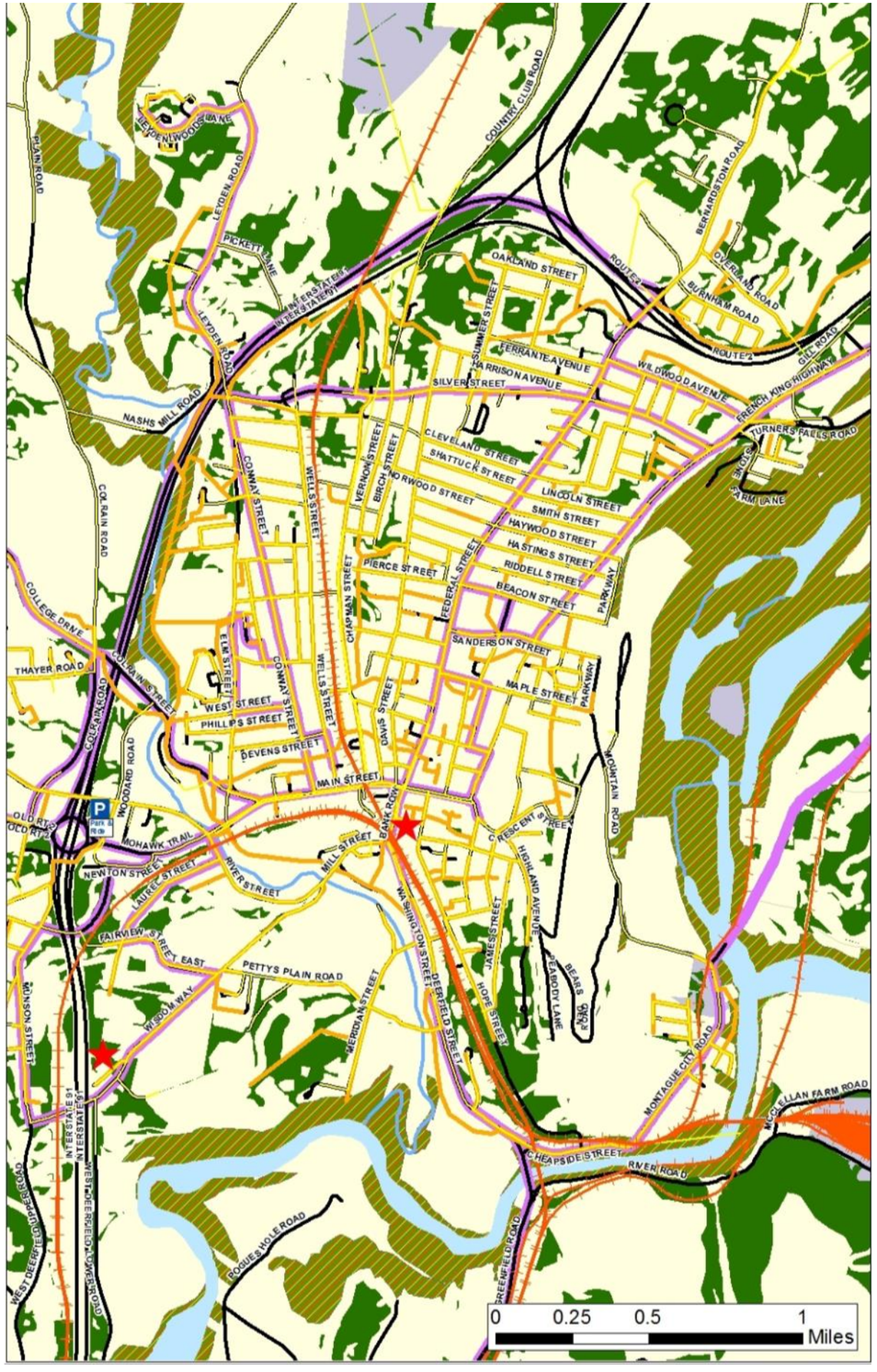
Advantages

- Major employment center, with retail, manufacturing, professional, and distribution sector jobs.
- Community is home to significant tourist attractions and independent educational institutions that bring a high number of visitors to the region.
- Access to I-91 and state routes that connect to other nearby employment centers.
- Located on the Route 116 Scenic Byway.
- Access to public transit in Village Center and along Routes 5&10 corridor.
- Access to public water supply infrastructure, through the South Deerfield Water Supply District.
- Access to public sewer infrastructure, and the South Deerfield Wastewater Treatment Plant, which is operating at about 40% capacity.
- Access to natural gas infrastructure, through Baystate Gas Company.
- Access to broadband services, including DSL and cable television broadband, and MassBroadband123.
- Access to sufficient parking and the new park-and-ride lot at the Whately/Deerfield line.
- Access to senior center, library, and public schools.
- Access to recreational amenities such as Mount Sugarloaf State Reservation, and parks.
- Access to fresh food at local farm stands and a specialty grocer.
- Multi-family housing is allowed in some residential zones.
- Accessory apartments are allowed by special permit.

Challenges

- Village Center sits upon a large expanse of aquifer, which may be impacted by development.
- There is no backup water supply ready to use in the Village Center, but there are agreements with nearby towns for backup water if needed.
- There are some pedestrian challenges due to disconnected sidewalks.
- Need for more frequent transit services and stops, and evening and weekend transit services.
- Any development should avoid environmentally sensitive sites and prime agricultural soils, where possible.

Map 10-6: Priority Development Area: Downtown Greenfield



The Town of Greenfield serves as the regional center for many nearby towns and has experienced significant investment in recent years in its Downtown. The Bank Row Urban Renewal District has had several historic buildings redeveloped into new storefronts and apartments, and the construction of the new John W. Olver Transit Center. There has been the broad adoption of energy efficiency and renewable energy practices in projects

Capital Improvement Projects

Parking Facility Upgrades: Planning is underway for the construction of a parking structure to support downtown mixed use development. In addition, the Town is considering applying Low Impact Development techniques to upgrade existing parking lots.

Downtown Streetscape and Gateway Improvements: The Town is considering a number of projects to enhance walkability and to improve the gateway entrances to the community.

Redevelopment/Infill Development Projects

Bank Row Urban Renewal District: While much of the District has been revitalized, the historic First National Bank Building is awaiting redevelopment. The building has been remediated, structurally secured and a new façade constructed. The non-profit owner is interested in selling it or in partnering with other entities to support its redevelopment and return it to productive use.

Federal Street Commercial Corridor: Vacant properties, including the former Lunt Silversmith factory complex and the former Trinity School property, are available for redevelopment. Successful reuse of these properties would contribute to the economic vitality of this corridor and the downtown.

Bendix Site Redevelopment/Eco-Industrial Park: With existing road, water, sewer, and utility infrastructure, this vacant town-owned property is being redeveloped into a small, multi-parcel industrial park with a potential data connection facility and a 2-acre solar installation.

Implications Due to Increased Development

Encouraging infill, new development or redevelopment can spur revitalization, but can also pose concerns in need of being addressed. The following are advantages and challenges that may relate to such projects.

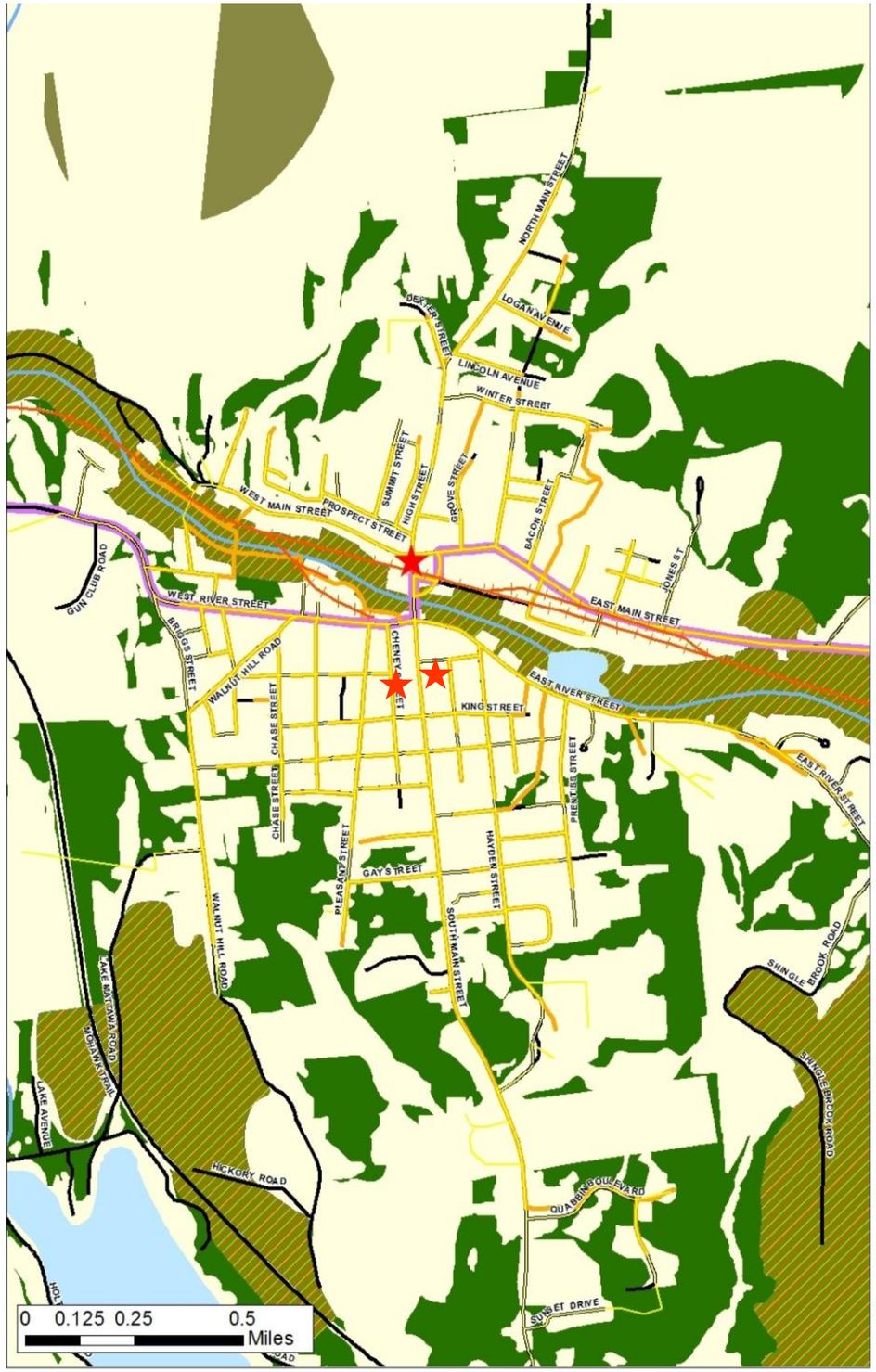
ADVANTAGES

- A major employment and population center, with access to jobs in all sectors.
- Access to I-91 and state routes that connect to other employment centers.
- Located on the Mohawk Trail Scenic Byway.
- Access to local and regional public transit services, and pending passenger rail service.
- Access to municipal public water and sewer systems, and to natural gas infrastructure.
- Access to broadband services, including DSL and cable television broadband, and Mass-Broadband123.
- Pedestrian and bicycle-friendly, with access to walking trails, bike paths, and parks.
- Access to senior center, library, YMCA, Greenfield Community College, public schools, hospital, health clinics, and social services.
- Access to entertainment and cultural attractions, including a cinema, Energy Park bandstand, and small performance spaces.
- Access to local fresh food, with a year-round farmers market, a local food coop, grocery stores, and community gardens.
- Multi-family housing is allowed by special permit in all residential zones; two-family allowed by right in most zones.

CHALLENGES

- Need for parking structure to meet needs for additional development.
- Need for transit services in the evening and on weekends.
- Relatively few residential rental properties that are presently vacant and available.
- Limited availability of retail and office space with amenities and full accessibility.
- Infill areas along rivers and the town's wastewater treatment facility may be impacted by severe flooding events as a result of climate change.
- The Green River is in close proximity to roads and parking lots, making it vulnerable to storm water run-off and road salt.
- Any development should avoid environmentally sensitive sites and prime agricultural soils.

Map 10-7: Priority Development Area: Downtown Orange



The Town of Orange's historic downtown is densely settled along the Millers River with a mix of resident, commercial and industrial uses. Both the Open Space and Recreation Plan and the Master Plan envision a downtown bustling with commerce and cultural and recreational activities for residents and visitors to enjoy.

Potential Priority Development

- Chapter 43D Site
- Town Boundary
- Major Road
- Rail Line
- Transit Route
- Major River, Stream
- Water Body
- Undeveloped Agriculturally Suitable Soils
- Undeveloped BioMap2 Forest Core
- Undeveloped Priority & BioMap2 Core Habitats
- Undeveloped Aquifer Areas
- Water Line
- Sewer Line

Note that the 43D sites on this map encompass blocks not just individual buildings.

Capital Improvement Projects

Downtown Orange Revitalization: There is tremendous interest in having the downtown vacant mill buildings in the downtown redeveloped and the smaller commercial spaces returned to more productive use. Key to revitalization is the upgrade of the wastewater treatment/collection system.

Randall Pond Industrial Park/Airport Sewer Extension: A sewer line extension is needed to expand industrial development adjacent to the industrial park and Orange Airport. (Not shown on map.)

Redevelopment/Infill Development Projects

- **Putnam Hall Block (Chapter 43D site):** An historic Town-owned parcel that the community has identified for redevelopment for retail and professional office uses.
- **South Main Street Block (Chapter 43D site):** Privately-owned commercial and industrial buildings that could accommodate mixed use redevelopment with potential 60,680 sq. ft. build-out.
- **West River Street Block (Chapter 43D site):** Privately-owned industrial buildings that could accommodate more mixed use redevelopment with a potential build-out of 148,000 sq. ft.
- **Orange Innovation Center:** Privately-owned, former factory building being converted to a mix of industrial, commercial, office and studio spaces. Center can accommodate further redevelopment.

Implications Due to Increased Development

Encouraging infill, new development or redevelopment can spur revitalization, but can also pose concerns in need of being addressed. The following are advantages and challenges that may relate to such projects.

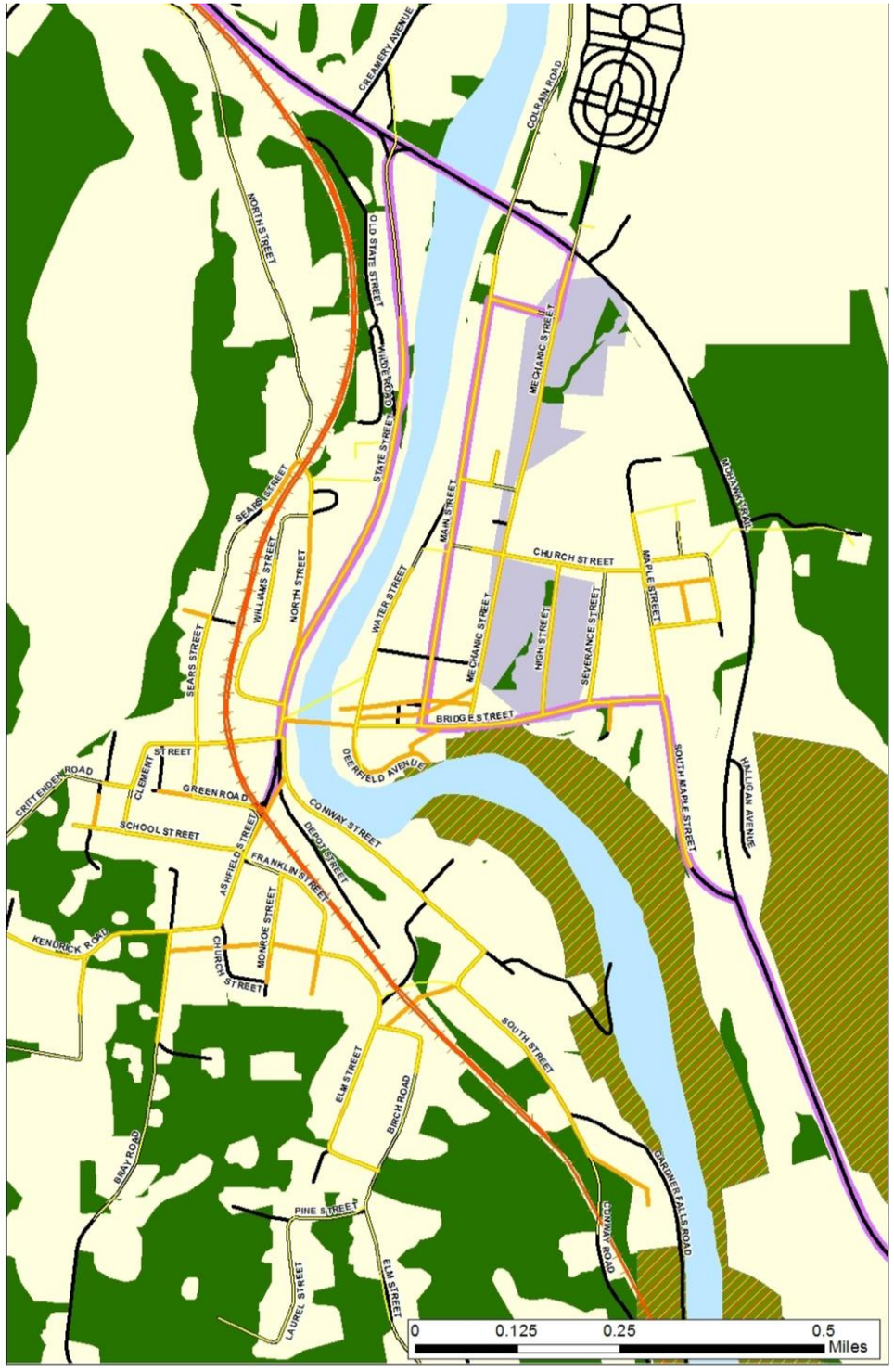
Advantages

- A major population and employment center, with access to jobs in manufacturing as well as other sectors.
- Access to Route 2 and other state routes that connect to other employment centers.
- Located on the Mohawk Trail Scenic Byway and the Route 122 Scenic Byway.
- Access to public transit services, and nearby access to the Orange Municipal Airport, which can accommodate jet traffic.
- Access to municipal public water and sewer systems. A recent upgrade to some sewer pipes has improved the system's overall efficiency.
- Access to broadband , including DSL and cable television broadband, and MassBroadband123.
- Pedestrian friendly community, with access to parks and the Millers River at the Riverfront Park.
- Access to amenities such as library, senior center, and public schools.
- Access to performance spaces in the Town Hall auditorium and at Butterfield Park bandstand.
- Access to fresh food at a food co-op and a seasonal farmers market.
- Two-family homes and accessory apartments are allowed by right in nearly all residential zones. Multi-family housing is allowed by right in the Commercial Area Revitalization District and by special permit in all remaining residential zones.

Challenges

- Much of the public water supply system's water mains date back to 1892.
- Potential issues with the back-up water supply in periods of high use.
- Wastewater treatment facility operating at 95% capacity.
- Need for more frequent transit services and stops, and evening and weekend transit services.
- Limited availability of retail and professional office space with amenities and full accessibility.
- No full-service grocery store within the Downtown area.
- Expense of redeveloping large mill structures not easily off-set by current lease rates.
- Downtown could be vulnerable to increased flooding due to climate change.
- The Millers River is vulnerable to storm water run-off and road salt.
- Any development should avoid environmentally sensitive sites and prime agricultural soils, where possible.

Map 10-8: Priority Development Area: Shelburne Falls Village Center



Potential Priority Development

- Town Boundary
- Major Road
- Rail Line
- Transit Route
- Major River, Stream
- Water Body
- Undeveloped Agriculturally Suitable Soils
- Undeveloped BioMap2 Forest Core
- Undeveloped Priority & BioMap2 Core Habitats
- Undeveloped Aquifer Areas
- Water Line
- Sewer Line

Settled around the Deerfield River, the Village of Shelburne Falls is the shared business district for the Towns of Buckland and Shelburne. It serves as a commercial and social hub for the surrounding less populated towns. This area is a popular destination for tourists in all seasons, with a recognized reputation as an arts community.

Redevelopment/Infill Development Projects

Village Center and Gateway Redevelopment: Vacant and underutilized properties in the Village Center and at the village gateways can be redeveloped for reuse. For example, 69-73 Bridge Street is the site of a demolished building that could be redeveloped for mixed uses. Efforts are underway to encourage the reuse of the historic Sweetheart Inn for community or commercial purposes.

Implications Due to Increased Development

Encouraging infill, new development or redevelopment can spur revitalization, but can also pose concerns in need of being addressed. The following are advantages and challenges that may relate to such projects.

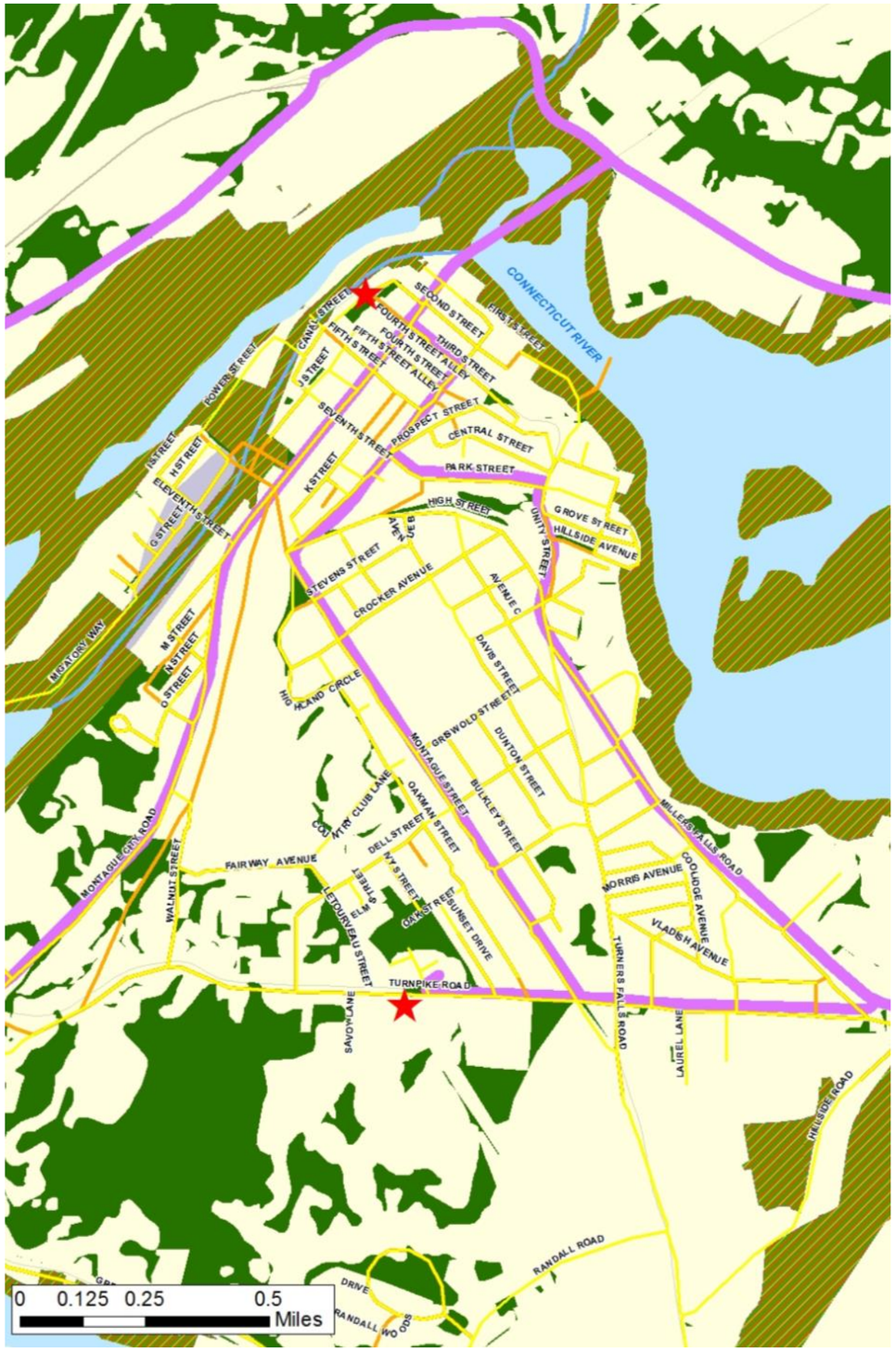
Advantages

- An employment center, with access to jobs in manufacturing, retail, professional services, and the creative economy.
- Access to Route 2/Mohawk Trail Scenic Byway and other state routes that connect to employment centers.
- Access to public transit that connects Shelburne Falls to Greenfield.
- Access to a public water supply system through the Shelburne Falls Fire District, which is upgrading its water lines presently.
- Access to public sewer system served by the Shelburne Falls Wastewater Treatment Facility.
- Wastewater Facility and pump station are situated in a way that protects them from flooding.
- Access to broadband services in the Village Center, including DSL, cable television broadband, and MassBroadband123.
- Pedestrian friendly community, with access to parks, bike routes, and the Deerfield River.
- Access to entertainment and cultural attractions, including the Bridge of Flowers, Glacial Potholes, Shelburne Falls Trolley Museum, and a theatre in the Shelburne Town Hall.
- Access to fresh food, with a local food coop, a seasonal farmers market, and a grocer.
- In Shelburne and Buckland Zoning Bylaws, two-family and accessory apartments as well as single to two-family conversions are allowed by right in most zoning districts.
- Multi-family housing is allowed by special permit in most districts.

Challenges

- Public water and sewer lines cross the Deerfield River via existing bridges. This infrastructure has been identified as a potential issue in Hazard Mitigation Plans.
- There are aquifer areas within the Village area that should be protected.
- The Deerfield River could be subject to more frequent flood events as a result of climate change and some potential redevelopment areas lie within its floodplain.
- The Deerfield River is in close proximity to roads and parking lots, making it vulnerable to storm water run-off and road salt.
- Need for more frequent transit services and stops, and evening and weekend transit services.
- Any development should avoid environmentally sensitive sites and prime agricultural soils, where possible.
- Existing dimensional requirements in residential zones may be a barrier to infill and redevelopment.

Map 10-9: Priority Development Area: Downtown Turners Falls



The Village of Turners Falls in Montague is a regional hub of industrial activity. It is also a champion of planning efforts to revitalize Turners Falls, with an emphasis on arts and culture. Turners Falls serves as a social and commercial center for the Town of Montague and surrounding towns.

Potential Priority Development

- Chapter 43D Site
- Town Boundary
- Major Road
- Rail Line
- Transit Route
- Major River, Stream
- Water Body
- Undeveloped Agriculturally Suitable Soils
- Undeveloped BioMap2 Forest Core
- Undeveloped Priority & BioMap2 Core Habitats
- Undeveloped Aquifer Areas
- Water Line
- Sewer Line

Redevelopment/Infill Development Projects

Historic Industrial Canal Area Revitalization: This area has several properties appropriate for redevelopment, including the Town-owned Strathmore Mill and the privately-owned Griswold Cotton Mill/Railroad Salvage Building.

Streetscape Improvements: As part of its recently developed Livability Plan, the Town is planning for improvements to enhance the walkability of the Downtown.

Downtown Revitalization: The Town is active in encouraging revitalization of Downtown buildings for more productive use, such as the former convenience store for use by Turners Falls RiverCulture.

Turnpike Road Industrial Park: Roads, utilities, and a water infrastructure extension are needed to support the creation of a new industrial park at the former town burn dump and public works site.

Implications Due to Increased Development

Encouraging infill, new development or redevelopment can spur revitalization, but can also pose concerns in need of being addressed. The following are advantages and challenges that may relate to such projects.

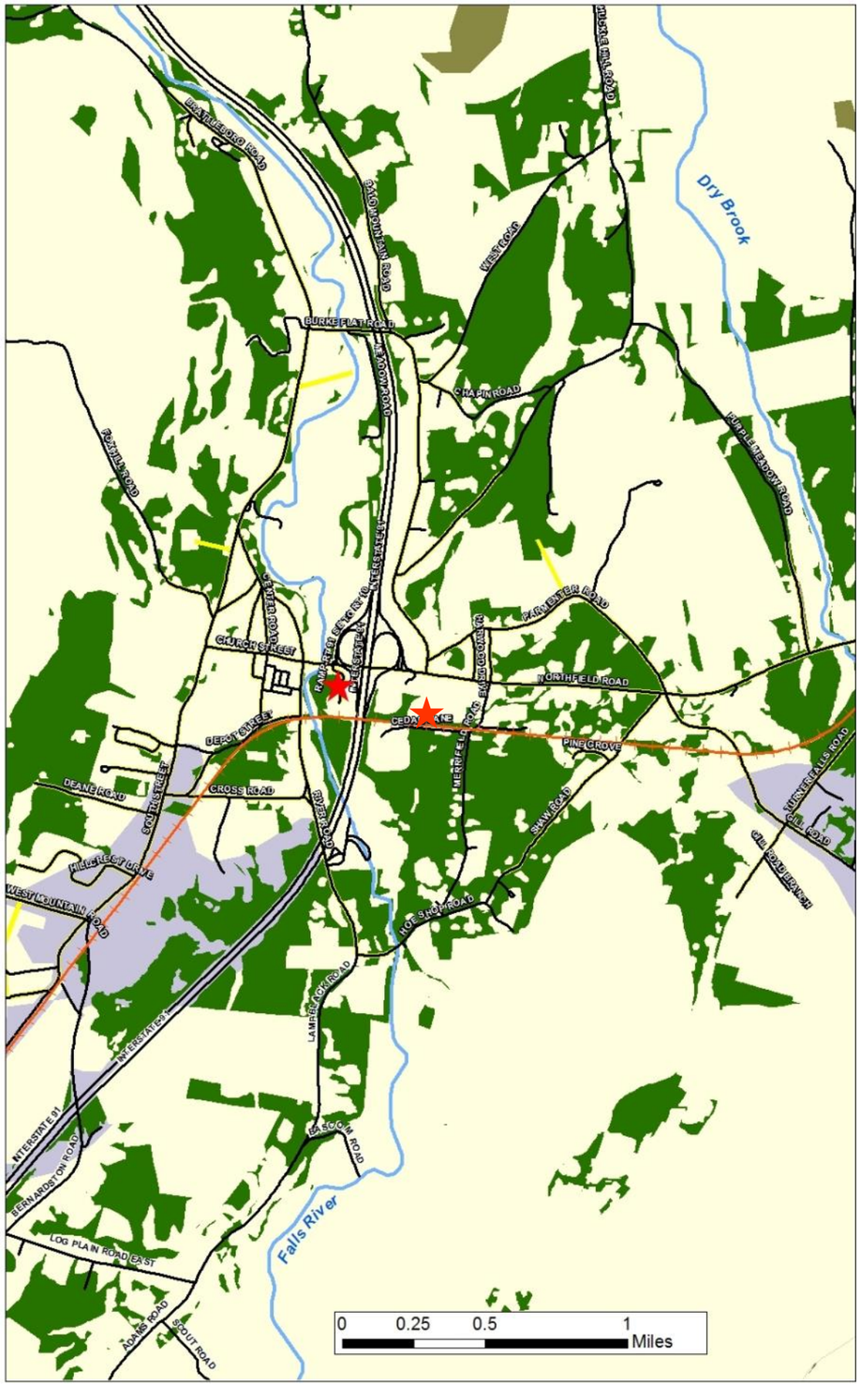
Advantages

- A major employment and population center, with access to jobs in manufacturing, creative economy, and other sectors.
- Access to nearby I-91, Route 2/Mohawk Trail Scenic Byway and other state routes that connect to other employment centers.
- Access to local public transit, and to the nearby Turners Falls Airport.
- Access to public water supply system through the Turners Falls Water Department, and a public sewer system that is served by the Montague Water Pollution Control Facility.
- Access to natural gas infrastructure through Berkshire Gas Company.
- Access to broadband services, including DSL and cable television broadband, and MassBroadband123.
- Though hilly, much of Turners Falls is walkable and pedestrian and bicycle friendly, and has access to bike-paths, parks and river access.
- Access to senior center, library, public schools.
- Access to entertainment and cultural attractions, including the Shea Theater and Great Falls Discovery Center.
- Access to local fresh food, with a seasonal farmers market and grocery store.
- Two-family housing is allowed by right in the Central Business and Neighborhood Business Districts.
- Multi-family housing by special permit in the Historic Industry District.

Challenges

- Approximately 45% of flow into the wastewater treatment plant is due to inflow and infiltration, the result of aged pipes.
- Limited availability of retail and professional office space with amenities and full accessibility.
- Expense of redeveloping large mill structures is not easily off-set by current lease rates.
- The Connecticut River is in close proximity to roads and parking lots, making it vulnerable to storm water run-off and road salt.
- In Historic Industrial area, there are significant parking issues and access issues with connecting mill buildings and the business district.
- Senior Center facility is undersized and cannot provide the level of services as needed for the population it serves.
- Need for more frequent transit services and stops, and evening and weekend transit services.
- Any development should avoid environmentally sensitive sites and prime agricultural soils, where possible.

Map 10-10: Emerging Development Area: Bernardston Village Center



Potential Priority Development

- Chapter 43D Site
- Town Boundary
- Major Road
- Rail Line
- Transit Route
- Major River, Stream
- Water Body
- Undeveloped Agriculturally Suitable Soils
- Undeveloped BioMap2 Forest Core
- Undeveloped Priority & BioMap2 Core Habitats
- Undeveloped Aquifer Areas
- Water Line
- Sewer Line

With the designation of two Chapter 43D sites in the Village Center and with easy access to I-91, the Bernardston Village Center is anticipated to receive additional development. In addition, recent commercial development on Routes 5 & 10 south of the Village Center has begun to attract more visitors to the community and has spurred additional business growth.

Capital Improvement Project

Bernardston Village Center Improvements: Installation of a wastewater treatment and collection system is needed to support a mix of uses in the Village Center.

New Development Project

Bernardston Chapter 43D Site #2: A privately-owned, 29 acre parcel zoned for commercial uses has been designated as a site for targeted development. Access to sewer infrastructure would make this site more advantageous for new development.

Implications due to Increased Development

Encouraging infill, new development or redevelopment can spur revitalization, but can also pose concerns in need of being addressed. The following are advantages and challenges that may relate to such projects.

ADVANTAGES

- Access to I-91 and other state routes that connect to other employment centers.
- Access to public water supply system through Bernardston Fire and Water District.
- Land available and zoned for development in the Village Center.
- Access to broadband services, including DSL and cable television broadband, and MassBroadband123.
- Access to senior center, library, and a park in the Village Center. Nearby access to the public school and farmers market.
- Multi-family housing is allowed by special permit in all residential zones.

CHALLENGES

- The Bernardston Fire and Water District is at or near its withdrawal limits for its public water supply.
- There is no public sewer infrastructure serving Bernardston. The Town would need significant water and sewer upgrades to support more infill and redevelopment.
- Public transit is not currently available.
- Pedestrian access to the commercial development south of the village is constrained by distance.
- Limited access to fresh food, with a seasonal farmers market located south of the village, but no local grocer.
- Protecting agricultural land from development will have to be considered.
- High water table challenges septic installations.
- Any development should avoid environmentally sensitive sites and prime agricultural soils, where possible.

Potential Priority Development

- Town Boundary
- Major Road
- Rail Line
- Transit Route
- Major River, Stream
- Water Body
- Undeveloped Agriculturally Suitable Soils
- Undeveloped BioMap2 Forest Core
- Undeveloped Priority & BioMap2 Core Habitats
- Undeveloped Aquifer Areas
- Water Line
- Sewer Line

The Northfield Village Center is recognized as an important scenic and historic resource in the region. The community is poised to see further development, depending on the future reuse of the former Northfield campus of the Northfield Mount Hermon School.

Redevelopment/Infill Development Projects

Northfield Campus: The former Northfield campus of the Northfield Mount Hermon (NMH) School is proposed for reuse for educational purposes by a private, non-profit entity that owns the property. The intensity of the proposed reuse for this 217 acre property is not presently known.

Implications due to Increased Development

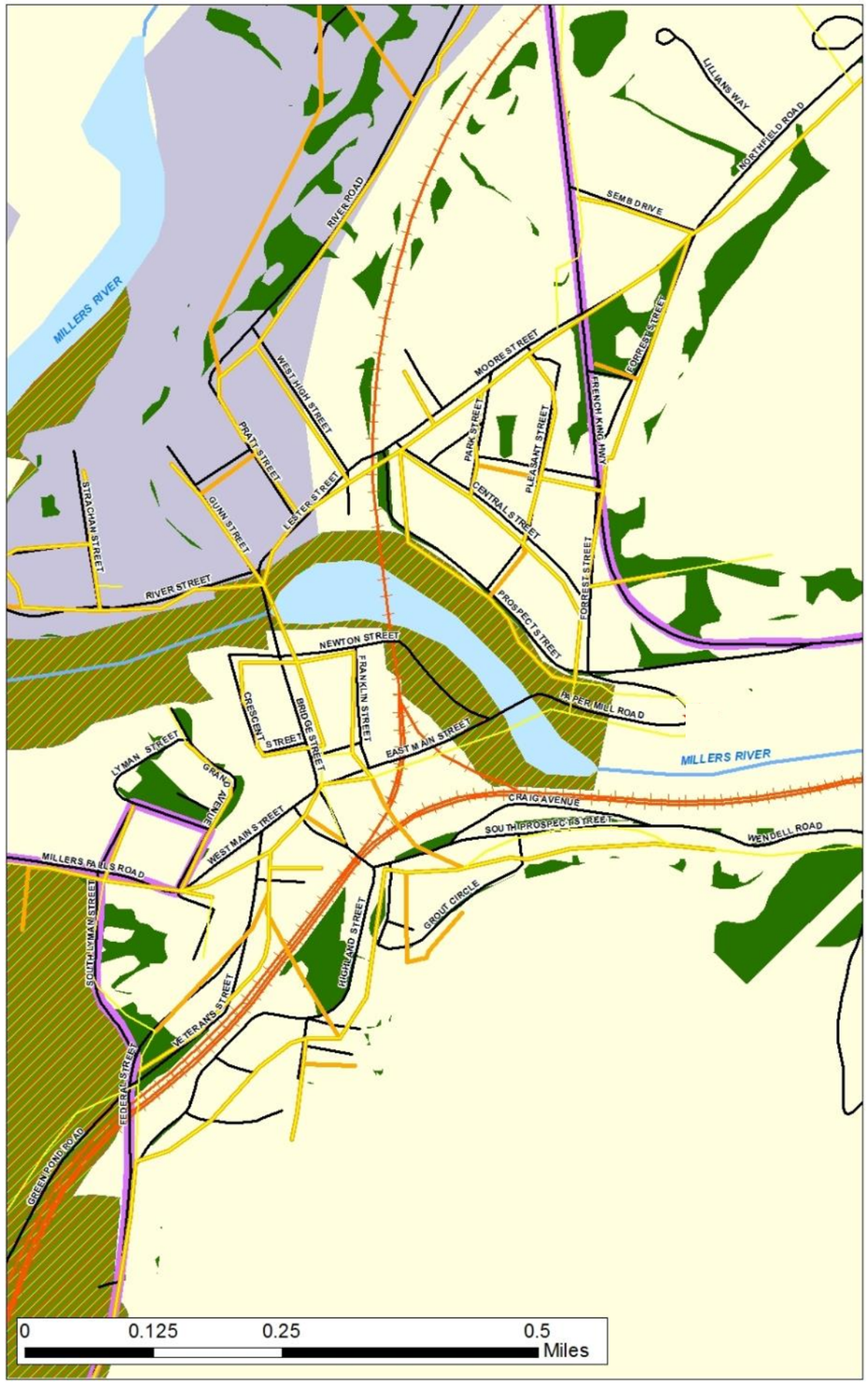
Encouraging infill, new development or redevelopment can spur revitalization, but can also pose concerns in need of being addressed. The following are advantages and challenges that may relate to such projects.

ADVANTAGES

- Access to state routes that connect to other employment centers.
- Located on the Connecticut River Scenic Farm Byway.
- Access to public water supply system through the Northfield Water District.
- Access to public sewer system in the village and former NMH School campus, as served by the Northfield Wastewater Treatment Plant.
- Access to broadband services, including DSL and cable television broadband, and MassBroadband123.
- Pedestrian and bicycle friendly community, with access to bike routes, and parks.
- Access to senior center, library and public school.
- Access to local fresh food at a seasonal farmers market and a local grocer.
- Two-family housing is allowed by right in all residential zones.
- Converted single-family dwelling to two to four-family dwelling is allowable by special permit.
- Multi-family homes larger than four-family are allowable if the Planning Board grants a special permit.

CHALLENGES

- Half of the flow at the Northfield Wastewater Treatment Plant is from inflow and infiltration issues.
- The water main on Main Street is in need of replacement. It is estimated that the Town experiences a water main break on Main Street every two to three years.
- The public water supply for the former NMH School campus, while working well, is old and may requirement replacement.
- Public transit is not available in town.
- Protecting agricultural land from development will have to be considered.
- Priority and BioMap2 Core Habitats are located downhill from the village center along the Connecticut River and could be impacted by significantly increased density in town.
- Aquifers are located north and west of the proposed infill areas and will have to be considered as part of any development planning.
- Protecting the character of the National Historic District is critical when considering new development.
- Any development should avoid environmentally sensitive sites and prime agricultural soils, where possible.



Potential Priority Development

- Town Boundary
- Major Road
- Rail Line
- Transit Route
- Major River, Stream
- Water Body
- Undeveloped Agriculturally Suitable Soils
- Undeveloped BioMap2 Forest Core
- Undeveloped Priority & BioMap2 Core Habitats
- Undeveloped Aquifer Areas
- Water Line
- Sewer Line

Map 10-12: Emerging Development Area: Millers Falls/Ervingside

Bisected by the Millers River, this village center is comprised of Millers Falls in the Town of Montague and Ervingside in the Town of Erving. While consisting of areas within two separate municipalities, the Village Center shares some infrastructure. The Village Center could benefit from revitalization efforts to foster greater economic activity and community vitality.

Redevelopment/Infill Development Projects

Millers Falls Revitalization: The Town of Montague is active in encouraging reuse of vacant properties, including its recent sale of town-owned properties for commercial and residential redevelopment. The Town is also interested conducting a Slum and Blight Study that would allow greater access to resources and to revitalize the Village Center, including a town-owned parcel adjacent to the former rail yard.

Ervingside Industrial Reuse: Vacant and underutilized industrial properties in Ervingside could be redeveloped and contribute to greater economic vitality in the Village Center. For example, the privately-owned, former International Paper Plant is vacant and available for redevelopment. The Renovator's Supply mill property is in active use by one anchor tenant and multiple tenants, but can also accommodate more intensive reuse.

Implications Due to Increased Development

Encouraging infill, new development or redevelopment can spur revitalization, but can also pose concerns in need of being addressed. The following are advantages and challenges that may relate to such projects.

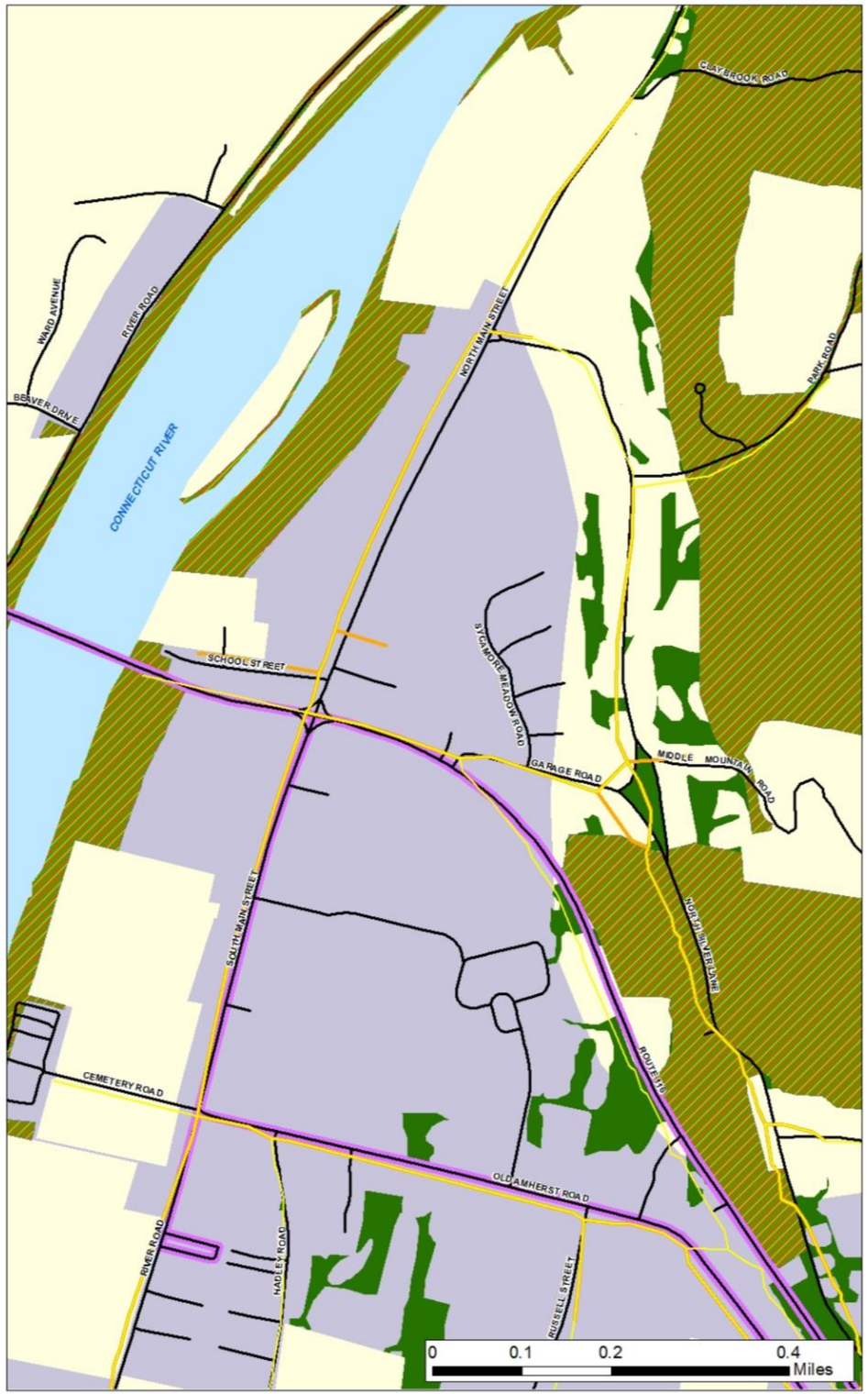
ADVANTAGES

- Access to Route 2/Mohawk Trail Scenic Byway and state routes that connect to other employment centers.
- Located on the Connecticut River Scenic Farm Byway.
- Access to public transit services.
- Access to east-west freight rail transportation corridor at the former railyard in Millers Falls.
- Access to public water supply systems through the Erving Water Department in Ervingside and the Turners Falls Water Department in Millers Falls.
- Access to public sewer systems throughout the village center, served by POTW#1 in Ervingside.
- Access to broadband, including DSL and cable television broadband, and MassBroadband123.
- Pedestrian and bicycle friendly community, with access to bike routes, and parks.
- Access to library.
- Access to fresh food at a local grocer.
- In Erving (Ervingside), two-family and accessory apartments allowed by special permit in the Central Village District and Village Residential District. Multi-family housing is allowed by special permit in the Central Village District.
- In Montague (Millers Falls), mixed use with single and 2-family as accessory use is allowed by right and multi-family is allowed by special permit in the Central Business District and the Neighborhood Business District. In the General Business District, single, two-family, and multi-family are allowed by special permit.

CHALLENGES

- Need for more frequent transit services and stops, and evening and weekend transit services.
- Need to retrofit the sewer infrastructure serving the former International Paper Plant, since prospective reuses will not generate as large a volume of wastewater as the paper plant.
- Need resources to rehabilitate vacant and/or substandard commercial and residential buildings.
- Expense of redeveloping large mill structures not easily off-set by current lease rates.
- The Millers River is in close proximity to roads and parking lots, making it vulnerable to storm water run-off and road salt.
- Any development should avoid environmentally sensitive sites and prime agricultural soils, where possible.

Map 10-13: Emerging Development Area: Sunderland Village Center



Potential Priority Development

- Town Boundary
- Major Road
- Rail Line
- Transit Route
- Major River, Stream
- Water Body
- Undeveloped Agriculturally Suitable Soils
- Undeveloped BioMap2 Forest Core
- Undeveloped Priority & BioMap2 Core Habitats
- Undeveloped Aquifer Areas
- Water Line
- Sewer Line

As stated in the Town of Sunderland's 2004 Community Development Plan, the vision for the Town is to preserve and protect its rural character, including its farmland and historic areas, while having adequate residential and commercial development that meets the needs of residents. The Town has adopted zoning bylaws that encourage more small business growth and allow for more dense development.

Capital Improvement Projects

- North Main Street Improvements: A project is proposed to improve the road surface, drainage system, and pedestrian amenities on a portion of Route 47/North Main Street within the Village Center.
- Access to Outdoor Recreation Amenities: As part of the Connecticut River Scenic Farm Byway, the Village Center is recognized for its significant historic and natural resources. Projects are proposed that would enhance the connection between these scenic resources and the Village Center by creating new bicycle and pedestrian facilities and improving small boat access to the Connecticut River. These projects would attract visitors and enhance residents' access to outdoor recreation.

Redevelopment/Infill Development Projects

- Village Center Development Strategy: To foster sustainable infill development, the Town of Sunderland proposes a strategy plan be created for the Village Center that would guide the manner of residential and commercial development in this historic area.

Implications Due to Increased Development

- Encouraging infill, new development or redevelopment can spur revitalization, but can also pose concerns in need of being addressed. The following are advantages and challenges that may relate to such projects.

ADVANTAGES

- Access to state routes that connect to other employment centers, and on the Connecticut River Scenic Farm Byway.
- Access to extensive public transit services, and access to a designated park-and-ride lot in the village.
- Access to public water supply system, through Sunderland Water District.
- Access to public sewer system through the Sunderland Sewer District.
- Access to broadband services, including DSL and cable television broadband, and MassBroadband123.
- Pedestrian and bicycle friendly community, with access to parks and the Connecticut River.
- Access to library and public elementary school.
- Access to fresh food at farm-stand and a local grocer.
- Planned Unit Development zoning in place

CHALLENGES

- Route 47 stormwater infrastructure
- Need to protect active farmland to maintain community character.

GENERAL LAND USE AND INFRASTRUCTURE SITING

Housing Land Use

The Housing Chapter makes recommendations regarding the types of housing that are necessary to meet the needs of Franklin County in the future. In addition to housing type, the sustainable siting of housing should also be considered, particularly in light of climate change. Individual towns will have to determine what measures may need to be taken, such as changes to their zoning bylaws, to help guide the siting of any new development.

In general, avoiding siting any new housing in flood plains and/or flood storage areas is prudent. Any redevelopment of existing structures should take into consideration the real potential for more frequent and severe flooding. Flood proofing and/or modifying existing structures to allow them to handle more extreme flooding events is recommended. Encouraging mixed use development which combines housing with amenities in population centers and/or employment centers is recommended.

Commercial and Industrial Land Use

As discussed earlier in this chapter, there is overwhelming public support for encouraging the redevelopment of vacant or underused mill buildings and other structures. As with housing, given the potential for more extreme flood events due to climate change, towns will need to decide whether it is advisable to promote redevelopment in areas that are prone to flooding. Siting commercial development in close proximity to employment centers is a sustainable strategy. Siting commercial development with a mix of uses including housing will increase options for walking and biking.

Other Land Uses

Renewable Energy Land Use

Siting of wind, solar, and geothermal resources is a topic of discussion in many Franklin County towns currently, as there is an interest in reducing fossil fuel consumption and increasing local, renewable energy generation. No matter where alternative energy facilities are sited, there will be impacts to the use of land. Some of the more common concerns regarding alternative energy siting are the potential disruption of wildlife habitat, the impact on scenic views and ridgelines, impacts to abutters, and to agricultural lands. An optimum balance between land availability and transmission availability is necessary for successful renewable energy generation projects. On the local and regional level, the feasibility of larger scale solar and wind projects is closely tied to access to the grid and the carrying capacity of the existing grid to accommodate the energy produced by them.

Solar Energy

Large-scale solar and photovoltaic (PV) installations could help our region - and our country – reduce our dependency on fossil fuels. Solar energy has many environment benefits but has environmental challenges as well, particularly in siting and land use. According to the U. S. Department of Energy's *SunShot Vision Study*, completed in 2012, the environmental benefits of solar energy production include reductions in greenhouse gas emissions and air pollutant emissions. The major environmental impact identified by the same study is the use of land. While some solar and PV installations can be sited on rooftops, parking structures, capped landfills, and former industrial sites, some will inevitably be sited on currently undeveloped land. As with any other development, avoiding areas of food production, high ecological, scenic, cultural, and historic value is prudent.

Clean Energy Results[1], a MA Department of Energy Resources (DOER) December 2012 publication, discusses strategies for siting ground-mounted solar. DOER strongly discourages siting that requires

[1] ttp://www.mass.gov/eea/docs/doer/renewables/solar/solar-pv-guide.pdf

significant tree cutting, because of the important ecological benefits of trees. DOER encourages siting in industrial and commercial districts, or on vacant and/or disturbed land.

When assessing the potential impacts of proposed solar installations, DOER recommends communities carefully consider other types of development that might take place in a particular location if there was no solar installation, and the potential impacts the alternatives might have in terms of noise, air pollution or landscape.

Ultimately, policy concerning the siting of large-scale solar and PV must be determined by individual towns. Towns throughout Franklin County are working to define their individual approaches to siting large-scale solar installations and, in some cases, towns are rewriting their zoning to include solar bylaws and/or solar overlay districts.

Greenfield has pursued alternative energy sources in the form of solar facility on the capped landfill, constructed in 2012. The facility, which received a 2012 Renewal Award –Brownfields to Brightfields Award by Brownfield Renewal, is projected to produce approximately 2.5 M of electricity per year. According to the Greenfield DPW, this will provide approximately 40 percent of the electricity used by all municipal buildings including the schools. The Town purchases the power from the developer of the project, for $0.01 cents per kilowatt hour which is a savings of approximately $0.08 per kilowatt on the electric bill. This translates into approximately a $235,000 savings per year for the Town in the form of credits on its electric bills.

In late 2012, Greenfield also voted to amend their Bylaws to allow large solar installations by special permit in the town's rural residential, suburban residential and general commercial and office districts. Land containing prime farmland would not be eligible for large solar installations.

The solar farm on Greenfield's capped landfill is expected to save the town over $200,000 in the cost of their electricity.

Wind

Like solar and PV, the siting of wind turbines and any related bylaws must be determined by individual towns. Issue to address include protecting ridgelines and scenic views, impacts to wildlife habitat, public health concerns, effects on property values, the availability of adequate wind resources, and the ability to access the grid infrastructure.

A locally-owned wind generation project in the region has been on line since 2011. Berkshire East ski resort, located in Charlemont, is the first ski area in the nation to produce 100 percent of its electricity from an on-site, renewable energy source, a 277-foot-tall wind turbine. The turbine eliminates the use of approximately 94,000 gallons of fuel oil annually. Because the turbine is intended to power only Berkshire East, considerations such as connecting to the grid were not obstacles to the project.

Hydropower

Hydropower is a renewable energy source that can also produce regular water supplies and flood controls. Despite the high cost associated with building a hydropower facility, power generation via hydropower facilities is considered quite cost-competitive because facilities tend to have low operation and maintenance costs and relatively long lifecycles. As of 2008, there were 35 hydropower facilities in the Pioneer Valley.

Impacts of hydropower can include impeded fish passage, alteration of flow patterns, and flooding risks associated with dam failures.

While hydropower can be beneficial in terms of being a "clean energy", there are also drawbacks to this technology. Hydropower infrastructure can inhibit or prevent the passage of migrating fish and can alter the natural systems and habitats in a river.

A significant hydropower facility on the Connecticut River is the Northfield Mountain Pumped Storage Project, completed in 1970, which is located about five miles upstream of the Turners Falls dam. This facility is unusual to the region in that it provides peaking power on demand. During the evening hours, water is pumped from the lower reservoir (the Connecticut River) to the upper reservoir (elevation 1,000 feet) that is located atop Northfield Mountain. Water is then released to the lower reservoir via the turbines to generate electricity during peak demand.

Erosive forces have destabilized many sections of the Connecticut River resulting in slumping and mass wasting of large sections of bank and the loss of trees and other riparian vegetation on the top of the banks. This erosion has been due at least in part to the widely fluctuating water levels associated with the Northfield Mountain Pumped Storage Project.

Currently, no small-scale hydropower projects are under development in the Pioneer Valley. However, the region could examine whether there are opportunities to construct new micro-facilities that do not significantly interfere with wildlife habitats.

Land Use and Water

Securing the availability and viability of our drinking water supplies is vital to being able to live sustainably in Franklin County. As noted earlier in this chapter and in the Natural Resources Chapter, the 2003 Franklin County Regional Water Supply Study assessed the short- and long-term capacity of community water supplies to support growth in the region and identified water supply issues and recommendations. It recommends that the region and its individual towns implement measures to sustain its drinking water supply, such as identifying and protecting future water supply sources, adopting best management practices for uses within aquifer recharge areas, and encouraging reductions in water use.

In light of the potential impacts of climate change on drinking water supplies, the Study's recommendations are even more urgent today than ever. Individual towns – and the region as a whole – have challenging work ahead to identify and protect future drinking water supplies and to plan for back up supplies.

See Chapter 8: Natural Resources for more information on water and aquifers.

Transportation Land Use

In order to achieve sustainability, Franklin County's transportation infrastructure ideally must be able to support existing and future development by providing public transportation options to residents in order to help reduce vehicle miles traveled and carbon emissions. The Transportation Chapter of the RPSD examines existing conditions of transportation infrastructure such as bridges, roads, and rail, as well as existing public transportation and alternative transportation opportunities.

One of the greatest challenges to transportation infrastructure in Franklin County is that the transportation network covers a large geographical area with a relatively sparse population. Many people live in Franklin County because they want to live in a rural setting. Commuting by private automobile is often the only option for transportation that many Franklin County residents have. A significant expansion of public transit routes and schedules would be required to adequately provide public transit options for the majority of Franklin County residents.

In order to support ridership, new development should occur in employment centers and town centers as well as along transit routes. As noted in the Transportation Chapter, Franklin County has established several transportation-related projects that will increase residents' transportation options and increase the region's sustainability. They include bikeways, park and ride lots, and the expansion of the public transit system.

A key constraint identified in Chapter 4: Transportation is the ability to achieve more sustainable land use patterns and the infrastructure to support them include the ability to expand public transit including passenger rail.

An additional transportation-related issue in the region is the condition of Franklin County bridges. Sixteen percent of bridges in Franklin County are structurally deficient and fourteen percent are functionally obsolete. Given how dispersed the population is in the region, maintaining the structural integrity of bridges is important to maintaining access to goods and services, and jobs for citizens living in rural areas. See the Transportation Chapter for Recommendations and Strategies that address these and other constraints and issues.

Agricultural Land Use

See the Chapter 8: Natural Resources for more information on Agricultural Land Use.

CLIMATE CHANGE IMPACTS ON LAND USE AND INFRASTRUCTURE

The assessment of the potential impacts of climate change is evolving as new data and reports are released. At the time of writing this report, the Federal Advisory Committee Draft Climate Assessment Report[2] was released for public review. Some of the key messages contained in the report specific to rural communities include:

1. Rural communities are highly dependent upon natural resources for their livelihoods. Climate change related impacts are currently affecting rural communities and will shift the locations where rural economic activities (like agriculture, forestry, and recreation) can thrive.
2. Rural communities face particular geographic and demographic obstacles in responding to and preparing for climate change risks. For example, first responders may encounter difficulties reaching disperse populations in rural areas.
3. Responding to additional challenges from climate change impacts will require significant adaptation within rural transportation and infrastructure systems.

The 2011 Massachusetts Climate Change Adaptation Report also assesses the impacts climate change could have on land use patterns and infrastructure throughout Massachusetts and is the basis for much of the information contained in this section. Table 1 shows the key sectors and infrastructure that is vulnerable to climate change.

Significant infrastructure development in the state occurred along the coastline, along rivers and streams, and in floodplains. According to the report, this trend, along with other growth patterns, places much of Massachusetts' key infrastructure resources in areas that are predicted to experience adverse effects from climate change.[3] The report states that infrastructure design has traditionally relied upon historic weather characteristics to determine the weather conditions that infrastructure assets can withstand. Since future climate patterns are expected to be different, designs based on historic weather patterns could leave infrastructure at risk.

[2] http://ncadac.globalchange.gov/

[3] http://www.mass.gov/eea/docs/eea/energy/cca/eea-climate-adaptation-report.pdf

Table 1 Massachusetts Climate Change Adaptation Report: Key Infrastructure Sectors Vulnerable to Climate Change

Sector	Infrastructure Involved
Energy (Electric, gas, petroleum)	Production, transmission, storage, distribution including power plants, substations, electric lines, and natural gas systems
Transportation	Roads, highways, bridges, and rail
Water (supply, wastewater, stormwater)	Water sources, pump stations, reservoirs, distribution systems, sewer systems, and septic systems
Dam safety and control	Dams and dikes
Solid and hazardous waste	Solid waste facilities and hazardous waste storage
Built infrastructure	Commercial, residential, industrial, institutional, and government buildings
Telecommunications	Phone, internet, and cable services

Although the report focuses on the impact sea level rise will have on coastal communities' infrastructure, it also indicates that infrastructure sited along rivers and streams could also be subject to more extreme flooding events, with longer recovery times and economic disruption. The report identifies specific impacts and vulnerabilities and recommends strategies to protect infrastructure and to encourage sound decision-making where climate change is concerned. The impacts and vulnerabilities are summarized in the following section and some of the strategies are included in the Recommendations and Implementation Strategies section of this chapter.

Climate Change Impacts on the Built Environment

Impacts to the built infrastructure and buildings were assessed in the report. Some impacts and vulnerabilities of infrastructure include:

- Extreme and more frequent weather events, including flooding, may damage **energy infrastructure** and delivery equipment such as generation plants, terminals, storage facilities and above-and below-ground wires and pipes.
- Inland **transportation infrastructure** may be affected by changing precipitation patterns, extreme weather events, and increased temperatures.
- **Water and sewer infrastructure** and plants could be subject to damage due to inundation from flooding rivers and streams.
- **Buildings** could be impacted by climate change such as greater thermal stresses on building materials, higher cooling demands, and inadequate existing flood-proofing.
- **Utility and communication infrastructure** could experience climate change impacts including flooding, erosion, heavy rainfall, and hurricanes. High wind, lightning, and ice storm events could damage or destroy utility lines, poles, and towers.

Climate Change Mitigation and adaptation Related to Land Use and the Built Environment

This sections draws from the 2011 Massachusetts Climate Change Adaptation Report chapter on Key Infrastructure. The report recommends the following strategies:

- **Mapping and Surveys:** Update floodplain mapping, identify at-risk facilities and structures, and determine strategies to protect or move such facilities and structures.
- **No Regrets Actions**: These are actions that make sense regardless of climate change, for example, conserving key resources such as drinking water and flood-proofing structures.

Buildings and infrastructure along and near water bodies were significantly impacted by Tropical Storm Irene's flooding.

- **Land Use, Design, Site Selection, and Building Standards:** Modify land use and zoning regulations to integrate climate change impacts.
- **Enhance Natural Systems:** To increase resilience of infrastructure, restore wetlands and flood storage capacity of floodplains.
- **Lead Time for Adaptive Construction:** Identify lead times needed for infrastructure replacement and rehabilitation.

Climate change is a global issue that has very real local impacts. Individual communities and their citizens play a critical role in addressing climate change. Some municipalities in the region have incorporated climate change considerations and adaption into all aspects of their plan. An example is Keene, NH, where in 2004 the city council formally adopted their Cities for Climate Protection Campaign: Local Action Plan, a plan to take local actions to address climate change. In 2007, the city followed up with Adapting to Climate Change: Planning a Climate Resilient Community. This plan is designed to focus on three key community systems: the built, natural, and social networks that collectively provide the key services or activities within a community or region.

Within Franklin County, our communities are taking action to reduce green house gas emissions and to encourage renewable energy production through the Green Communities program. Currently, 15 of our 26 towns have achieved Green Community status. Integrating climate change adaptation into all aspects of planning, development, and redevelopment is an important next step that our communities can take to address climate change.

SUSTAINABLE DEVELOPMENT STRATEGIES

As the region considers strategies for sustainable development, techniques and strategies such as Green Infrastructure, Smart Growth principles and Low Impact Development strategies can help guide decision-making. These tools can be used at the local level as well.

Green Infrastructure

Green infrastructure is a sustainable approach that communities can use to help maintain healthy waters and provide multiple environmental benefits. Green infrastructure uses vegetation and soil to manage rainwater where it falls. By merging natural processes

into the built environment, green infrastructure provides not only stormwater management, but can also help with flood mitigation, water quality management, and maintaining ground water levels for drinking water supplies.. At a time when many of our towns are considering replacing aging traditional infrastructure, green infrastructure should be considered as an alternative or complementary technique.

Green infrastructure can be used by municipalities and by homeowners alike. Some examples include:

- Downspout disconnection.
- Rainwater harvesting for watering gardens.
- Bio-swales and rain gardens to capture and infiltrate rain on site.
- Permeable pavements.
- Green roofs for rainwater retention and cooling.
- Urban tree canopy for reducing cooling and heating costs and for rainwater retention.

While green infrastructure techniques can be used at different scales, policy to encourage green infrastructure at the municipal, regional or watershed level can reap some of the greatest benefits. Adapting municipal stormwater regulations is a key way in which towns and cities are implementing green infrastructure programs. Another way in which municipalities can encourage the use of green infrastructure is to sponsor high-profile pilot projects that introduce different green infrastructure tools and techniques to municipal workers and residents alike. There are many examples of municipalities implementing green infrastructure projects in the region, including in Orange, MA. In Orange, the purpose of the Orange Riverfront Park, which is located on the banks of the Millers River, was to use an alternative to the conventional "pipe and pond" approach to stormwater management. The Low Impact Development (LID) techniques incorporated an ecologically-based approach to stormwater management that created a hydrologically functional landscape that generates less surface runoff and less nonpoint pollution, especially important for development projects adjacent to sensitive resource areas. The project, a former Brownfields site, also created an "outdoor classroom" which showcases several LID stormwater management techniques, including: rain gardens, porous pavers, and bioretention swales. The park will not only help to educate visitors about LID but also provide access to the Millers River, a regionally significant natural resource, and offer visitors a peaceful place to picnic, take a walk, enjoy views of the river, and launch a canoe or kayak.

The Orange Riverfront Park utilizes Low Impact Development techniques to sustainably manage stormwater runoff.

There are opportunities in many of our Franklin County towns to implement green infrastructure techniques to reduce stormwater runoff and to improve water quality. One way for municipalities to build green infrastructure into their approach for stormwater runoff is encourage the use of green infrastructure in any new or redevelopment projects. For instance, any time a parking lot is slated for repaving, towns can use that as an opportunity to potentially remove curbing and add rain gardens or pervious paving to help treat stormwater on site. Anytime a repair to roads is required, green infrastructure techniques such as permeable pavement and bio-swales can be considered. Green infrastructure

techniques can be particularly valuable in our more populated communities, where there is a greater percentage of impermeable surfaces, fewer trees, and often a close proximity to a river.

Low Impact Development

Conventional development often starts by clearing a parcel of most, if not all, trees and vegetation and adding impervious roads to connect homes sited on large lots. Typically, natural features and drainage are disturbed and may be destroyed during the site preparation. Roads are often built with curbs which direct stormwater runoff directly to storm drains. Human-built drainage features – often in the form of detention ponds – are then added back into the site.

Low Impact Development (LID) is a sustainable land development approach that protects critical natural resource areas on the site, maintains natural drainage flow paths, minimizes land clearance, concentrates built environment, and reduces impervious surfaces. The natural features and hydrology of the site are preserved and used instead of the conventional methods of collecting, conveying, and piping away runoff.

Smart Growth Principles

Smart Growth, a sustainable development principle, is a term used to describe a set of planning principles that can be melded with the unique conditions of a region to achieve more sustainable development patterns. Smart Growth supports communities that are socially, economically, and environmentally sustainable.

The Massachusetts Executive Office of Energy and Environmental Affairs(EOEEA) offers Smart Growth Toolkit[4], which includes information, resources and model bylaws related to Smart Growth and LID. Core principles of Smart Growth relating to land use and infrastructure include:

- Efficient use of land and infrastructure.
- Communities focused around human-scale, mixed-use centers with housing choices.
- A balanced, multi-modal transportation system providing increased transportation choice.
- Conservation and enhancement of environmental and cultural resources.
- Vital small towns and rural areas.
- Local, state, and federal policies and programs that support urban investment, compact development and land conservation.
- Well defined community edges, such as agricultural greenbelts, wildlife corridors or greenways permanently preserved as farmland or open space.

In 2012, United States Environmental Protection Agency (EPA) released a guide to applying Smart Growth principles to rural settings. *Essential Smart Growth Fixes for Rural Planning, Zoning, and Development Codes*[5] provides strategies organized around key issues that rural communities face. It is intended to provide Smart Growth policy options that communities can implement, which can help small towns and rural areas ensure that their development is fiscally sound, environmentally responsible, and socially equitable. It can also help communities ensure that their zoning bylaws support the kind of land use patterns they favor.

Local Food Production

Food production, distribution and consumption patterns have gone through a major transformation in the past 50 years. In the 21st century global food economy, most foods travel an average of 1,500 miles from farm to plate. Consumers have grown used to the convenience and vast selection of year-round produce and other foods. But the often huge distances that food often travels is unsustainable in the long run.

[4] http://www.mass.gov/envir/smart_growth_toolkit/pages/SG-bylaws.html

[5] www.epa.gov/dced/pdf/rural_essential_fixes_508_030612.pdf

A revitalized local and regional food system can reduce the number of miles food travels, ease dependence on fossil fuels, and provide a wide array of jobs and development opportunities to Franklin County residents. As towns look at possible future development, the potential for rebuilding food processing infrastructure, reusing mill buildings for food-based businesses, and protecting agricultural land should all be priorities.

Imports of food by airplane have a substantial impact on global warming pollution. In 2005, the import of fruits, nuts, and vegetables into California by plane released more than 70,000 tons of CO_2, which is equivalent to more than 12,000 cars on the road.[6]

On the individual level, citizens can help make the regional food system more robust in many different ways. Actions citizens can take include:

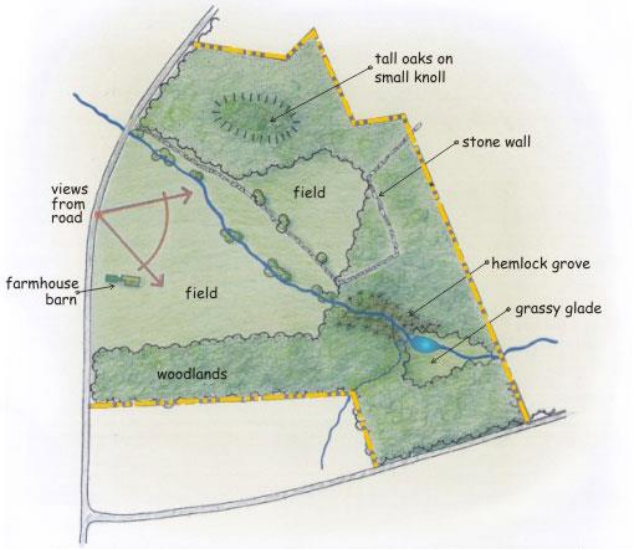
- Supporting local farmers' markets or encouraging the formation of a farmers' market, if none exists in the area.
- Joining a CSA (Community Supported Agriculture) to support local farmers.
- Selecting local produce and eating what is in season, whenever possible.
- Encourage local grocers, restaurants, and schools to use local foods.
- Avoid buying produce that has been flown in from abroad.
- Encourage businesses and government bodies to adopt procurement policies favoring locally grown foods.
- Support the protection of farmland and farm buildings, keeping it affordable and available to farmers.

[6] Natural Resources Defense Council, 2007

MODEL SUSTAINABLE LAND USE REGULATIONS

Open Space Development

OSRD is an approach to residential development that promotes open space preservation based on environmental and social priorities. It can reflect a partnership in development design between municipal officials and developers that provides mixed housing types including affordable housing, recreational amenities, and minimal disturbance to the natural terrain.



Identifying important natural resource and other values of a site is an integral part of the planning process for Open Space Development.

The Open Space Development process typically begins with determining how many lots could be developed under conventional zoning. The plan development process then follows four basic steps:

- **Identify conservation areas** including wetlands, farmland, floodplains, buffers to streams, wildlife habitats, and other features.

- **Locate house sites** to maximize access to open space and proximity to views. Conceptual alternatives are explored.
- **Site roads, trails, and other infrastructure,** avoiding excess impervious surfaces and integrating a natural stormwater management practices.
- **Draw in lot lines** and establish ownership and management of the preserved open space.
- **Incentives** such as "bonus lots" can be provided to support town priorities such as open space protection, provision of affordable housing, or recreational amenities.

Transfer of Development Rights (TDRs)

This is a system that assigns development rights to parcels of land and gives landowners the option of using those rights to develop or to sell their land. TDRs are used to promote conservation and protection of land by giving landowners the right to transfer the development rights of one parcel to another parcel. By selling development rights, a landowner gives up the right to develop his/her property, but the buyer could use the rights to develop another piece of land at a greater intensity than would otherwise be permitted. Model Transfer of Development Rights bylaws can be used as a starting point for a community wishing to craft its own TDR bylaws.[7] This technique can help direct growth to town centers while protecting farmland and forestland.

Pending Land Use Regulations

An Act Promoting the Planning and Development of Sustainable Communities

This streamlined zoning reform (House #3216) proposes changes to the Mass General Law (MGL) c. 40A Zoning Act that would help enable towns to zone for more sustainable land use patterns. Highlights of the bill[8] currently under consideration include:

- **Powers of Cities and Towns:** Explicitly confirms statutory authority for the use of inclusionary zoning, form-based codes, transfer of development rights, site plan review, and natural resource protection zoning.
- **Minor Subdivisions:** Allows cities and towns to replace Approval Not Required (ANR) provisions with regulations for minor subdivisions. ANR developments are almost unregulated, producing sprawling development patterns. Minor subdivisions improve local oversight through a streamlined review process.
- **Consolidated Permitting:** Encourages all decision-making boards to come together at the beginning of a project review and share common information. Each board still retains the authority to make an independent decision in accordance with its own standards.
- **Development Impact Fees:** While standard practice across the United States, impact fees are generally unavailable to Massachusetts communities. This would establish a clear and predictable process for assessing fees to cover eligible impacts such as traffic, stormwater, and water supply.
- **Vested Rights ("grandfathering"):** Provides reasonable and standardized zoning protections for development projects proposed in building permits, special permits, and subdivision plans.
- **Inclusionary Zoning:** Provides explicit statutory language allowing municipalities to require the creation of affordable housing projects, which can count towards the 10% local requirement under Chapter 40B.
- **Variances:** Benefits property owners by expanding the usefulness of the variance to address a wider array of zoning situations.

[7] www.mass.gov/envir/smart_growth_toolkit/bylaws/TDR-Bylaw.pdf

[8] Massachusetts Smart Growth Alliance

- **Dispute Resolution:** Enables developers and municipalities to pursue alternative dispute resolution instead of litigation to resolve conflicts.
- **Parks and Playgrounds:** Allows Planning Boards the option to set aside up to 5% of a subdivision as a park or playground for the development.
- **Master Plans:** Makes master planning optional and allows cities and towns greater flexibility to choose the elements of that plan based on local needs.
- **Planning Ahead for Growth Act:** Grants additional tools and incentives to communities that choose to "opt-in" by making four specific zoning changes consistent with the state's Sustainable Development Principles. These benefits include: broader use of impact fees, development agreements, natural resource protection zoning, shorter vesting periods, the ability to regulate the rate of development, and priority for State infrastructure funding.

CONSTRAINTS TO SUSTAINABLE LAND USE AND INFRASTRUCTURE

The public participation process and data analysis conducted for this Plan identified several major constraints that are acting as barriers to improved sustainability in Franklin County. Those barriers as well as other constraints or barriers include:

- Lack of funding and/or financing for redevelopment projects and upgrades to water and sewer infrastructure.
- Local zoning does not always support sustainable land use patterns.
- Climate change may pose significant challenges to infill and redevelopment, especially where infill areas are in close proximity to rivers.
- The initial cost of green infrastructure and LID projects can sometimes be higher, although cost savings are often realized over the long term.
- Information and training is needed for local public works employees on green infrastructure and LID techniques.
- Costs of redeveloping structures, including bringing them into building code compliance and making them accessible, is sometimes cost-prohibitive.
- Not all people want to live in infill areas and may prefer to be in low population areas.
- Private land ownership makes some climate change adaptation strategies, such as reconnecting rivers to their floodplains, more challenging.
- Existing flood plain mapping is out of date (from the 1980s or earlier), may not reflect existing conditions, and does not have a predictive element that allows for climate change.
- Climate change is not a linear process, meaning that impacts will be erratic and unpredictable.
- Aging infrastructure, such as bridges, water and sewer lines, and culverts may be particularly vulnerable to increase flooding.
- Drinking water supplies may be vulnerable to climate change, especially in towns where there is no back-up water supplies and/or where there are high water tables.
- Droughts may also impact private drinking water wells.
- Properties down-stream of high risk dams may encounter issues getting insurance.
- More heat waves may have particular negative impacts on our aging population.
- More droughts may impact agricultural operations and irrigation.
- More droughts may also spur more wildfires.

Table 2: Recommendations and Strategies for Land Use and Infrastructure	Implementation					Partnering Organization(s)*
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Integrate climate change mitigation and adaption into all levels of planning						
Update local land use and zoning regulations to integrate climate change impacts	X					Towns, FRCOG
Encourage towns to promote municipal and homeowner-level energy reduction and efficiency programs	X					Town Energy Committees, FRCOG, FCRHRA
Encourage Green Communities designations to be attained by remaining 11 Franklin County towns		X				Town Energy Committees, FRCOG, DOER
Encourage towns to include climate change impacts and adaptation in all master plans, hazard mitigation plans, and open space and recreation plans	X					Towns, FRCOG, FEMA, MEMA
Assess the impact climate change could have on vulnerable areas and infrastructure						
Update floodplain mapping using predictive modeling to help identify at-risk facilities and structures, and determine strategies to protect or move such facilities and structures		X				MEMA, FEMA, FRCOG
Identify communities for which access to vulnerable populations during major flood events is constrained or restricted	X					FRCOG, WRHSAC, Town EMDs
Assess the ability of the built environment and infrastructure located along rivers to withstand inundation, including wastewater treatment and public water supplies		X	X			FRCOG, WRHSAC, Town EMDs and DPWs, Water and Sewer Districts, Town Building Inspectors
Encourage the flood proofing of wastewater treatment facilities		X	X			FRCOG, WRHSAC, Town EMDs and DPWs, Water and Sewer Districts, Town Building Inspectors
Encourage towns to assess all river and stream crossing areas for their ability to sustain more frequent and severe flooding		X	X			Towns, MassDOT, Town Con Coms, DCR

See Page 18 of Chapter 4: Housing Page 17 for a key to the Partnering Organizations abbreviations

Table 2: Recommendations and Strategies for Land Use and Infrastructure	Implementation					Partnering Organization(s)
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Work for the protection and viability of drinking water sources for the region						
Seek funding to conduct a regional drinking water supply study		X				FRCOG
Identifying additional potential community water supply sources		X				FRCOG, Towns, USGS
Encourage towns and/or water districts to identify ready-to-use alternate or emergency drinking water supplies		X				FRCOG, Town Boards of Health, MEMA, Town Water Districts
Encourage the adoption of Best Management Practices in all towns with aquifer areas	X					FRCOG, Town Conservation Commissions , DCR
Encourage water conservation by homeowners, farmers and other business owners, and municipalities, especially in drought conditions	X					Town Energy Committees and Conservation Commissions , Town Water Districts
Encourage the adoption of sustainable development and redevelopment techniques						
Encourage the adoption of Low Impact Development techniques in local regulations to help protect surface waters from stormwater runoff		X	X			FRCOG, Town Planning Boards
Restore wetlands and flood storage capacity of floodplains		X				FRCOG, Town Conservation Commissions, DCR
Encourage conservation development, to set aside more undisturbed land to function as green infrastructure		X	X			FRCOG, Town Planning Boards
Promote infill and redevelopment of Priority Development Areas, Emerging Development Areas, and all town centers						
Support the reuse of vacant or underutilized commercial and industrial buildings for mixed use		X	X	X		Towns, FRCOG, Private Investors, Non-Profits
Encourage towns to identify priority development and protection areas as part of their master planning process	X					Town Planning Boards
Allow accessory apartments in single-family homes by right		X				Town Planning Boards

Table 2: Recommendations and Strategies for Land Use and Infrastructure	Implementation					Partnering Organization(s)
	In Progress / Ongoing	0-5 Years	6-10 Years	11-15 Years	16-20 Years	
Encourage towns to modify their zoning for by-right conversion of single to multi-family homes and multi-family homes in town centers with sewer infrastructure		X	X			Town Planning Boards
Promote mixed use development (residential, commercial, light industrial and retail) in town centers	X					FRCOG, Town Planning Boards, Private Investors
Encourage roof-top and other low-impact siting of alternative energy as part of redevelopment	X					Town Energy Committees and Planning Boards, Private Investors
Promote the expansion of public transit and/or park and rides in all town and employment centers	X					FRCOG, MassDOT, FRTA, Town Energy Committees
Support the creation of off-road bike and pedestrian paths that connect town centers with residential areas	X					FRCOG, MassDOT, DCR, Towns
Encourage the use of green infrastructure techniques at homeowner, municipal, and water-shed levels						
Promote education and outreach to homeowners on green infrastructure techniques such as rain gardens, downspout disconnection, and tree planting	X					Town Energy Committees, Open Space and Rec Committees
Encourage municipalities to implement green infrastructure techniques, including GIS mapping of existing street trees	X					FRCOG, Town Energy Committees
Encourage towns to provide incentives to homeowners for using green infrastructure techniques	X					Town Energy Committees, Open Space and Rec Committees, Planning Boards, Town DPWs
Support workshops for public works employees on green infrastructure and GIS mapping	X					Select Boards, FRCOG, Town DPWs
Advocate for policy that supports sustainable land use patterns						
Encourage state legislators to pass the pending Zoning Act changes: *An Act Promoting the Planning and Development Of Sustainable Communities*		X				FRCOG, Towns
Encourage towns to strengthen their floodplain zoning bylaws	X					FRCOG, MEMA
Encourage towns to protect agricultural lands, important wildlife habitat, and other vital land from development	X					FRCOG, Land Trusts, MDAR, DCR

BENCHMARKS

In order to help ensure that the goals of this chapter are implemented, the following benchmarks are suggested as milestones to measure progress toward sustainability. The benchmarks are data-driven and can be evaluated in various contexts over time. To do this, data on the benchmarks will be collected and evaluated by FRCOG staff at regular intervals to establish trends.

TABLE 3: Land Use and Infrastructure Benchmarks

Performance Measure	*Unit of Measurement*	*Desired Trend*	
Towns incorporating climate change in planning	Number of towns	Increase	↑
Emergency drinking water backup supplies	Number of backup supplies	Increase	↑
Towns using LID and/or green infrastructure	Number of towns	Increase	↑
Vacant and underutilized buildings/sites	Number of buildings/sites	Decrease	↓
Town flood plain bylaws updated/adopted	Number of towns' bylaws	Increase	↑
Additional drinking water supplies identified	Number of drinking water supplies	Increase	↑
Town centers revitalized	Number of town centers	Increase	↑
Towns with stormwater management regulations	Number of towns	Increase	↑
Towns with mixed use zoning in town centers	Number of towns	Increase	↑
Towns with Conservation Development or similar bylaws	Percent change	Increase	↑
Towns with floodplain bylaws	Percent change	Increase	↑

SUSTAINABLE FRANKLIN COUNTY

Chapter 11: Conclusions and Summary Recommendations

SUSTAINABLE PLANNING IN FRANKLIN COUNTY

This Regional Plan for Sustainable Development provides a roadmap of how Franklin County can become more sustainable. It outlines the barriers to sustainability that the County faces and offers recommendations on a variety of interconnected issues that can move the region forward to a more sustainable future. Most importantly, the Plan was created by the residents of Franklin County with an extensive public outreach effort at the beginning of the planning process, continued public participation during the drafting of the Plan, and a region-wide comment process for the draft version of the Plan.

This Plan is not intended to just sit on a shelf after its completion. Benchmarks have been created for each of the chapters to mark progress on how well this Plan is being implemented. Responsible parties and time frames have been identified for each of the recommendations.

Implementation will occur at a variety of levels and among many individuals and organizations. For this Plan to be successful, collaboration and compromise must be integral components of the implementation process. Fortunately, Franklin County has a long history of collaboration among governments, non-profits, and community organizations. The region also has a history of sustainable projects that provide a solid foundation from which to build.

The following matrix summarizes the recommendations and strategies made in each of the chapters of the Plan. This matrix highlights the interconnectedness of issues and the need for collaboration as the Plan is implemented.

	Summary Recommendations	Sectors Impacted						
		Housing	Transportation	Economic Development	Energy	Natural Resources	Cultural Resources	Land Use and Infrastructure
Housing	Promote housing affordability.	X		X				
	Promote residential infill near downtowns and town centers.	X	X	X		X		X
	Provide housing options for elder and disabled populations.	X						
	Increase rental housing stock.	X						
	Prevent homelessness and assist with the homeless.	X						
	Increase energy efficiency of all housing stock.	X			X			
Transportation	Encourage integrated planning activities that support sustainable development.	X	X	X	X	X	X	X
	Promote transportation activities and technologies which conserve energy and reduce travel congestion and vehicle emissions.		X		X	X		
	Enhance the mobility of people and goods traveling to, from, and through Franklin County.		X	X				
	Promote economic development.		X	X				
	Improve transportation safety.		X					
	Maintain rural character.		X			X	X	X
	Support the preservation of existing transportation infrastructure.		X					X
	Implement climate change adaptation projects to enhance and protect transportation infrastructure.		X			X		X

	Summary Recommendations	Sectors Impacted						
		Housing	Transportation	Economic Development	Energy	Natural Resources	Cultural Resources	Land Use and Infrastructure
Economic Development	Support activities to enhance job skills and access to employment in regionally significant clusters and industries.			X				X
	Support activities that redevelop vacant or underutilized commercial and industrial properties.		X	X			X	X
	Support activities that revitalize and more intensely use downtowns and village centers.		X	X			X	X
	Support activities to develop planned industrial park properties in suitable locations.			X				X
	Support agricultural, forestry and fisheries sector in Franklin County.			X		X		
	Support growth of creative economy cluster.			X			X	
	Support growth of educational services cluster.			X				
	Support growth of green economy cluster.			X	X			
	Support growth of information and technology infrastructure cluster.			X				X
	Support the growth of natural and cultural -based tourism cluster.			X		X	X	
	Support activities that promote access to sustainable transportation.		X	X	X			X
	Support the development and growth of locally-owned businesses, cooperatives and non-profit organization that offer job opportunities and provide goods and services for residents.			X				
	Support buy-local efforts at personal, institutional, and business to business level.			X		X		
	Support application of sustainable business practices.			X	X			

Summary Recommendations		Sectors Impacted						
		Housing	Transportation	Economic Development	Energy	Natural Resources	Cultural Resources	Land Use and Infrastructure
Energy	Reduce energy consumption across all sectors – transportation, residential, commercial and industrial – without sacrificing quality of life or economic opportunities.	X	X	X	X	X		X
	Improve energy efficiency so as to reduce wasted energy.	X	X	X	X	X		X
	Reduce the impacts of emissions and extreme weather events through green infrastructure.				X	X		X
	Reduce waste.				X	X		
	Site new green energy and support the local economy.			X	X	X		X
Cultural Resources	Encourage regional and local initiatives that identify and protect existing cultural and historic resources.						X	X
	Support activities that redevelop vacant or underutilized historic properties.	X					X	X
	Support the growth of the creative economy.			X			X	
	Promote cultural resources "branding" on a regional level that captures the essence of Franklin County.			X			X	
	Support efforts of indigenous groups (organizations or tribes) to develop an appreciation and understanding of their rich heritage in the region.					X	X	
	Support education and outreach related to cultural and historic resources.						X	
Natural Resources	Support town, regional, and state policies that help make farms and farming economically viable.			X		X		X
	Promote locally produced farm products and assist farmers in successful farming ventures.			X		X		
	Support the expansion of food and farming related infrastructure and services.			X		X		X
	Support efforts that increase food security for Franklin County and the region			X		X		X
	Support additional research/studies to help support a resilient regional food system.			X		X		

Summary Recommendations		Sectors Impacted						
		Housing	Transportation	Economic Development	Energy	Natural Resources	Cultural Resources	Land Use and Infrastructure
Natural Resources (cont.)	Support initiatives that protect large areas of unfragmented forestland and that promote local forest products.				X	X		X
	Encourage regional and local initiatives that identify and protect existing and potential drinking water supplies.					X		X
	Preserve areas identified as critical habitat, especially those adjacent to already protected land.					X		
	Encourage regional and local initiatives that ensure the protection of wetlands and important flood storage areas.					X		X
Land Use and Infrastructure	Promote infill and redevelopment of Priority Development Areas, Emerging Development Areas, and all town centers.	X	X	X	X	X	X	X
	Integrate climate change mitigation and adaptation into all levels of planning.	X	X	X	X	X	X	X
	Assess the impact climate change could have on vulnerable areas and infrastructure.	X	X			X	X	X
	Work for the protection and viability of drinking water sources for the region.					X		X
	Encourage the adoption of sustainable development/redevelopment techniques.	X	X	X	X	X	X	X
	Encourage the use of green infrastructure techniques at homeowner, municipal, and water-shed levels.				X	X		X
	Advocate for policy that supports sustainable land use patterns.	X	X	X		X		X

Acknowledgements

Sustainable Franklin County would not be possible without the support, expertise and dedication from the following people and organizations:

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Rich Hubbard, Franklin Land Trust

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The work that provided the basis for this publication was supported by funding under an award with the U.S. Department of Housing and Urban Development. The substance and findings of the work are dedicated to the public. The author and publisher are solely responsible for the accuracy of the statements and interpretations contained in this publication. Such interpretations do not necessarily reflect the views of the Government.

Sustainable Franklin County

This project is supported by funding under an award with the U.S. Department of Housing and Urban Development.

Consortium Members: *Franklin Regional Council of Governments*
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