



APPENDIX E:

ROUTE 4 & I-90 CONNECTOR STUDY, CHAPTER IV: RECOMMENDATIONS



**ROUTE 4 & I-90
CONNECTOR CORRIDOR
LAND USE PLANNING STUDY**
Town of North Greenbush, New York



Draft Report

Prepared by:

**Edwards
AND Kelcey**

Submitted to:
Town of North Greenbush, NY
January 2006

IV. RECOMMENDATIONS

The LUPS recommends a series of land use and transportation strategies to achieve the Town's vision, goals and objectives for the Route 4 and Interstate 90 Connector Corridor. The strategies integrate the following principles:

- mixed land uses;
- compact community design;
- range of housing prices and types;
- walkable neighborhoods;
- distinctive, attractive design;
- open space, farmland, and scenic resource, and historic preservation;
- transportation choices;
- interconnectivity of roadways, pedestrian ways and neighborhoods; and
- predictable, fair and cost-effective development decisions.

To help achieve these principles, the recommendations for the study area are organized by the integration of three basic elements:

- an open space network;
- neighborhoods and planned hamlets; and
- multi-modal transportation.

The recommendations and guiding patterns for each of these elements are provided below. A composite map illustrating the location of specific recommendations is provided in Figure 5. In addition, the various zoning recommendations discussed in this chapter are summarized in Table 1. In addition to specific recommendations, desirable patterns and design guidelines for future land uses and transportation improvements are provided. These should be used by the Town during development reviews (e.g., subdivision and site plan review, planned unit developments and variances) to ensure future developments contribute to the Town's vision.

Table 1 – Recommended Zoning Changes

No.*	Current Zoning Districts	Proposed Zoning Districts
1	PBD, BG, RS, RM	Planned Hamlet
2	RM	Conservation Subdivision
3	RM	Conservation Subdivision
4	AR, RS	Conservation Subdivision
5	PBD, RS	Planned Hamlet
6	BG, PBD	Tech Park Mixed Use
7	BG	Conservation Subdivision
8	PBD, RS	Conservation Subdivision
9	BG, IG	Tech Park Mixed Use
10	BG	Mixed Housing
11	AG-RU	Conservation Subdivision
12	RS, RM, PBD	Planned Hamlet
13	IG, PBD	Big Box Retail
14	BG	“Main Street”- Big Box Retail
15	PC, PO, RM, CP, PBD	Planned Hamlet
16	PC, PBD, RS	Planned Hamlet
17	IG	“Main Street”
18	RM, RS	Open Space Gateway

* Potential land uses are located on Figure 5.

Zoning Districts:

- AG-RU Agricultural Rural District
- AR Agriculture Residence District
- RS Residence District, Single-Family
- RM Residence District, Multiple
- PBD Professional Business District
- BG General Business District
- IG Industrial District
- CP Community/Public District
- PC Planned Commercial
- PO Professional Office



1. OPEN SPACE NETWORK

The recommended land uses include an open space network consisting of a greenbelts, environmental sensitive areas, formal outdoor spaces, parks, and trail networks. The open space system should be considered as a continuous system linking all areas of the study corridor.

The creation of greenbelts, parks and formal outdoor spaces, as well as the preservation of natural corridors and sensitive environmental areas, can be achieved through the project planning and review processes (e.g., subdivision and site plan reviews, PUDs, environmental impact statements). Where feasible, connections should be required for new developments between the various open spaces. These open space corridors provide for recreational benefits as well as buffers between neighborhoods and land uses. Each new development should integrate and enhance a continuous open space system in some manner. A description of each type of open space recommendation is provided below.

A. Greenbelt

A greenbelt is a corridor connecting recreational and natural areas and includes both manmade and natural linkages. The recommended greenbelt can be used to provide access between different land uses and between neighborhoods and communities. This will help to preserve the desired rural character of the community. This “rural character” can be utilized to promote the real estate market identity of the Route 4 and Connector corridor. The greenbelt will also help to create distinct neighborhoods and hamlets as recommended in Section 2 of this chapter (Neighborhoods and Hamlets).

As shown in Figure 6, there are a number of existing open spaces that should be preserved or maintained to provide a greenbelt around much of the study area. The western portion of the Tech Park between the Hudson River and the Connector forms the core of this greenbelt. The greenbelt should also include the east/west stream corridors, areas of steep slope and the National Grid power line right of way. Another key recommended portion of the greenbelt includes the vacant areas surrounding I-90 Exit 8 and west of the Phase I Connector as shown on Figure 6.



B. Conservation Subdivision Design

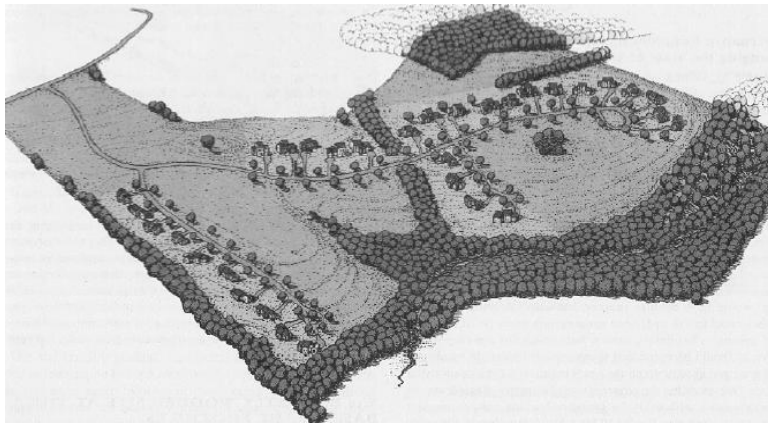
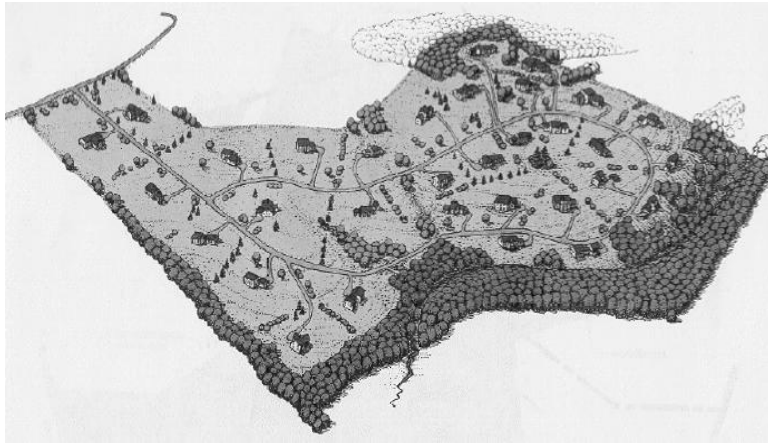
Certain properties within the corridor are recommended for future development as “conservation subdivisions design (CSD).” Conservation subdivisions provide for the clustering of residences in a portion of a development parcel to preserve open space and reduce the amount of infrastructure. They also provide linkages with surrounding or adjacent open space.

The specific areas recommended for CSD within the corridor are shown on Figure 5. They include parcels in the following locations.

- Bloomingrove Drive near Williams Road (Recommendation No. 2).
- Between Catherine Avenue and Bloomingrove Drive (Recommendation No. 3).
- Between Glenwood Road and Route 4 (Recommendation No. 4).
- Portion of the Rensselaer Tech Park fronting on Route 4 south of Jordan Road (Recommendation No. 7).
- Properties along east side of Route 4, south of Jordan Road and north of power transmission line (Recommendation No. 8).
- Property east of Bloomingrove Drive south of Snyders Lake Road (Recommendation No. 11).
- Property south of Washington Avenue and west of Phase I Connector Exit 8 (Recommendation No 18).

Each of these recommendations involve rezoning of properties under the current zoning ordinance. A summary of the proposed changes is provided in Table 1.

In addition, it is recommended that the Town adopt a CSD provision within the Zoning Ordinance to provide for the recommendations above. The ordinance would incorporate the zoning densities permitted under the Single-Family Residential (RS) District. The CSD ordinance should incorporate by reference the patterns and design recommendations of Section 2 of this Chapter (Neighborhoods and Hamlets).



Compared to traditional subdivision design, conservation subdivisions offer the full development potential of a parcel while minimizing environmental impacts and protecting desirable open spaces. The developed portion of the parcel is concentrated on those areas most suitable for development, such as upland areas or areas with well-drained soils. The undeveloped portion of a conservation subdivision can include such ecologically or culturally-rich areas as wetlands, forest land, agricultural land/buildings, historical or archeological resources, riparian zones (vegetated waterway buffers), wildlife habitat, and scenic viewsheds.

Typically, the open space is permanently preserved via easement or dedication and managed through a homeowners association, land trust (or other conservation organization), or local government agency. In some conservation subdivisions, preserved

areas have been leased to farmers for small-scale agricultural production, used for community gardens, and even used as community-owned horse farms.

From the developer's perspective, CSD offers lower development-related expenses with a high-quality, highly-marketable product as the end result. Having homes clustered on smaller lots reduces development costs since there are fewer trees to clear, less land to grade, and less road, water, and sewer infrastructure needed to serve the development.

Conservation subdivisions also target the growing consumer market for homes in natural settings with less property to maintain. Even with smaller lots, housing prices and resale values in conservation subdivisions compare favorably to those in traditional subdivisions. In fact, consumers have shown a willingness to pay a premium for the environmental amenities and quality of life that conservation subdivisions offer. Many people would gladly trade lot size for proximity to natural scenery. More details on conservation subdivisions and ordinances are found at: <http://commpres.env.state.ma.us/content/csd.asp#>.



C. Civic Spaces

Formal public open spaces should also be incorporated into the design of new developments within the study area. These can be in the form of plazas, squares or greens. Formal public spaces are an important component of any neighborhood as they encourage social interaction. For example, they can provide places suitable for informal gatherings or public events.

Formal public spaces once gave identity to the larger community and linked residential neighborhoods, commercial centers and civic uses. However, outdoor public spaces have been replaced by auto-dominated shopping centers in most communities. The plan recommends the reintroduction of formal, outdoor public spaces to bring the public realm into the corridor. The appropriate types of public spaces are described below.

Squares or greens are typically between one and three acres in size and may encompass an entire block.

A plaza is typically more urban in nature and occupies a smaller area than a square or green. In addition, a plaza is typically bordered by buildings whereas a green is surrounded by streets.

Plazas, squares or greens should be placed at the juncture between a core commercial area and surrounding residential or office uses. They should not be located on sites that are not suitable for other types of uses (e.g., oddly shaped parcels or at the edge of a development).

In some cases, public buildings (e.g., day care center) can be placed within civic spaces. Clear pedestrian access from the civic space to the surrounding employment or residential areas is also required.

Landscaping should provide trees and plants that make comfortable, relaxing environments. The amount and location of landscaping should be appropriate to the character of the surrounding uses.

D. Parks

Public parks should be incorporated into the future developments within the study area. Parks should vary in size to meet the needs of the multiple neighborhoods in the vicinity of the Connector. Generally, it is recommended that 5% of the gross area of a neighborhood or new development should be designated as parkland.

These spaces should not be isolated, they should be located within the neighborhoods at a distance that allows children to walk or bicycle. When possible, parks should be located in prominent sites, at major intersections or in neighborhood centers.

Parks should also be dispersed throughout future residential developments to provide auto-free destinations for children. Typically, one to four acre parks should be placed within two blocks of any new residences. This size site can easily accommodate a range of active and passive uses for a variety of age groups. Smaller parks are also safer as they allow for street surveillance.



At least one larger park (e.g., five to ten acres) with large playing fields should be located within the study area. This larger park should be located at the edge of neighborhoods to avoid the separation of residential uses. The Town should consider the development of a larger park as part of the recommended greenbelt. The park could possibly be developed in cooperation with a developer as part of the development review process.



E. Sensitive Environmental Resources

Wetlands, streams, stream corridors and steep slopes within the study should be protected for both ecological reasons and the aesthetic value they add to the study area. An inventory of such resources is included in the Existing Conditions (Chapter 2) of the Plan. However, additional resources may be identified and protected as part of the individual project planning and review process. These resources should be incorporated into the continuous open space system to the extent feasible.





2. NEIGHBORHOODS AND HAMLETS

A. Background

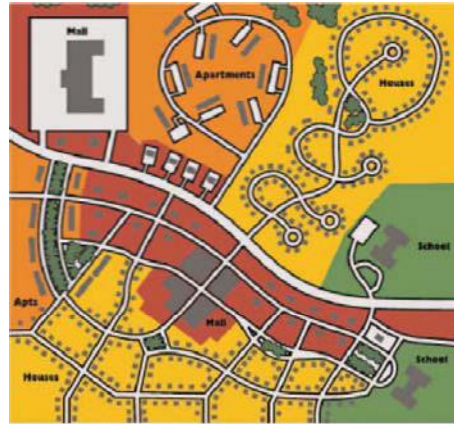
The focus of the land use recommendations is the “neighborhood.” The neighborhood is the basic building block of community design. The neighborhoods of a community can vary in size, density and composition. However, they do have a defined edge and core area.

The core area is an important aspect of the neighborhood. These cores are compact centers that serve the needs of the residents, integrating the different components of life, work, play, and shopping within walking distance. The core area is typically the area of greatest commercial and housing density within a neighborhood.

Historically, most town development was based on the concept of neighborhoods and core areas. Neighborhoods traditionally formed around a central focus such as a roadway intersection or green. As an area grew, development was concentrated around this central focus. Consequently, the highest density of development and greatest mix of uses occurred at this location. Current zoning ordinances, with their emphasis on segregating dissimilar land uses preclude this type of development.

Land Use Patterns

Upper Portion – Limited roadway network and separation of uses (Discouraged).



Lower Portion - Multiple roadway connections and mix of uses in close proximity (Encouraged).

B. Hamlets

I. HAMLET LOCATIONS

The LUPS recommends that the Town designate a series of mixed-use core areas or “hamlets” in the case of North Greenbush. To support the hamlets it is recommended that the Town eliminate or substantially reduce commercial and industrial zoning outside of the recommended centers. The Town is also encouraged to develop mixed-use zoning that supports the hamlet concepts described further below.

There are four existing strip retail corridors along Route 4 that are recommended for redevelopment as hamlet cores. The recommended hamlet cores would encourage mixed-use development that radiates away from Route 4 rather than solely concentrating retail uses in a linear strip along Route 4.

The locations of the existing retail areas that would form part of the hamlet cores include:

- the vicinity of Route 4 between Williams Road and Mazoway Avenue;
- the vicinity of Route 4 between Glen Drive and Jordan Road;
- the vicinity of Route 4 between Valley View Boulevard and the terminus of Bloomingrove Drive; and
- the vicinity of Route 4 south of Jordon Road .

In addition, the LUPS recommends that the mixed-use hamlet south of Jordon Road be extended west in the Rensselaer Tech Park. The Tech Park has an approved master plan for future development. However, in order to remain competitive in an evolving market for technology parks, the Tech Park's sponsors may desire to incorporate a hamlet or "main street" concept. The concept would be best located on a new linkage road that intersects directly with the Connector from Route 4.

A new hamlet is recommended for portion of the Valley View Corporate Park surrounding the proposed at grade intersection of Valley View Blvd and the Phase II Connector. The hamlet will be unique in that it is an area recommended for large format or big-box retail uses. However, design guidance is given below that should be strictly adhered to by the Town and developer.

Two other hamlets are recommended south of Route 43 on either side of Route 4. A hamlet is recommended on the west side of Route 4 for the existing historic area of Defreestville and the surrounding property extending to the Phase 1 Connector.

Another hamlet is recommended for the large tract on the east side of Route 4 (south of Route 43), which was rezoned to Planned Commercial as part of the GEIS. It is recommended that the Planned Commercial zoning be amended to allow the mix of uses recommended for the hamlets. This area also allows for the incorporation of large format or big box retail that meets the LUPS's design recommendations.

The two areas recommended for big box retail within the hamlets have sufficient traffic to support such uses based on the Retail Market Analysis provided in the appendices. The LUPS further recommends that the pattern and design guidelines for hamlets be used to supplement the design guidelines included in the Zoning Ordinance for the Planned Commercial District.

II. HAMLET BENEFITS

The concept of hamlets will help to reduce future traffic congestion and the costs of highway capacity improvements along Route 4. The hamlets will allow persons to walk, bike or use transit to and from various land uses. In turn, this reduces the number of trips requiring cars. The hamlets will also help to preserve the character and quality of life in North Greenbush. The hamlets also offer broader range of housing choices than typical conventional development.

Compact, walkable developments offer significant long-term fiscal advantages for the town. Numerous economic studies show that mixed use patterns and compact densities offer significant savings for developers and reduce municipal costs for maintaining infrastructure due to the reduced footprint of development. In addition, since commercial development is part of the mix, there may be a positive fiscal impact on the community.

Stores thrive best when they are part of an overall destination. Close proximity to residents and workers means there is more walk-by traffic. To achieve this, a variety of land uses should be located together on the same parcel or block. Thus, development should be compact and multi-story to create a destination.



Connections to community life and “mixed use” activities are increasingly cited as important considerations when buying a home. The diversity of housing types and attractive public features for walkable communities can help sell homes as well or better than homes in conventional developments. Evidence of this is found in the Capital District where some of the region’s most expensive homes are located in the core areas of compact communities such as Saratoga Springs or Delmar. Studies have shown that walkable developments match the absorption rate (the rate at which new homes are purchased as they become available for sale) of competing conventional developments.

III. HAMLET DESIGN

Hamlets are low-density neighborhood centers consisting of retail uses, civic, residential and small office uses. The portion of Defreestville in the vicinity of the Bloomingrove Drive and Washington Avenue is an example of an existing hamlet center within the study area.

A hamlet center is typically concentrated around a major intersection or civic space and is surrounded by low-density residential areas or open space. It serves as a commercial destination for the surrounding residential districts. Figures 7-9 illustrate how the hamlets and conventional development differ.

A hamlet center is typically a 5-minute walking distance in radius that is approximately $\frac{1}{4}$ mile in distance. Over that distance, residents will drive rather than walk. While the principles may be applied to any size projects, walkable hamlets ideally will include enough population to support retail and other services.

While a hamlet may be as large as 500 acres, the minimum size should be 30 acres. The size of the hamlet can vary, but it should comprise 5 to 40 percent of the land area of the surrounding neighborhood.

Ideally, the hamlet should support daytime and evening activities to create an attractive and safe neighborhood destination. Offices support cafes during lunch, shops draw people during the day and on weekends, and restaurants and movie theaters draw people on the weeknights and weekends.

Residential uses within the hamlets can include single-family, duplex, row houses, and apartments. Outside the hamlet, the remainder of the neighborhood is usually comprised of moderate-density single family homes, although offices and parks are acceptable as long as they contribute to the pedestrian friendly environment.

Figure 7 shows a typical highway corridor with substantial amounts of vacant land.

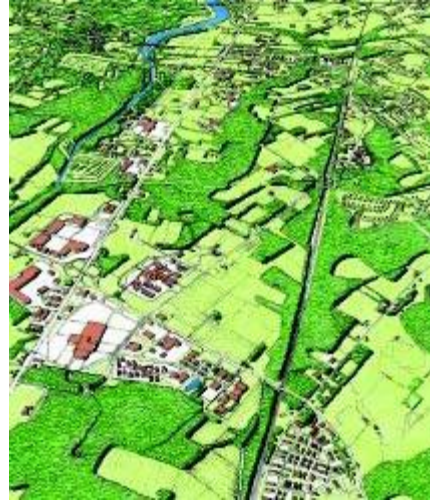


Figure 8 illustrates how development is likely to occur under existing zoning.



Figure 9 illustrates the recommended mixed use, hamlet based strategy.



A. Mixed Use

The core commercial area in the hamlet center may mix ground floor retail, office and commercial space. Sufficient retail space should be provided to create opportunities for residents and employees to run errands during lunch time or while traveling to or from work.



Big box retail can be incorporated into main street retail centers, instead of isolating the stores along the Route 4 or Connector corridors. Office and employee-intensive technology uses should be located adjacent to the shopping portion of the core area.



A variety of land uses should be located together on the same block or parcel.



The configuration of retail uses in the hamlets should balance pedestrian and auto accessibility. While larger stores may need to orient to an arterial and parking lots, smaller stores should orient to pedestrian “main streets” and plazas (or other civic spaces). Direct local street access from the local residential areas should be provided.

In order to accommodate mixed uses, typical densities in the hamlets should be at least 0.5 Floor Area Ratio (FAR). Densities as high as 2.0 or higher should be permitted if the other recommended design considerations can be met

B. Pedestrian-Oriented Design

The LUPS encourages pedestrian focused development within hamlets, fostering the use of sidewalks, bike lanes and pedestrian and bike destinations. Successful commercial developments that rely on walk-by traffic occur along main streets and in hamlets. Pedestrians typically arrive by car and park once to access several stores. Efficient auto access is important in hamlets, but traffic moves more slowly than along arterials.

Pedestrian-oriented hamlets can thrive in suburban or rural areas. If they are designed as true centers, they become a destination for surrounding residential neighborhoods. These areas depend on site and building designs that attract shoppers into their stores. However, these design focus on attracting the eye of the slower moving pedestrian rather than passing automobiles.



Two elements are critical, shop windows and the concentration of shopping opportunities along pedestrian routes. Shop fronts display their most compelling merchandise and displays tend to change approximately every 25 feet to create a rhythm of visually inviting goods. The best pedestrian areas have a higher density of shops to draw the pedestrian.

The presence of other pedestrians is also an attraction, creating a feeling of safety. This is opposed to the auto environment, which caters to the solitary driver.

C. Parking

To attract foot traffic to local shops, the configuration of parking, streets and building entrances should provide a comfortable route for pedestrians. Traversing large parking lots and access road designed for high volumes of automobiles will discourage pedestrian traffic.



Parking should be located along the streets (buffering pedestrians from automobiles) or in shared lots that do not disrupt pedestrian activity. The aim is to provide a convenient parking location where shoppers can leave their cars and get to areas for walking as soon as possible. The preferred distance is within 600 feet of the primary pedestrian and shopping corridor.



Commercial retail parking lots can dominate the landscape if typical standards are used. The vibrancy of commercial and mixed-use centers is often compromised by too much land dedicated to parking.



To minimize the dominance of parking, it should be located on-street or to the rear of buildings, linked by alleys and service roads when possible. The Town should encourage greater reliance on shared parking (which is more space efficient). Consumers park once and shop several stores on foot. Adjacent parking lots should have connections to reduce traffic on streets.

The edge of the hamlets fronting on Route 4 or other new roads may house larger parking areas and stores in locations requiring visibility from Route 4 or the Connector. However, the larger stores should be required to provide doorways to both the pedestrian oriented shopping street and their parking lot.

Standard parking ratios leave 50 percent of the parking empty 50 percent of the year (Urban Land Institute, 1999). Even for big box retail, parking requirements should be reduced to 4 spaces or lower per 1000 square feet (sf) from 5 spaces. As a comparison, urban retail

parking standards range as low as 2.5 spaces per 1000 sf for areas served by transit. The amount of parking required in each development should be established on case-by-case basis and should not be based solely on national standards. Rather the Town should consider the guidelines contained herein. The pedestrian connections among mixed-uses increases the efficiency of parking and lessens the amount needed. The reduced requirements for parking frees up more land for buildings, parks and other uses.

D. Setbacks

Buildings in the hamlets should be required to build to the sidewalk edge. These minimal setbacks bring the buildings close to the street and to pedestrians. This defined edge adds vibrancy by encouraging window shopping and streetside activity. Larger setbacks of no more than 20 feet should be permitted for multi-story office buildings and streetside cafes.



E. Facades

Facades should be varied and articulated to provide visual interest to pedestrians. Street level windows and numerous building entries should be required in the core commercial area. Instead of an overall uniform frontage, facades should vary from one building to the next. Arcades, porches, bay and balconies should be encouraged.



Street-facing facades should not have large segments of blank wall (i.e., no more than 30 linear feet). Windows and entries should be used to break up facades into segments. A large proportion (i.e., at least 60 percent) of the linear length of the façade for non-residential buildings should contain windows, doors or arcades at all levels. In no instance, shall the street façade of a building consist of an unarticulated blank wall or unbroken series of garage doors. Glass curtain walls and reflective glass should not be allowed.

F. Entrances

The primary entrance to commercial buildings should orient to the pedestrian oriented streets, plazas or parks, not to interior blocks or parking lots. The pedestrian focus of a building is its entrance. If the entrance is oriented to the parking lot, it reduces the viability of the street.



Larger stores at the ends of the main streets should be required to provide doorways to both the pedestrian oriented shopping street and their parking lot. These uses should form a pedestrian oriented circulation system. The core should be accessible from the surrounding residences without requiring use of an arterial.



Narrow, repeated frontages encourage walking with the promise of upcoming interesting things to see. Visible, friendly entrances into the stores' faces that are directly accessible from the main pedestrian street are desirable. Street facing windows encourage shopping and lure consumers inside.



Even the entrances of low-intensity uses, such as gas stations, can be successfully relocated to promote pedestrian activity while maintaining the viability of the business.

G. Upper-Story Uses

Upper floors of buildings should be used for office or residential in the core area. Taller buildings are encouraged in the core area to provide visual interest, to concentrate pedestrian activity and to support retail uses by bringing a greater number of shoppers.



IV. RETROFITTING EXISTING STRIPS

The four existing strip retail corridors along Route 4 that are recommended for redevelopment as hamlets include:



- the vicinity of Route 4 between Williams Road and south of Mazoway Avenue;
- the vicinity of Route 4 between Glen Drive and Jordan Road; and
- the vicinity of Route 4 between Valley View Boulevard and the terminus of Bloominggrove Drive; and
- the vicinity of Route 4 south of Jordan Road.

The hamlets would encourage mixed use development that radiates away from Route 4 rather than solely retail uses in a linear strip along Route 4. These existing strip corridors can be transformed to follow a more traditional development pattern with a focus on a mix of uses and pedestrian facilities. The transformation can occur over several years as properties are redeveloped.

It can be a challenge to transform existing auto-oriented areas to a walkable environment. These strip commercial uses include a collection of developments that are in close proximity to each other, yet are not interconnected. In addition, travel to and within these sections of Route 4 is dependent on automobiles as they lack pedestrian and bicycle facilities.

There are several physical design strategies that can be used to provide a gradual, incremental change to a walkable environment. These are summarized below.

- New parking should be sited behind buildings, away from the street. Small parking lots along the sides of buildings are acceptable as long as they minimize their frontage and curb cuts along Route 4.
- A fairly continuous street wall with minimal breaks for curb cuts, driveways and sidewalks should be required. Buildings should line the street edge to create a defined edge to the public space. Ideally, commercial and mixed-use buildings

should be located at, or within, 10 feet of the public sidewalk. Combined with sidewalks and street trees, a comfortable and attractive pedestrian setting is created. Residential uses may be set back somewhat further, especially farther from the core area of the hamlet.

- Require a minimum of two stories to accommodate mixed uses.
- Greater continuity in appearance of buildings should be required. Visually, strip commercial corridors are often oriented toward motorists, using large scale signage, individual buildings, and large parking lots in the front yard. As the strips are redeveloped, greater continuity in appearance should be required. This will help to create a more attractive, cohesive and safe roadway environment.
- Existing front yard or side yard parking lots should be developed with small buildings that face onto the street. These infill or “liner” buildings can create a pedestrian environment in the midst of larger uses. The liner buildings can house businesses that require a small footprint. This can be a tool to increase the economic use of underutilized parking lots. Parking lots on streets that extend into residential neighborhoods should have the highest priority for this type of infill.
- Visual interest should be provided to large, bland buildings over time by adding doors, windows, trellises and other architectural features.
- Attractive existing buildings should be adapted to new uses rather than tearing them down.

Transportation improvements can also help to transform the existing strips in the study area. Some potential measures include:

- Disconnected streets should be transformed by adding new streets or pedestrian connections as parcels redevelop. The more connected the street network, the better traffic will flow.
- Use “traffic calming”, such as raised intersections, bulbouts, neckdowns, raised cross-walks and patterned crosswalks to slow traffic and improve the pedestrian environment on existing and new streets.
- Create a pedestrian area on wide, heavy traffic streets (e.g., Route 43) by changing to a boulevard design. Combined with a collector distribution system, this can also separate local traffic from through traffic.

- For areas where a street is not possible, at least one pedestrian pathway should be required from the adjacent area.



C. Residential Design

Residential uses in the planned hamlets should consist of a mix of single-family housing and multi-family housing including apartments, condominiums, townhouses, rowhouses, duplexes, office/residential buildings, retail / residential buildings and single family homes on small lot sizes. The purpose of the mix is to provide a range of housing type choices and pricing options for residents. Currently, the trend to build residential developments of same “style and cost” has reduced these options.

Property just south of the electrical substation and north of Cooley Motors is recommended for mixed housing (Recommendation 10). This would provide greater variety in housing type and cost for residents in the corridor.



Accessory apartments as well as small-scale office/residential buildings and retail/residential buildings can also contribute to the pedestrian environment of hamlets. An accessory apartment is a modest living space built at the rear of a single family lot, either freestanding or over a garage.



Housing outside of the centers should remain primarily single family residential. Townhomes, multi-family homes and two-family homes are appropriate in order to provide a range of house choices. The following guidelines are recommended to create both a pedestrian friendly and family-oriented neighborhood character, while accommodating a range of housing choices.



With the exception of accessory dwelling units, the primary entrance of every dwelling should face and be accessible from the street. Entries should not be deeply recessed or hidden, especially for multi-family housing.





Developers should provide variation in the housing by mixing architectural styles, lots sizes and building types and sizes. This will create greater visual interest along sidewalks for pedestrians. In contrast, streets lined with identical homes and blank garage doors make walking less appealing and diminish community character.



New residences should also incorporate front porches. Porches create a semi-private zone, which encourages socialization and helps provide “eyes on the street” for safety.



Several measures should be taken to minimize the dominance of garages in residential areas. Garages should be set back from the street-facing façade and should comprise less than 40 percent of the width of the total street-facing frontage. On-street parking should be encouraged as this provides a buffer from traffic for pedestrians and calms traffic.



Alley- or lane-accessed garages are advantageous in meeting this standard. Detached garages should be located behind the house. Attached garages should have either a side entry or be recessed from the front of the house.

Parking for attached residences with shared entrances, such as apartment buildings and mixed-use buildings, may be provided in several ways including:

- Within the structure or behind a street-facing living space, retail or home office space.
- Underneath the living space of a residence.
- Surface parking behind a structure.

3. TRANSPORTATION

The road system in the study area primarily currently serves the movement of automobiles rather than multiple modes of transport. In addition, the street system in the study area is disconnected making travel by any mode difficult. Thus, the LUPS makes a series of recommendations to address these issues and to achieve the Town's vision and goals.

The I-90 Connector and associated improvements can help to address these issues by providing an alternative to Route 4 for north-south travel. The Town can further shape the transportation environment by:

- defining the alignment and purpose of neighborhood linkage roads;
- establishing block size and connectivity requirements; and
- developing a multi-modal network.

Pedestrian-oriented street standards and access management guidelines can also improve circulation in the study area. Each of these strategies is discussed below.

Communities typically focus on transportation planning of the roadway system for trips to and from work. However, commuter trips account for only one-fourth of the average daily vehicle miles traveled (VMT) by a household (nationally). The average suburban household now makes 10-12 automobile trips per day, and the majority of these trips are for non-commuter purposes (e.g., shopping, getting kids from school and other activities). Combined with the land use recommendations, the transportation recommendations herein can shorten and reduce the number of non-commute trips in North Greenbush.

Ideally, residents should be able to walk to shopping and other errands from home, offices and schools. However, in many instances, this will be unrealistic given current development patterns, roadway design and other constraints in the study area. However, it is still possible to reduce automobile dependency within the recommended hamlets by applying the following recommendations.

A. Neighborhood Linkage Roads

The Town should plan for an integrated, community street network that links adjacent neighborhoods. The LUPS identifies the conceptual alignment of several "neighborhood linkage" roads on Figure 10. These linkages connect Route 4 and the I-90 Connector, rather than collect and funnel traffic onto Route 4. The recommended linkages include the following.

- A. Realignment of terminus of Bloomingrove Drive along Williams Road. Includes creation of a grid roadway system to provide alternative access routes and pedestrian-scaled blocks within the proposed hamlet.
- B. Service road between Winter Street hamlet and Route 4. Includes a roundabout (B1) on Route 4 at Winter Street, possibly incorporating Jordan Road. Roundabout will address safety and geometry issues at existing intersection of Winter Street and Route 4.
- C, D. Northern and Southern alignment of Snyders Lake Road Extension. Provides additional east/west access to Connector and Tech Park. The northern alignment uses Town Garage property to access Bloomingrove Drive. The southern alignment was proposed in the Routes 4 and 43 GEIS.
- E. Currently proposed Tech Park Road with Access to Connector.
- F, G, H. Alternative Tech Park connectors between Jordon Road and Snyders Lake Road extension (C,D). Can be considered as part of future updates to Tech Park Master Plan.
- I. Frontage road between the Tech Park/Snyders Lake Road Extension and Valley View Boulevard. Uses the Connector right of way for stream crossing. Provides more direct access for users of Snyders Lake Road Extension to Connector and planned hamlet at Valley View Boulevard.
- J. Service road between Valley View Boulevard hamlet and Dixon Road or Ludlow Lane at Route 4. Can serve as “Main Street” within planned hamlet west of Route 4. To be coordinated with relocation of the existing fire house and possibly access to development in northeast quadrant of Routes 4 and 43 intersection (e.g, Van Rensselaer Square).
- K. Van Alstyne Drive “Main Street” extension to Valley View Blvd. Provides more direct route between Van Alstyne Drive and Valley View Boulevard. Large format retail to front on roadway according to recommended design patterns in Section 2.

The new network will be much more effective in handling traffic than a simple widening of Route 4 for two reasons. First, it provides the region’s residents with route choices rather than offering only a single, high-volume roadway. In this way, connections between local uses are more direct and traffic can be rerouted along numerous roadway combinations in the event of an incident.

Second, strip development tends to accompany the expansion of existing roadways due to the large amounts of traffic funneled onto these facilities. However, such development is much less likely to appear along a set of parallel roadways due to the limited traffic volume on each. As a result, while the capacity added through road widening tends to be quickly

consumed due to induced development, new capacity created through the construction of a parallel roadway is much more likely to remain available over an extended period.

These linkages will also help to minimize walking and biking distances between destinations. In addition, they can also serve as the “Main Street” for the recommended hamlets. In addition, interconnected streets provide a variety of ways to get to a hamlet. By spreading out traffic throughout a network of streets, congestion on Route 4 and other existing roadways will be lessened.

B. Multi-modal Emphasis

The Town should give equal consideration for all modes when reviewing development proposals. The aim should be to mix the convenience of the car with the benefits of walking, biking and transit use. This will require giving people choices for how they travel to and from, as well as within, destinations.

This is a difficult hurdle. Since the 1940's, transportation planning has focused on optimizing automobile travel within our communities. This has resulted in auto-based land use policies and a transportation system with few sidewalks, bike trails or transit services. This reliance on the automobile has resulted in increasing congestion and the widening of Route 4 in some locations. In some instances, the ability to provide capacity for automobiles has been outpaced or outgrown by the volume of traffic. The intersection of Routes 4 and 43 is an example of this trend.

However, by providing more than one option for getting to places, the future volume of traffic can be decreased. In turn, this will lead to reduced travel time and traffic congestion as well as lower expenditures for new roadway capacity. If there are alternatives for short trips by mixing land use, the town can further reduce congestion. In addition, by lessening dependence on automobiles, young and old residents will have options for travel, healthier lifestyles and reduced air pollution.

In order to foster multi-modal transportation options with the study area, the Town should require the improvement of bicycle, pedestrian and transit facilities for all new projects. The recommended bicycle and pedestrian linkages are shown on Figure 10.

The Town can also enhance the attractiveness and economic viability of transit through a number of measures. First, the Town should include the Capital District Transportation Authority (CDTA) as an interested agency on all State Environmental Quality Review (SEQR) applications. This will ensure that the CDTA has the formal opportunity to review and comment on the transit-compatibility of all development proposals along their service routes.

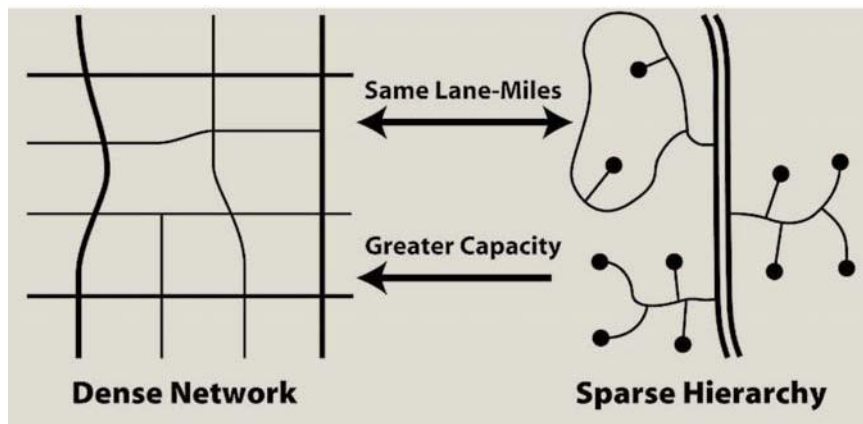
Second, the CDTA is updating its Transit Development Plan to incorporate policy that will weight investment decisions based on the transit-supportiveness of a community's land use

and transportation planning practices. The recommendations contained throughout this LUPS generally are considered transit supportive. It is important that the Town apply these practices to ensure CDTA's continued investment in the study area.

Lastly, the Town should look to private investment in transit shelters. New developments within the hamlets and along transit routes should be required to provide a dry, dignified place to wait for transit. This can be accomplished by requiring developers to provide the CDTA's typical bus shelter as illustrated in Appendix 2.

C. Block Sizes and Connectivity

To promote walking and reduce congestion, maximum block sizes and connectivity requirements are recommended. Maximum block sizes of 600 feet per side are recommended to maintain pedestrian scale. This can be stated in acreage, approximately 8 acres, to give flexibility for transitioning between different street patterns.



Cul-de-sacs should be generally prohibited unless specifically dedicated for a connection to future, adjacent development. In addition, cul-de-sacs should only be sited at the perimeter of a development and should only be used to provide for future connectivity. Pedestrian connections to existing cul-de-sacs or streets should be provided where feasible.

The town should consider establishing a street connectivity index to encourage pedestrian traffic and reduce pressure on arterial streets such as Route 4 and 43. The index is a measure of how direct routes are within a proposed development. The index is simply the number of street links divided by the number of dead-ends and intersections. For perspective, Manhattan's street grid has an index of 1.7 while a typical suburban subdivision with cul-de-sacs and few access points to arterial streets would have an index of 1.1. The Town should determine the desired index for the study area, but it should be higher than current conditions.

D. Access Management

Access management provides ingress and egress to adjacent land development while simultaneously preserving the flow of traffic on the road system in terms of safety, capacity and speed. Access management can increase the capacity of the transportation infrastructure and create shorter travel times. In addition, the functional life of the infrastructure can be prolonged thereby conserving costs for transportation infrastructure. When combined with pedestrian-oriented street standards and traditional neighborhood design principles, access management standards can significantly enhance the aesthetics of a corridor.

General access management strategies that should be implemented by the Town include the following.

- Plan for the location of future signalized intersections.
- Require developers to provide a connected and sufficient local road system to provide access to Route 4 and the I-90 Connector.
- Reduce or limit the number of curb cuts by considering the location, design, and spacing of driveways.
- Require shared access points and connectivity between parcels.
- Reduce the number of parking spaces by permitting shared parking arrangements among individual businesses.
- Relate driveway designs to travel speeds and traffic volumes;
- Prohibiting direct parking access from a parking space to a roadway.
- Require alleys and service roads to provide access to the garages located in the rear of residences and parking lots located in the rear of buildings.
- Plan for public parking.

Many of these strategies are further discussed below to assist the Town with implementation during the subdivision and site plan process. Ultimately, the Town should develop and adopt a set of access management standards for the study area. In the interim, additional guidance is provided in the "Access Management Manual" (Transportation Research Board of the National Academies, 2003). A useful visual guide to the principles of access management is also available at www.accessmanagement.gov. In addition, the Town should apply the following standards.

I. Access Points

Controlling the number of access points (e.g., driveways, curb cuts), from a site to a roadway reduces potential conflicts between cars, pedestrians and bicycles. Continuous street fronts with sidewalks are also imperative for creating inviting pedestrian environments.

Each parcel should only be allowed one access point and shared access should be encouraged. The town may also require developers to subdivide parcels into lots that do not require direct access to arterials such as Route 4 and the neighborhood linkages. Alternatively, incentives such as density bonuses or reduced frontage requirements can be used to encourage developers to use access from existing side streets or construct a side street rather than directly access a major road. This is particularly important in the recommended centers.

Establishing a minimum distance between access points reduces the number of locations a driver has to observe and minimizes the opportunity for conflict. Spacing standards should be based on the classification and design speed of the road, the volume of traffic resulting from proposed development and the physical conditions of the site. Guidance on access separation distances is provided in "Driveway Spacing and Traffic Operations" (Transportation Research Board Circular E-C019, December 2000).

In addition to limiting the number of access points, the width of access should be restricted based on the use of the site. For example, residential driveways could be limited to 15 feet at the edge of the pavement including turning radii. The maximum width for a commercial site entrance could be 36 feet including 2-foot shoulders. The width should be determined based on the type of use for the site, the type of traffic (cars versus 18 wheel trucks) and the projected volume of traffic.

II. Turning Radius

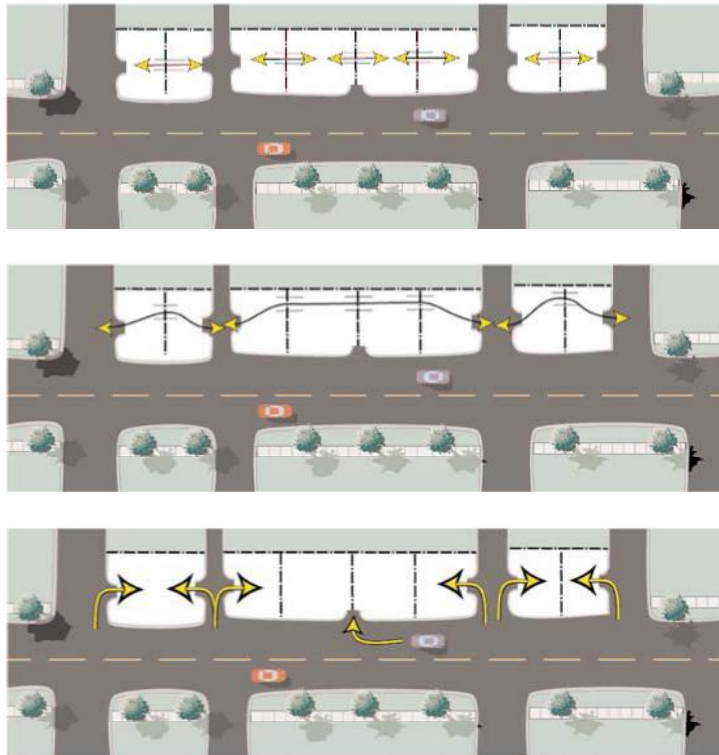
The size of the turning radius affects the speed at which vehicles can exit the flow of traffic and enter a driveway. In general, the larger the radius, the greater the speed at which a vehicle can enter. An excessively large radius will create hazards for pedestrians.



The speed of the roadway, the anticipated type and volume of traffic and the type of use should be considered when evaluating the turning radius. Proposed uses that require deliveries of large trucks (major retail and gas stations) should provide larger turning radii, but located away from primary pedestrian routes. Other uses, such as banks, offices or areas with high pedestrian traffic, should be served with smaller turning radii. Curb radius at intersections should be no more than 15 feet with a typical measurement of 10 feet at main streets in pedestrian oriented environments.

III. Shared Access

Access points should be shared between adjacent parcels to minimize the potential for conflict between turning and through traffic. Shared access can be effectively used for both residential and non-residential units. Joint access to adjacent development and interconnections between sites should be required for all development on Route 4 and the neighborhood linkage roads. This may require developers to make provisions in the rear of lots for secondary roads, requiring reciprocal easements for shared parking or rights of way.



The shared access requirements will help preserve the capacity of these roads by reducing the number of curb cuts. Every opportunity should be taken to provide for interconnections for both vehicles and pedestrians.

IV. Corner Clearance

Adequate distance between a driveway and intersection improves traffic flow and safety by reducing interference between turning movements. Typical corner clearance standards are not applicable in the study area due to the short distances between intersections along Route 4 and the recommended block standards. Instead, the town should encourage access to properties via side streets, access or service roads and shared driveways.

V. Throat Length

The length of driveway that is controlled internally from the intersection is termed the “throat length.” Driveways should be designed with adequate throat length to accommodate queuing by the maximum number of vehicles as defined by the peak period of operation.

VI. Alignment of Access Points

Street and driveway intersections represent conflict points for all modes of travel. To improve safety, intersections and driveways should be aligned opposite each other where possible and intersect roadways at a 90 degree angle.

VII. Medians

Medians are used to control and manage left turns and crossing movements as well as separating turning movements in opposite directions. Restricting left turning movements reduces the conflict between through and turning traffic. Medians may be useful in managing traffic and fostering a pedestrian environment on the core mixed use areas of Route 4 and 43 and along the neighborhood linkages. Medians can also add to the aesthetics of these roadways by incorporating landscaping.



VIII. Pedestrian-Oriented Street Standards

The Town should update its roadway street standards to reflect the desired pedestrian environment for neighborhood connectors, local streets and Route 4. The standards should show overall right-of-way widths, roadway and sidewalk widths, on-street parking, street tree and planting locations and other features such as medians.



As part of the process to develop pedestrian-oriented street standards, efforts should be made to use the minimum feasible street cross section. The process of developing street standards should be done in conjunction with developers, public works, and fire and police departments. This will require some education about the way mixed mode streets function. Current street standards focus on the risk of two vehicles colliding, rather than the risks to pedestrians on foot. This has led to the practice of wide roadways, despite the resulting higher speeds and subsequent serious injuries or fatalities. Emergency access has been another overriding concern that can be achieved with narrower street dimension. In order for the linkage roads to serve as “main streets”, standards should require the roadway to include parking on both sides.



As one potential strategy, the Town should consider designing the linkage roads as park streets or parking blocks. These are streets with a linear park at the center with one-way roads running on both sides. They are successful at reducing traffic congestion from turning movements because they create more space for cueing. Ideally, the planted center area should be at least 80 feet in width from inner curb to inner curb to function as a usable open space.

The standards for local streets in residential areas should require interconnections, with on-street parking, adjacent sidewalks, raised curb and tree plantings. The streets should be designed for slow moving traffic and pedestrian activity. Narrower streets slow traffic, increasing safety for residents and fostering pedestrian activity. For example, local streets could range between approximately 20 to 28 feet wide with parking on one side (same side as sidewalk).



Communities often question the value of on-street parking and street trees. However, parked cars on streets and landscaping can create buffers between sidewalks and traffic. Trees along the street protect pedestrians, makes streets more attractive and sidewalks safer for pedestrians.



Another key feature that should be included in the street standards are alleys. Alleys should be encouraged and should be a minimum 16 feet wide.



In addition, street standards should encourage alignments that provide street vistas, which are terminated by a building or deflected angle in the street. This promotes visual interest for both motorists and pedestrians. However, curving roads should maintain their cardinal direction over their entire trajectory.

IX. Traffic Calming

Traffic calming measures should be considered as part of the design of the linkage roads and local streets. The measures may also be used to retrofit existing auto-oriented roadways, including Route 4. Potential measures include centered mid-block yield points, offset yield points, knock-downs, on-street parking, chicanes, modified intersections, textured crosswalks and roundabouts. Pedestrian crosswalks encourage walking trips, especially when combined with bump-outs or median refuges. Examples of and further design guidance for these measures are presented in the Institute of Traffic Engineers/Federal Highway Administration report "Traffic Calming: State of the Practice" at www.ite.org/traffic/tcstate.htm/tcsop.

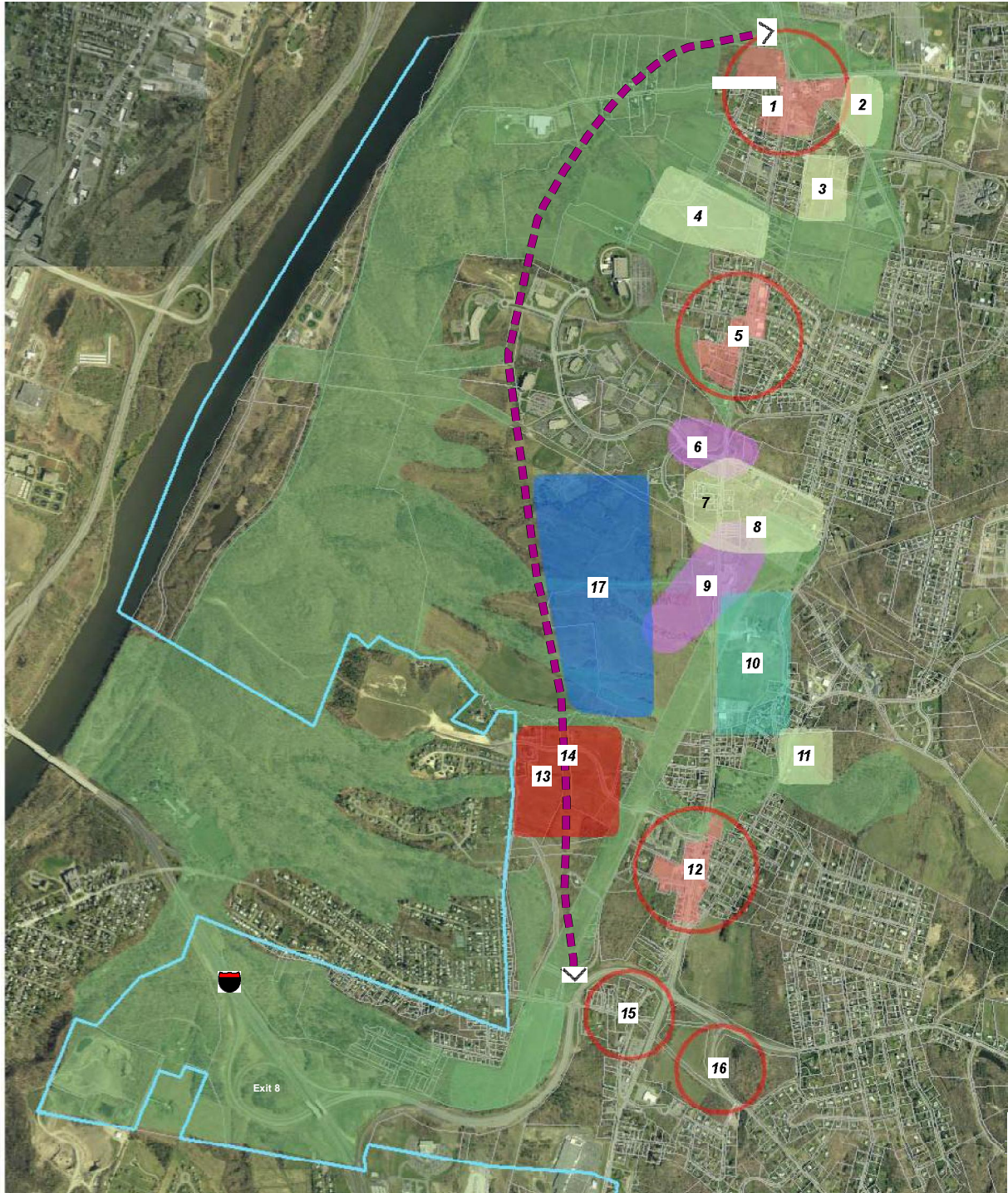


Traffic calming measures can result in slower automobile speed. With proper planning and design, the volume capacity of calmed roads can be maintained with slower traffic speeds. In addition to a friendlier walking environment, slower speeds will likely improve pedestrian safety.

Currently, there are no sidewalks along Route 4, yet the roadway was identified by study participants as being desirable for walking, biking and traffic calming. The walkability of Route 4 is a difficult issue that must balance maintaining traffic capacity and the safety of nearby residents. Route 4 is not just a link on the state highway, the development along Route 4 is a destination in its own right. Since one role of the state highway system is to serve important local destinations, the pedestrian environment should be considered an equal priority to auto access along the roadway.

Route 4 & I-90 Connector Corridor Study

Town of North Greenbush, NY



Legend

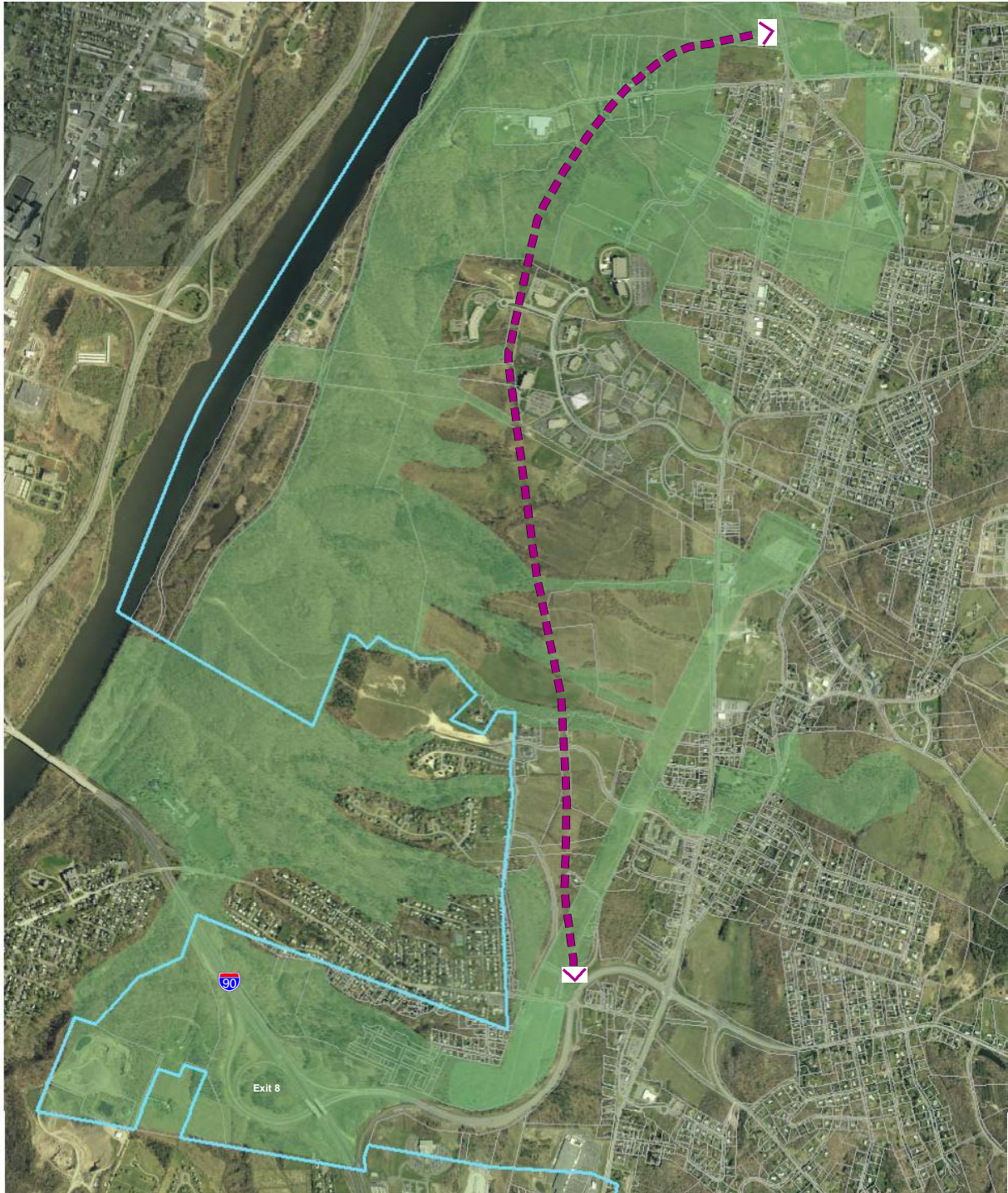
- Open Space
- Conservation Subdivision
- Mixed Housing
- Main Street Big Box Retail/Office
- Main Street Technology Campus
- Tech Park Mixed Use
- Planned Hamlet
- Connector
- Parcels
- Town Boundary

Figure 5
Land Use Recommendations



Route 4 & I-90 Connector Corridor Study

Town of North Greenbush, NY



Legend

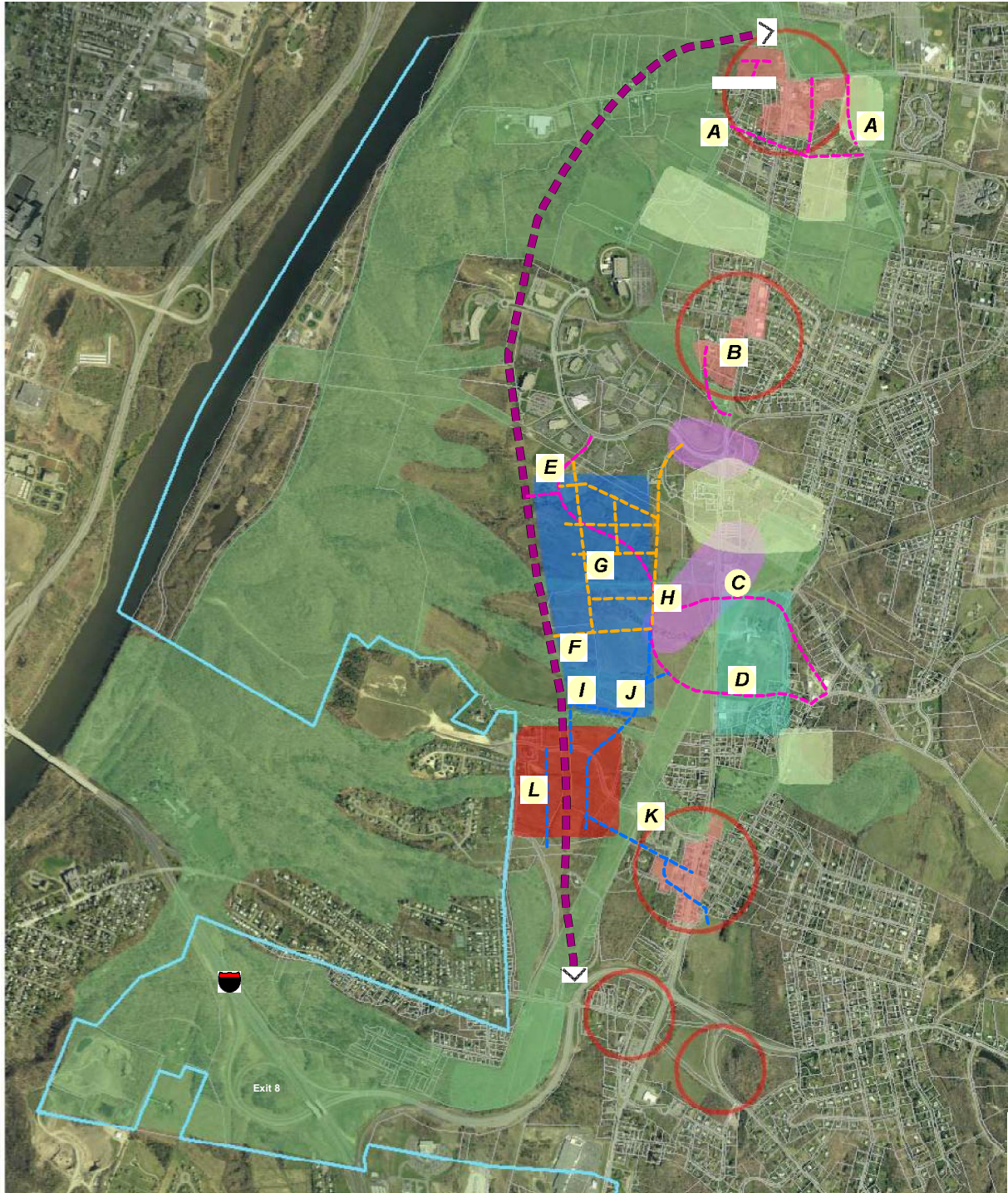
- Open Space
- Connector
- Parcels
- Town Boundary

Figure 6
Greenbelt



Route 4 & I-90 Connector Corridor Study

Town of North Greenbush, NY



Legend

- Proposed Roads 3
- Proposed Roads 2
- Proposed Roads 1
- Open Space Gateway
- Conservation Subdivision
- Mixed Housing
- Main Street Big Box Retail/Office
- Main Street Technology Campus
- Tech Park Mixed Use
- Planned Hamlet
- - - Connector
- Parcels
- Town Boundary

Figure 7
Transportation
Recommendations