STUDY

ROUTE 5 SOUTH - RIVER ROAD

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1 executive summary

This Route 5 South – River Road Study is an effort to implement the sustainability goals of the Norwich Town Plan. The 2011 Town Plan calls upon Norwich to "*identify areas easily accessible to good roads, town services, schools, and public transportation to be considered for higher density energy efficient development*."

The Route 5 South and River Road corridors were selected as the study area because they are easily accessible from major transportation corridors, Norwich Village and downtown Hanover, and because they are served by public transit. The study area encompasses 726 acres or approximately 2.5% of the town's total land area.

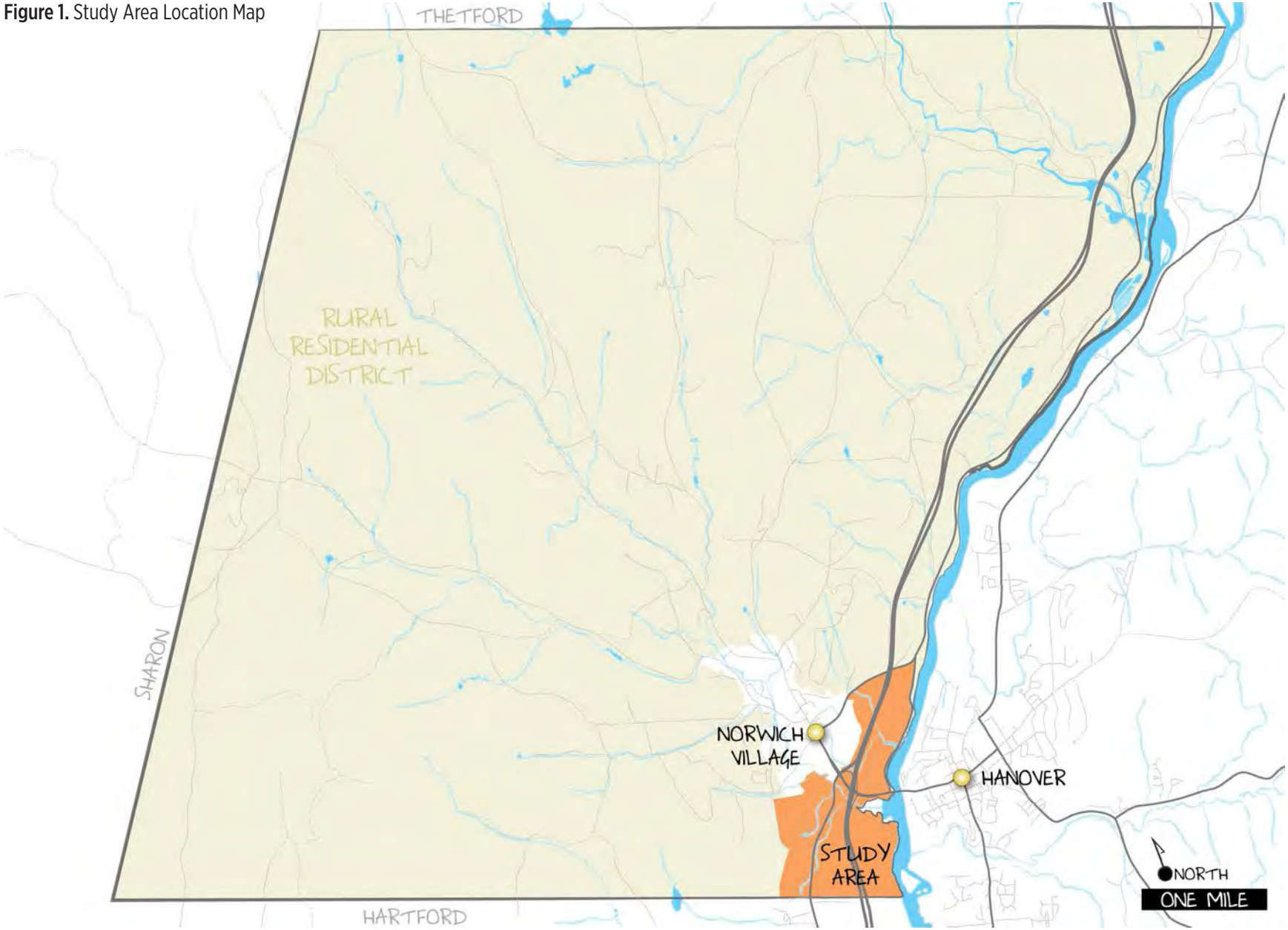
The 2011 Town Plan also recommends that Norwich *"begin implementation with community planning workshops to identify appropriate areas, densities, site plan and design patterns, etc. for future growth in these residential and mixed use areas."* Accordingly, this Route 5 South – River Road Study involved:

1. Assessing the land within the study area to identify development constraints and opportunities.
2. Analyzing demographic and housing trends in the town and region to provide insight into what development may be necessary to meet the needs of current residents and future generations.
3. Exploring any potential future land use and development patterns on suitable sites within the study area.
4. Using a community survey and workshops to gather feedback on the preferred type, density, form and design of any potential future development within the study area.
5. Analyzing existing development potential under current zoning as compared to future scenarios for sustainable development within the study area.
6. Recommending options for furthering the sustainability goals and policies of the 2011 Town Plan.

Based on the assessments and public input, the following measures are recommended to further implement the sustainability goals of the 2011 Town Plan:

1. Maintain the town's current site plan standards for reviewing development proposals, which have worked well in recent years to ensure that proposed development is high quality, pedestrian friendly and compatible with its surroundings.
2. Maintain the town's current natural resource protection standards, which provide substantial protection for natural resources.
3. Establish a new Mixed Use zoning district that would:
   a. Allow for a broader range of housing and nonresidential uses, and multiple principal uses within a building or site as a by-right use.
   b. Allow for a somewhat higher density of housing and smaller lots than is allowed within the study area under current zoning.
   c. Include appropriate standards to ensure compatibility with surrounding land uses.
   d. Offer bonuses and incentives for affordable, workforce and senior housing, as well as for mixed use, compact, and efficient building and site designs.
   e. Require sidewalks, bike lanes, internal walkways and connections to nearby paths, trails or development sites as appropriate to the site.
4. Continue efforts to promote alternative wastewater solutions within the study area. If the town pursues an option to provide wastewater capacity, it should adopt a wastewater policy that would allocate:
   a. A percentage of the available capacity for affordable, workforce and/or senior housing to ensure that any investment in public infrastructure serves to further this priority planning goal.
   b. The available capacity between residential, commercial, industrial and/or public uses in order to ensure that as any development proceeds over time, a mix of uses would emerge.

Figure 1. Study Area Location Map



2 introduction

SUSTAINABILITY

Norwich's 2011 Town Plan includes a strong focus on ensuring a sustainable future for Norwich. The plan defines sustainability *"as meeting our needs in the present without compromising the ability of future generations to meet their needs."*

The 2011 Town Plan builds on the efforts of previous town plans and land use policies, which sought to reduce sprawl and preserve the Norwich's rural character by significantly reducing development potential on 97% of the town's land area. It recognizes that guiding development away from rural land was one of two essential components of a plan to promote sustainability. The other part of the sustainability formula – which has not yet been implemented – was the adoption of policies to guide such development as may be necessary to meet the needs of current residents and future generations towards existing settlement areas and major transportation corridors.

To achieve this second essential element of Norwich's sustainable future, the 2011 Town Plan recommends the following approach:

1. Identify areas easily accessible to good roads, town services, schools, and public transportation to be considered for higher density, energy efficient development.
2. Begin implementation with community planning workshops to identify appropriate areas, densities, site plan and design patterns, etc. for future growth in these residential and mixed use areas.
3. Create incentives for a diversity of housing types to meet the needs of all ages, financial situations, and lifestyles, including affordable and workforce housing.
4. Create new land use regulations and districts based on the plans developed that recognize and allow for a diversity of housing types to meet the needs of all ages, financial situations, and lifestyles.
5. Identify wastewater capacity, either on-site or off-site, that will support the proposed level of development in each area, and develop wastewater treatment for areas without adequate on-site wastewater treatment capacity that are otherwise suitable for higher density development.

This Route 5 South – River Road Study was initiated in direct response to the plan's sustainability goals, objectives and actions.

STUDY AREA

This Route 5 South – River Road Study focuses on a small portion of Norwich south and east of the village as shown in Figure 1. The 726 acres included in the study area accounts for approximately 2.5% of the town's total area, or about one out of every 40 acres. The study area includes:

1. The Route 5 South corridor, which extends approximately one mile from I-91 Exit 13 south to the Hartford town line. The Route 5 South corridor begins approximately ½ mile south of the village and is bounded to the north by Exit 13 and to the south by the Hartford town line.
2. The River Road corridor, which extends approximately one mile from Main Street (Route 10A) north to Church Street (Route 5). The River Road corridor is located approximately one mile east of the village and just across the Connecticut River from downtown Hanover.

In accordance with the recommendations of the 2011 Town Plan, this area of town is *"easily accessible to good roads, town services, and public transportation."* The future land use element of the 2011 Town Plan includes this land in the Village/Route 5 South Planning Area. The plan states that *"the town should direct the majority of its growth and development to this [Village/Route 5 South] land use planning area."*

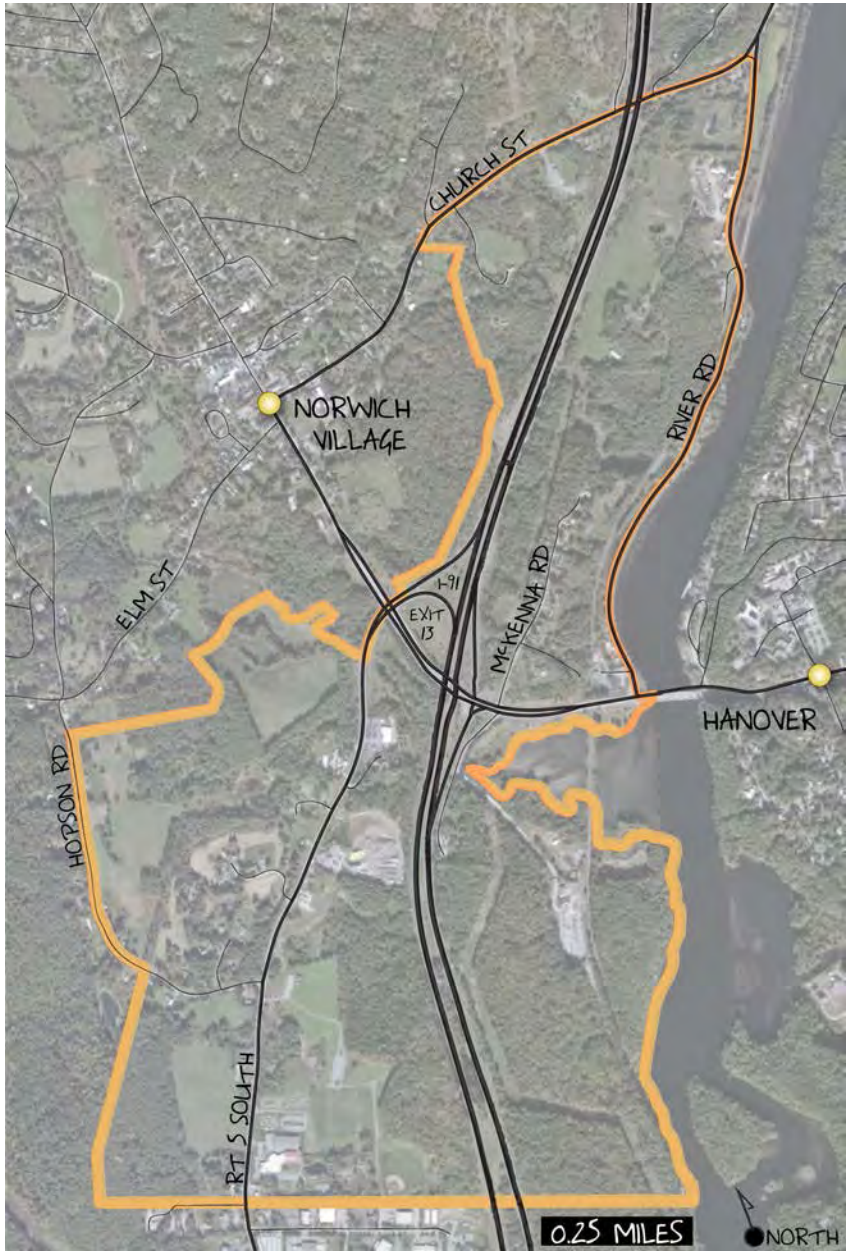
The study area is adjacent to Norwich village, downtown Hanover, and developed areas in Hartford. It is within the Upper Valley's core area in proximity to existing employment centers and major transportation corridors, which various state, regional and municipal plans, studies and initiatives recognize as a preferred location for any future growth and development in accordance with smart growth and sustainability principles.

PLANNING PROCESS

This Route 5 South – River Road Study consisted of the following elements:

1. Delineation of the study area guided by the goals, policies and recommendations of the 2011 Town Plan.
2. Assessment of the land within the study area to identify development constraints and opportunities.
3. Analysis of demographic and housing trends in the town and region to provide insight into what development may be necessary to meet the needs of current residents and future generations.
4. Exploration of any potential future land use and development patterns on suitable sites within the study area.
5. Community survey and workshops to gather feedback on the preferred type, density, form and design of any potential future development within the study area.
6. Analysis of existing development potential under current zoning as compared to future scenarios for sustainable development within the study area.
7. Recommendations for furthering the sustainability goals and policies of the 2011 Town Plan.

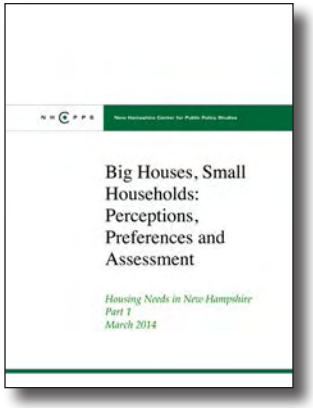
Figure 2. Study Area Detail Map



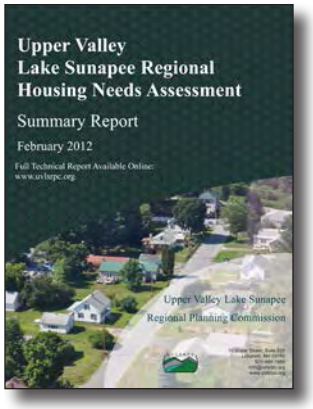
3 demographic and market trends

Numerous studies have shown that the region's housing needs and preferences are shifting. There are a growing number of households in the region whose housing needs are poorly met by single-family detached homes, which are the dominant type of housing available in the region. The mismatch of housing needs and housing supply is contributing to unsustainable development patterns (i.e., rural residential sprawl, inefficient transportation, high housing costs). Shifting lifestyle preferences and demographic trends are driving demand for alternative forms of housing in the region, particularly in convenient, central locations that also offer alternative transportation options.

Last year, the New Hampshire Center for Public Policy Studies released a statewide report, *Big Houses, Small Households: Perceptions, Preferences and Assessments*, which found:



- Overall homeownership demand is declining. This is due to multiple factors including a weaker economy, lower rates of in-migration, difficulties in obtaining financing, low levels of liquidity for older homeowners, and high levels of student debt and mediocre wage growth for younger generations.
- Current housing supply is poorly aligned with evolving housing preferences. The number of 3+ bedroom units is far greater than 1 and 2 bedroom units. This means that there are few options for older residents wanting to downsize, single adults and others living in small households. The demand for rental housing is greater than the supply in most markets. Younger age groups are less likely to be homeowners as compared to previous generations at the same age. They need/want the affordability, mobility and flexibility associated with renting.
- Seniors are occupying a growing proportion of housing units. By 2025, seniors will be living in one out of every three housing units. Many seniors want to "age in place" but they will face challenges because the homes they are occupying today may not meet their long-term accessibility, mobility and/or affordability needs. There is an inadequate supply of housing located, designed and priced to meet future demand.
- New construction is anticipated to be limited in an era of projected slower population growth. With less new construction, it will be necessary to rehabilitate and reconfigure the existing housing stock to better meet evolving housing needs and preferences.



The Upper Valley Lake Sunapee Regional Planning Commission completed a Housing Needs Assessment in 2012. Much of the data analyzed in the report is from the Lebanon-Hanover labor market area, which includes Norwich.

Some of the specific demographic, housing and economic trends highlighted in that assessment included:

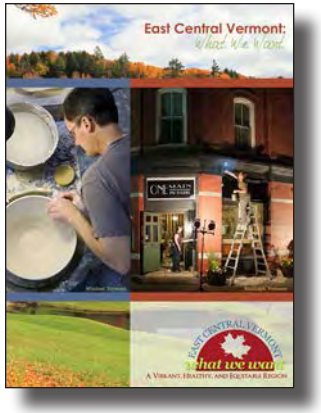
- More than one-third of the region's population will be age 65 or older by 2030 and nearly half of all households will be headed by someone age 65 or older.
- The region will need to attract younger workers at a greater rate to avoid a decline in the labor force.
- Nearly all the net growth in households during the past 20 years has occurred in one and two person households.
- Employment in the Lebanon-Hanover area has increased faster than housing during the past 20 years.
- Entry-level wages in some of the largest occupational sectors in the Lebanon-Hanover area range from about $9 to $20 per hour.

Rental housing affordable to single wage earners in this range is virtually non-existent in the private, unsubsidized market.

- More than 1 out of 3 households in the region have a high housing cost burden (more than 30% of their income) and nearly 1 out of 6 households have a severe housing cost burden (more than 50% of their income).
- The average travel time for a commuter has increased about 25% during the past 20 years as people are living further from their place of work, largely seeking more affordable housing. While housing further out from employment center may be less expensive, that savings is often offset by increased transportation costs.

The assessment also found that there is an extreme shortage of rental housing in the region. It concluded that a larger share of future housing construction will need to be rental and multi-family for the region to attract the necessary younger workers and to serve an increasing demand from seniors for down-sized, more affordable, or more accessible housing units. It may be possible to meet some of this need through conversion of the existing housing stock as discussed in *Big Houses, Small Households*.

The findings of those two New Hampshire assessments and other recent studies from around the region paint a clear picture of the regional housing market and the implications of the current imbalance between housing supply and demand on many other aspects of community and family life – economic development, transportation, childcare, energy consumption, climate change, civic engagement, education and more.



Those findings are also consistent with the issues identified in the just completed plan for East Central Vermont entitled *What We Want*, which emphasizes the need for affordable housing in the region.

That plan states that *"We must address the lack of affordable housing near jobs and service centers. By 'affordable,' we're talking about more than subsidized housing for low-income residents; we're also talking about housing for skilled workers and professionals whose talents we need for a thriving community."*

It notes that more striking than the lack of supply of low-income housing in Eastern Central Vermont is that *"moderate-income households are priced out of the market in many locations. In addition, even in those locations where people might be able to afford a decent, energy-efficient house, very little, if any, inventory exists."*

The plan recommends construction of new, energy-efficient housing stock that promotes compact development and the efficient use of resources. It calls upon towns to identify land in core areas and on transit routes that is suitable for development, and work with developers and existing property owners to highlight opportunities for affordable and mixed income housing – **exactly what this Route 5 South - River Road Study hopes to achieve**.

4 sustainable development

The 2011 Town Plan states that *"central to achieving a sustainable future is the need to change our land use development practices and patterns."* The changes that Norwich's plan recommends align with the findings of the studies and plans from around the region presented in Chapter 3. They are a continuation of the town's 20-year effort to guide any future development away from rural areas and towards existing settlement areas and major transportation corridors.

The 2011 Town Plan calls for more than a change in the location of any future development; it outlines a number of changes in land development practices that will be necessary for Norwich to become a sustainable community. These sustainable development practices include:

- Offering a range of housing options and choices that fit people's needs at different life stages and that are affordable to those at different income levels.
- Supporting a variety of transportation choices and creating walkable neighborhoods.
- Mixing land uses so that opportunities for people to live, work, shop and play are located within close proximity to another.
- Designing green, compact buildings and neighborhoods that use land, energy and other resources efficiently.
- Designing a distinctive and attractive built environment that contributes to the town's character and sense of place.
- Preserving open space and protecting sensitive resources.

Many of these sustainable development practices are interdependent as shown in Figure 3, creating positive feedback loops and spin-off benefits for individual households, the immediate neighborhood and society in general.

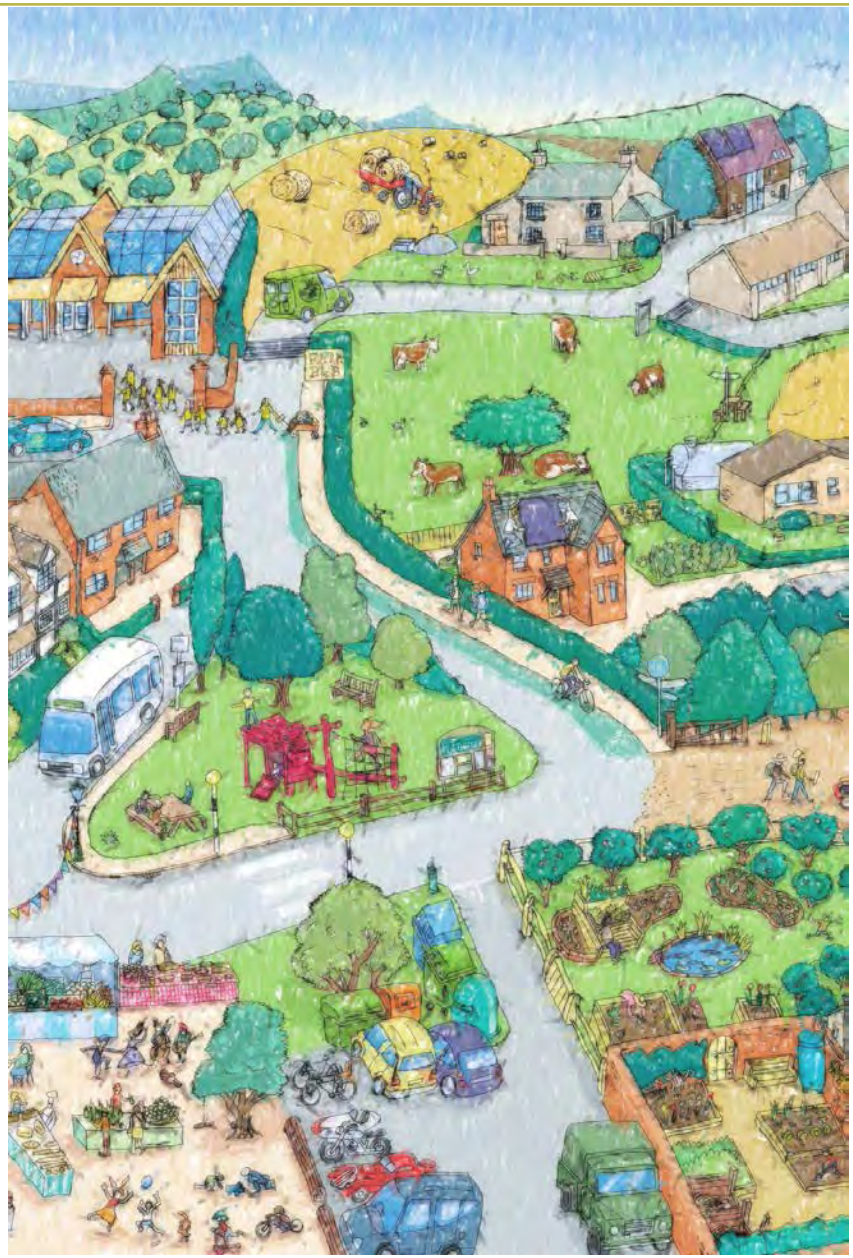
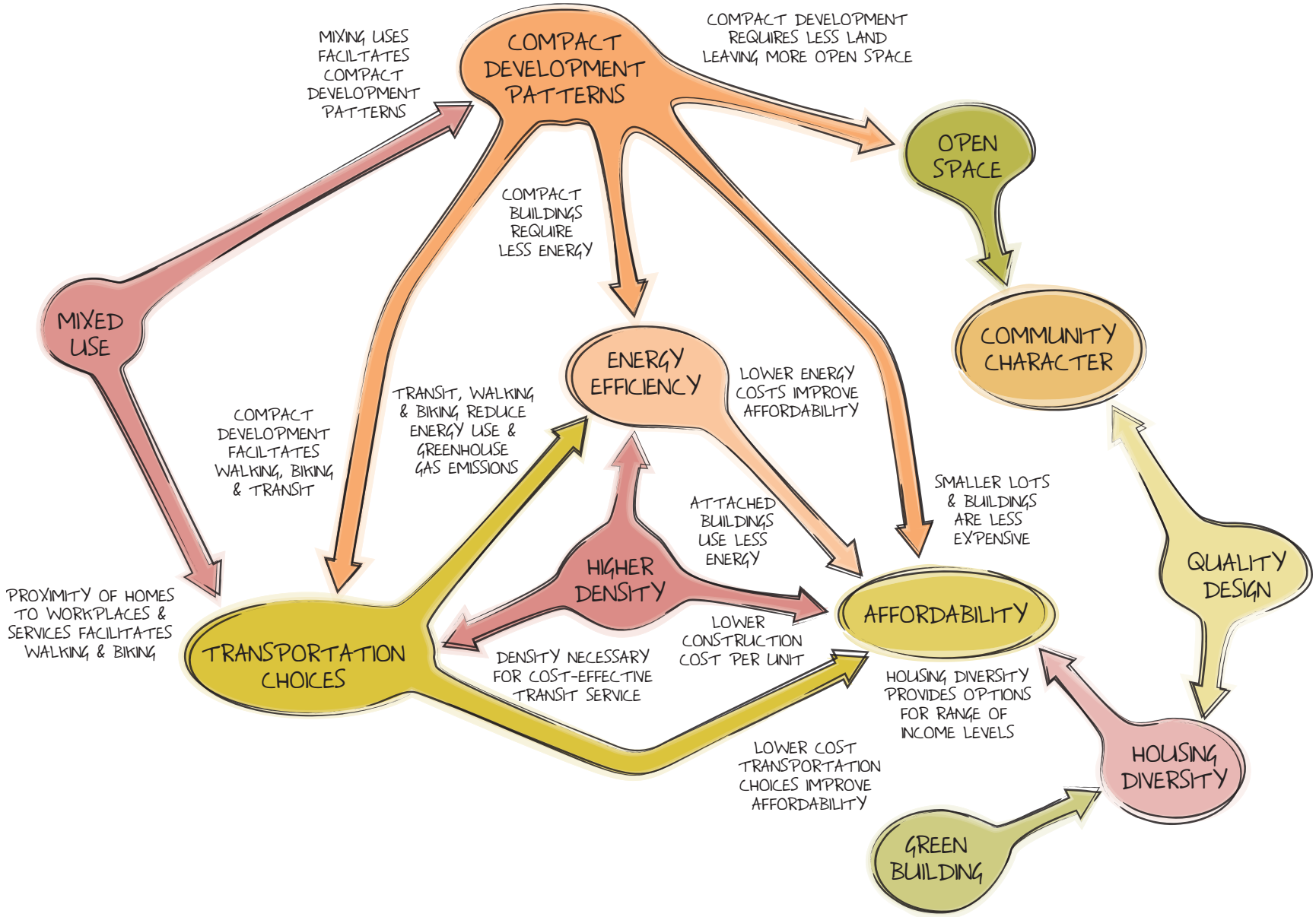


Figure 3. Sustainable Development Practices and Benefits



HOUSING DIVERSITY

The 2011 Town Plan calls *"for a diversity of housing types"* in Norwich. Currently, high-value, owner-occupied, single-family homes are the predominant type of housing available in town. The Census Bureau estimates that nearly 35% of Norwich households are spending more than 30% of their income on housing today – a level that is typically considered "unaffordable." The median sale price of a primary residence in Norwich was $448,000 in 2014, more than twice the county or state median.

Living in Norwich is simply not an option for a significant percentage of those working in the region, including in Norwich itself, because of the limited supply of housing affordable to low- and moderate-income households. As detailed in the 2011 Town Plan, there has been an awareness and concern about the high cost of housing in Norwich for many years. The town has an Affordable Housing Subcommittee charged with fostering affordable housing in town. The zoning and subdivision regulations have been amended to create incentives and bonuses for affordable housing. However, these efforts have met with limited success to-date and Norwich remains one of the most expensive places to reside in the state.

High housing costs and limited housing choices are not only a concern in Norwich, but are a problem throughout the region. As summarized in Chapter 3, a number of housing studies from around the region have pointed to a need for affordable and workforce housing to sustain a healthy local economy. Without such housing, local businesses have greater difficulty attracting and retaining workers. Demand for affordable and workforce housing is coming from:

- Young professionals and students who prefer to rent in order to preserve their mobility. Many young people are looking for housing in walkable communities with access to transit where they can enjoy a less auto-dependent lifestyle. They value energy efficiency and green building features, and require broadband access.

Figure 4. Missing Middle Housing

Missing Middle Housing encompasses a range of clustered or multi-unit housing types compatible in scale with single-family homes that help meet the growing demand for walkable, compact living. It offers diverse housing options along a spectrum of affordability, including duplexes, fourplexes, and cottage clusters, to support walkable communities, neighborhood shops and services, and public transit. It addresses the mismatch between the available housing stock and shifting demographics combined with the growing demand for walkability.

There is very little housing in Norwich that meets the state's definition of affordable housing (24 V.S.A. § 4303 (1)). Based on the 2015 county median income, monthly housing costs could not exceed $1,025 for a one-person household and $1,464 for a four-person household to be affordable. That one-person household could affordably purchase a home priced at no more than $138,500, while the four-person household could affordably purchase a home priced at no more than $199,000 (based on Vermont Housing Finance Agency's home mortgage calculator). In 2014, the median sale price of a condominium unit exceeded $200,000 and a single-family home exceeded $400,000 in Norwich.

There is a limited supply of rental housing in Norwich with rentals comprising less than 20% of the total number of housing units in town. Less data is available on rental costs as compared to homeownership costs in Norwich, but the most recent Census Bureau estimates suggest that the median gross rent in town is approximately $1,200 per month (American Community Survey 2009-2013).

For Norwich, discussion of "affordable housing" also includes what is referred to as workforce or moderate-income housing. This is housing that would be affordable to those working for median wages in the region. It is commonly considered housing that is affordable to households earning 80% to 120% of the county median income. It is more feasible that housing in this price range could be built in Norwich without the subsidies that would certainly be required to build "affordable housing."

- Moderate and low-income households (individuals and families) who cannot afford to purchase a home within proximity to the region's employment centers. Presently, many of these households have chosen to live further from where they work in order to find lower cost housing, but that benefit is offset by longer commutes and higher transportation costs. Housing that is in locations served by transit and that is energy efficient can significantly reduce total living costs.

The demographics of the town and region clearly point to a growing need for senior housing as well. By 2030, it is anticipated that someone age 65 or older will head half of all households in the region. Not only is there a significant resident population at or approaching retirement age, the educational, cultural and recreational amenities in the region are attracting younger retirees and empty-nesters to the Upper Valley. This need is evidenced by the level of interest in the Norwich Senior Housing project, which offers 24 units of affordable rental housing in the village. That project is an example of the scale and type of affordable, compact housing that could be provided in the study area.

Many older residents want to "age in place," which will require a continuum of housing options and support services so people can remain living in Norwich at all life stages. Seniors and other small households want smaller, low-maintenance homes. Units that offer universal design and accessibility features in locations served by transit are particularly important for elders who want to live independently without having to leave their community.

In considering how to address the town's housing needs, a sustainable approach would consider not only the up-front land and construction costs, but the annual operating costs of the units. Housing can be made more sustainable and affordable by:

- Locating units in walkable, mixed use areas where there is public transit service to minimize the need to own a car and/or the amount of travel required for daily living.
- Orienting and configuring buildings for passive solar to minimize the amount and cost of energy needed for heating and lighting, and to reduce associated greenhouse gas emissions.
- Building high performance buildings that are well insulated with efficient windows, heating and cooling systems, and lighting to minimize their energy use and operating costs, and associated greenhouse gas emissions.
- Using durable and low-maintenance construction materials and finishes to minimize maintenance and repair costs.

Clearly, Norwich will need to offer a broader range of housing options, including rental housing and senior housing, in order to attract and retain the diverse population of residents needed for a sustainable future. The Route 5 South – River Road area is one of the few places in town where such housing could feasibly be accommodated.

TRANSPORTATION CHOICES

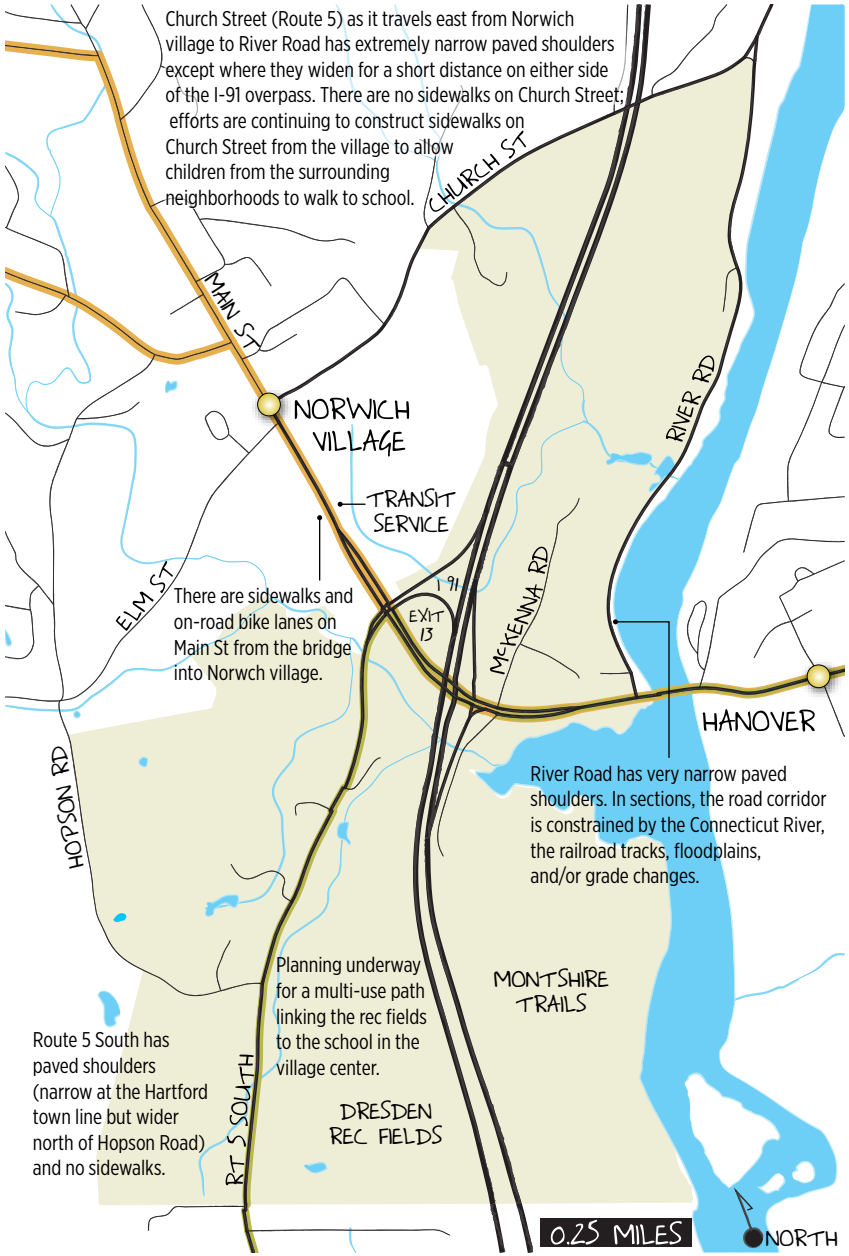
In accordance with the goals of the 2011 Town Plan, walkability and access to transit are essential elements of sustainable development. The Route 5 South – River Road is being considered as a location to focus any needed future growth and development in Norwich largely due to its proximity to major transportation corridors and existing settlement areas, and access to transit. The River Road corridor is within one mile and the Route 5 South corridor is within two miles of Norwich village and downtown Hanover.

Walkable places are comfortable, convenient, healthy and sustainable. They reduce unnecessary vehicle travel and the associated fuel costs, inconvenience of traffic congestion, and emissions of air pollution and greenhouse gases. A walkable community or neighborhood requires more than just sidewalks and pedestrian paths. The places that people are traveling between must be within a walkable distance of each other (commonly considered to be ¼ mile), necessitating compact, higher density, mixed use development patterns. Walkable places:

- Have frequent and densely interconnected pedestrian routes, which shorten both actual and perceived distances. This results from a development pattern with small blocks and frequent crosswalks. It can also be accomplished by creating public access through larger blocks such as alleys and pathways.
- Have a clear and continuous pedestrian network with frequent street crossings.
- Have complete streets that accommodate multiple modes of transportation. Streets are generally narrow to reinforce slow vehicle speeds.
- Are designed with buildings located relatively close to streets and public spaces rather than being set back far from the street behind expansive parking lots. This development pattern provides a sense of definition to streets and public spaces and allows easy pedestrian access to buildings.

Figure 5. Transportation Infrastructure within the Study Area

While the area's bicycle and pedestrian facilities are incomplete, they could reasonably be extended and improved incrementally in conjunction with any future development.



- Locate public spaces that generate the greatest activity, such as retail and dining, directly along pedestrian routes, and design them with pedestrian-oriented windows and displays. Auto-oriented and utility spaces are tucked away and largely hidden from pedestrian routes.
- Locate most off-street parking behind or below buildings where it will not disrupt pedestrian spaces. Parking needs to be connected to the pedestrian network, so that once people have parked they can easily walk to multiple destinations.
- Are human scaled. Buildings can use facade elements, awnings, lighting, signs, landscaping and other features designed to relate to pedestrians. The form of large buildings can be broken up or subdivided to reduce their perceived mass. Landscaping can be used to provide visual interest, screen utilitarian site features and shade walkways.

Even within a walkable community or neighborhood in Norwich, it is likely that many households will need or want to have a motor vehicle. However, the location, availability of transit and a more sustainable development pattern could make it feasible for households living within the study area who might otherwise require multiple vehicles to have only one. Reducing the number of vehicles per household has multiple positive benefits:

- Reducing household transportation costs.
- Reducing the number of vehicles on the roads (traffic congestion) and miles driven.
- Reducing the emission of climate changing greenhouse gases.
- Reducing the amount of land devoted to parking.
- Increasing transit ridership and carpooling, which lowers per passenger costs and energy use.
- Increasing travel by bike or foot, which also has health benefits, especially for an aging population.

MIXED USE

The 2011 Town Plan calls for "the creation of additional zoning districts allowing some level of commercial or mixed use activity on the west side of Route 5 South and along River Road." Mixed use – the close physical integration of places for working, living and recreating – is an essential ingredient of a sustainable community. Mixed use development is simply more practical. When the day-to-day things people need to do are in immediate proximity to each other less transportation is required, generating multiple benefits to individuals and the larger society.

"Mixed use" is a loosely defined term, but most definitions share common elements such as:

- Relating mixed use to higher density and/or more compact development patterns.
- Calling for a mix of uses within proximity to one another (often defined in terms of a 5- to 10-minute walk or ¼-mile radius).
- Emphasizing walkability between the uses and reduced auto-dependence.

For many, the image that may come immediately to mind when hearing the term "mixed use" is a traditional downtown building with ground floor retail and upper floor apartments. But that is only one of the possible forms and scales of mixed use. The term can encompass:

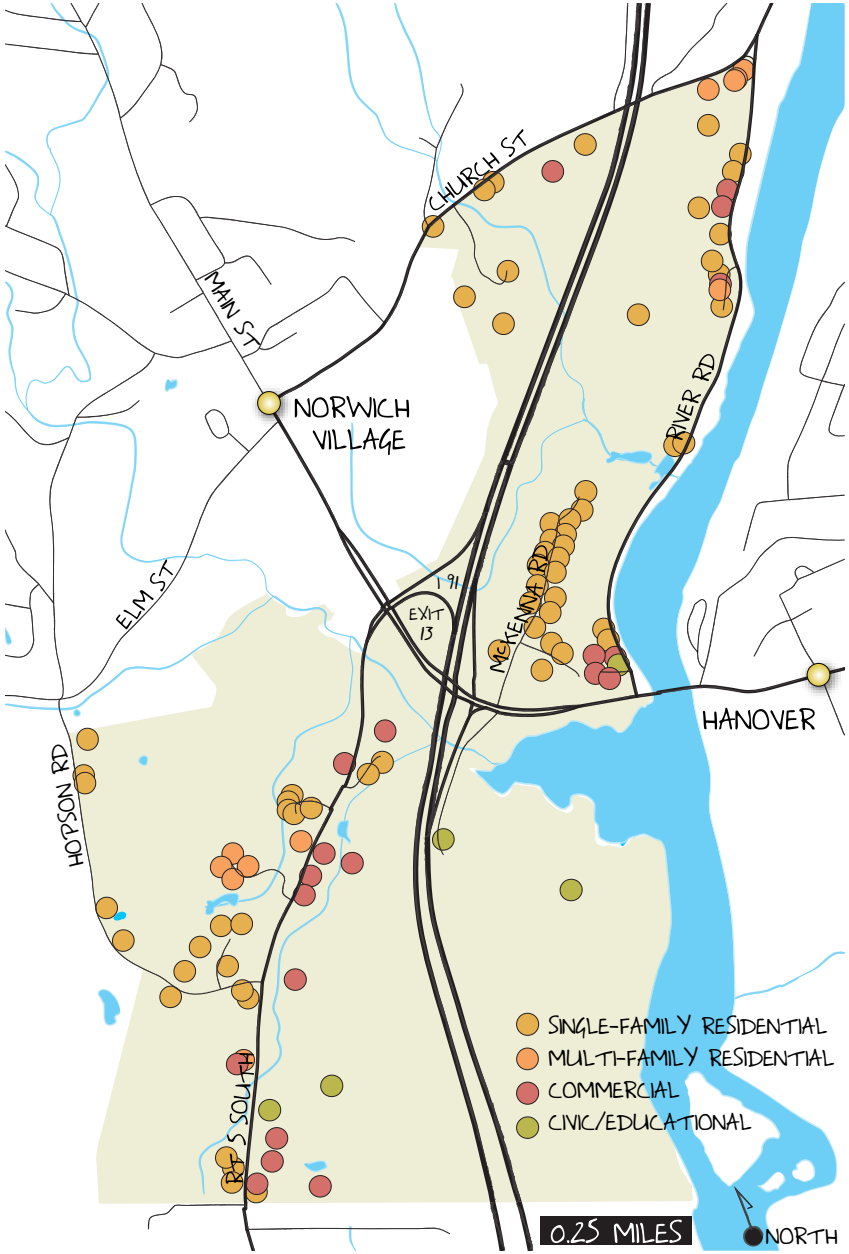
- Mixed Use Buildings. This approach combines different uses in the same building. The building is usually multi-story. Lower floors typically have more public uses (commercial) with more private uses (residential) on the upper floors. However, it is also possible

to mix uses horizontally within a single floor level. Mixed use buildings may pose greater construction (having to meet code requirements for multiple uses) and financing challenges than single use buildings.

- Mixed Use Projects. This approach combines different uses on a single development site, but within separate single use buildings. The plan for the site is unified and coordinated with the buildings in close proximity to one another and the uses functionally integrated often through shared vehicular and pedestrian access and parking. Typically, the higher intensity public uses (commercial) will be located closest to the street with more private uses (residential) located behind. This pattern is common along highway corridors. It is an effective way to create a transition in the intensity, density and scale of development, which can buffer established, adjoining neighborhoods from more intensive development.
- Mixed Use Neighborhoods. This approach looks beyond a single building or project to the broader neighborhood context. It would allow a diversity of uses within a neighborhood, but not require that an individual building or development project necessarily include a mix of uses. Typically the neighborhood is defined by a walkable distance (5-10 minutes, ¼ mile). A typical mixed use neighborhood may be primarily residential but include uses such as a corner market, a few professional offices or personal service businesses, and the like. It will also often include a mix of housing options - single-family homes, duplexes, accessory apartments, multi-family, etc. Sidewalks, paths and streets designed to allow neighborhood residents to safely access nearby businesses on foot or bicycle are an essential element of a mixed use neighborhood.

While there is a mix of residential and commercial uses existing along Route 5 South and River Road today, the corridors lack most of the elements characteristic of mixed use development. There is the potential for infill development to incorporate sustainable development principles such as walkability and higher density, and realize the benefits of mixed use within the study area.

Figure 6. Current Land Use within the Study Area



COMPACT DEVELOPMENT

The sustainable future envisioned in the 2011 Town Plan calls for discouraging sprawl by providing an alternative in the form of compact, higher density, mixed use neighborhoods in and around the village and major transportation corridors. It is also clear that higher density is the only viable means to provide more affordable and workforce housing in Norwich.

Compact development is a sustainable approach to development in which single- and multi-family housing is built at relatively higher densities to maximize the use of available land. It is a recognized strategy to reduce public infrastructure costs and protect open space by accommodating more development in less space. Compact neighborhoods often include a mix of uses so that residents can find goods and services without driving long distances. The higher level of density also facilitates a range of transportation choices, including public transit, walking and biking. It also reduces household transportation and utility costs, which are directly tied to the price of fuel and energy, and to air pollution and greenhouse gas emissions.

Relatively higher densities are an essential component of compact development, but these densities are typically achieved through a combination of housing types such as townhouses, apartment buildings and single-family homes on small lots. Densities within compact residential neighborhoods typically range between six to twelve dwelling units per acre. Compact development does not simply imply larger buildings or smaller lots. Traditional neighborhood development is a form of compact, mixed use development that is based on the characteristics of pre-WWII neighborhoods in New England town and urban centers. Such walkable neighborhoods usually feature a diversity of housing types along with a few, relatively small retail, office and service uses.

Changing the negative connotations that many Norwich residents have of higher density development is one of the barriers that will need to be overcome to further the sustainability goals of the 2011 Town Plan. People's perception of density is complex and greatly influenced by design. For example, the current village center is an example of relatively high density development that, as evidenced by very high housing prices, is apparently attractive to many residents. Through appropriate siting and design many of the concerns about higher densities can be addressed. Design characteristics that affect the perception of density include:

- Building Size. Smaller buildings appear to be less dense than larger buildings.
- Building Orientation. Buildings with narrower facades along the street appear to be less dense than buildings with wider facades.
- Building Articulation. Buildings that have recesses, projections or other variations in the wall plane appear to be less dense than buildings with a solid, straight wall plane.

- Building Height. Buildings that are lower in height appear to be less dense than taller buildings.
- Building Separation. Buildings that are detached with space between them appear to be less dense than attached buildings.
- Building Form. Buildings that look like single-family homes (i.e., smaller footprint, detached, pitched roof) appear to be less dense than other building forms.
- Trees and Landscaping. Buildings with trees or other landscaping in front appear to be less dense than buildings with no trees or landscaping in front.

Compact development patterns provide an efficient use of land that not only allows more people to live in a smaller area, but also facilitate more effective mitigation of development impacts. For example, compact mixed use development is an efficient means to reduce impervious cover and stormwater runoff volume per dwelling unit. An EPA assessment in 2006 determined that the runoff rates within compact development were 74% less per house as compared to residential subdivision with a similar number of homes on one-acre lots.

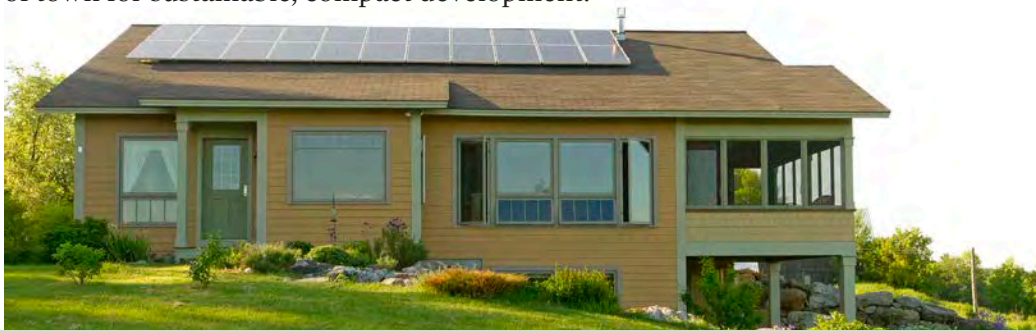
The efficiencies gained from compact development patterns can be further enhanced through green building practices. Green buildings are designed to reduce the overall impact of the building on human health and the natural environment by efficiently using energy, water and other resources, incorporating sustainable, recycled and/or low-maintenance materials and finishes, and creating healthy indoor environments with minimal pollutants. Many green building practices can have minimal to no impact on initial construction costs, but can result in significantly lower operating costs over the life of the building.

Making use of solar energy is fundamental to sustainable, green buildings. How a building is oriented to the sun has a dramatic impact on its heating and cooling costs. Simply orienting a building and properly locating windows for passive solar gain can reduce its energy costs and greenhouse gas emissions by 25% to 50%. A passive solar building is typically designed:

- With its longest dimension on a true east-west axis, although a variation of 15 to 30 degrees can still offer some benefits.
- So the south facade receives sunlight between 9 a.m. and 3 p.m. during the heating season.
- With shading to prevent summer sun from entering the interior through use of roof overhangs, awnings and/or landscaping.
- With many windows on the south facade and few on the north facade.
- With the most actively used interior spaces, and those that require the most heat and light, along the south facade (i.e. kitchens and living rooms) and with less used spaces along the north facade (i.e. bedrooms and utility spaces).
- With an open floor plan to optimize distribution of solar heat and light throughout the interior.

Basic passive solar design can be enhanced with the addition of thermal massing within the building to store heat and active solar systems to produce hot water or electricity.

As discussed in Chapter 3, there is documented a need for compact, conveniently located, energy-efficient, green homes in the region. Proximity to existing settlements and major transportation corridors, along with the availability of transit, makes the Route 5 South – River Road area the most feasible area of town for sustainable, compact development.



5 community input

As called for in the 2011 Town Plan, Norwich residents were invited to participate in this planning effort for the Route 5 South – River Road area. As part of this planning process, two community workshops were held and a preference survey was conducted. Complete notes and survey results are included in Appendix A. The common themes that emerged from the discussion and comments included:

- Concern about the desirability and/or necessity of any further development in Norwich. About 20% of the residents who took the online preference survey indicated that they would not support any additional development in town. Others questioned why opportunities for infill within the village were not being considered and thought that was a better option than the Route 5 South and River Road areas.
- Recognition that there is demand for housing in the core Upper Valley area and that the high cost of housing is an ongoing problem for Norwich. Some also noted that it isn't just the price of housing in town that is an issue, it is also the location and type of housing available.
- Identification of wastewater as the principal barrier to the planning goals for the study area.
- Concern that any future development could increase traffic congestion and increase the cost of providing municipal services.
- Discussion of the primary agricultural soils within the Route 5 South corridor. Some expressed concern about any development on agricultural soils and thought they should remain available for farming in the future. Others thought that other factors such as the size, configuration, location, traffic and surrounding land uses would likely limit the economic viability of agriculture on those soils. It was also noted that the agricultural soils would pose a significant challenge for any proposed development that required Act 250 approval.
- General consensus that the land south of Hopson Road on Route 5 was best suited for housing. It would be near the recreation fields and would likely have plenty of open space due to the natural constraints existing in that area. A few would prefer to see mixed use with some businesses since it is a high traffic area. There were concerns that this location is furthest from the village and would not be walkable. Others noted that there is transit service and a multi-use path is being planned to connect this area to the village.
- General consensus that it made little sense for the land north of Hopson Road on Route 5 to be zoned Rural Residential given the existing development pattern and location and that it would make sense for both sides of the highway to be commercial or mixed use.
- Desire to see Lewiston revitalized in a manner that would enhance its historic character and create a more attractive gateway into town.
- Lack of consensus about the River Road corridor. Some saw this area as having great potential due to its location (proximity to Hanover and the village) and river views for housing (particularly affordable rentals). Others noted that the interstate would generate noise and the visibility of any potential project from the interstate might pose problems if the project needed Act 250 approval.
- General consensus that the area east of the interstate and south of Church Street was best suited for housing. This area is closest to the village and could be walkable if there were sidewalks or a path.
- General preference for mixed use development over single use commercial development.
- More support for smaller-scale housing types like cottages and compact single-family homes than for larger multi-unit buildings.
- Affordability is a determining factor as to whether many residents would support any future housing development within the study area.

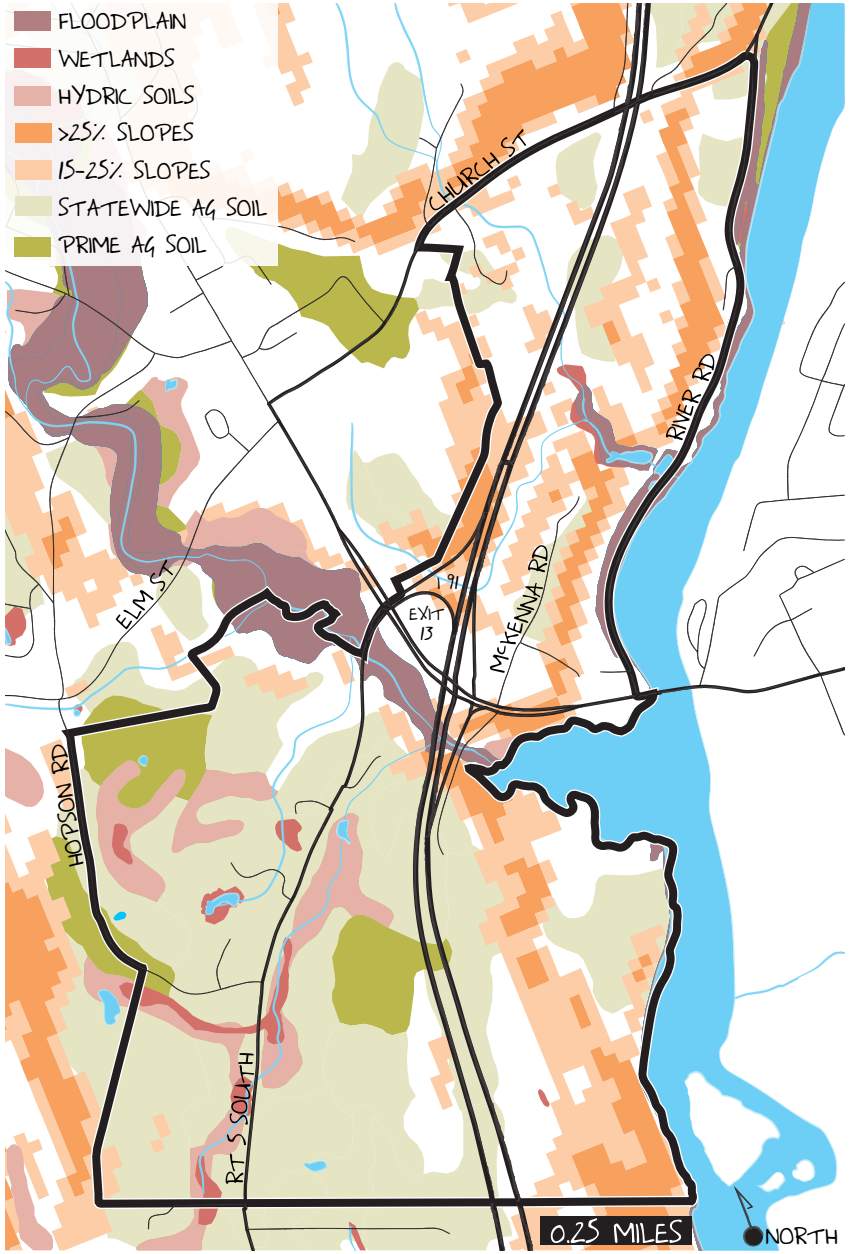
6 natural resource assessment

As a first step in this planning process, a natural resource assessment was completed to determine the amount of land within the study area that might be available and suitable for any future development. The findings are detailed in Appendix B and summarized here.

The natural resource assessment suggests that while there are opportunities for development within the study area, a significant amount of acreage is unlikely to be developed due to a combination of physical limitations or constraints and current land ownership and use. The analysis showed that more than 60% of the land within the study area is either not available or suitable for any future development. Of the remaining acreage, most has natural resource features that would likely reduce or influence how the land could potentially be used or developed.

The assessment suggests that the natural resource constraints within the study area will dictate that any future development be relatively small scale with ample open space.

Figure 7. Natural Resource Assessment Map



7 current zoning analysis

As part of this planning process, the amount, type and pattern of development that would be possible within the study area under Norwich's existing zoning and subdivision regulations was examined. The analysis is detailed in Appendix C and summarized here.

Most of the land in the study area is currently in the Rural Residential zoning district. Under current zoning, that portion of the study area currently has about 70 dwelling units built and the potential for about 320 additional homes. However, that density could not be achieved without some alternative to on-site septic systems. Wastewater capacity limits the amount of development likely to occur in the foreseeable future far more than the zoning regulations.

Norwich's Commercial/Industrial district is entirely located within the study area (east of Route 5 South). The analysis suggests that the developable (non-school) land in this district is nearly built-out. Even modest infill development or expansion of existing uses may be dependent on wastewater infrastructure becoming available within this district, which would free up the land currently required for on-site septic systems.

The previous studies and debates on the issue of municipal sewer in Norwich are evidence that wastewater needs to be addressed incrementally and at a neighborhood scale. A decentralized approach and short extensions of sewer from neighboring communities are the most viable options for providing wastewater treatment capacity in the study area as needed to support the sustainable development envisioned in the 2011 Town Plan.

Perhaps what is more critical at the present time than the allowed density is the form and pattern of development. If the vision for a sustainable future is to be realized, there needs to be a change in the form and pattern of any future development.

Figure 8. Current Zoning Map

8 recommendations

HOUSING DIVERSITY

To further the town's goal of encouraging housing diversity, Norwich should:

1. Establish a new Mixed Use zoning district in which:
   a. A diversity of housing types (single-family, two-family, multi-family, townhomes, apartments, etc.) would be permitted uses.
   b. A continuum of senior housing options (independent living, assisted living, nursing facilities) would be permitted uses.
   c. The town's current accessory apartment provisions, which are more generous than required under state law, would remain unchanged.
   d. Site plan review standards would require compatible transitions between infill housing and adjacent development. This should include consideration of landscaped buffers; proximity of outdoor lighting, parking, utilities, trash or other utilitarian site features to neighboring properties; stepping down the massing or height of buildings near property lines so that they are similar to neighboring buildings; and locating windows and outdoor spaces to maintain privacy and minimize overlook.
   e. Offers incentives for affordable, workforce or senior housing similar to the current bonuses offered in the Village Residential district. Bonuses should be available to projects that include a mix of market rate and affordable units.
2. Implement an alternative approach to regulating residential density within a new Mixed Use zoning district by:
   a. Eliminating the maximum residential density altogether and allowing as much housing to be built as the infrastructure and site are capable of accommodating;
   b. Requiring a minimum residential density to ensure that any future housing will be compact and higher density (assuming that there is infrastructure to support it); and/or
   c. Measuring residential density based on square footage of habitable space rather than total number of units to create an incentive for smaller dwellings.
3. Continue efforts to promote alternative wastewater solutions within the study area, which will be necessary to support a range of housing types. If the town pursues an option to provide wastewater capacity, it should:
   a. Adopt a wastewater allocation policy that would set aside a percentage of the available capacity for affordable, workforce and/or senior housing to ensure that any investment in public infrastructure serves to further this priority planning goal.

TRANSPORTATION CHOICES

To further the town's goal of enabling transportation choices, Norwich should:

1. Continue to use the Transportation Checklist, which addresses pedestrian, bicycle, transit and vehicular transportation, circulation and access for proposed development, when reviewing development proposals.
2. Continue to support Advanced Transit efforts to increase transit ridership by providing comfortable, convenient, reliable, efficient and frequent service to major destinations throughout the region.
3. Prepare and adopt a pedestrian and bicycle master plan that would recommend complete streets improvements including sidewalks and bike lanes, connections between existing trail systems and greenways, and corridors for future multi-use paths and greenways.
4. Incorporate complete streets principles into town standards for any new or improved roads within private developments and upgrades to public roads, particularly within the village and study area including:
   a. Sidewalks and bike lanes.
   b. Narrow streets and travel lanes.
   c. Transit stops and shelters.

5. Require any future development to contribute to improved walkability within the study area by:
   a. Designing projects to be pedestrian-friendly with internal walkways that connect parking areas, building entrances and other site amenities, and that connect to sidewalks and pathways along streets and to surrounding properties.
   b. Incrementally extending and connecting sidewalks and pedestrian pathways in accordance with the town's pedestrian and bicycle master plan.

MIXED USE

To further the town's goal of promoting mixed use development, Norwich should:

1. Establish a new Mixed Use zoning district that would:
   a. Continue to apply the town's site plan criteria, which have worked well in recent years to ensure that proposed development is high quality and compatible with its surroundings.
   b. Allow for a diversity of housing types as discussed above.
   c. Use broad use categories (office, retail, dining, lodging, service, light industry, etc.) to define the range of uses that will be permitted or conditional.
   d. Use design and performance standards to ensure that new development will be compatible with the envisioned purpose, character and development pattern for the area.
   e. Allow multiple principal uses within a building or site as a by-right use provided that all applicable standards are met (impervious surface coverage, setbacks, residential densities, building size or floor area ratio, etc.).
   f. Offer incentives for multi-story mixed use buildings such as reduced parking requirements, or additional building height or floor area.
2. Continue efforts to promote alternative wastewater solutions within the study area, which will be necessary to support mixed use development. If the town pursues an option to provide wastewater capacity, it should:
   a. Adopt a wastewater policy that would allocate the available capacity between residential, commercial, industrial and/or public uses in order to ensure that as development proceeds over time, a mix of uses would emerge.

COMPACT DEVELOPMENT

To further the town's goal of promoting mixed use development, Norwich should:

1. Continue to apply the standards in Norwich's current regulations that provide substantial protection for natural resources and ensure that any new development proposal incorporates sensitive natural features into the site plan as an open space amenity or as part of green stormwater or low impact development practices.
2. Establish a new Mixed Use zoning district that would:
   a. Allow for very small residential lots by right (currently possible through PUDs only) by reducing minimum residential lot size, frontage and setback requirements.
   b. Offset reduced private yard space with increased requirements for common outdoor space and/or pedestrian access to nearby public lands and recreation facilities.
   c. Require passive solar orientation unless applicant can demonstrate that it is not a feasible or beneficial option given the characteristics of the site or the proposed use.
3. Limit the amount of impervious surface that could be created within the study area as a whole by:
   a. Establishing a maximum impervious surface coverage standard for development sites.
   b. Reducing off-street parking requirements (requiring no more than one space per dwelling unit for smaller homes with transit service).
   c. Allowing shared parking and off-site parking.
   d. Encouraging on-street parking on private development roads and allowing that to count towards parking requirements.