



Appendix F

Technical Investigation Memorandums

**East
Greenbush**

Our Vision. Our Community.





EAST GREENBUSH COMPREHENSIVE PLAN UPDATE

TECHNICAL MEMORANDUM: ZONING

OVERVIEW

The Town's Comprehensive Zoning Law was adopted in 2008 and incorporated a number of changes to the Town's zoning. Since that time, several planning efforts have identified recommended land use and zoning changes to help the Town prosper and to enhance the Town's major transportation corridors and neighborhoods. The purpose of this technical memorandum is to validate the recommendations offered in these plans and provide a series of land use and zoning recommendations to be included as part of the Comprehensive Plan Update. The recommendations that have been brought forward in this exercise are those that align with the feedback that has been received throughout the Comprehensive Plan Update process from the public, stakeholders, Town staff and the Comprehensive Plan Steering Committee (CPSC).

PAST PLAN CONSIDERATIONS

Over the last 20 years the Town has engaged in a number of planning efforts to plan for future development, population change and to improve the community. While a number of projects have been implemented, there is a need for changes to zoning and land use practices to fully realize the Community's vision. The 2006 Land Use Plan Update and Zoning Study and Final Draft 2014 Corridor Plan and Design Guidelines for Columbia Turnpike and Troy Road are two key documents that offered land use and zoning recommendations throughout the Town that are still relevant today. Following is a description of each of these planning efforts and relevant zoning and land use recommendations in be included as part of the current Comprehensive Plan Update.

2006 Land Use Plan Update and Zoning Study

The 2006 Land Use Plan and Zoning Study (2006 Plan) was an update of the Town's 1993 Comprehensive Plan and focused on Town-wide and area specific land use and zoning recommendations. The plan divided the Town into six character areas and offered recommendations based on each of those areas.

The six character areas included:

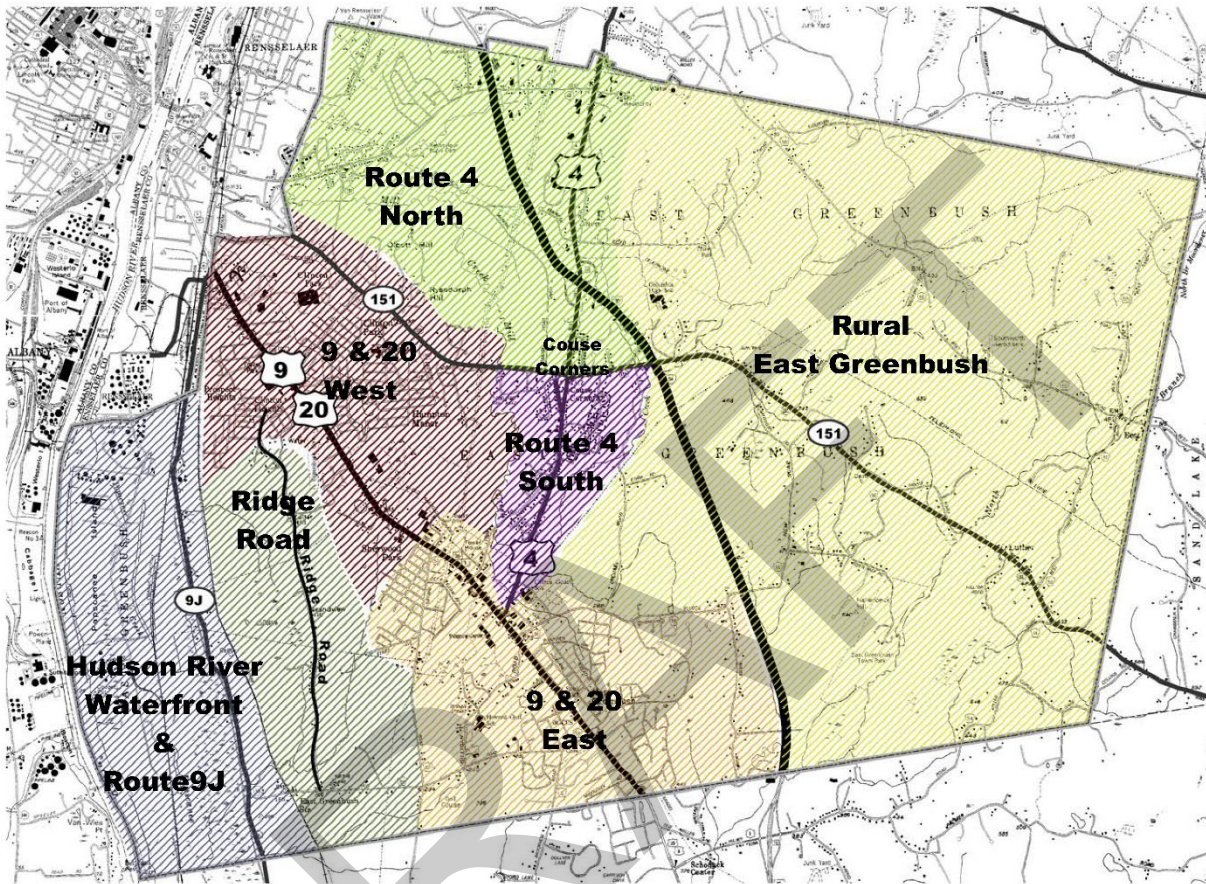
- Rural East Greenbush
- Hudson River Waterfront & Route 9J
- Ridge Road
- Columbia Turnpike (Route 9 and 20) West
- Columbia Turnpike (Route 9 and 20) East
- Route 4: North and South

In discussions with the Town and CPSC as part of the current Comprehensive Plan Update process, it was determined that the character areas established in the 2006 Plan do not necessarily reflect what is happening in the Town today and that the character area concept should not be brought forward. However, while the areas established in the 2006 Plan may not be relevant still, many of the proposed



recommendations still are. Following is a description of each of these areas along with recommendations that are still relevant today.

Map 1: Character Areas of East Greenbush



Character Areas from the 2006 Land Use Plan Update and Zoning Study

Rural East Greenbush

Rural East Greenbush included that area of Town primarily east of I-90 in the south and Route 4 in the north. This is the area of Town that is primarily rural with scenic landscapes, low-density residential and agricultural land uses. Several recreational resources also exist in this area, including the East Greenbush Town Park and Camp Is-Sho-Da, a long running camp that is owned and operated by the Girl Scouts of North Eastern New York. Much of the focus for this area in the 2006 Plan and today is on the protection of natural, scenic and agricultural resources.

Relevant Recommendations:

- Protect/conservelandscape views and rural character along scenic roadways. Provide for vegetation buffers as part of future development
- Improve the cluster subdivision regulations and/or create a conservation subdivision incentive zoning regulation that will be applicable for RB; R-OS; and AR zoning districts. Develop a clear conservation design and site layout process to define and achieve the important open space lands to be protected/conserved



- Develop rural design/conservation design guidelines for development in this area of town to be protective of the rural character during site layout and design
- Particularly within the R-OS zoning district, analyze the potential build-out and impacts to the existing character to determine whether the build-out will be able to sustain the desired vision for rural character

Hudson River Waterfront & Route 9J

This area includes the Town's Hudson River shoreline from the border with the City of Rensselaer south to the border with the Town of Schodack. From east to west this area extends from the Hudson River east just beyond Route 9J. This area includes a variety of land uses, including waterfront industrial, small scale commercial, low density residential and agricultural lands and open space. Much of this area also lies within a floodplain or among protected lands in the Papscanne Creek Preserve limiting the types of development that can take place in this area.

Relevant Recommendations:

- Regulate large-scale commercial development through establishment of building caps and gateway areas for focused growth
- Pursue remediation and high-level restoration of brownfields for future re-use of this landscape
- Strengthen Town review of any proposed development in the Coastal Industrial zoning district as the Town transitions to a less industrial vision for its Hudson River waterfront, and to a restored waterfront area with new opportunities for public access and publicly oriented uses. Require port-related uses and special permit process for any proposed new development in the Coastal Industrial zoning district. Do not allow for new coastal industrial growth unless it is directly related to Hudson River shipping and port-related needs or other major water-dependent land uses that are essential to the area
- Pursue creative opportunities for safe, public waterfront access in addition to the Papscanee Island Nature Preserve
- Encourage the protection of additional open spaces in this area, creatively in concert with conservation organizations and other governmental support

The proximity of this area of Town to the Hudson River presents a number of challenges. The 2019 Town of East Greenbush Natural Resources Inventory identifies rising sea level causes by climate change as a significant concern for this area of Town. In the future East Greenbush and the northeast region as a whole is expected to experience an increase in temperatures, shifting precipitation and sea-level rise. This will have an impact on any riverfront activity and will play a role in land use decision making in the future. Under the 2008 Comprehensive Zoning Law, approximately half of the Papscanee Island floodplain is located within the Coastal Industrial zoning district. According to the zoning, "The CI District is intended to permit and encourage the development of light manufacturing and warehousing uses appropriate along the waterfront which require access to the river, rail line or require large quantities of water." Much of this area remains vacant or in agricultural use, with the potential for significant new development. Under the current zoning, development plans are required to minimize conflict with adjacent agricultural operations by providing a 100' buffer. In light of the risks posed by sea level rise and coastal flooding the Town should evaluate the potential cumulative impact of buildout in the Papscanee Island floodplain and identify mitigation options.



Ridge Road

This area centers around Ridge Road, located between Route 9J and Route 9 and 20 and is characterized by some of the Town's most significant scenic and natural resources. This area contains a number of environmental constraints, including steep slopes and critical habitat that limits the amount of development that can occur here. This also creates an opportunity to protect many of the Town's natural and scenic resources. Another limiting factor to development here is the lack of water and sewer infrastructure.

Relevant Recommendations:

- Develop scenic roads/landscape buffer guidelines for applicability with site plans and subdivisions to help conserve scenic character and natural resources along Ridge Road, and other scenic roadways
- Strengthen the town's subdivision regulations to clarify designing for areas such as along Ridge Road with significant natural and scenic resources

Columbia Turnpike (U.S. Route 9 and 20)

West

This area represents the western portion of Route 9 and 20 from the border of the City of Rensselaer to the intersection of Route 4. Land uses vary greatly in this area and include commercial, residential, light industrial, education and community services. Several of the Town's older neighborhoods are located off this corridor and include Hampton Manor, Clinton Heights and Prospect Heights. A primary concern for this area is the infill and redevelopment of commercial spaces as well as transportation related improvements that include better access management and pedestrian and bicycle connections between neighborhoods and commercial areas.

East

This area represents the eastern portion of Route 9 and 20 from the Route 4 intersection to the border with the Town of Schodack. The historic settlement of the community was focused in this area in the hamlet of East Greenbush with the focal point being the Dutch Reformed Church and other historic buildings. The hamlet of East Greenbush has a more traditional development pattern with two-story, mixed-use buildings set close to the roadway and sidewalk-lined streets. This area also includes a number of single-family homes that have been converted to professional offices and services.

Corridor-Wide

The 2006 Plan included a series of land use concepts to help guide future development and land use regulations along the Route 9 and 20 corridor. This included the concept of focused areas or "nodes" along the Route 9 and 20 corridor. These nodes focus on the redevelopment of existing commercial areas and new growth as part of identifiable, distinct, "destinations" or "places" that each have a mix of uses. This concept is encouraged and has been included as part of the current Comprehensive Plan Update.

The four nodes described in the 2006 Plan are as follows:

- **The Heights** - This area is an existing residential, commercial and growing high-technological employment center. The commercial and residential growth could provide some housing for potential employees for this nearby employment center as well as cater to support businesses, shopping, restaurants to serve this area of town. A small and mid-size retail mix of stores and



professional offices should be encouraged in this area, with connections to the existing surrounding neighborhoods and employment centers.

- **Farm-to-Market Way** - This area includes the existing Price Chopper, the old Ames Plaza and Corellis and Becker Farms. Support "green" development with more landscaping as homage to the agricultural heritage and a relation to the streams that run through this area and remaining wooded areas. Potential uses might include golf courses, residential, restaurants, services, farmers market or public marketplace, etc. Cross – connections are critical to connect adjacent developments such as the former Ames Plaza to destinations.
- **Central Marketplace** - Potentially the most intense development could occur along this already busy corridor, with larger stores and potential multi-story buildings. Redevelopment at the Hannaford plaza could serve as the focal point
- **Historic East Greenbush Hamlet** - A walkable, mostly residential (but with a high variety of residential types) area with neighborhood commercial buildings and civic uses. Preservation of the heritage and history of the hamlet area including the landmark Dutch Reformed Church at Hayes Road and surrounding cemetery. Development of pedestrian linkages for residents in adjacent neighborhoods. Adaptive reuse of key older buildings and residences for small-scale commercial and offices. Opportunities for restaurants, cafes, and continued civic uses. Provision for a small park area/s for public use. Development of unique signage to help people identify with this area

Relevant Recommendations:

- Encourage the tradition of mixed-use buildings (with appropriate design)
- Development should create internal road systems, pedestrian paths and sidewalks and cross-connections to adjacent parcels and side streets off of Route 9 and 20
- Allow for moderate increases in density of residential and commercial development (up to a cap) only through an incentive zoning process and the exchange for community amenities of comparable value. New development could help pay for upgrades to existing infrastructure. Some additional density in balance with amenities will help create a sense of place
- Aesthetically enhance this central "main street – great street" of the community through quality site layout and building design, signage, landscape and streetscape features
- Extend the traditional pattern of existing residential neighborhoods in adjoining new residential neighborhoods
- Develop commercial design guidelines and tie them into the four different identifiable places (or nodes) along Route 9 and 20, using settlement and building patterns and architectural elements to unify new designs
- Conduct site-specific cooperative planning with landowners to redevelop key parcels that can act as catalysts for future redevelopment
- Revisit parking requirements for commercial uses within the zoning code and allow for reduced parking and shared parking options



- Revise greenspace requirements to create useable, formal park space and to allow for better site design

Route 4: North and South

This area includes the Route 4 corridor from the border with the Town of North Greenbush to the Route 9 and 20 intersection. For much of the Town's history the Route 4 corridor was a rural road with some moderate development around Couse Corners. In the mid-twentieth century development started to expand particularly with the construction of I-90. The southern portion of Route 4 is primarily residential with some areas of small-scale commercial and offices. North of Couse Corners, the corridor becomes increasingly commercial and characterized by larger scale commercial development, offices and industrial development, as well as smaller strip malls with a combination of retail and restaurants.

Relevant Recommendations:

- Create development design guidelines for commercial development uses
- Update the existing cluster regulations and/or develop a conservation subdivision ordinance that helps to create well-designed development that protects sensitive environmental features

Town-Wide

The 2006 Plan also offered Town-wide land use and zoning recommendations, many of which are still relevant today. Town-wide recommendations include:

- Ensure a high-quality design and layout of all new and re-used places and structures in Town
- Reuse existing buildings with creative, new uses and/or reutilize/redevelop areas that have previously been developed or disturbed
- Support mixed-use buildings and places and develop form-based design standards to help ensure high-quality places for the community
- Create new corporate offices and commercial centers that provide a mix of interconnected and complementary uses
- Conserve the rural landscape character, especially in the eastern, rural portion of town and along rural roadways and farmsteads
- Develop town-wide design guidelines for commercial and residential development, and with specific guidance per character area. Include guidance on green space design and open space conservation area design as well

Zoning Specific Recommendations:

- Refine the allowed uses in the zoning code within B-2 (limit new auto-related businesses and storage businesses)
- Implement a stronger measure to ensure that auto-related businesses are allowable currently where they exist, but do not continue and become any more predominant as a land use along 9 and 20
- Refine the existing parking regulations for B-2 Commercial Zoning District to consider decreasing parking space requirements.



- Foster shared parking arrangements even among neighboring separate parcels and require increased future shared access management planning and designing for existing and new development projects to mitigate traffic impacts.
- Create a new mixed-use zoning overlay map (starting with the concept map within this report) that shows where the four focused areas are proposed for 9 and 20

2014 Corridor Plan and Design Guidelines

The 2014 Corridor Plan and Design Guidelines (Corridor Plan) report provided a series of recommendations and design guidelines to improve the physical form along Route 9 and 20 and Route 4. The goal of the plan was to improve the quality of life and community character for East Greenbush residents by enhancing the aesthetics of the built environment and fostering vibrant, pedestrian-friendly and accessible land use patterns.¹ The intention of this plan was to complement to Town's existing zoning law and provide direction for necessary zoning changes to achieve the community's vision. A key focus of the Corridor Plan is on the use of form-based code (FBC) which focuses on building form rather than use of a building. FBC establishes zones of building type and allows building owners to determine the uses. The look and layout of a street is carefully designed to reflect neighborhood scale, parking standards, and pedestrian accessibility, but building owners and occupants are allowed flexibility to determine how the buildings will be used.² The following is an overview of the concepts and recommendations for zoning and land use that were discussed in the Corridor Plan that are still relevant today and should be incorporated into the current Comprehensive Plan Update.

The Corridor Plan provides an explanation of general planning and design concepts that are recommended to be incorporated into the Town's Comprehensive Zoning Law. These general concepts include:

- **Build-to Zone** - Build-to zone establishes the area on the lot between a minimum and maximum setback where principal buildings must be located
- **Street Width-to-Building Height Ratio** - The street width-to-building height ratio measures a building's setback from the road centerline in relation to the height of the building
- **Rural-to-Urban Transect** - The rural-to-urban transect recognizes the full range of environments from densely developed urban cores to undeveloped natural areas. This system supplements or replaces conventional zoning systems that have encouraged a car dependent culture and land-consuming sprawl. Transect zones provide the basis for real neighborhood structure, which requires walkable streets, mixed uses, transportation options, and housing diversity. Transect zones provide the basis for real neighborhood structure, which requires walkable streets, mixed uses, transportation options, and housing diversity. The urban-to-rural transect is commonly divided into six zones that vary by the ratio and intensity of their natural and built components. The Corridor Plan applied three of those six zones to the highway corridors - T3, T4 and T5

¹ Corridor Plan & Design Guidelines for Columbia Turnpike and Troy Road, 2014

² Planner's Dictionary, American Planning Association



- **Site Design Standards** – The plan offered a series of recommended site design standards related to access management, walking, biking and transit, landscaping and greenspace, parking, signs and lighting

The Corridor Plan presented a Concept Plan and Transect map that illustrate the recommendations for Route 4 and Route 9 and 20.

- **Concept Plan** - The concept plan incorporates proposed trail opportunities, including along the former trolley line and around Hampton Lake, and existing transit locations. It also illustrates where stronger pedestrian connections to adjoining neighborhoods are desired/needed
- **Transect Map** - The transect zone map illustrates the transects (from T3 to T5) along Columbia Turnpike and Troy Road, as well as two special areas – the SUNY Albany East Campus and the land around Exit 9. The Town of East Greenbush could use this transect map in several ways depending on the degree to which the town wants to pursue further revisions to its zoning law:
 - As the foundation for a complete form-based code for the study area, which would replace the current zoning districts and standards
 - As an overlay district, which would supplement the current zoning districts and standards.
 - As an accompaniment to the design guidelines without making it a regulatory map.



EAST GREENBUSH COMPREHENSIVE PLAN UPDATE

TECHNICAL MEMORANDUM: HOUSING

OVERVIEW

As part of the Comprehensive Plan Update, the Town has identified several high priority issues to be addressed through specific investigations. Housing needs throughout the Town were identified as one of the high priority issues to be addressed through this effort.

Over the last 10-15 years, the national and regional housing market has trended towards multi-family housing development while single-family detached housing has slowed. The quality and types of housing available in a community can have a significant impact on how the community functions. Communities with more single-family development may see a higher percentage of families with children, while renter-occupied multi-family units may trend towards young professionals and empty nesters.. Housing type can also have an impact on land use patterns and demographics as well. For example, multi-family residential units typically result in a higher population density. When located near a commercial center, a higher population density can help support local businesses and helps support public transportation options. Housing affordability is also a key factor that impacts the wellbeing of a community.

In this exercise, a number of factors were examined to learn more about housing needs in East Greenbush. Housing data from the U.S. Census Bureau was analyzed over a series of time utilizing data from the 2000 and 2010 Decennial Census and American Community Survey 5-Year Estimates. This includes current information about the Town's housing stock compared with neighboring communities. The neighboring communities that were included as part of this analysis include the Towns of North Greenbush, Sand Lake, Schodack, Bethlehem and City of Rensselaer. An overview of regional trends in the Capital Region and Rensselaer County was also explored as well as relevant housing related recommendations from past planning efforts.

RESIDENTIAL HOUSING UNITS OVER TIME

As of 2018, the Town of East Greenbush had a total 7,217 housing units which represents a 15% increase in total units since the year 2000¹. When compared to neighboring communities, East Greenbush was neither the highest nor lowest rate of increase in total housing units during that time. The Town of Schodack had the lowest increase in total housing units at 9%, while the City of Rensselaer had the highest increase in units at 26%. In terms of total units, the Town of Bethlehem had the highest number of housing units in 2018 at 14,830, followed by East Greenbush at 7,217 and Schodack at 5,394 units. Overall, East Greenbush developed housing units at a higher rate than Rensselaer County which experienced an increase in units by 10% during the same time period.

¹ Decennial Census, 2000, 2010; American Community Survey 2018 5-Year Estimates



Total Housing Units 2000-2018				
	2000	2010	2018	% Change
Town of East Greenbush	6,281	7,006	7,217	15%
Town of North Greenbush	4,336	5,103	5,203	20%
Town of Sand Lake	3,277	3,673	3,713	13%
Town of Schodack	4,942	5,372	5,394	9%
Town of Bethlehem	12,459	14,029	14,830	19%
City of Rensselaer	3,713	4,695	4,684	26%
Rensselaer County	66,120	71,475	72,852	10%

Source: Decennial Census, 2000, 2010; American Community Survey 5-Year Estimates, 2018

HOUSING TYPE

Housing types are categorized based on the number of units in a residential building. This includes a single unit, both detached and attached, 2-units, 3-4-units and 5 or more units. The type of housing available can impact how the residential needs of the community are accommodated. American Community Survey 5-Year Estimates were utilized to examine housing types in East Greenbush from 2010 to 2018. It is important to note that these are estimates and not exact counts. The information gathered should be utilized to provide an overall representation of the type of residential development that occurred in the Town over a certain period of time and not an exact number of units of each housing type.

In the eight-year period from 2010 to 2018, multi-family buildings with two units increased by 20%. This is the highest rate of increase during this time period followed by buildings with 5-units or more at 9% and single-family, detached units at 7%. During this time period buildings with 3 or 4 units decreased by 36%.

East Greenbush Housing Types 2010-2018			
	2010	2018	% Change 2010-2018
1-Unit, Detached	4,597	4,900	7%
1-Unit, Attached	618	615	-0.5%
2-Units	318	381	20%
3 or 4 Units	278	177	-36%
5 Units or More	1,042	1,139	9%

Source: American Community Survey 5-Year Estimates, 2010, 2018



HOUSING TENURE

Housing tenure describes renter and homeowner-occupied housing units. In 2018, 76% of occupied housing units in East Greenbush were owner-occupied and 24% were renter-occupied. East Greenbush has a higher rate of owner-occupied units and a lower number of renter-occupied units compared to Rensselaer County. East Greenbush is similar in housing tenure to neighboring towns like Bethlehem, Schodack and North Greenbush. The only neighboring community to have more renter-occupied units than owner-occupied is the City of Rensselaer. However, urban areas commonly have more rental units available than homeowner-occupied units.

	Housing Tenure 2018	
	Owner Occupied Units	Renter Occupied Units
Town of East Greenbush	76%	24%
Town of North Greenbush	71%	29%
Town of Sand Lake	88%	12%
Town of Schodack	79%	21%
Town of Bethlehem	75%	25%
City of Rensselaer	39%	61%
Rensselaer County	63%	37%

Source: American Community Survey 5-Year Estimates, 2018

HOUSING AFFORDABILITY

Housing affordability is a complex issue that many communities across the country continue to try and address. In today's world, many segments of the population face challenges making ends meet and paying for housing related costs. It is not only low-income workers who face affordability challenges. It is also young professionals with student debt and seniors on fixed incomes.

Affordable housing includes many different housing types and may include workforce housing or subsidized housing. Workforce housing refers to housing that is affordable to the average worker. This may include owner or renter-occupied housing units and can be located in single-family or multi-family units. The Federal Housing and Urban Development Department guidelines for affordability is that housing costs should consume no more than 30% of household income. Households spending more than 30% of their income on housing are considered cost-burdened and may have difficulty affording necessities such as food, clothing, transportation and medical care.²

The following table shows the percentage of households spending 30% or more of their household income on monthly housing costs. This has been separated into three categories, including Owner-Occupied with a Mortgage, Owner-Occupied without a Mortgage and Renter Occupied units. In 2018 25% of owner-occupied units with a mortgage and 7% of owner-occupied units without a mortgage were spending 30% or more of their household income on monthly housing costs. At this time, 41% of renter occupied households were spending 30% or more of their household income on monthly housing costs. When

² Capital Region Indicators, CDRPC 2016



compared to other peer communities and Rensselaer County as a whole, East Greenbush has a similar breakdown of housing affordability

	Percent Households Spending 30% or More on Monthly Housing Costs		
	Owner Occupied with Mortgage	Owner Occupied without Mortgage	Renter Occupied
Town of East Greenbush	25%	7%	41%
Town of North Greenbush	23%	13%	39%
Town of Sand Lake	23%	13%	40%
Town of Schodack	21%	7%	38%
Town of Bethlehem	20%	10%	44%
City of Rensselaer	13%	15%	46%
Rensselaer County	25%	13%	47%

Source: American Community Survey, 5-Year Estimates, 2018

HOUSING TRENDS

Capital Region Trends

The Town of East Greenbush is influenced by trends in housing both locally and across the Capital Region. The Capital District Regional Planning Commission (CDRPC) provides yearly updates of building permit activity and housing market trends for the Capital Region. This information can help to provide context for individual municipalities to gain a better understanding of what is taking place in and around their communities.

In both the Capital Region and across the Country, both sales and inventory of existing homes are down. Over the last few years, a lack of home inventory has led to high home prices and fewer homes available on the market. This type of trend makes it more difficult for first-time home buyers to purchase a home. The lower inventories and increased demand for homes may increase demand for new residential construction in the region.

According to the most recent data provided by CDRPC, there was a slight decrease in building permit issuance and a decline in the share of multi-family permits issued from 2017 to 2018 across the Capital Region. Overall, permit issuance, particularly for multi-family permits, have continued to decline since a 15-year high in 2015. Since 2012 single-family permit issuance has increased by 7.8%. While overall permit issuance is below levels seen in the early 2000s, current levels are still higher than in the early 2010s.³

When evaluated by county, Rensselaer County issued the smallest number of building permits from 2007-2018 when compared with Saratoga, Albany and Schenectady Counties. During this time Rensselaer County made up 11.8% of the total share of building permit issuance in the four-county Capital Region. Of that, 7.1% were single-family and 4.7% were multi-family.

³ Capital District Regional Planning Commission, 2018 Building Permit Update



Generational Trends

Beyond trends in the regional housing market, communities should take into consideration the needs of individuals and families across generations. Different age cohorts may seek different types of housing depending on family size, employment, or lifestyle. According to 2015 National Association of Realtors survey, young professionals and baby boomers desire similar amenities and housing types.⁴ Communities that succeed in attracting and retaining these groups are ones that focus on the quality of place and access to amenities. This includes access to restaurants, shops within walking distance, entertainment and public transportation. Those in the baby boomer generation may be empty nesters looking to downsize from a large single-family home to a more maintenance-free lifestyle. Young professionals may be looking for transitional housing while saving to buy a home or start a family. A community should include a range of housing options that allow individuals and families to remain in the community through each stage of their lives.

Housing in East Greenbush is primarily oriented towards single-family, owner-occupied units. There are some areas of multi-family, apartments, and senior living communities, and most of these housing options are not located within walking distance to commercial and activity centers. There are significant opportunities to attract and retain young professionals and baby boomers in East Greenbush by providing additional housing opportunities in key locations of town.

COMMUNITY HOUSING NEEDS AND CONSIDERATIONS

The population of the Town has increased by approximately 16.5% over the last 30 years. During that same time, major employers like Regeneron have continued to expand and locate in East Greenbush. As the population continues to increase and major employers expand, housing options will need to diversify to meet the needs of residents of all ages, income levels and lifestyles. To ensure that the needs of existing and future residents are being met, a variety of housing options will be necessary, including affordable, workforce and market rate housing.

Workforce housing is a type of housing that is affordable for middle income earners and may include such professions as police officers, firefighters, teachers, health care workers, retail clerks, etc. Over the last 20 years, wage stagnation combined with an increased cost of living has led to challenges of housing affordability for middle income earners that do not typically qualify for subsidized housing.

There are opportunities to diversify housing in East Greenbush by focusing on the development of mixed-use activity nodes in key locations in the Town. Mixed-use activity nodes may include a mix of retail, commercial, medium to higher-density residential and offices in a compact, walkable area with multi-modal transportation options. This type of development not only creates new housing opportunities, it also helps to support and build the local economy. Higher density mixed use zones help to create a sense of place and can become a catalyst to spur business growth and creates a critical mass of people needed to support public transportation options. The ideal location for these mixed-use activity nodes in East Greenbush are along U.S. Routes 9 and 20 and U.S. Route 4. These corridors contain the necessary infrastructure needed for additional growth, are located along existing public transit routes, and are primary gateways into the community.

⁴ American Planning Association PAS Report: "Downtown Revitalization in Small and Mid-sized Cities"



PAST PLAN CONSIDERATIONS

Over the years, the Town of East Greenbush has engaged in several planning efforts that resulted in recommendations that relate to housing. Based on input from the public, stakeholders, Town staff and the Comprehensive Plan Steering Committee (CPSC), some of those recommendations are still relevant today and should be included as part of this Comprehensive Plan Update. The following recommendations are centered around housing and were established in the 2006 Land Use Plan Update and Zoning Study.

2006 Land Use Plan Update and Zoning Study

- Rural East Greenbush
 - Improve the cluster subdivision regulations and/or create a conservation subdivision incentive zoning regulation that will be applicable for RB; R-OS; and AR zoning districts. Develop a clear conservation design and site layout process to define and achieve the important open space lands to be protected/conserved. Develop rural design/conservation design guidelines for development in this area of town to be protective of the rural character during site layout and design.
- Route 9 and 20 Corridor
 - Encourage the tradition of mixed-use buildings
 - Locate well-designed, attractive, senior housing and attractive multi-family dwellings in and near these distinct places/destinations
 - Extend the traditional pattern of existing residential neighborhoods in adjoining new residential neighborhoods
- Town-wide
 - Create a mix of high-quality residential development in town, with diverse offerings for families of all sizes, ages and abilities.
 - Model new neighborhoods upon pedestrian friendly, traditional neighborhood patterns that include appropriate public amenities
 - Build neighborhoods with traditional settlement patterns within water and sewer service areas. Within new development, design connected streets and cross-connections to ensure adequate circulation
 - Actively pursue enhancement, revitalization and reinvestment in existing neighborhoods, particularly the older, more established neighborhoods of town, such as those located along Route 9 & 20
 - Upgrade housing stock and neighborhood infrastructure as needed. Conduct upgrades in do-able phases and seek outside assistance to help the community.



EAST GREENBUSH COMPREHENSIVE PLAN UPDATE

TECHNICAL MEMORANDUM: TRANSPORTATION NEEDS

OVERVIEW

An efficient and effective transportation system is about more than just moving vehicles. It is about providing a system that works for all people and all modes in a safe and efficient manner. This technical memorandum focuses on the transportation needs for the Town of East Greenbush and explores the challenges and potential solutions to developing a safer and more efficient transportation system. Several past planning efforts have been completed by the Town that offer ideas and recommendations that are still relevant today and are discussed in the subsequent sections of this report. It is important to note that the effectiveness of transportation systems closely correlates with land use. Many of the past planning efforts offer recommendations not just for the roadway, but for development and redevelopment of properties as well. The following discussion explores different modes of transportation including vehicular mobility, public transit, bicycle and pedestrian mobility, priority corridors in Town and a discussion of Complete Streets.

VEHICULAR MOBILITY

The Town of East Greenbush is primarily an auto-dependent suburb where the use of a vehicle is needed for most activities and the availability of public transit is limited. The Town is comprised of a network of roadways that include I-90, a major interstate highway that travels east to west from Boston, Massachusetts, to Seattle, Washington. Direct access to I-90 creates a direct connection to countless destinations including entertainment and employment centers throughout the Capital Region. U.S. Route 4, and the Columbia Turnpike (U.S. Route 9 and 20), are two other significant roadways in the Town and form the corridors for which most commercial and residential development is located.

A significant number of vehicles pass through East Greenbush on a daily basis. Despite a decline in commercial activity, Columbia Turnpike still contains a significant amount of through traffic with an Average Annual Daily Traffic (AADT) count of 26,999 vehicles at its most highly traveled section between Route 4 and Sherwood Avenue. The most heavily traveled section of Route 4 is located between Route 151 and I-90 with an AADT of 23,973 vehicles. I-90 traverses the Town for a length of approximately 4.5 miles with an AADT of 54,458 vehicles.¹ These corridors receive a significant amount of traffic flow, making East Greenbush a key link on the overall transportation system of the Capital Region.

Future vehicular trends include a more significant presence of electric vehicles (EV). As EVs become more prevalent, more charging stations like the ones located at the Residence Inn on Tech Valley Drive and Market 32 on Columbia Turnpike should be considered. As of March 2019, there were 345 EVs registered on the road in Rensselaer County and the number has been climbing since 2013 when Governor Andrew M. Cuomo launched Charge NY, a program administered by the New York State Energy Research and Development Authority to encourage the use of more electric cars and trucks by providing rebates, incentives, tax credits and assistance with infrastructure installation.

¹ NYS Department of Transportation Traffic Data Viewer: <https://gis3.dot.ny.gov/html5viewer/?viewer=tdv>



PUBLIC TRANSIT

Public transportation is limited in East Greenbush, however, bus service is provided by the Capital District Transportation Authority (CDTA) in several locations. CDTA runs three bus routes through East Greenbush, with two that stop directly in Town along Columbia Turnpike and one The stops along Route 4 at the Rensselaer County Plaza. Express Route 520 runs from Schodack to the Empire State Plaza in Albany with no direct stops in East Greenbush. Neighborhood Route 233 runs on Columbia Turnpike from Downtown Albany to the Schodack Park & Ride. The 233 route has approximately 20 stop locations along Columbia Turnpike in East Greenbush from Regeneron to Sussex Road. Route 214 connects East Greenbush with Downtown Albany and includes a stop at the Rensselaer County Plaza. Regeneron operates a shuttle service that traels between its various facilities in East Greenbush and North Greenbush. While public transportation is limited, the accessibility of ride sharing services, including Lyft and Uber have created more opportunities for those without a car or those who seek to use a car less often.

BICYCLE AND PEDESTRIAN MOBILITY

A community's bicycle and pedestrian infrastructure are key public amenities that create healthy, walkable, safe and desirable places to live, work and play. Pedestrian infrastructure can also aid in the economic development of a community by creating connections to businesses and commercial areas. The Town has made a number of pedestrian improvements over the last several years, but significant gaps still exist in neighborhoods and commercial areas and the connections between them. In order to create a safer and more inviting community for residents and visitors, improvements to bicycle and pedestrian infrastructure should be prioritized.

Sidewalks and Bike Lanes

Bicycle and pedestrian infrastructure are limited in many areas of Town. Sidewalks are primarily located along U.S. Route 9 and 20, NY Route 151 between Couse Corners and Columbia High School, in some neighborhood areas, and along U.S. Route 4 in the northern part of the Town. Recent investments have been made to improve sidewalks along Route 9 and 20. In 2019, the New York State Department of Transportation (NYSDOT) began work on a nearly \$1 million project to add new and repair old sidewalks along both sides of the road up to Hays Road. The sidewalk project is expected to be completed by Fall of 2020. The long-term goal of NYSDOT is to complete the sidewalk connections through to Schodack along Route 9 and 20. These improvements have laid the groundwork to continue creating connections between neighborhoods, schools and recreation centers to major commercial areas in the Town.

There are currently no dedicated bike lanes in the Town, though certain roads have wide enough shoulders to accommodate bicyclists. State Routes 9J and 151 are State Designated Bike Routes, however neither have any bicycle amenities. Route 9J has significantly wide shoulders throughout the entire East Greenbush corridor making it a good option for bicyclists. Route 151 has wide shoulders throughout much of the corridor along Red Mill Road, but quickly narrows once it transitions to Luther Road. Areas with relatively narrow shoulders could be difficult for less experienced cyclists to safely and comfortably share the road with vehicular traffic.

The 2017 Town of East Greenbush Amenities Plan offers several recommendations related to improving bicycle and pedestrian infrastructure. Those recommendations include:



- **Fill in sidewalk gaps along Columbia Turnpike:** The Amenities Plan discusses two large gaps along Columbia Turnpike where no sidewalks exist: from the intersection of U.S. Route 4, south to Elmwood Drive and from the Rensselaer border south to Riverview Terrace. These gaps are approximately two-thirds and one-half of a mile, respectively. Segments of the road should be a priority as this is the primary corridor through the developed portion of East Greenbush and should serve as the spine for pedestrian connections, both along the corridor and to surrounding neighborhoods.
- **Complete sidewalks along Route 4:** This area serves as a major North-South connection in the Town and currently there are only isolated sections of sidewalk. A sidewalk or multi-use trail between Route 9 and 20 and Couse Corners would provide a critical link between many of the Town's neighborhoods.
- **Create a sidewalk linking Prospect heights and Hampton Manor:** Crossing at Columbia Turnpike could either be at the existing light at the intersection with Sherwood Avenue, or perhaps a new pedestrian activated signal could be installed closer to Ridge Road.
- **Create a sidewalk linking Eckman Park to Columbia Turnpike and the Albany Hudson Electric Trail:** There is a short run of sidewalk on Gilligan Road off of Columbia Turnpike that could be extended to Goff Middle School allowing connections to the Turnpike, the future Albany-Hudson Electric Trolley trail, and the surrounding neighborhoods.
- **Improve signage/markings for bike routes:** The Town could work with NYSDOT to add bike route signs and pavement markings on Route 151 and 9J to improve bicycle safety and raise awareness to these important linkages within the state's bike route system.

Multi-Use Trails

There are currently no existing multi-use trails in the Town. However, work has begun on the Albany-Hudson Electric Trail (AHET), a 35-mile, multi-use trail that will follow the right-of-way of the former Albany-Hudson Electric Trolley which connected the City of Hudson to the City of Albany and operated from 1899 to 1929. A significant portion of the trail will run through East Greenbush, parallel to Route 9 and 20. The completion of this trail will be a significant amenity to residents and will create new opportunities to attract visitors to East Greenbush. The trail will also create new transportation alternatives for residents to commute to employment centers like Regeneron and the SUNY Albany Health and Sciences Campus and to visit local businesses. The AHET project is part of Governor Andrew M. Cuomo's Empire State Trail initiative and provides a key link between the Capital Region and the Mid-Hudson Valley. Construction of the AHET began in the Summer of 2019 with an anticipated completion date of November 2020.²

In addition to the AHET, the 2017 Town of East Greenbush Amenities Plan offers several recommendations related to the development of multi-use trails. Those recommendations include:

- **Create a multi-use trail adjacent to Michael Road and Elliot Road:** A multi-use trail should be created along these important town roads that would link the primary commercial and residential areas of Town to the high school, elementary school, YMCA, Library and the Town Park.

² Albany-Hudson Electric Trail Feasibility Study, 2011



- **Create a connection between the Albany-Hudson Electric Trail and the Town Park:** There are currently no trails leading to the Town Park. One potential trail could be created into the south end of the park. While the exact route would need to be determined, conceptually the trail could extend from the future trolley trail near Horizon View Drive, east along roads and easements to a right-of-way passing underneath I-90 at the end of Greenwood Drive, then along the edge of NYSDEC regulated wetlands located on private property and then north into the Town Park.
- **Create a multi-use trail loop around Hampton Lake:** A pedestrian loop path around the lake connecting to and/or through Hampton Lake Park is recommended. The Hampton Lake Loop Path would provide nearby residents with a safe and attractive walking and jogging path around the water, which would also serve to provide safe pedestrian access to the park.
- **Create a multi-use trail adjacent to Tempel Lane:** Possibly as part of a development amenity, a multi-use trail could be constructed along the length of Tempel Lane—linking the Couse Corners area to the town's northern neighborhoods. In addition, with potential bicycle improvements along Route 151, a bicycle loop trail would effectively be created. Such a trail would most likely be developed in cooperation with developers seeking to develop this site.
- **Create a multi-use trail connection between Papscaene Island and the Albany-Hudson Electric Trail:** The Rensselaer County trail vision map indicates a desired trail paralleling the Hudson River, which would incorporate existing trails located within the Papscaene Island Nature Preserve, and would eventually link up with the future Albany-Hudson Electric Trail. A trail connection north of the preserve could be completed along easements paralleling the active rail line and/or along existing road right-of-ways. The northern-most portion of this connector trail would be located within the City of Rensselaer and could be an opportunity for intermunicipal cooperation.

The Capital District Transportation Committee (CDTC) recently completed the Capital District Trails Plan (Trails Plan) which provides a regional approach to multi-use trails planning to help communities throughout the Capital Region access, plan for and continue to develop a seamless, connected, regional trail network. The Trails Plan overs several recommended trail networks and trail connections, including the AHET which serves as a core trail in the regional trail network. The Town also received technical assistance from CDTC and the Capital District Regional Planning Commission (CDRPC) to conduct a feasibility study to construct a side path along Gilligan Road, with the first phase linking Goff Middle School and the ball fields and the Tiernan Avenue neighborhood.

FREIGHT MOBILITY

Freight mobility refers to the transportation systems that contribute to the movement of goods into and out of a region. This may include truck transportation, rail transportation and water transportation. The Town of East Greenbush includes a number of industries that rely on a safe, efficient and reliable freight transportation systems. Facilities including the FedEx Distribution Center, Regeneron, the port area, shopping areas, as well as, residential package delivery and garbage pickup illustrate the diversity of freight and movement of goods in the Town. American Oil Road is a significant route that serves the industrial port area of Town. The Town has initiated communication with the CDTC to designate the road as federal-aid eligible due to the significance of the road as a regional freight route. The expansion of Regeneron's Tempel Lane Campus will have an impact on freight mobility with a significant increase of truck traffic into and out of the facility.



PRIORITY CORRIDORS

There are several key transportation corridors that are in need of improvement in the Town, including Routes 9 and 20, Route 151 and Route 4. Each of these corridors experiences challenges related to traffic, walkability or a need for revitalization. Following is an overview of each of these areas along with priority recommendations from past planning efforts that focused on these corridors.

U.S. Route 9 and 20

Columbia Turnpike (U.S. Route 9 and 20) runs northwest-southeast from the City of Rensselaer line to the Schodack town line. From Rensselaer south, land use transitions from residential to small-scale commercial and large-scale commercial strip development. The corridor is primarily auto-oriented and has been described in past studies as “sterile, non-descript and unfriendly to pedestrians”.³ Historically, this was the main commercial strip and transportation corridor from Boston to Albany prior to the construction of I-90 with most of the Town’s early development stemming from this roadway. Over the years as traffic was diverted to the interstate this area saw a decline in traffic and commercial activity.

In the early 2000s, a NYSDOT reconstruction project was completed along the corridor that was intended to improve traffic safety. While this project did provide certain traffic safety improvements, it also had several negative impacts that contributed to the challenges that this area faces today. As a result of that project, street trees were removed, the road was widened, and a turning lane was added. While the intent of the project was to improve safety, it resulted in a significant loss of a sense of place and pedestrian safety. Planning efforts since that time have focused on improving the corridor and making it a safer and more inviting place to visit and do business.

The 2014 Corridor Plan and Design Guidelines (Corridor Plan) report provided a series of recommendations and design guidelines to improve the physical form along Route 9 and 20 and improve safety from a vehicular, pedestrian and bicyclist standpoint. The following concepts were recommended for the Route 9 and 20 Corridor:

- **Access Management:** Adjoining lots should share access and provide internal vehicular and pedestrian access between lots whenever possible. Additional curb cuts along Route 9 and 20 should be avoided and eliminated whenever possible.
- **Walking, Biking, Transit:** Sidewalks and walkways should be constructed along public rights-of-way, internal parking areas, between pedestrian spaces, and to adjoining land uses. Walkways from sidewalks should connect to pedestrian oriented building entrances. Features such as crosswalks, pedestrian islands, and parking lot medians with sidewalks should be incorporated throughout a site design. All crosswalks and walkways should be distinguished from driving surfaces through the use of textured and painted surfaces. Bicycle racks and transit stop accommodations should also be provided where appropriate.
- **Landscaping and Greenspace:** Attractive and well-planned landscaping and greenspace should be incorporated into site designs. Street trees should be provided along the frontage adjacent to the sidewalk. Existing landscaping standards within the town’s zoning should be revised to increase the number of landscape perimeter islands required within parking lots. Additional landscaping and

³ Corridor Plan & Design Guidelines for Columbia Turnpike and Troy Road, 2014



greenspace should be considered in an effort to manage stormwater through low impact development techniques.

- **Parking:** Parking should primarily be located along the side and in the rear of buildings. A minimum amount of parking may be located between the building and street as specified in the guidelines for each transect zone. Existing off-street and shared parking standards within the town's zoning should be enforced. However, this plan recommends that the town provide additional flexibility to allow for a limited amount of parking in front of buildings within the B-2 zoning district as described in the guidelines. For larger parking lots, landscape median islands with sidewalks should be required for a select number of single parking bays. Medians with sidewalks should align with pedestrian site access and building entrances. Infrastructure for electric vehicle charging stations should also be considered for existing and new parking lots.

The Corridor Plan also recommends a more traditional network of walkable roadways and land use patterns to be developed in adjoining areas along Route 9 and 20. This type of network typically includes a system of parallel connectors that provide multiple and direct routes between origins and destinations.⁴ The goal of this type of roadway system is to provide a high degree of connectivity and accessibility between neighborhoods and activity centers.

Advantages of a more traditional, walkable road network include:

- Reduced concentrations of traffic on a limited number of thoroughfares.
- Reduced vehicle miles of travel due to more direct routes.
- Increased pedestrian and multi-modal travel options along low and high-volume roadways.
- More direct walking routes to nearby transit systems.
- Increased densities and more flexible phasing for developers.
- Improved emergency vehicle access via redundant road networks.

U.S. Route 4

U.S. Route 4 (Route 4) runs north-south from the North Greenbush town line to the intersection with Route 9 and 20. Land uses vary greatly along Route 4 and transitions from residential to more commercial as one moves north from Route 9 and 20. Land uses include single-family residential, large apartment complexes, small scale offices, office parks and intense large-scale retail near the North Greenbush town line. The character of the roadway changes from north to south as well. In the southern part of the corridor the road is primarily a two-lane roadway with access to adjacent residential neighborhoods. North of Couse Corners, the road alternates between four and five lanes, similar to Route 9 and 20. This road generally serves vehicular traffic well but is not well suited to pedestrians and bicyclists. Traffic congestion at peak times has also become a challenge in the northern section of the corridor as one approaches North Greenbush. Rapid development along Route 4 in North Greenbush is a likely contributing factor to the increased traffic congestion.

The Corridor Plan offers a number of recommendations to improve the transportation system along Route 4. Much of these recommendations parallel the recommendations stated above for the Route 9 and 20

⁴ Corridor Plan & Design Guidelines for Columbia Turnpike and Troy Road, 2014



corridor, including improvements to access management, walking, biking and transit, landscaping and greenspace and parking.

Another study that looked at ways to improve the Route 4 corridor was the 2006 Route 4 Corridor Study, prepared by the Capital District Transportation Committee. The goal of this study was to develop conceptual transportation improvements and management actions for the Route 4 corridor.

Transportation related recommendations from this study include:

- Facilitate a multi-modal future and preserve and improve the capacity and safety of Route 4 through:
 - Good access management, including raised and flush medians
 - Providing inter-parcel connections and reductions in driveways
 - Innovative treatments at intersections, including signal coordination and roundabout designs
 - Pedestrian and bicycle treatments, including signalized crosswalks, sidewalks and bicycle lanes
 - Bus stops where the combination of buss service and safe pedestrian accommodation to a desired destination occurs
 - Traffic calming to promote vehicle travel speeds more appropriate for a multi-modal corridor

A number of improvements have taken place since this study, including the construction of roundabouts at Couse Corners and the intersection of Route 4 and Mannix Road.

NY Route 151

NY Route 151 is a major collector road that extends west to Broadway in the City of Rensselaer and east to Route 150 in the Town of Schodack. The first section of Route 151 from 3rd Avenue Extension to Couse Corners is a two-lane roadway with wide shoulders that can safely accommodate bicycle and pedestrian activity. From Couse Corners to Route 150 along Luther Road, the roadway transitions from a wide two-lane highway to a two-lane winding country road with narrow shoulders. The entirety of Route 151 is part of the NY State Designated Bike Route #5 which extends from New Lebanon in the east to Niagara Falls in the west. While Luther Road is part of this bike route, it poses safety challenges for bicyclists due to the narrow shoulders and blind curves along the roadway.

Past planning efforts for Route 151 have focused on improvements to pedestrian, bicycle and vehicular access as well as general safety improvements. The 2004 NYS Route 151 Corridor Study focused on the Luther Road area from Couse Corners to Columbia High School. The goal of the study was to identify recommendations that would improve pedestrian, bicycle and vehicular mobility in the corridor, with particular concern being pedestrian safety between the High School, Library and the YMCA.⁵

A significant amount of work has gone into the implementation of this plan since its development in 2004. Since that time, a roundabout was constructed at the Route 4 and Route 151 intersection. A sidewalk has also been constructed from Columbia High School along Luther Road to Route 4 creating an important

⁵ NYS Route 151 Corridor Study, 2004



connection to the Couse Corners Roundabout. This sidewalk has improved walkability for those attending Columbia High School as well as those visiting the East Greenbush Public Library and YMCA.

Tempel Lane Corridor

The expansion of Regeneron into the Tempel Lane area presents a number of challenges and opportunities for the Town. The project includes the construction of a new facility to support an expansion of its pharmaceutical manufacturing business, known as the Tempel Lane Campus. The development of this campus on Tempel Lane is a significant change from the existing land use which consists of vacant and undeveloped forested land. This campus will also create significant changes to traffic flow through this area. Vehicular travel will increase due to the commutation of employees and there will be a significant increase in freight transport into and out of this area. A Traffic Impact Study (TIS) was developed in March 2018 which evaluated potential impacts to the transportation network and adjacent roadways. The TIS evaluated a number of intersections that may be impacted by the project and identified mitigation measures to reduce those impacts. Major impacts include a significant increase in vehicular and truck traffic on Tempel Lane and roads in proximity to the project and an overall decrease in the levels of service due to the increase in traffic. Mitigation includes the extension of Tempel Lane to 3rd Avenue Extension along the discontinued Town right-of-way and aligning with Cedar Crest Drive. This traffic mitigation effort also appears in the Mill Creek Commerce Park Planned Development District (PDD) State Environmental Quality Review Act (SEQRA) documentation, in the Tempel Farms PDD SEQRA documentation and in the 2009 Western East Greenbush Final Generic Environmental Impact Statement (WGEIS). This improvement is a necessary link to connect the Regeneron Project with the Tempel Farms PDD. Other traffic mitigation measures related to this project include:

- N.Y. Route 151/Tempel Lane Intersection - Monitor for the installation of a traffic signal (Phase I and Phase II). Construct an eastbound left-turn lane on N.Y. Route 151, a westbound right-turn lane on N.Y. Route 151 and a southbound left-turn lane on Tempel Lane (Phase III).
- U.S. Route 4/N.Y. Route 151 intersection - Expand the roundabout to two lanes northbound/southbound and modify the eastbound approach so that left turns can be made from both lanes (Phase III).
- U.S. Route 4/3rd Avenue Extension intersection - Optimize existing traffic signal timing (Phase III).
- U.S. Route 4/Grandview Drive intersection - Optimize existing traffic signal timing (Phase III).
- U.S. Route 4/Hotel Access Road intersection - Construct a south-bound right-turn lane on US Route 4 (Phase III).
- 3rd Avenue Extension/Cedar Crest Drive/Tempel Lane intersection - Construct a two-way left turn lane for eastbound and westbound left-turn movements and provide a shared northbound left-turn/through lane and a separate right-turn lane. Monitor for the installation of a traffic signal (Phase III).
- Provide spot repairs on Tempel Lane from the Regeneron Site Driveway to N.Y. Route 151 where pavement is currently crumbling. (Phase I and Phase II).
- Provide a full depth pavement reclamation and/or new courses on Tempel Lane after build-out of the site and construction vehicles have finished using the road.



- Tempel Lane/Regeneron Site Driveway - Construct a southbound left turn lane.

COMPLETE STREETS

Complete streets design is defined as roadway design features that accommodate and facilitate convenient access and mobility by all users, including current and projected users, particularly pedestrians, bicyclists, transit users, and individuals of all ages and abilities. Complete streets may also play a role in making a community healthier, reducing environmental impact, and leading to private investment in a corridor. The concept of Complete Streets encompasses many approaches to planning, designing, and operating roadways and rights of way with all users in mind to make the transportation network safer and more efficient. Complete Street policies are set at the state, regional, and local levels and are frequently supported by roadway design guidelines.

Several past planning efforts initiated by the Town have resulted in recommendations for a complete streets policy and design standards, including the 2006 Land Use Plan Update and Zoning Study, 2009 Western East Greenbush GEIS and the 2014 Corridor Plan and Design Guidelines for Columbia Turnpike and Troy Road.

In September 2018, the Town held a Complete Streets Implementation Workshop to inform the public and any interested stakeholders about Complete Streets. The workshop was focused on potential future project opportunities, design options and opportunities, and coordination opportunities developed through discussions with Town staff, and a review of prior studies.

In November 2019, the East Greenbush Town Board adopted a Complete Streets Policy which ensures that Town departments, including Planning and Zoning, and Public Works "*shall consider the safe and efficient accommodation of bicyclists, pedestrians, transit users, and those involved in goods movement in all new street construction and street reconstruction undertaken by the Town of East Greenbush. In addition, where the need for bicyclist and pedestrian facilities has been established or is defined in Town planning documents, the Commissioner of Public Works shall consider the addition of safe bicyclist and pedestrian facilities in new street construction and street reconstruction undertaken by the Town of East Greenbush*".⁶

The guidelines recommended in the 2014 Corridor Plan and Design Guidelines described several elements that should be included when considering complete streets design for development and redevelopment projects. Those elements include:

- **Pedestrian and ADA Compliant Elements:** Sidewalks, crosswalks, curb ramps, accessible pedestrian signals, detectable tactile cues and warnings, and longer walk intervals at traffic signals.
- **Bicycle Elements:** Bicycle routes and lanes, signage and pavement markings, and bicycle racks.
- **Streetscape Elements:** Street trees, landscaping, rain gardens, permeable paving material and buffers between vehicles and people
- **Traffic Calming and Access Management:** Intersection bump-outs, curb extensions, textured material and center refuge islands. Driveway consolidations, modifications and closures and shared site access.

⁶ Town of East Greenbush Resolution 243-2019, "A Resolution Adopting a Complete Streets Policy for the Town of East Greenbush"



- **Transit and Parking Elements:** Accessible bus stops, shelters and pull-outs integrated with pedestrian enhancements. Delineated on-street parking spaces and curb/sidewalk bump-outs.

DRAFT



EAST GREENBUSH COMPREHENSIVE PLAN UPDATE

TECHNICAL MEMORANDUM: COMMUNITY INFRASTRUCTURE

OVERVIEW

Infrastructure related to stormwater, wastewater and the drinking water supply are critical for a community's health and wellbeing. This infrastructure is also directly related to the pattern of development and types of land uses that occur within a community. The Town owns and operates a wastewater treatment system. Upgrades to the Town-owned wastewater treatment plant were recently completed, and the Town is currently investing in the conveyance system, including pump stations and sewer pipe improvements. The following includes an overview of the Town's existing stormwater, wastewater and drinking water supply, an identification of challenges now and in the future and recent upgrades that have been undertaken by the Town.

STORMWATER

The Town manages stormwater through a Municipal Separate Stormwater Sewer System (MS4) in accordance with the MS4 Permit issued by the New York State Department of Environmental Conservation (NYSDEC). The MS4 consists of infrastructure designed to convey (e.g., pipes and ditches), treat (e.g., stormwater management "retention" ponds), and discharge (i.e., "outfalls") stormwater to receiving waters. The Town's MS4 is comprised of a combination of privately and publicly owned and operated facilities. The MS4 Permit regulates the discharge of stormwater in an attempt to both reduce the amount of stormwater discharge and reduce the amount of pollutants entering nearby water bodies. All MS4 communities located within the boundaries of a Census Bureau defined "urbanized area" are regulated under the Environmental Protection Agency's Phase II Stormwater Rule, which requires adherence to the MS4 Permit. Stormwater runoff is generated from rain and snow melt that falls on impervious surfaces such as parking lots, paved streets, roof tops, and compacted bare soil. When water flows over impervious surfaces it may collect and transport pollutants that are harmful to the environment and drinking water supplies. The increase in runoff generated during such precipitation events is directly related to the increase in impervious surface and, therefore, to land development activities which increase impervious surfaces. Adherence to the MS4 Permit includes the implementation of control measures to reduce the amount of pollutants entering a water body. The six minimum control measures required by the NYSDEC include:

1. Public Education and Outreach
2. Public Participation/Involvement
3. Illicit discharge Detection and Elimination
4. Construction Site Runoff Control
5. Post-construction Runoff Control
6. Pollution Prevention/Good Housekeeping

To meet these goals, East Greenbush is working to develop a Town-wide Geographic Information System (GIS) for all utility systems and stormwater outfall locations. Education and outreach programs administered by the Town have included, among other topics, information on general stormwater management practices,



pet waste management, and lawn and yard waste management. All proposed residential development and commercial construction projects that disturb more than one acre of land are subject to the NYSDEC's stormwater pollution prevention regulations and are required to develop a Stormwater Pollution Prevention Plan (SWPPP) to control run-off during construction and minimize off-site discharges following project completion.

The Town is actively working to inspect existing stormwater structures to determine the overall condition and areas where repairs and/or rehabilitation is required. Limited camera inspection has been conducted to date, however, the Department of Public Works (DPW) expects to expand the program in the future to provide video documentation of existing catch basins, storm drainage systems, and culverts. Recent inspections have located and identified problems with failing corrugated steel culverts and pipes. A program to proactively slip line failing culverts has been established, however, funding is limited at this time. In addition, the Town DPW recently purchased a vac truck to facilitate cleaning and inspection of catch basins and pipes.

The Town DPW is also focusing on stormwater issues within the community in those areas most prone to flooding. Areas along Philips Road from U.S. Route 9 and 20 continuing to California Avenue within the existing Sherwood Park development are continually experiencing stormwater issues resulting from inadequate and undersized drainage systems. The Hampton Manor neighborhood has also experienced issues with stormwater where approximately twenty-two (22) separate outfalls currently discharge into Hampton Manor Lake. Major improvements and replacements to the stormwater piping in the Hampton Manor area have now been completed.

To minimize and prevent future issues from occurring, the Town will be instituting more stringent stormwater design standards for all new developments, both commercial and residential, coupled with greater field supervision during construction to ensure future systems are designed and built correctly in accordance with plans and specifications. Because land development and growth are directly tied to stormwater issues, the Town will be exploring alternative mechanisms to fund the cost of maintaining stormwater infrastructure. These mechanisms include stormwater utility districts for new developments and the use of the State Environmental Quality Review Act (SEQRA) and Generic Environmental Impact Statement (GEIS) process to identify stormwater impacts of new development and link to mitigation projects and costs.

WASTEWATER COLLECTION AND TREATMENT SYSTEMS

The Town DPW is responsible for the Town's four sewer districts, comprised of the Third Avenue Sewer District, General Sewer District, Couse Sewer District, and the Hampton Manor Sewer District. Wastewater for the Town is treated at a secondary treatment facility located on the south side of U.S. Routes 9 and 20 near the border with the City of Rensselaer. The Town will be consolidating the four districts into a Town-wide district by the end of 2021.

As with the water supply system, the wastewater collection system currently only serves the most densely populated areas of the Town, parallel and adjacent to U.S. Routes 4, 9 and 20 and County Routes 151 (Red Mill Road) and 915 (Third Avenue Extension). Expansion of the collection system into the rural areas of the community is not anticipated at this time.



Recently, \$15 million dollars of improvements were completed to increase the capacity and upgrade treatment operations. The wastewater treatment plant (WWTP) has a capacity to treat approximately 4.3 million gallons per day (MGD) but the facility is currently only permitted to process 2.7 MGD. The average daily flow to the treatment plant is currently 2 MGD. Under storm conditions, the flow to the plant can increase by a factor of 2-3 times. Under normal rainfall events the flow will average 2.5 MGD. Recent improvements to the WWTP have included a system designed to inject substances into the effluent in order to address odor issues at the plant. Odor issues have been a recurring issue, and the Town has also been working with industrial dischargers, under the Town's industrial user permit, to address constituents in their discharges that exacerbate odor issues. There are also planned landscaping and signage improvements at the WWTP facility.

Wastewater is conveyed to the treatment plant through a piping network consisting of approximately 80± miles of gravity sewer lines and force mains. The Town maintains fourteen (14) separate pump stations located throughout the system to direct the wastewater to the WWTP. Major improvements are currently underway or proposed to increase the capacity of the collection and pumping systems. The Third Avenue pump station and the Barrack Road pump station both in the existing Third Avenue district are being replaced to increase capacity from existing users and from planned development within this area of the Town. This will address the projected needs from industrial users such as Regeneron as they expand to the Tempel Lane campus. The new stations are also being designed to provide for greater efficiency and safety for the Town's maintenance staff. With the new pump stations, approximately 6,300 feet of existing sewer main will be replaced with new 15" to 27" pipe.

Additionally, the existing Commons pump station located to the north of Genet Elementary School in the Couse Sewer district is also scheduled for rehabilitation to replace aged components and controls. Improvements are also proposed for the Corliss, Luther Road, and the Hideaway pump stations.

The overall sewer collection system is reported to be in good condition and capable of accommodating increased flows from future development. The principal deficiency with the piping network is inflow and infiltration (I&I) into the system resulting in excessive flows to the WWTP during storm events. Much of the piping network is older clay tile allowing for infiltration to occur at the joints between various pipe sections. To minimize and reduce I&I, the entire collection system is being televised to inspect and review the condition of the lines. Areas requiring improvements are proposed to be slip lined to restore capacity and reduce infiltration. Six thousand feet of sewer line was previously televised during 2019.

To reduce the impact of excess flows reaching the WWTP during storm events and impacting operations, a one-million-gallon equalization tank was installed adjacent to the Corliss pump station on Corliss Avenue and U.S. Routes 9 and 20. The tank temporarily holds excessive wastewater flows. The retained wastewater is then subsequently released to the WWTP during the evening hours for treatment. The Town is currently seeking to make improvements to the Corliss pump station which will install automated bypass piping and valving to take advantage of this tank capacity along with replacement of current pumps.

Another issue contributing to excessive flows is stormwater drainage from sump pumps in residences discharging into the sewer collection system. It is estimated that 850 homes throughout the Town are illegally discharging into the system. The Town is actively working to correct this situation.

In addition to wastewater collected from the Town sewer districts, the Town has an existing agreement with the Town of Schodack, located immediately south of East Greenbush. Through the agreement the Town will



accept 45,000 gallons per day of domestic waste from Schodack for treatment at the East Greenbush WWTP. At this time Schodack only produces 30,000 gallons per day but they are currently negotiating with East Greenbush to increase their daily limit. Schodack six Pump stations, including one on U.S. Route 9 & 20, one on Empire Boulevard, two on Miller Road and one on Isabella Court / Waters Road to direct the wastewater through force mains into the East Greenbush collection system. The flow is metered at the Town line between East Greenbush and Schodack off of Horizon Veiw Drive West in a metering vault. The Town is also working with industrial users situated within Schodack but discharging to the Town's system to address flow constituents which cause odor issues and ensure compliance with the Town's industrial user permit.

DRINKING WATER SUPPLY

The Town's public water supply is purchased from the City of Troy and provided to the East Greenbush General Water District. The sourcewater is the City of Troy's Thomhannock Reservoir, a 5.5 mile-long artificial reservoir located in the Town of Pittstown capable of storing 12.3 billion gallons of water when full. The General Water District extends from the City of Rensselaer to the Town of Schodack paralleling Routes 9 and 20 and running north between the City of Rensselaer and Route 4 to the Town boundary with North Greenbush providing potable water to the most densely populated areas of the community. Rural areas of the Town, east of Interstate 90 (I-90) and along the NYS Route 9J corridor, are presently not interconnected or served through the water district. The City of Rensselaer water department provides water supply to a portion of the American Oil Road corridor approximately 1,200 feet south of the Town line.

The Cross Street Pump Station convey water through a 36" transmission main from the City of Troy along U.S. Route 4 to both the Town and the City of Rensselaer. Storage and system pressure are maintained by two (2) five-million-gallon concrete water storage tanks located and constructed on Grandview Drive in 2008. The pump station and transmission main are jointly owned by the two communities. The cost of construction for the water system components was equally shared by the Town and the City of Rensselaer. The associated maintenance cost of the transmission and storage system is prorated based upon water consumption. As the Town daily demand exceeds that of the City, the Town is responsible for a greater percentage of the cost. The General Water District currently provides water through 4,700± service connections to approximately 11,200 residential and commercial customers with an average annual daily demand of approximately 3.2-million-gallons per day combined with the City of Rensselaer. The maximum quantity of water that the Town can obtain from Troy is 5.5-million-gallons per day.

The Hampton Manor neighborhood was previously supplied by the Hampton Manor Water district through a separate well supply. In 2018 this district was shut down due to an aging infrastructure and merged into the Town's General Water District. The Hampton Manor wells have been decommissioned and the existing water tank was demolished in July 2020. Improvements within the former district are continuing with the installation of new meter pits and individual meters are expected to be complete by the end of 2020.

The existing water mains, hydrants, and system components throughout the Town are all reported to be in good condition. The town-wide system maintains approximately 90± miles of mostly ductile iron transmission and service mains. From Grandview Drive at the border between the Town of East Greenbush and the Town of North Greenbush, the 36" main reduces down to a 30" line that runs to Iroquois Place just before the intersection of U.S. Routes 4 and 9 and 20. The transmission main heading west on Routes 9 and 20 toward Rensselaer is a 16" line while that heading east toward Schodack is an 8" main. The 16" main



running east toward Rensselaer does not interconnect with the City system but loops back along Sherwood Avenue tying in with the 16" main on Red Mill Road (NYS Route 151). Running south on NYS Route 151, the main reduces down to a 12" line. Smaller service mains exist throughout existing residential neighborhoods ranging in size from 8" to 4" mains. Three separate connections off of the 30" main on Route 4 provide water to the City of Rensselaer. These are located at Valley View Boulevard, Washington Avenue, and Third Avenue. Pressure throughout the system is maintained by the two water storage tanks on Grandview Drive and pressure reducing vaults in certain areas of town to reduce pressure to low areas.. A separate pump station located at the end of Electric Avenue separately provides additional pressure to the Huntswood development.

INFRASTRUCTURE CONSIDERATIONS

The development of a community is often controlled by the availability of sewer and water infrastructure. Extending this infrastructure to rural areas can have negative consequences and contribute to unsustainable suburban sprawl if careful planning is not instituted. New water transmission mains to remote areas of the Town are not proposed at this time. However, sufficient water is available from the City of Troy to allow for future development within the Town. Extensions of water and sewer infrastructure should only be extended to areas deemed appropriate for additional commercial and residential development. Based on current trends in commercial and residential growth in the community, infrastructure extensions would be most appropriate in specific areas of Town, including Luther Road (NYS Route 151) just east of Columbia High School and Mannix Road.

Another consideration with regard to infrastructure expansions is the process for individual sewer and water extension requests. Current trends have indicated an increase requests for sewer and water extensions to properties outside the existing sewer and water districts. Currently, the Town does not have a formal process to guide decision making with regards to sewer and water extensions. This presents an opportunity to establish a formal process for individual sewer and water extensions to control the growth of the Town more efficiently. All infrastructure expansion projects should coordinate with the Town Department of Public Works' Pavement Condition Inventory to ensure that extensions are planned in coordination with ongoing roadway improvements.

In addition to ongoing work on the former Hampton Manor district, the Town DPW is continually providing improvements throughout the District to increase flow and system pressures and to provide redundant service within neighborhoods in the event of a main failure or related problem. Work is continuing to loop and interconnect isolated water mains and to remove dead ends.

RELEVANT RECOMMENDATIONS

Several past planning efforts and feasibility studies have provided a series of recommendations for maintenance and upgrades to the Town's sewer, water and wastewater systems. The following is a summary of relevant recommendations from these efforts, many of which the Town is working to implement (as described above).

Third Avenue & Barracks Pump Station Upgrade Task 1 – Preliminary Feasibility Study

The Third Avenue and Barracks Road Pump Stations were installed in the mid 1970's and are approaching their useful service life. The Preliminary Feasibility Study, prepared by Tighe & Bond in July 2019, examined the existing conditions of the pump stations and offered recommendations for improvements to the system. The improvements were recommended in this study include:



- Based upon the allowable collection system capacity a pump station replacement plan was developed that was based upon converting the station to a suction lift pump station and the abandonment of the existing dry pit vault and wet well. The major benefit from this conversion is eliminating the below grade confined space vault resulting in a safer working environment for employees and reduced future operation and maintenance costs
- Variable frequency drives (VFDs) were also recommended to allow a higher capacity station to be completed while collection system pipe work is addressed. As higher collection system capacity is achieved, the maximum pump speed can be increased.

The study also recommended several steps to take prior to proceeding to preliminary design phase. Those recommendations include:

- As poor pipe condition can greatly impact flow capacity, the entire collection system that is the focus of this evaluation should be televised as pipe improvement plans are developed.
- Flow metering is recommended at two locations downstream of Barracks Pump Station. It is important to confirm what collection system capacity is available. A minimum 1 month of flow metering is recommended.
- Survey should identify parcel owners and the need for easements. This particularly a concern at the Third Avenue Station.
- Survey should verify elevation of force main discharge elevation.

Third Avenue & Barracks Road Pump Station Upgrade Task 2 – Preliminary Design Report

The second task for the Third Avenue & Barracks Road Pump Station Upgrades was a Preliminary Design Report prepared by Tighe & Bond in November 2019. This report offered several recommendations and proposed improvements to the Third Avenue and Barracks Road Pump Station. Proposed improvements include:

- During the feasibility analysis a pump station replacement plan was developed that was based upon construction of new suction lift pump stations and the abandonment of the existing dry pit vault and wet well. The major benefit from this conversion is eliminating the below grade confined space vault resulting in a safer working environment for employees and reduced future operation and maintenance costs while providing needed flow capacity.
- Proposed pump station components include:
 - Influent Mahr-type Bar Screens and Enclosures
 - Suction Lift Pumps with Variable Frequency Drives and Enclosures
 - Concrete Wet Wells
 - Site Improvements

2006 Land Use Plan Update and Zoning Study

The 2006 Land Use Plan and Zoning Study (2006 Plan) was an update of the Town's 1993 Comprehensive Plan and focused on Town-wide and area specific land use and zoning recommendations. Some of the



recommendations presented in this plan relate to growth in the community based on the existing location of water and sewer infrastructure. The following recommendations are those that relate to the Town's water, sewer and stormwater infrastructure.

- Protect and enhance existing residential neighborhoods:
 - Within Water and Sewer Range: Incentivize needed public amenities with minor, capped density allowances in proportion to amenity values.
- Build neighborhoods with traditional settlement patterns within water and sewer service areas. Within new development, design connected streets and cross-connections to ensure adequate circulation.
- Clarify the R-B zoning district for areas that have access to water and sewer, and areas that do not. To achieve the desired vision of the RB zone and the character of this large zoning district that is located in both areas with sufficient infrastructure, and areas without municipal sewer infrastructure, amend the R-B zoning district law so that it is in sync with the community's land use vision; and so that it is clear for landowners, developers, and town officials to follow.

2014 Corridor Plan & Design Guidelines

The 2014 Corridor Plan and Design Guidelines (Corridor Plan) report provided a series of recommendations and design guidelines to improve the physical form along Route 9 and 20 and Route 4. The plan recommends the use of green infrastructure to help reduce stormwater runoff and improve the aesthetics of parking areas and pedestrian thoroughfares. The green infrastructure approach uses natural design features to reduce runoff, promote infiltration, and treat water quality. Green infrastructure practices may include green roofs, cisterns and rain barrels bioretention basins or rain gardens, stormwater planters, and pervious surfaces.

2009 Western East Greenbush Generic Environmental Impact Statement

The 2009 Western East Greenbush General Environmental Impact Statement (WGEIS) evaluated the cumulative impacts of potential future development in the Town in order to plan for and mitigate impacts do to growth. Through the development of the WGEIS, mitigation fees were established for the extension of sewer and water infrastructure for new development projects on a cost per unit basis of \$5,100 to be paid for by the project applicant. Through the use of the WGIS, the cost of future infrastructure improvements can be more evenly spread among potential new developments in the Town.

**Source: The information presented in this report was provided by the Town of East Greenbush Department of Public Works.*