

Alternative Futures Evaluations

Introduction

This Section summarizes the findings in the Scenario Evaluations Paper reproduced in Chapter VIII. Appendix F. Scenario Evaluations (note that evaluation headings have been renumbered for the purposes of this section). The evaluations include an assessment of the three future scenarios which are fully described in previous section. The three future scenarios include: the Base Scenario, the Intermediate Scenario and the Stimulated Scenario. Each assumes a varying degree of growth and investment in the Corridor. The Study's focus is achieving a Preferred Future (presented in section III.C. Preferred Future), and in order to achieve this the various options have been evaluated in three broad categories: Land Use/Urban Design/Environmental, Transportation and Quality of Life/Socio-Economic. Each category has a list of sub-criteria which generally includes a definition, methodology and findings. It should be noted that the sub-criteria topics are not necessarily unique to the category in which it is listed but also transferable across categories.

A. Land Use/ Urban Design/ Environment

1. Access to Transit

The Stimulated Scenario, incorporating the Bus Rapid Transit (BRT) system, provides the highest level of transit accessibility (see B.6 System Flexibility in this section). The higher level of reinvestment and land use changes will locate more people near transit and provide for a better walking environment around the transit stops. The transit system provides people with the choice of boarding express buses with less frequent stops, but with reduced travel times, or alternatively boarding

local buses which provide more frequent stops with slower travel times, but providing more uses within walking distance of the stops.

Measures of transit accessibility discussed include:

Quality of Walk Between Point of Origin/Destination and Transit

Locating complimentary land uses near transit stations and employing sensitive design techniques can effectively make transit a viable alternative for commuting as well as other trips; both of which are evident in the Detailed Study Areas.

Distance Between Stops (Size of Service Area)

In the Intermediate scenario, existing transit stops will remain with new stops added to provide a spacing of about one quarter mile in suburban locations and approximately every second block (800'-900') in urban cores. Within the Stimulated Scenario transfer stations are spaced approximately 1000' – 2000' apart in urban areas and between 2000' – 6000' in the suburban areas.

Length of Travel Times

Level of service (LOS) improves when transit is in dedicated lanes and unimpeded by other vehicular traffic. In the Stimulated Scenario BRT trips on transitways outside of the urban parts of the Corridor would achieve a LOS of B or C. In the urban cores where transit will be in the same lanes as other traffic rankings drops to a LOS of D.

Frequency of Service ("Headway")

Corridor-wide traffic flow should experience an incremental improvement due to the reduction of access points thereby improving headways. Express service will be improved in the Intermediate Scenario, and the Stimulated Scenario will see improved headways with the use of dedicated transitways and overall system improvements.

Ease of Transfers

Both the Intermediate and Stimulated Scenarios identify locations for transfer stations, and each station would be equipped to make transfers as seamless as possible. The Stimulated Scenario would include more transfer stations and a higher level of service for transit that serves areas adjacent to Central Avenue and State Street.

2. Land Consumption Effects

There are two ways by which the Alternative Future Scenarios affect change in the use of land in the Corridor. First, the land use patterns put forth in the scenarios rely on infill development on small parcels of vacant land and parking lots, and the reuse of existing developed land. Secondly, the transportation

elements of the Future Scenarios will require purchase of private land to widen certain segments of the right of way (r.o.w.).

Infill and Re-use

Corridor-wide, CD+A and EPS have identified over 1,300 acres in future opportunity areas which are likely to experience change over the next 15 years. Currently vacant land accounts for about 235 acres (18%) of the total land supply in the Corridor. Much of this vacant land, particularly in Albany and Schenectady, consists of individual lots and vacant buildings. The Village of Colonie has the largest percentage of vacant supply, consisting of several parcels over 10 acres a piece. Neither of the Future Scenarios would result in all of the potential supply being developed. The Intermediate Scenario would develop less than 20% of the supply and the Stimulated Scenario would develop just over 50% of the supply.

It is not clear what effect either on the Future Scenarios would have on regional growth patterns, but they would have an effect on the amount of growth that would occur in different parts of the Region. The Intermediate Scenario would result in a higher proportion

Table III.6: Estimate of Land Supply and Vacant/Reuse By Scenario

	Potential Opportunity Areas			Supply Used in Future Scenario			
	Total Land (acres)	% Vacant	% Reuse	Intermediate Acres	% of Supply	Stimulated Acres	% of Supply
Albany	308	27%	73%	67.5	22%	153.5	50%
Town of Colonie	562	14%	86%	77	14%	220	39%
Village of Colonie	177	23%	77%	47	27%	127	72%
Niskayuna	121	15%	85%	29	24%	72.5	60%
Schenectady	137	18%	82%	26	19%	94	69%
Total Corridor	1,305	18%	82%	247	19%	667	51%

of regional growth locating in the Corridor; for example 11% of the household growth compared with only 2.6% expected under current land use policies. The Stimulated Scenario would result in substantially more development in the Corridor. But its increased overall growth rate assumptions would also lead to more growth in suburban and semi-rural areas of the region even though the percentage of total growth occurring in the remaining region would be lower on a percentage basis.

Widening the Right-of-Way

Additional r.o.w. that would be added to Central Avenue and State Street in order to achieve the transportation improvements as described in the two scenarios, is only required in the suburban portions of the Corridor, particularly in those areas where the multi-way boulevard design is used and when dedicated transit lanes are provided. In the Intermediate Scenario, additional acreage required would range from 1.5 to 4.4 acres; for the Stimulated Scenario, the range would be 11.5 to 22.2 acres (or an increase of 12% over the existing total area of the r.o.w.).

New Streets and Amenities

More specifically, the total land consumption of newly created or improved public right-of-ways and area takeoffs for other public areas (i.e.; parks and plazas) within the seven Detailed Plan Areas is estimated at approximately 27 acres.

3. Land Use Capacity

Opportunity Area Capacity Estimates

CD+A reviewed the opportunity areas that had been identified during the assessment of existing conditions and future real estate market projections. An estimate of the development capacity of these sites was prepared, guided by the market assessment, and the design and review of the urban typologies and detailed studies. These potential capacities were used to guide the assignment of regional growth in the three Scenarios.

Generally, the capacities exceed the demand as defined by the three Scenarios. The Stimulated Scenario projects 6,250 new households in the Corridor, just over 90% of the identified capacity; and 15,500 new jobs, about 33% of the identified capacity.

Table III.7: Range of Consumption Estimates for Public Right-of-Ways and Plazas

	Intermediate Growth Increase in R.O.W. Width (acres)		Stimulated Growth Increase in R.O.W. Width (acres)	
Segments 1 & 2	0.0	0.0	0.0	0.0
Segment 3	1.2	4.1	9.5	20.2
Segment 4	0.3	0.3	2.0	2.0
Segments 5, 6, & 7	0.0	0.0	0.0	0.0
Total Corridor	1.5	4.4	11.5	22.2

Assignment of Growth in the Scenarios

The Base Scenario represents existing land use and transportation policies and the future growth that is projected by the CDRPC; 0.5 percent per annum in employment and 0.45 percent per annum in households. The Intermediate Scenario represents the same growth projections as the Base, but with a portion of regional growth shifted to the Corridor. This reflects the potential for the Corridor to "out compete" other parts of the region with the adoption of new land use policies and other public policies to encourage investment and development in the Corridor. The Stimulated Scenario represents the potential future if the regional growth rates are tripled; 1.5 percent per annum for employment and 1.35 percent per annum in households. It also represents additional land use policies to encourage more intensive development in portions of the Corridor.

The three Futures Scenarios are compared with the Urban Reinvestment Scenario developed as part of the New Visions Study. Under these conditions, the Intermediate Scenario assumes that the Corridor will not be able to attract as much future housing development as projected in the Urban Reinvestment Scenario, but assumes that the two downtowns will be able to attract a higher proportion of future housing. Regionally, the Scenario assumes that all three subareas of the Study Area will be able to attract a higher proportion of future employment growth. The Stimulated Scenario assumes a similar distribution of future jobs and housing as the Intermediate Scenario with the exception that the downtown cores would attract a slightly smaller proportion of regional growth.

4. Open Space

An underlying goal in concentrating development along an existing corridor such as NY5 is

not only to make transit a viable alternative but to limit or slow development into the surrounding natural resources and agricultural lands. Corridor-wide, this can be simply termed as "development in landscape" and in both alternative growth scenarios, enhancement to significant natural resources is made to maximize the "green" character along the Corridor. This is particularly the case in the portion of the Corridor around Lisha Kill.

On the scale of the Detailed Site Areas, it would be the reverse approach that is evaluated, namely the quality of the "landscape in development." In this condition, open space is integrated into the community in both Scenarios with an emphasis on the quality and location of the space rather than its size. All of the Detailed Site Areas include enhancement of the landscape, ranging from the creation of new parks as gathering places in the community to improvements to street and neighborhood landscaping.

5. Environmental Effects

Generally, negative effects on the environment are reduced and positive effects increase, on a proportional basis, as you move from the Base Scenario to the Intermediate Scenario and finally to the Stimulated Scenario.

Air Quality

Auto Use. The proposed improvements to the transit system and changed land use patterns will allow people to use their automobiles less and opt for taking transit, bicycling, or walking.

Transit Use. As the Alternative Scenarios are implemented improved "cleaner" technologies will help to reduce bus pollution associated with higher transit use.

Noise Impacts

The noise of vehicles traveling along Route 5 has a direct and negative effect on the environment. Vehicle numbers are not expected to be reduced to any noticeable extent in any of the Scenarios, but the number of buses traveling along the Corridor will increase. Improved engine technology can reduce this potential impact. For those occupying buildings that directly abut the street the noise from the street is a factor that will be considered as they choose to live and work in the Corridor. Building and street design can mitigate noise to some degree, but some additional noise is one of the "trade-offs" of urban living.

Water Quality and Hydrology

Motor Vehicle Impacts. Oil leaks, fuel spills and leaks, and leaks from other vehicle fluids are a major contributor to water pollution. The Alternative Scenarios will reduce the impacts from motor vehicles by encouraging alternative forms of transportation which allows people to drive their cars less. Recommended parking lot designs can also provide opportunities to filter run-off before it enters the regional drainage system.

Development Pattern Impacts. The Alternative Scenarios will result in a more compact development pattern in the Corridor and encourage more efficient land use patterns throughout the region, thereby securing open space and reducing impervious areas which can have a positive effect on water quality and hydrology.

Reuse Benefits. The clean-up and reuse of groundwater contaminated sites will improve overall water quality.

Land Utilization

The land use patterns and implementation strategies that are being developed for this Study will identify public policies that encour-

age reuse and redevelopment, and off-set the potentially higher site and building development costs of reuse. Ultimately the policies will support more efficient use of the land.

B. Transportation

The transportation impacts were evaluated for automobile traffic and congestion, transit ridership and service quality, pedestrian and bicycle access, safety, access management and system flexibility. Five different scenarios were evaluated from the perspective of transportation impacts. Each scenario includes a combination of a land use/growth scenario and a transportation policy.

1. **Baseline Conditions Scenario** – This scenario represents the minimum accomplishment in the Route 5 Corridor, and serves as a point of comparison with the other scenarios.
2. **New Visions Reference Scenario** – This scenario assumes a continuation of existing New Visions commitments and CDRPC forecasts, similar to the Baseline. But unlike the Baseline, New Visions progress in TDM and related actions is assumed, which results in a 15% across the board reduction in trips.
3. **Intermediate / New Visions Scenario** – This scenario assumes the New Visions Transportation Plan with "intermediate" urban reinvestment in the Route 5 Corridor, and would include "stepped up" transportation system design.
4. **Intermediate / Full Implementation Scenario** - This scenario would also include the intermediate scenario described in Scenario 3, plus a "high-type" transit investment (i.e. light rail or dedicated busway - [Bus Rapid Transit]).

5. **Stimulated Scenario** - The Stimulated Scenario assumes average annual growth rates for the whole region would be three times higher than for the Baseline or Intermediate Scenario, and assumes the “high-type” investment in transit investment.

Service Description

Baseline and New Visions: Transit service under these scenarios represents additional, continuous, incremental improvements to existing service. The New Visions Scenario also reflects a transit service benefit from land use redesign that makes access to transit service more manageable.

“New Visions+”: In conjunction with the New Visions and Intermediate land use Scenarios, a “New Visions +” transit design is also possible. The New Visions + service represents further incremental improvements over that described above.

High End Transit with Dedicated Lanes: Under the Intermediate and Stimulated Scenarios, which increase activity levels in the corridor, a “high end” transit scenario (LRT or BRT although the BRT has flexibility advantages) may also be appropriate. The high end service could also be accompanied by high end express service.

6. System Flexibility

“Flexibility” has a dual meaning; it relates to both a user’s degree of choice in mode of transportation and the adaptability of a particular transit system (BRT vs. LRT) over time and to r.o.w. restrictions.

Choice

For the Scenario evaluation purposes, all modes of transit are examined: auto, public transit, bicycling and walking. The Future Scenarios sought to improve the overall conditions for all these modes, but focused on

improving non-auto means in order to make them a more attractive choice, leveling the playing field in terms of convenience.

Transit System Flexibility – BRT vs. LRT

Through the process of evaluating the Future Scenarios it has been determined that a Bus Rapid Transit (BRT) is more appropriate than a Light Rail Transit (LRT) system for transit service in the Corridor. A BRT system is superior due to inherent flexibility of the system including:

- Transitioning between lanes as dictated by roadway configuration requirements.
- Ability to detour due to accidents or other impediments that could block the transit or HOV lane.
- Adapting vehicle capacity to time and route requirements by either adding more buses during a particular time or using articulated buses to increase capacity. Conversely, during low periods the BRT offers the option of using smaller, more fuel-efficient vehicles to meet demand.
- Ability to add and relocate transit stops and stations as required with less modification to the street. Additionally, stations can occur more frequently with the BRT system because buses can accelerate more quickly than LRT vehicles.
- Possibility of duplicating rail service proposed along the current Conrail alignment if the regional commuter rail project proves successful during the pilot project. A BRT system meanwhile could complement a heavy rail system by working in tandem through the use of shuttle buses between commuter rail stations and bus transfer stations.

7. Vehicular Volumes

The purpose of the traffic impacts analysis was to determine if more intense development along the Corridor and various transit strategies would result in an automobile traffic pattern that was feasible and acceptable.

The traffic modeling summarized in Table III.8 indicates that the traffic volumes resulting from the Intermediate Scenario are similar to the volumes that are forecast for the New Visions Reference Scenario. It can be assumed that a high type transit investment could reduce the auto traffic modestly. However, auto traffic volumes would generally be no worse because of the Intermediate Scenario, with or without a high type transit investment. The modeling work indicates that the Stimulated Scenario would result in higher traffic volumes than the Intermediate Scenario. However, the Stimulated Scenario volumes would be generally comparable to the Baseline Scenario. Although the Stimulated Scenario represents a higher auto growth scenario in the Corridor, it is a level of traffic growth that could be managed.

Table III.8 also indicates the one hour maximum acceptable link capacities at representative locations. Under all Scenarios, link volumes would be less than existing link capacities. However, implementation of dedicated transit lanes would result in off peak direction capacities of 1000 in urban Albany, suburban Schenectady, and urban Schenectady. These reduced capacities would result from making the off peak direction auto lanes available for parking. There would be some locations where the off peak direction volumes would exceed the link capacities.

8. Congestion

The results of this evaluation are summarized in Table III.9. "Excess Vehicle Hours of Delay" represents the delay that would occur at

unacceptable congestion levels (level of service "E" or "F"). The results indicate that congestion under the New Visions Reference Scenario and the Intermediate Scenario would be less than year 2000 levels; and congestion under the Baseline Conditions and Stimulated Scenario would be greater than year 2000 levels. However, the New Visions Reference Scenario, the Intermediate Scenario, and the Stimulated Scenario would all be better than the 2015 Baseline Scenario with respect to congestion. The impacts of transit investments were not directly modeled although based on the findings of the Fixed Guideway Transit Investigation. It would be reasonable to assume that the overall congestion benefits of transit investment would be modest.

9. Access Control

The Corridor must serve the role of a regional arterial while also providing for the local access needs of adjacent land uses. Two types of conflicts are inherent in this dual purpose role. The first type of conflict is from a quality of life perspective concerning the intrusion of through traffic into residential neighborhoods. The second type involves excess curb cuts, with the resulting driveway turn movements interrupting traffic flow. Some form of access control is needed to ensure a balance between smooth flow of traffic, increased pedestrian safety and improved on-street parking opportunities. The Detailed Study Areas have been evaluated in relation to the aforementioned conflicts and design mitigation techniques employed. Each Detailed Study Area and their respective street sections illustrate at least one of the following techniques in access control:

- boulevards separating through traffic from local access traffic in parallel accessways with the result of greatly reducing number of curb cuts and left hand turns;
- shared parking and driveways, inter-

Table III.8: Route 5 Auto Traffic Volumes Under Different Scenarios

Route 5: Selected Locations			One Hour Maximum Acceptable Link Capacity (LOS D/E)	PM Peak Hour 1990 Volumes	2015 PM Peak Hour Volumes			
					Baseline Conditions Scenario	New Visions Reference Scenario	Inter- mediate Growth Scenario	Stimulated Growth Scenario
From	To							
Eagle Street	Lark Street	WB	2500	870	1240	1100	1070	1160
		EB	2500	610	680	660	680	710
Henry Johnson Boulevard	North Lake Street	WB	2500	750	980	790	890	940
		EB	2500	750	980	820	950	930
Watervliet Avenue	Everett Road	WB	2500	1980	2250	2020	2060	2220
		EB	2500	1620	1710	1540	1600	1700
Osborne Road	Fuller Road	WB	2800	1330	1820	1590	1640	1820
		EB	2800	1380	1780	1540	1640	1760
Fuller Road	Wolf Road	WB	2800	1670	2140	1880	1930	2150
		EB	2800	1500	1740	1590	1620	1760
Lincoln Avenue	Nicholas Drive	WB	2800	1770	2230	1630	1730	2250
		EB	2800	2080	2550	2210	2310	2670
Vly Road	New Karner Road	WB	2800	1640	2130	1670	1730	2190
		EB	2800	1310	1650	1380	1410	1710
Lisha Kill Road	Mather Avenue	WB	2800	1200	1770	1500	1490	1840
		EB	2800	800	1150	1000	1020	1240
Balltown Road	Linda Lane	WB	2500	930	1270	1190	1200	1280
		EB	2500	710	960	870	860	950
Fenwick Avenue	Route 7	WB	2500	900	1320	1170	1180	1310
		EB	2500	590	930	780	790	860
McClellan Street	Brandywine Avenue	WB	2500	745	1050	790	850	1040
		EB	2500	870	1210	970	960	1132
Close Street	Nott Terrace	WB	2500	350	500	390	420	480
		EB	2500	200	560	490	530	570

Table III.9 Excess Vehicle Hours of Delay

	1990	2000	2015 Baseline Conditions Scenario	2015 New Visions Reference Scenario	2015 Inter- Mediate Growth Scenario	2015 Stimulated Growth Scenario
Route 5 Corridor PM Peak Hour Excess Vehicle Hours of Delay	93	229	257	113	118	246
Route 5 Corridor PM Peak Hour Excess Vehicle Hours of Delay per 1000 Miles Traveled	2.1	4.2	4.3	2.2	2.3	4.2
Average Speed (miles per hour) in the PM Peak Hour	24	22	21	24	24	21

connected parking lots reducing need for curb cuts;

- one way entries into neighborhoods, gateways;
- one way couplets (i.e. parallel one way streets within about one block of each other); and,
- left turning restrictions.

Colonie Village: The reduction of curb cuts in this segment from twenty to only three improves the Arterial-Land Access Conflict Index from an "E" rating to a "B" rating for present traffic volume and a "C" rating for projected volumes in 2015.

Swinburne Park: The reduction of curb cuts in this segment from sixteen to six improves the Arterial-Land Access Conflict Index from an "E - F" rating to a "D" rating for present traffic volume and for projected volumes in 2015.

10. Generalized Costs

This section reviews the potential costs for the transportation improvements which are recommended in the Alternative Scenarios by using some rough costs and cost comparisons to similar transportation improvements that have been made around the country.

The extent of roadway improvements varies widely across the three Scenarios. In the Base Scenario, relatively little change would occur with the exception of on going or planned improvements along the Corridor. In the Intermediate Scenario, more extensive streetscape improvements are projected to improve the environment for pedestrians, bicyclists, and transit riders. The cost of rebuilding a quarter mile section of Central Avenue in Downtown Albany to become street section type 1 would be about \$1.5 million, while the cost of building a quarter mile of a

multi-lane boulevard, street section type 3A, would be about \$3.25 million. The cost of implementing these improvements could be included with transit upgrades in some cases which could make some additional (competitive) state or federal funds available. The cost of the street improvements for the Stimulated Scenario could be significantly higher, particularly if light rail is implemented. Table III.10 illustrates the cost differences between LRT and BRT systems nationwide. As can be seen, the costs for bus rapid transit systems are typically much lower than the costs for light rail.

If a major transit investment is made in the Corridor to develop a BRT or LRT system, it is likely that many of the other recommended transportation and streetscape improvements could be funded along with the transit system. A complete and cost-effective package of transportation improvements accompanied with appropriate land use policies and projects could compete more effectively for state and federal funding.

The 1997 *New Visions* plan does not identify a particular set of actions for the NY 5 corridor. However, the plan does call for an aggressive pace of urban arterial rehabilitation, improvements to pedestrian and bicycle accommodations, ITS investment and restructured transit routes with additional feeder services. The NY 5 Corridor's share of the 20-year New Visions regional budget for the capital cost of these items is approximately \$40 - \$45 M, addressing improvements in most, but not all, segments. The recently updated *New Visions* plan, *New Visions 2021* increased this amount to \$122 M.

The transportation system capital cost for moving beyond the New Visions elements toward an alternative that incorporates BRT may cost an additional \$75 M. The components of the incremental cost of the NY 5

preferred concept are utility undergrounding (\$34 M), bus rapid transit vehicles and stations (\$25 M), multi-way boulevards in limited locations (\$26 M) and other amenities and features (\$20 M for lighting, relocated site access and turning movements to allow limited bus lanes, etc.) The BRT transit cost estimates compare to previous NY5 light rail transit (LRT) estimates of nearly \$400 M in capital expenses developed under the Fixed Guideway Study.

11. Mode Share

For the purposes of the evaluation of the NY5 concept scenarios, transit usage is derived from detailed estimates made for various transit and land use scenarios during CDTC's Fixed Guideway Transit Investigation of 1995. At the lower end, continued incremental implementation of New Visions's transportation actions should increase transit trips by 5-10% over the Baseline Scenario. At the regional scale, total transit usage is estimated to be approximately 1.8% of all peak hour person trips. At the upper end, under the Stimulated

Scenario, transit ridership could increase by as much as 60% to approximately 2.8% of all peak hour person trips. Other NY5 Scenarios can be expected to fall in between these lower and upper bounds for transit ridership and mode share. It is likely that mode share for the Intermediate Scenario will be less, but close to, the mode share under the Stimulated Scenario if the high-end transit service and parking costs are in place. For trips contained entirely within the Corridor (that is between two traffic analysis zones both located along NY5), transit usage differs less dramatically across alternative Scenarios. Using the results of the Fixed Guideway Transit Investigation work, transit usage is estimated at approximately 9-10% of peak hour trips for the Baseline Scenario (New Visions would be slightly higher). For the Stimulated Growth Scenario, mode share increases to nearly 15% for internal Corridor trips. This expected increase of approximately 60% in transit ridership within the Corridor would be consistent with increases experienced elsewhere where high-end transit such as BRT has been introduced.

Table III.10: Major Transit System Capital Costs (in millions of year 2000 dollars per mile)

System	Length in Miles	Cost per Mile
Light Rail Systems		
Sacramento	18.3	\$13.0
Santa Clara	20.0	\$25.2
San Diego	20.8	\$18.3
Portland	15.2	\$30.0
CDTC <i>New Visions</i>	17.0	\$23.2
Bus Rapid Transit Systems		
Cleveland – electric trolley bus	10.0	\$26.6
Orlando – downtown circulator	2.3	\$9.3
Hartford – dedicated busway	9.0	\$8.6
Eugene – busway in arterial	8.0	\$6.0
Santa Clara – Next Bus System	27.0	\$1.2
Alameda County – Next Bus System	16.0	\$1.8

Table III.11 Estimated Transit Ridership

Fixed Guideway Scenario	NY5 Scenario		Regional Daily Ridership
LRT w/ urban revitalization	Stimulated w/ high-end transit		65,000 – 80,000
	Intermediate w/high-end transit		60,000 – 70,000
Free fare bus system			55,000 – 65,000
	Intermediate w/incremental transit		50,000 – 55,000
Null with stable service	New Visions	Baseline	45,000 – 50,000
Null with falling demand			40,000 – 45,000

An approximate representation of where the various Scenarios fall within the range of transit ridership is shown in Table III.11, relative to the detailed results from the Fixed Guideway Transit Investigation.

The Fixed Guideway Transit Investigation found that a high type transit investment in the Corridor, in combination with measures to encourage transit, would result in reductions in VMT.

12. Vehicle Miles Traveled

The results of the VMT analysis are consistent with the traffic volumes considered in the Corridor. The Baseline Scenario results in the highest VMT, followed closely by the Stimulated Scenario. The New Visions Scenario and the Intermediate Scenario are comparable, but significantly less than the Baseline Scenario. The impacts of transit investment on VMT were not directly modeled for these scenarios.

13. Transit Service Availability/Schedule Adherence

Transit accessibility and service quality under these various service designs can be evaluated using the recent Transportation Research Board Transit Capacity and Quality of Service Manual. Quality of service is considered using several "Level of Service" criteria in Table III.12.

Table III.12 Transit Level-of-Service

	Current	New Visions	New Visions +	High End Bus	High End LRT
Service Frequency LOS	A (East) B (West)	A (East) A or B (West)	A	A	A or B
Hours of Service LOS	A (East) B (West)	A or B	A	A	A
Service Coverage LOS	C	B	A	A	A
Passenger Load LOS at peak load point	D	D (C with some articulated bus)	D (B with all articulated bus)	C (with all articulated bus)	E (C with two-car operation)
Headway Adherence LOS	D or E	D or E	D or E	C	C
Transit/Auto Travel Time LOS	C or D	C	C	B	B

14. System Capacity

Transit system capacity under any Scenario does not approach the status of crisis. Consideration of separate lanes or rights-of-way is therefore less a consideration for the purpose of capacity as it is for travel time and reliability. For the Intermediate or Stimulated Scenarios, bus service along the Corridor at a five-minute frequency would produce a peak-hour, peak direction capacity (including standing room) of about 700 persons; a three-minute headway would produce a peak-hour, peak direction capacity of about 1,200 persons. Use of articulated buses with increased capacity would be sufficient at the highest ridership levels. Similarly, light rail transit vehicles in one-car configuration (with a capacity of up to 200 persons) would be able to handle the estimated 2015 peak direction demand with headways of ten minutes or less.

15. Quality of the Trip

In this section, the transit use patterns of two "typical" (fictitious) residents of the Corridor are described: Ms. Smith is a commuter who travels daily from her home in the Village of Colonie to her workplace in Downtown Albany. Mr. Washington lives with his wife and two teenage children in the Vale neighborhood in Schenectady. Each narrative is divided into three parts: the journey under current conditions, under the Intermediate Scenario and under the Stimulated Scenario. The narratives describe changes in transit service, streetscape and land use – three major factors that effect the quality of a trip. These narratives can be found in the Alternative Scenarios Evaluations paper in Appendix F.

16. Safety

National data have shown that as the number of access points (driveways and intersections) increases per mile, the crash rate also typically

increases. The Route 5 Corridor ranks near the top for arterial streets in terms of driveway-related vehicle collisions according to CDTC's Driveway Study completed in 1995. An examination of updated crash data for the 3 year period from 1996 to 1998 obtained from NYSDOT corresponding to the 7 corridor study segments, indicates that there was an annual average number of crashes of 1,058 along the section of Route 5 from Lark Street in Albany to Nott Terrace in Schenectady. Segments with numerous curb cuts have a higher percentage of crashes occurring "midblock" versus those that occur at intersections, further validating the findings of the 1995 driveway study.

To estimate the safety benefit of a proposed roadway improvement, the number of crashes that would potentially be avoided due to that improvement are compared to the average cost per crash to arrive at an estimate of savings. By managing vehicle access along the corridor and improving the roadway to reduce the number of conflict points between vehicles, crashes should be reduced. The NYSDOT Traffic Engineering and Safety Division issues a periodic listing of roadway improvements or "countermeasures" and their relative "crash reduction factors." According to this countermeasures list, improving a roadway by installing a raised median should result in a twenty percent (20%) reduction in all crashes, with rear end and left turn collisions reduced by 32% and 44%, respectively. While there is no specific NYSDOT crash reduction factor related to consolidating driveways or other techniques (except for installation of a median barrier), the NYSDOT 1995/1996 Five Year Program included an estimate of a 26 percent reduction in crashes at locations where arterial management techniques are applied; techniques include an array of actions including consolidating driveways, interconnecting parking lots, installation of frontage roads, etc. Each Future Scenario includes provision for

use of these techniques along the Corridor, with certain street sections also including installation of a raised median and separating local from through traffic.

For the purposes of this evaluation an expected 20% reduction in future overall crashes has been applied. Assuming then that the average annual number of crashes of 1,058 cited above was reduced by 20%, and that the average crash cost (averaged across all crash types) for urban, suburban and village locations is equal to \$46,100 (according to NYSDOT Traffic Engineering and Safety Division, January 1996) an annual savings of approximately \$9,755,00 can be estimated. Benefits to pedestrian, bicycle and transit safety will be realized as well from a reduction in conflict points with and between vehicles and better overall managed and defined access along the corridor.

In conclusion, the proposed street section designs and Detailed Study site plans under each of the possible future scenarios contain elements which will better manage vehicle access and enhance bicycle and pedestrian accommodation.

17 – 21. Pedestrian Circulation

Detailed Study Area within each typology was evaluated for both Scenarios in terms of:

17. Building Frontages

Providing the pedestrian with the maximum exposure to "active" building facades (i.e. windows and doors) to increase visual interest and sense of security. Depending on detailed site area, building frontages increase in a range from 1% to 17% in the Intermediate Scenario and 10% to 30% in the Stimulated Scenario.

18. Connection to Transit, Services, and Community Amenities

Creating an ease of access between transit stops and surrounding neighborhood. Each Scenario demonstrates a deliberate attempt to create "interconnectivity." Given the higher level of new development in the Stimulated Scenario, it achieves the most improvement in connectivity.

19. Connection to Building Entries

The degree to which a building entry is linked to a pedestrian path. Each Scenario demonstrates this technique effectively. Again, the extent of redevelopment in the Stimulated Scenario maximizes the improvement in pedestrian access to building entries.

20. Sidewalk Design

Designing sidewalks to accommodate a variety of pedestrian activities. Sidewalk widths in the Detailed Site Areas for each Scenario have a minimum width of eight feet but an overall average width of 12' to 15'.

21. "Crossability" – Pedestrian Friendliness of Intersections

Maximizing the number of street crossings is an effective means of turning an important corridor into a community "spine" or "link," rather than a "divider." Also, minimizing the width of crossing with "bulb-outs" or other means and providing "pedestrian refuge areas" on medians can make a crossing safer. All Detailed Study sites illustrate such improvements.

22. Bicycle Accessibility

Currently there is little or no provision for bicycle circulation along the Corridor. Within each corridor segment, the design team

endeavored to create a safe cycling environment in order to promote cycling as an alternate means of transportation. Spatial constraints within the more dense urban core segments entailed the creation of bicycle routes on parallel streets.

C. Quality of Life/Socio-Economic

23. Access to Local Services

The combination of recommended land use and transportation improvements included in the Alternative Scenarios will improve access to local services for those who live and work in the Corridor. These include the recommendation for continued and strengthened community commitment, especially in the suburban communities, to providing and expanding pedestrian access (sidewalks) from surrounding streets and land uses in and adjacent to the Corridor. In the Base Scenario approximately 30% of new residents and 40% of new workers will be within convenient walking distance of local services. In the Intermediate Scenario about 50% of new residents and workers would be within walking distance of local services. This increases to about 65% in the Stimulated Scenario.

The Detailed Study for the Vale Neighborhood provides a good example of these differences. In its existing condition, there may be a small corner store within walking distance of Mynderse Street and this will not likely change in the Base Scenario. In the Intermediate Scenario, there may not be new local services at the intersection, but improvements to the transit system and development of local services along State Street, at the Central Schenectady Neighborhood Detail Study, will provide more convenient choices in local services. Ultimately, in the Stimulated Scenario, the extent of new investment in the neighborhood could support local services at the corner of Mynderse and State Streets.

24. Neighborhood Identity

Neighborhood Identity refers to the ability for a resident or visitor to distinguish the neighborhood they are in from any other. For each Detailed Site Area the Design Team identified and capitalized upon the predominant positive characteristics of each neighborhood. Criteria included:

- predominant land use and provision of a balanced land use mix;
- architectural and landscape character;
- dominant demographics;
- presence of neighborhood/community/regional amenities;
- definable edges/gate ways; and
- regional land use and transportation context.

Detailed Study Examples:

Townsend Park/West Hill Neighborhood

The Townsend Park/West Hill Neighborhood Detailed Study Area is the most urban neighborhood along the entire Corridor. The neighborhood is typified by a three or more story street wall interrupted by surface parking lots. The Team's intent was to maintain the urban quality by filling in the street wall while allowing mid-block pedestrian path-thr oughs, and consolidating the parking into more central locations that are screened from the street by buildings or landscaping. Both of the Intermediate and Stimulated Scenarios implement these concepts, and in fact several of these concepts are being or will be implemented by the Central Avenue BID and the City of Albany as existing policy strategies. But the policies that would support further reinvestment in the community as part of the Alternative Futures would accelerate and add

to the positive changes that are already occurring.

Swinburne Park

The design of the Detailed Plan combines these two aspects by creating a pedestrian link (between the park and residential neighborhood) through a warehouse-style retail district. Existing buildings are retained and additional infill building of the same ilk are proposed. It is envisioned that the new buildings would be of a similar industrial aesthetic to those existing. This is a unique area in the Corridor where the potential for change under existing policies may exceed the expectations of the Design Team. Since this design was completed development interest in this area could lead to more change than is represented in the drawings. Both Scenarios could improve upon the quality and extent to which this future development would contribute to the positive identity of the community through the creation of design standards and guidelines.

Colonie Village Center

The creation of a neighborhood identity for the Colonie Village Center is reliant upon the presence of the existing community center. The proposed change in uses would further support the idea of this becoming a more concentrated, identifiable village center. The redesign of the transportation infrastructure can also improve community identity. The Stimulated Scenario would rebuild Central Avenue as a "multi-lane boulevard" locating through traffic in the central lanes and provide a parallel but separated local accessway. The local accessways create a more pedestrian- and bicycle-friendly environment along the street edge. This allows new and existing development to front directly onto the street. The edge of the street can become a public place where residents from the adjacent neighborhoods can walk to shops, cafes, and meet their neighbors.

New Karner Regional Mixed-Use District

The New Karner Road area's current identity is that of an auto-oriented commercial district including an underutilized shopping center. Located at an important regional intersection and the geographic midpoint of the Corridor, the site remains appropriate for regional-serving uses in addition to a new transit-oriented community. Proposed uses would include two to three story mixed-use buildings fronting the streets, apartment buildings, single family homes, a community center, hotel and employment uses (some of which could be located in a renovated K-Mart store). The proposed street system within the larger district links the various neighborhoods, shopping and employment areas together into an integrated mixed-use district. Under the Intermediate Scenario it is likely that only portions of the mixed-use district would get built. Increased investment in transit and the changing character of Central Avenue for its entire length would encourage the development of the mixed-use buildings up to the street in at least some locations. Full build-out of the area would likely only occur with the combination of changed land use policies and increased regional growth and transit investment that are part of the Stimulated Scenario.

Woodlawn Plaza

As with the New Karner District, the geographical location of this area is its most identifiable attribute. With continued growth in the Corridor, a future regional transit route is possible along The Crosstown intersecting at this point. This would put Woodlawn Plaza Mall in a prime location for a mixed use neighborhood and a concentration of office employment uses. Within the Intermediate Scenario this could be achieved by infilling the existing mall parking lot with a small green and three mixed-use buildings with ground floor retail and office above. In the Stimulated Scenario similar development would extend to the north side of State Street. The mall is

woven back into the neighborhood by reintroducing a street (an extension of Lawnwood Avenue) and, with the mall removed, lining Albany Street and Laurel Avenue with new single-family residential homes. This re-establishes the neighborhood back into the mall site.

Vale Neighborhood

Attention in the Vale Neighborhood has been paid to maintaining and securing the residential identity of the neighborhood through the design of attractive traffic-calming measures. Designating one-way streets, narrowing entries into the neighborhood, and marking entries with monuments helps to define the boundary between the commercial uses on the street and the neighborhood behind. The plan enhances the presence of the Vale Park within the neighborhood by the creation of a link between the park and State Street. The revitalization of land use in the area creates the opportunity to provide community serving commercial and service uses, as well as opportunities for housing that serves the diverse community. This could include senior housing with different levels of care. Current uses such as the motels, which are deemed as neighborhood nuisances, are proposed to be converted to more community-serving uses under the Intermediate Scenario and fully replaced by new buildings in the Stimulated Scenario.

25. Social Equity

Increased Access

The Alternative Scenarios create a land use pattern and improve the transportation system making it easier for those without access to an automobile to move about the Corridor and the region. Providing alternatives to the automobile as the primary mode of transportation improves access to employment, education, retail and services, recreation, and social activities for all residents in the Corridor and

the communities around it, particularly for those who do not have access to an automobile. This group includes those who cannot afford to own a car, seniors, youths and children, and those with physical and other disabilities.

Decreasing Cost of Transportation

Providing better access to transit, walking, and bicycling, as well as making automobile use more efficient, allowing people to spend more of their income on housing costs, education, entertainment, or savings.

A national "home loan experiment" recognizes these benefits to households. Location Efficient Mortgages (LEMs) are mortgages that reflect the household cost savings of living in a neighborhood that provides good access to services and transit, thereby reducing household transportation costs. The program is sponsored by a combination of federal agencies and grant foundations.

Improved Safety

Transit is relatively safer than automobile travel. Street design improvements proposed in the Alternative Futures will also improve safety for pedestrians and bicyclists. Improved access controls for properties adjacent to Route 5 (i.e. reducing curb cuts) will improve safety for all transportation types; this is discussed in more detail in II.16 *Safety*.

26. Security

The perceived level of security has a bearing on the level of investment made in a community and the quality of life. For each Alternative Scenario, design and zoning initiatives have been employed to put as many "eyes upon the street" as possible, thereby dissuading illicit activities.

27. Housing Diversity/Affordability

There are three basic types of homes that would be created in the Intermediate and Stimulated Scenarios, with the Stimulated Scenario having more medium density homes than the Intermediate:

New and revitalized two-family and single-family homes: The Alternative Scenarios propose a set of land use and transportation policies and investments that can make these neighborhoods more attractive to a variety of people looking for an alternative to living in the suburbs. At the same time, programs must be present to encourage homeownership and investment in rental stock to provide better quality homes for lower income people.

New medium density row houses: The Capital District already has some neighborhoods with historic row houses and opportunities exist to develop neighborhoods with new row houses which are attractive to certain segments of the population.

New and revitalized multi-family apartments or condominiums: Apartments and condominiums integrated into neighborhoods or mixed-use development can provide more affordability than row houses and can also meet other needs of seniors and students.

28. Neighborhood Through Traffic

The traffic analysis prepared by CDTC indicates that under the Intermediate Scenario, through traffic would not significantly increase in the adjacent neighborhoods. Any transit improvement that is made in the corridor can be expected to relieve traffic levels in adjacent neighborhoods modestly. The higher growth in the Stimulated Scenario would not be limited to the Route 5 Corridor, but would occur throughout the region. Therefore, higher traffic levels would not be the result of actions

in the Route 5 Corridor, but of sustained actions by the region to encourage economic growth. Investments in site design and transit would not cause such growth, but rather would provide a way to manage such growth in the Corridor if it occurred. Overall, improved transit, pedestrian and bicycle connections would provide alternatives to driving through the neighborhoods, and would help to calm traffic traveling through neighborhoods.

29. Parking Location/Availability

The Futures Scenarios recognized the importance of ample and conveniently located parking facilities in enhancing the economic viability of retail within the Corridor. Similar to pedestrian circulation, a representative Detailed Site Area for each typology was evaluated. Criteria includes:

Maximizing On-Street Parking: Maximizing on-street parking benefits include: increasing parking availability near a driver's destination; improving land use efficiency by reducing the amount of land given over to off-street parking; effectively narrowing the street; signaling to the drivers to slow down; and, providing a protective barrier between traffic and pedestrians.

Reducing Street-Facing Parking Lots: Locating parking in the rear of sites can reduce the "perception" of auto dependency and promote an attractive and comfortable pedestrian realm.

Promoting Shared Parking: Encouraging mixed-use developments that have peak parking demands at different times effectively reduces parking demand.

Interconnectivity: The interconnectivity between parking areas is important to maximize the utility of shared parking. Benefits include reducing the need for curb cuts along arterials thereby reducing congestion, and allowing drivers and

pedestrians to cross property lines without returning to the street thereby allowing for “trip linking.”

30. Economic Cost

CDTC has pioneered the use of a fuller incorporation into transportation analysis of the external costs of transportation. These costs include the costs borne by individuals or society at large for water quality damage, waste disposal, air pollution and climate change, land consumed for necessary parking spaces and so forth. From previous work in the New Visions Fixed Guideway Transit Investigation, the following conclusions can be drawn about the various NY 5 land use and transportation concepts.

1. The vast majority of expected monetary costs of the transportation, consistent with the current case or the "Null" or Baseline Scenario, will be borne by private individuals and firms, for example, provision and operation of vehicles, and provision of parking spaces is predominantly a user expense.
2. Scenarios which focus on transit investment and services alone, without changing the form or location of development (land use), can be expected to increase overall monetary costs of the transportation system. That is, the environmental and safety benefits of the increased usage of the transit system will be insufficient to cover the public cost of providing and operating the service. (Such service may still be warranted for purposes of equity, access to jobs and other criteria.)
3. Scenarios which achieve changes in the form and location of development will be sufficient to cover the costs of appropriate transit service improvements through other societal benefits. Land use changes to match New Visions requirements would be suffi-

cient to support the modest New Visions transportation investments. Based on work performed for the Fixed Guideway Transit Investigation, the more substantial Stimulated Growth Scenario with High End transit (even light rail) would produce savings in personal vehicle ownership and operation, parking, accidents, congestion costs to businesses, pollution, energy consumption and water quality. These savings in aggregate would offset the public cost of constructing and operating the service.

Conclusions

The results of the evaluations indicate the Stimulated Scenario with the "high type" investment in transit – specifically Bus Rapid Transit (BRT) provides the highest level of benefits.

Although it is not expected that regional growth will itself be at an accelerated level, the land use patterns in the Stimulated Scenario, along with sensitive urban design recommendations, will create a safe, attractive environment for a variety of housing and business types. Revitalizing blighted neighborhoods, or intensifying the use of underutilized areas provide increased choices in housing, job opportunities and local services. In turn, it would be expected that the overall security of the respective community would be improved which itself would foster continued revitalization. Finally, the land use and urban design policies will enable Central Avenue and State Street to become a community amenity and more effectively connect the Corridor with the surrounding neighborhoods.

In addition, the development patterns are complementary to all modes of transport. Roadway improvements recommended such as dedicated transitways and access controls in the Stimulated Scenario allow for the revital-

ization and intensification of land use without worsening congestion. In fact, improvements would be expected to relieve congestion thereby improving the overall quality of the trip for auto and transit users. Specific to transit, an important finding is that the overall flexibility of a BRT system makes it the more viable option than LRT along a corridor with such varying conditions. Pedestrian and bicycle safety and comfort has been given due consideration in roadway, sidewalk and urban design improvements making them also more viable modes.