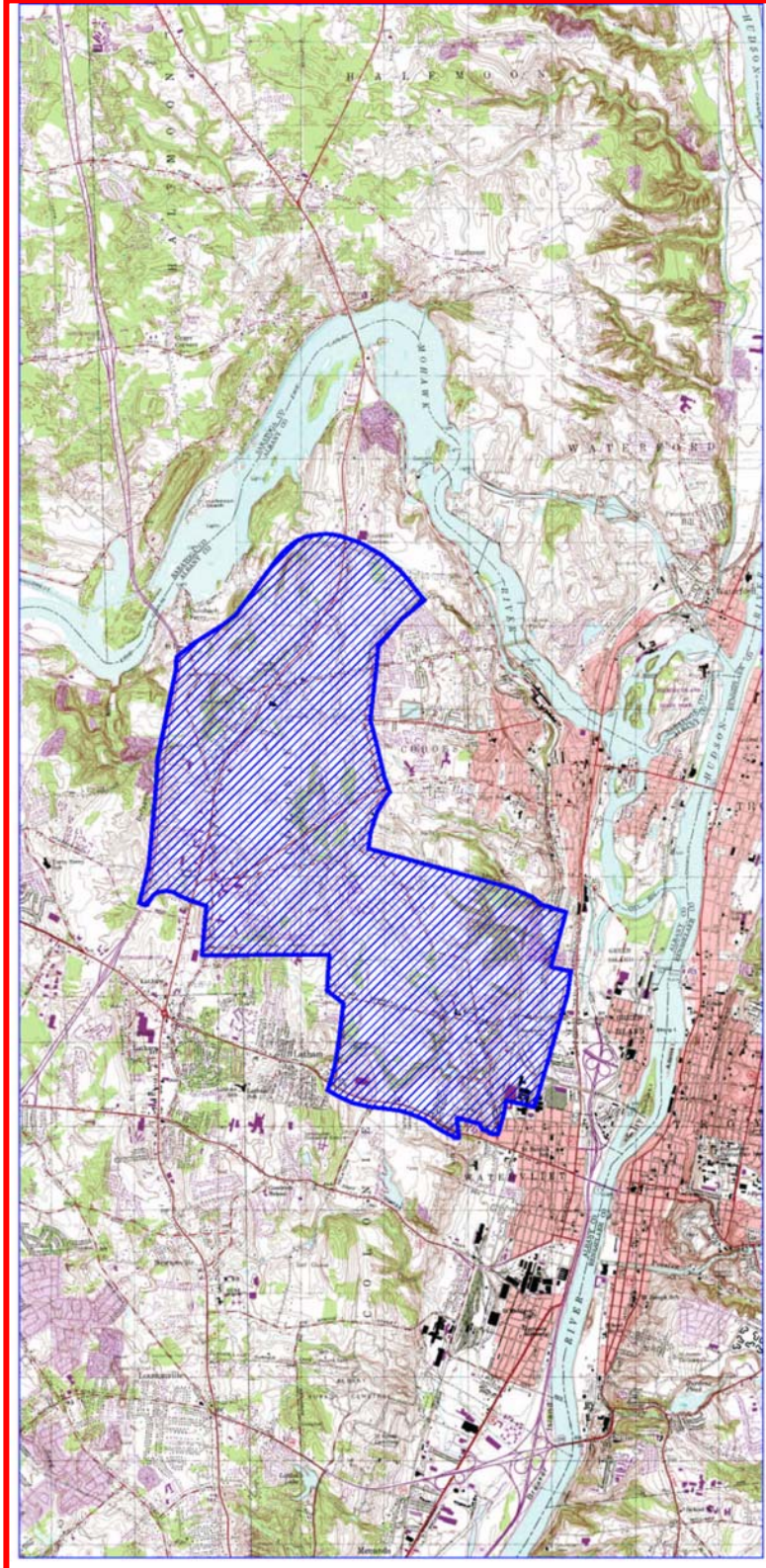


DGEIS Land Use and Transportation Update

Boght Road – Columbia Street



Town of Colonie, NY



Prepared for:

**Town of Colonie
Public Operations Building
347 Old Niskayuna Rd
Latham, New York 12110**

Prepared by:



**17 Computer Drive West
Albany, New York 12205**

Project #04-108

August 2005

FINAL REPORT

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CHAPTER I

INTRODUCTION

A. Introduction and Background

The Draft Generic Environmental Impact Statement (DGEIS) was completed for the Boght Road-Columbia Street Area in the Town of Colonie in February 1989. The document projected growth in the study area over ten and twenty years and analyzed the impact of that growth during two planning periods, 1999 and 2009. The document also quantified future transportation improvements and costs, and serves as the mechanism for mitigation costs assessed to development projects within the study area. It has been fifteen years since completion of the DGEIS. During the last fifteen years, significant land development has occurred and traffic characteristics in the area have changed. This study will establish a new baseline for the assessment of land development projects, traffic improvements, and the calculation of transportation mitigation costs attributable to new development within the study area. It is anticipated that this study will serve as the basis for re-evaluation and amendment of the GEIS Statement of Findings relative to transportation impacts. Figure 1.1 shows the project location and study boundary.

B. Purpose

The purpose of this land use and transportation update is to provide answers to several questions:

- What are the existing traffic conditions in the study area? How are the existing conditions different than those anticipated in the 1989 DGEIS?
- Are the land use assumptions made in the original DGEIS still valid? How have they changed?
- What transportation system changes or improvements are necessary to accommodate the anticipated land uses? When are these changes required?
- What costs are associated with these changes and improvements?

Each of these questions has several areas requiring proper research and analysis. These questions will be answered in the following chapters of this document by 1) defining the existing conditions and comparing them to the projections in the 1989 DGEIS, 2) examining the current land use projections within the study area, projecting

the traffic volume and patterns associated with the projections, and analyzing the projected traffic volumes for the 2009 and 2020 design years, 3) determining when and what transportation system improvements are necessary to accommodate the projected growth in the area and 4) estimating the cost of design and implementation of the required improvements.

Figure 1.1 – Project location map

CHAPTER II EXISTING CONDITIONS

Existing conditions in the study area were determined through several methods. Conversations with representatives of the Town provided land use and crash information. Intersection turning movement counts (TMC), automatic traffic recorder (ATR) data, and existing roadway and intersection geometries in the study area were collected by representatives of CME. Hourly traffic count data for Routes 9 and 9R were obtained from the NYSDOT.

A. Land Use

Land use in the study area is primarily residential, but also includes educational, agricultural, commercial, industrial, and open space. Review of development patterns between 1989 and 2004 indicates that commercial development during this time mainly occurred along the Loudon Road (Route 9) corridor, particularly in the section between Northway Exit 7 and Dunsbach Ferry Road. Approximately 367,000 square feet (SF) of office space and 180,000 SF of retail space were constructed. Residential development was more widely spread throughout the study area with concentrations in the northwesterly portion between Loudon Road and the Town bike path, along the eastern section of Columbia Street, and along Haswell Road. A total of 627 single family residential building lots were approved during this time, most of which have been built out. Table 2.1 compares the existing land use in the study area to the land use projections in the 1989 Study.

TABLE 2.1 – COMPARISON OF LAND USE PROJECTIONS

Land Use	1989 DGEIS		2004 Existing (Acres)
	1989 Existing (Acres)	2004 Projected* (Acres)	
Residential	820	2,384	1,262
Commercial / Industrial	264	462	315
Active Agricultural	400	102	363
Woodland/Brush land/Abandoned Agriculture	2,625	1,161	2,169

* The 2004 Projected values were extrapolated from the 1999 and 2009 values published in the original study.

The table indicates that approximately 1,564 (2,384 – 820) acres were estimated for residential development and 198 acres were estimated for commercial/industrial development by 2004. Active agricultural land was expected to decrease by about 298 acres during that same time period. The last column in the tables indicates that in actuality, land converted to both residential and commercial uses was substantially less than projected (442 acres and 51 acres, respectively), with 37 acres of the new development displacing active agricultural uses.

B. Traffic Conditions

Several factors should be considered when discussing traffic conditions in the study area. These factors include, traffic volumes at study area intersections and roadways, roadway function and classification, and crash history.

1. Traffic Volumes

Based on available traffic counts and those collected specifically for this study, the 2004 existing daily and peak hour traffic volumes were determined and are presented on Figure 2.1. These volumes are also presented in Table 2.2, a comparison of the 1988 existing traffic volumes in the original study and the 2004 current traffic volumes on the study area roadways.

As expected, traffic volumes throughout the study area have increased over the last 16 years. Table 2.2 shows that traffic volumes have increased by approximately 5,000 to 6,000 vehicles per day (VPD) on Route 9, volumes have increased by approximately 2,400 to 3,000 VPD on Old Loudon Road south of Columbia Street Extension, and volumes have increased by approximately 1,400 VPD on Columbia Street Extension east of Johnson Road.

In addition to the existing traffic volume comparison, Table 2.3 compares the traffic volumes projected in the 1989 DGEIS to the 2004 existing traffic volumes. The table shows that the 2004 projected traffic volumes are generally higher than the existing traffic volumes on the study area roadways. As a result, the timing of necessary highway improvements is slower than originally anticipated.

TABLE 2.2 – BASE YEAR TRAFFIC VOLUME COMPARISON

Roadway Segment	1988 Traffic Volumes			2004 Traffic Volumes			Comparison		
	Source: 1989 DGEIS			Source: DGEIS Update			Difference = Update - DGEIS		
	AM	PM	AADT	AM	PM	AADT	AM	PM	AADT
Rt 9 between Fonda Rd & N. Old Loudon Rd	1399	1727	14450	2220	2420	20150	821	693	5700
Rt 9 between N. Old Loudon Rd & Boght Rd	1406	1733	14450	2220	2420	20150	814	687	5700
Rt 9 between Boght Rd & Century Hill Dr	1896	1713	18350	2080	2510	23600	184	797	5250
Rt 9 between Century Hill Dr & Rt 7	2130	2002	20650	2610	2930	26100	480	928	5450
Rt 9 between Rt 7 & Sparrowbush Rd	2214	2932	26600	2600	3640	32350	386	708	5750
Rt 9 between Sparrow Bush Rd & Rt 2	1573	2269	20750	2370	2950	26350	797	680	5600
Fonda Road	63	71	600	130	160	1400	67	89	800
Schermerhorn Rd	41	44	400	60	100	800	19	56	400
Boght Rd between Dunsbach Ferry Rd & Rt 9	143	185	1550	290	350	2600	147	165	1050
Dunsbach Ferry Rd between Island View Rd & Boght Rd	---	---	---	50	110	950	---	---	---
Dunsbach Ferry Rd between Boght Rd and Pollock Rd	176	207	2050	310	420	3150	134	213	1100
Dunsbach Ferry Rd between Pollock Rd & Rt 9	170	135	1400	280	250	2550	110	115	1150
Pollock Rd	207	179	1800	290	390	3450	83	211	1650
Century Hill Dr	239	223	1200	460	340	2050	221	117	850
Old Loudon Rd between Rt 9 & Columbia St Ext.	193	286	2250	260	540	4500	67	254	2250
Old Loudon Rd between Columbia St Ext & Cobee Rd	471	711	5500	550	780	8500	79	69	3000
Old Loudon Rd between Cobee Rd & Rt 2	513	731	5800	490	780	8200	-23	49	2400
Rt 9R between Rt 9 & Baker Ave	355	502	3950	360	510	5100	5	8	1150
Baker Ave (Rt 9R) between Boght Rd & Vliet Blvd	257	381	4850	360	470	5200	103	89	350
Baker Ave (Rt 9R) between Vliet Blvd & Columbia St Ext	494	621	5900	500	650	6500	6	29	600
Columbia St Ext (Rt 9R) between Baker Ave & Johnson Rd	747	1008	10400	950	1190	11800	203	182	1400
Johnson Rd	378	562	5750	410	610	6350	32	48	600
St. Agnes Highway	326	406	3500	360	450	4200	34	44	700
Boght Rd between Johnson Rd & Haswell Rd	389	399	2900	410	490	3700	21	91	800
Boght Rd between Haswell Rd & Rt 2	301	310	2850	220	300	2750	-81	-10	-100
Miller Rd	164	239	2500	290	400	3950	126	161	1450
Haswell Rd	238	246	2300	270	330	3600	32	84	1300
Swatling Rd	219	284	3600	400	530	5300	181	246	1700

TABLE 2.3 – 2004 TRAFFIC VOLUME COMPARISON

Roadway Segment	2004 Traffic Volumes								
	Source: 1989 DGEIS*			Source: DGEIS Update			Difference = Update - DGEIS		
	AM	PM	AADT	AM	PM	AADT	AM	PM	AADT
Rt 9 between Fonda Rd & N. Old Loudon Rd	2177	2845	23225	2220	2420	20150	43	-425	-3075
Rt 9 between N. Old Loudon Rd & Boght Rd	2264	2758	23250	2220	2420	20150	-44	-338	-3100
Rt 9 between Boght Rd & Century Hill Dr	2721	2768	26900	2080	2510	23600	-641	-258	-3300
Rt 9 between Century Hill Dr & Rt 7	3530	3572	35525	2610	2930	26100	-920	-642	-9425
Rt 9 between Rt 7 & Sparrowbush Rd	3519	4334	41675	2600	3640	32350	-919	-694	-9325
Rt 9 between Sparrow Bush Rd & Rt 2	2362	3325	26325	2370	2950	26350	8	375	25
Fonda Road	74	83	725	130	160	1400	56	77	675
Schermerhorn Rd	121	252	1750	60	100	800	-61	-152	-950
Boght Rd between Dunsbach Ferry Rd & Rt 9	209	350	2600	290	350	2600	81	0	0
Dunsbach Ferry Rd between Island View Rd & Boght Rd	---	---	---	50	110	950	---	---	---
Dunsbach Ferry Rd between Boght Rd and Pollock Rd	249	389	2975	310	420	3150	61	31	175
Dunsbach Ferry Rd between Pollock Rd & Rt 9	247	230	2225	280	250	2550	33	20	325
Pollock Rd	358	436	4150	290	390	3450	-68	-46	-700
Century Hill Dr	718	682	3650	460	340	2050	-258	-342	-1600
Old Loudon Rd between Rt 9 & Columbia St Ext.	628	713	6250	160	260	4500	-468	-453	-1750
Old Loudon Rd between Columbia St Ext & Cobee Rd	835	1232	9625	550	780	8500	-285	-452	-1125
Old Loudon Rd between Cobee Rd & Rt 2	778	1271	9550	490	780	8200	-288	-491	-1350
Rt 9R between Rt 9 & Baker Ave	656	974	7575	360	510	5100	-296	-464	-2475
Baker Ave (Rt 9R) between Boght Rd & Vliet Blvd	440	887	8875	360	470	5200	-80	-417	-3675
Baker Ave (Rt 9R) between Vliet Blvd & Columbia St Ext	792	1221	11175	500	650	6500	-292	-571	-4675
Columbia St Ext (Rt 9R) between Baker Ave & Johnson Rd	1243	1482	15800	950	1190	11800	-293	-292	-4000
Johnson Rd	706	911	10150	410	610	6350	-296	-301	-3800
St. Agnes Highway	531	890	6550	360	450	4200	-171	-440	-2350
Boght Rd between Johnson Rd & Haswell Rd	744	818	5625	410	490	3700	-334	-328	-1925
Boght Rd between Haswell Rd & Rt 2	461	536	4650	220	300	2750	-240	-236	-1900
Miller Rd	404	807	7025	290	400	3950	-114	-407	-3075
Haswell Rd	394	505	4425	270	330	3600	-124	-175	-825
Swatling Rd	513	759	9350	400	530	5300	-113	-229	-4050

* The 2004 values are estimates based upon the 1999 and 2009 values published in the original study.

2. Functional Classification

Functional classification is a method of grouping highways by the character of service they are intended to provide. Typically, a highway is classified as an expressway, an arterial, a collector or a local street. An expressway or interstate is the highest class of highway and is characterized by traffic with higher speeds, longer trip length, and full control of access. An arterial generally serves traffic having relatively high speeds, moderate trip lengths, and provides some access to adjacent land uses. Collectors and local streets serve traffic with lower speeds, short trip lengths, and provide full access to adjacent properties. The functional classification of roadways in the study area is shown on Figure 2.2. The functional classification of study area roadways does not appear to have changes since the original study.

3. Crash History

Information on the number and types of vehicular crashes occurring on the study area roadways from August, 2001 through July, 2004 was provided by the Town of Colonie Police Department. The crash rates for each intersection and mid-block roadway segment, or link, were calculated and compared to statewide averages published by the NYSDOT.

Tables 2.3 and 2.4 compare the crash information from the 1989 DGEIS to the current data. The crash rates for intersections, expressed in terms of Crashes per Million Entry Vehicles (MEV), are presented in Table 2.3. The rates for mid-block segments, expressed in terms of Crashes per Million Vehicle Miles (MVM), are presented in Table 2.4.

Table 2.4 indicates that of the 22 current study area intersections, 20 have crash rates that are higher than the statewide average. The 1989 DGEIS had 5 of 16 intersections with crash rates higher than the statewide average. The study area intersections are not necessarily less safe than during 1989, they are being compared to a higher standard. The statewide average rate published by the NYSDOT has decreased significantly over the last fifteen years. For example, the Route 9 / Dunsbach Ferry Road / Belmar Parkway South intersection (intersection number four in Table 2.4) crash rate has decreased from 0.51 crashes per MEV to 0.30 crashes per MEV. However, since the statewide average rate has decreased from 1.08 in 1989 to

0.22 in 2004, this intersection now has a crash rate that is higher than the statewide average. Based on discussion with the Town, only the Boght Road / Haswell Road / Elm Street intersection (intersection number 12 in Table 2.4) was investigated further. The intersection crash rate of 3.33 is more than twelve times higher than the statewide average rate of 0.27.

A traffic signal warrant analysis was conducted by others in June, 2004 for this intersection. The signal warrant analysis concluded that a traffic signal was not justified, however, all-way stop control was recommended. Subsequent traffic signal and all-way stop control warrant analysis for this study concur with the findings of the June, 2004 analysis. All-way stop control should be installed at this intersection in accordance with the New York State Manual of Uniform Traffic Control Devices (NYS MUTCD).

TABLE 2.4 – INTERSECTION CRASH RATES

Intersection		Average No. Crashes per Year		Million Entry Vehicles per Year (MEV)		Crash Rate (crashes / MEV)		Statewide Average Rate (crashes / MEV)	
		1989	2004	1989	2004	1989	2004	1989	2004
1	Rt 9 (Loudon Rd) / Columbia St Ext (Rt 9R)	21.2	31.7	11.95	16.33	1.77*	1.94*	1.26	0.60
2	Old Loudon Rd / Rt 9 (Loudon Rd) / Latham Auto Park	---	3.3	---	9.31	---	0.36*	---	0.22
3	Rt 9 (Loudon Rd) / Century Hill Dr	---	5.7	---	9.44	---	0.60*	---	0.35
4	Rt 9 (Loudon Rd) / Dunsbach Ferry Rd / Belmar Pkwy S	3.5	2.7	6.80	9.00	0.51	0.30*	1.08	0.22
5	Rt 9 (Loudon Rd) / Boght Rd (Rt 9R)	9.8	14	5.71	9.86	1.71*	1.42*	1.29	0.60
6	Rt 9 (Loudon Rd) / Old Loudon Rd / Boght Ball fields	---	2	---	9.00	---	0.22	---	0.60
7	Rt 9 (Loudon Rd) / Fonda Rd	---	5	---	7.99	---	0.63*	---	0.13
8	Swatling Rd / Troy-Schenectady Rd (Rt 2)	6.3	7.7	10.20	6.57	0.61	1.17*	0.90	0.60
9	Columbia St Ext (Rt 9R) / Johnson Rd	3.5	6.3	5.55	6.04	0.63	1.05*	1.29	0.35
10	Baker Ave (Rt 9R) / Columbia St Ext (Rt 9R)	5.3	4	3.41	5.16	1.55*	0.77*	1.29	0.60
11	Boght Rd (Rt 9R) / Baker Ave (Rt 9R)	2.8	1	2.81	2.41	1.00	0.42*	1.29	0.27
12	Boght Rd / Haswell Rd / Elm St	5.3	7.7	2.37	2.30	2.23*	3.33*	1.29	0.27
13	Haswell Rd / Swatling Rd	2.3	1.3	1.51	1.75	1.52*	0.76*	0.90	0.16
14	Miller Rd / Johnson Rd	0.5	2	2.04	2.65	0.24	0.76*	0.90	0.16
15	Latham Ridge Rd / Old Loudon Rd	1.3	2.7	3.27	3.56	0.40	0.75*	0.90	0.16
16	Miller Rd / Latham Ridge Rd	0.5	0.7	1.08	1.68	0.46	0.40*	0.90	0.16
17	Baker Ave (Rt 9R) / Vliet Blvd	1.0	0	2.76	2.28	0.36	0.00	0.90	0.27
18	Johnson Rd / St. Agnes Hwy / Boght Rd	2.8	2	2.96	2.30	0.95*	0.87*	0.90	.016
19	Old Loudon Rd / Jeanne Jugan Ln / Cobee Rd	2.8	3	3.30	3.27	0.85	0.92*	0.90	0.27
20	Old Loudon Rd / Columbia St Ext (Rt 9R)	---	12.7	---	7.79	---	1.63*	---	0.60
21	Dunsbach Ferry Rd / Pollock Rd	---	0.3	---	1.79	---	0.19*	---	0.16
22	Dunsbach Ferry Rd / Boght Rd	---	0.7	---	1.53	---	0.43*	---	0.16

* Denotes an intersection accident rate higher than the appropriate statewide average rate.

TABLE 2.5 – SEGMENT CRASH RATES

Intersection	Segment Length (miles)		Average No. Crashes per Year		Million Vehicles Miles (MVM)		Crash Rate (crashes/MVM)		Statewide Average Rate (crashes/MVM)	
	1989	2004	1989	2004	1989	2004	1989	2004	1989	2004
<u>Route 9</u>										
Sparrowbush to I-87/Rt 9	0.3	0.3	1.8	0	2.91	3.54	0.2	0	2.31	2.60
I-87/Rt 9 to Dunsbach Ferry	0.7	0.7	16	0	.28	4.85	3.03*	0	2.31	2.60
Dunsbach Ferry to Boght	0.6	0.9	8	1	4.02	6.24	1.99	0.16	2.31	2.60
Boght to Old Loudon	---	0.51	---	2	---	3.75	---	0.54	---	2.60
<u>Route 9R</u>										
Rt 9 to Johnson	0.3	---	8.5	---	1.40	---	6.07*	---	2.91	---
Rt 9 to Old Loudon	---	0.10	---	4.7	---	0.43	---	10.75*	---	2.94
Old Loudon to Johnson	---	0.10	---	7.7	---	0.43	---	17.75*	---	2.94
Johnson to Baker	1.3	1.25	10.3	9.7	4.93	5.38	2.09	1.79	2.56	2.19
St Agnes to Manor	0.90	---	1.8	---	1.76	---	1.02	---	2.56	---
St Agnes to Vliet	---	0.53	---	0	---	1.26	---	0	---	2.19
Vliet to Manor	---	0.37	---	0	---	0.57	---	0	---	2.19
Manor to Rt 9	0.74	0.74	2.8	0.3	1.07	1.38	2.62*	0.24	2.56	2.19
Swatling Rd, Haswell to Rt 2	0.67	0.67	1.3	2.7	6.88	1.30	1.48	2.06	2.57	2.19
Haswell Rd, Swatling to Boght	1.00	1.00	1.5	0	0.84	1.31	1.79	0	2.57	2.19
Miller Rd, Johnson to Latham Ridge	0.92	0.61	2.8	1	0.84	0.88	2.34	1.14	2.57	2.19
<u>Boght Rd</u>										
Dunsbach Ferry to Rt 9	---	0.62	---	0.7	---	0.59	---	1.14	---	2.19
Johnson to Elm	---	2.63	---	4	---	3.55	---	1.13	---	2.19
Boght Rd	1.67	---	2.5	---	1.77	---	2.41	---	2.57	---
St. Agnes	0.51	---	0.8	---	0.65	---	1.23	---	2.57	---
Johnson Rd, Rt 9R to Miller Rd	0.42	0.66	1.5	3	0.88	1.53	1.70	1.95	2.57	2.19
Pollock Rd	0.58	0.58	2	0	0.38	0.73	5.26*	0	2.57	2.19
Dunsbach Ferry Rd	1.35	1.35	3.3	0	0.76	1.55	4.34*	0	2.57	2.19

* Denotes an intersection accident rate higher than the appropriate statewide average rate.

C. Operational Analyses

Intersection operation is characterized by level of service (LOS). The *Highway Capacity Manual* defines intersection LOS in terms of average delay per vehicle and quantifies LOS results with grades A through F. LOS A operation has low control delay (less than ten seconds per vehicle at signalized intersections) and a LOS F operation has relatively high control delay (greater than 80 seconds per vehicle at signalized intersections). Intersection delay is based upon several factors including approach volume, intersection geometry, traffic control, heavy vehicle percentage, number of pedestrians, and several other factors.

The Capital District Transportation Committee (CDTC) publishes a Mid-Block Capacity Threshold table that identifies the typical capacity of a roadway segment depending upon roadway classification. According to CDTC to operate at LOS D conditions, two-lane surface arterials and collectors can accommodate 1,000 vehicles per hour in each direction. A four-lane undivided roadway can accommodate 2,500 vehicles in each direction and a four-lane divided roadway can accommodate 2,800 vehicles in each direction. Two-lane local roads can accommodate 625 vehicles in each direction per hour.

The study area intersections and roadway segments were analyzed to determine those locations that are currently experiencing operational deficiencies. These locations are shown on Figure 2.3. The measures required to resolve or minimize these existing deficiencies are shown on Figure 2.4 and summarized below:

- Route 9 / Dunsbach Ferry Road – Installation of a traffic signal will improve overall operations to LOS C during both peak hours. Consideration should be given to coordinating this signal with the traffic signal at the Route 9 / Century Hill Drive intersection.
- Route 9 / Century Hill Drive – Signal timing changes will mitigate existing peak hour LOS deficiencies.
- Columbia Street / I-87 / Route 7 Ramps – Signal timing adjustments will improve overall delay during the morning peak hour.
- NYS Route 2 / Swatling Road – Signal timing changes will mitigate existing peak hour LOS deficiencies.

- Route 9 / Boght Road (Route 9R) – Construct exclusive left-turn lanes on the eastbound and westbound side road approaches.
- Latham Ridge Road / Old Loudon Road – The traffic volumes at the intersection appear to satisfy the minimum vehicular volume warrant for installation of a traffic signal. Level of service calculations indicate that the intersection will operate at LOS B or better during both peak hours with installation of a traffic signal. Further engineering study should be conducted before traffic signal installation.

Figure 2.1 – 2004 Traffic Volumes

Figure 2.2 – Functional Classification

Figure 2.3 – Existing Operational Deficiencies

Figure 2.4 – Measures required to address operational deficiencies

CHAPTER III FORECASTING

A. Future Traffic Projections

1. Land Use

In order to fully assess impacts of future development, land use forecasts were prepared for study years 2009 and 2020. These future land uses were developed in consultation with the Town and are shown on Figure 3.1. The forecasts are based on a parcel-by-parcel review of developable land and development densities allowed under current zoning, and resulted in the following development potential.

TABLE 3.1 – POTENTIAL LAND DEVELOPMENT

Type of Development	2004 → 2009	2009 → 2020
Residential	1,398 units	1,006 units
Retail	156,000 SF	556,000 SF
Office	202,500 SF	456,000 SF

2. Trip Generation

Trip generation estimates were prepared for each of the future analysis years. The trip generation estimates are calculated using the 7th edition of the Institute of Transportation Engineers (ITE) *Trip Generation Manual*. Table 3.2 summarizes the trip generation estimate if the study area is fully developed.

TABLE 3.2 – TRIP GENERATION SUMMARY

Study Year	AM Peak Hour			PM Peak Hour		
	Enter	Exit	Total	Enter	Exit	Total
2009	599	802	1,401	1,037	852	1,889
2020	1,264	993	2,257	1,784	2,039	3,823
Total	1,863	1,795	3,658	2,821	2,891	5,712

Table 3.2 indicates that at full build-out of the study area approximately 3,650 additional trips will be generated during the AM peak hour and 5,700 trips will be generated during the PM peak hour.

3. Trip Distribution and Assignment

Using existing traffic patterns and information provided by CDTC's Regional Travel Demand Forecasting Modeling, likely regional traffic distribution patterns were established. A TMODEL transportation sub-area model was then developed to assign the trips to the study area roadway network.

4. Projected Traffic Volumes

The anticipated traffic demand throughout the study area was developed based upon the methodology discussed above. Figure 3.2 illustrates the 2009 projected traffic volumes. Table 3.3 compares the 2009 projected traffic volumes for the 1989 DGEIS and the current study.

The table shows that the volumes projected in the 1989 DGEIS are generally higher than the most recent projections. However, the 2009 full build-out volumes from the original study are more comparable to the 2020 projections contained in this update to the original study. This comparison suggests that land development has occurred more slowly than originally predicted, yet when full build-out occurs, the traffic volumes will be more consistent with the original forecasts. The 2020 projected volumes are illustrated on Figure 3.3.

Table 3.4 illustrates the anticipated traffic growth in the study area in terms of annual percentage growth. The table indicates that the annualized traffic growth from 2004 to 2020 ranges from 0.44% on Old Loudon Road to 5.53% on Old Loudon Road north of Columbia Street Extension. The high annual traffic growth on Old Loudon Road is primarily due to one possible anticipated future development (development number 28 on Figure 3.1) accounting for over 900,000 square feet of retail development.

At full build-out in 2020, Route 9 is still expected to carry the heaviest volume of traffic at 49,550 vpd between Century Hill Drive and Route 7. The original DGEIS predicted an AADT of 39,350 vpd during full build-out. Route 9R (Columbia Street Extension) is expected to carry over 22,000 vpd by 2020 and Old Loudon Road, Route 9R (Boght Road and Baker Avenue), and Johnson Road are expected to carry over 10,000 vpd by the year 2020.

TABLE 3.3 – 2009 PROJECTED TRAFFIC VOLUME COMPARISON

Roadway Segment	2009 Traffic Volumes								
	Source: 1989 DGEIS			Source: DGEIS Update			Difference = Update - DGEIS		
	AM	PM	AADT	AM	PM	AADT	AM	PM	AADT
Rt 9 between Fonda Rd & N. Old Loudon Rd	2492	3377	27150	2770	2690	22400	278	-687	-4750
Rt 9 between N. Old Loudon Rd & Boght Rd	2620	3604	28800	2490	2940	24500	-2620	-664	-4300
Rt 9 between Boght Rd & Century Hill Dr	3104	3185	30850	2250	2810	28050	-854	-375	-2800
Rt 9 between Century Hill Dr & Rt 7	3897	3971	39350	2910	3330	37000	-987	-641	-2350
Rt 9 between Rt 7 & Sparrow Bush Rd	3889	4809	46150	2730	3800	42250	-1159	-1009	-3900
Fonda Road	77	87	750	150	170	1450	73	83	700
Schermerhorn Rd	161	265	2000	80	140	1100	-81	-125	-900
Boght Rd between Dunsbach Ferry Rd & Rt 9	239	422	3100	300	400	2950	61	-22	-150
Dunsbach Ferry Rd between Island View Rd & Boght Rd	---	---	---	100	160	1400	---	---	---
Dunsbach Ferry Rd between Boght Rd and Pollock Rd	285	475	3550	340	470	3550	55	-5	0
Dunsbach Ferry Rd between Pollock Rd & Rt 9	273	275	2550	300	300	3050	27	25	500
Pollock Rd	421	547	4450	320	430	3800	-101	-117	-650
Century Hill Dr	853	810	4300	560	430	2600	-293	-380	-1700
Old Loudon Rd between Rt 9 & Columbia St Ext.	837	923	8200	280	550	4600	-557	-373	-3600
Old Loudon Rd between Columbia St Ext & Cobee Rd	945	1330	10600	560	850	9250	-385	-480	-1350
Old Loudon Rd between Cobee Rd & Rt 2	822	1386	10300	490	830	8750	-332	-556	-1550
Rt 9R between Rt 9 & Baker Ave	775	1151	8950	540	830	8300	-235	-321	-650
Baker Ave (Rt 9R) between Boght Rd & Vliet Blvd	538	1074	10300	430	580	6450	-108	-494	-3850
Baker Ave (Rt 9R) between Vliet Blvd & Columbia St Ext	928	1420	13250	590	770	7700	-338	-650	-5550
Columbia St Ext (Rt 9R) between Baker Ave & Johnson Rd	1393	1586	17350	950	1250	15700	-443	-336	-1650
Johnson Rd	710	913	10200	500	840	8750	-210	-73	-1450
St. Agnes Highway	606	1054	7600	430	550	5000	-176	-504	-2600
Boght Rd between Johnson Rd & Haswell Rd	791	864	5950	430	620	5600	-361	-244	-350
Boght Rd between Haswell Rd & Rt 2	516	597	5200	280	400	3650	-236	-197	-1550
Miller Rd	449	931	7950	350	540	5350	-99	-391	-2600
Haswell Rd	458	538	4900	370	390	4250	-88	-148	-650
Swatling Rd	615	884	11050	450	565	5650	-165	-319	-5400

TABLE 3.4 – SUMMARY OF TRAFFIC VOLUME PROJECTIONS

Roadway Segment	AADT			Annualized Traffic Growth		
	2004	2009	2020	2004-2009	2009-2020	2004-2020
Rt 9 between Fonda Rd & N. Old Loudon Rd	20150	22400	26800	2.14%	1.64%	1.80%
Rt 9 between N. Old Loudon Rd & Boght Rd	20150	24500	30650	3.99%	2.06%	2.66%
Rt 9 between Boght Rd & Century Hill Dr	23600	28050	35100	3.52%	2.06%	2.51%
Rt 9 between Century Hill Dr & Rt 7	26100	37000	49550	7.22%	2.69%	4.09%
Rt 9 between Rt 7 & Sparrow Bush Rd	32350	42250	49050	5.48%	1.37%	2.64%
Fonda Road	1400	1450	2100	0.70%	3.42%	2.57%
Schermerhorn Rd	800	1100	1900	6.58%	5.09%	5.56%
Boght Rd between Dunsbach Ferry Rd & Rt 9	2600	2950	3200	2.56%	0.74%	1.31%
Dunsbach Ferry Rd between Island View Rd & Boght Rd	950	1400	1650	8.06%	1.50%	3.51%
Dunsbach Ferry Rd between Boght Rd and Pollock Rd	3150	3550	3700	2.42%	0.38%	1.01%
Dunsbach Ferry Rd between Pollock Rd & Rt 9	2550	3050	3900	3.65%	2.26%	2.69%
Pollock Rd	3450	3800	4350	1.95%	1.24%	1.46%
Century Hill Dr	2050	2600	2650	4.87%	0.17%	1.62%
Old Loudon Rd between Rt 9 & Columbia St Ext.	4500	4600	10650	0.44%	0.19%	5.53%
Old Loudon Rd between Columbia St Ext & Cobee Rd	8500	9250	10700	1.71%	1.33%	1.45%
Old Loudon Rd between Cobee Rd & Rt 2	8200	8750	8800	1.31%	0.05%	0.44%
Rt 9R between Rt 9 & Baker Ave	5100	8300	11700	10.23%	3.17%	5.33%
Baker Ave (Rt 9R) between Boght Rd & Vliet Blvd	5200	6450	9000	4.40%	3.07%	3.49%
Baker Ave (Rt 9R) between Vliet Blvd & Columbia St Ext	6500	7700	10200	3.45%	2.59%	2.86%
Columbia St Ext (Rt 9R) between Baker Ave & Johnson Rd	11800	15700	22600	5.88%	3.37%	4.15%
Johnson Rd	6350	8750	11250	6.62%	2.31%	3.64%
St. Agnes Highway	4200	5000	6200	3.54%	1.97%	2.46%
Boght Rd between Johnson Rd & Haswell Rd	3700	5600	8100	8.64%	3.41%	5.02%
Boght Rd between Haswell Rd & Rt 2	2750	3650	5450	5.83%	3.71%	4.37%
Miller Rd	3950	5350	6300	6.26%	1.50%	2.96%
Haswell Rd	3600	4250	5250	3.38%	1.94%	2.39%
Swatling Rd	5300	5650	6350	1.29%	1.07%	1.14%

B. Projected Traffic Conditions

Traffic operational analyses were conducted for the 2009 and 2020 traffic volumes. Figure 3.4 highlights the locations that are expected to experience operational deficiencies by 2009. Figure 3.5 highlights the locations that are expected to experience additional operational deficiencies by 2020.

Table 3.5 lists the measures required to address the additional highway deficiencies anticipated for the study years and compares the mitigation measures to the improvements recommended in the original study. The intersection improvements are also highlighted on Figures 3.6 and 3.7 for the 2009 and 2020 study years, respectively. Some intersections include recommendations for installation of a traffic signal or construction of a roundabout. Preliminary inspection of these locations indicates that they might benefit from construction of a roundabout. Though roundabout construction is not highlighted as a recommendation for every intersection, before a traffic signal is installed or significant intersection geometry improvements are made, the feasibility of installing a roundabout should be investigated at each study area intersection. Roundabout feasibility should also be investigated with any new development.

It should be noted that a new connector road “the Vliet Street Extension” was recommended in the original 1989 GEIS. This GEIS update has shown that traffic volumes in the Boght Road area are less than originally predicted and that the Vliet Street Extension is no longer considered necessary. The Vliet Street Extension was conceived to provide an alternate route for through traffic between Baker Avenue and Route 9. A currently pending subdivision proposal (the Canterbury Crossing) will use up the available land and eliminate the potential to construct the Vliet Street Extension. While the subdivision roads within the Canterbury Crossing project do provide a connection between Baker Avenue and Route 9, the alignment and design of the new subdivision roads do not meet the intent of the original Vliet Street Extension concept. They are not being designed to accommodate through traffic or alleviate study area congestion. Based on this GEIS update, the loss of the Vliet Street Extension corridor is considered acceptable.

TABLE 3.5 – INTERSECTION IMPROVEMENT COMPARISON

Intersection	Intersection Improvements			
	Source: 1989 DGEIS		Source: DGEIS Update	
	1999	2009	2009	2020
Route 9 / Fonda Rd	No improvements necessary.	No improvements necessary.	No improvements necessary.	No improvements necessary.
Route 9 / Old Loudon Rd / Ball Fields	No improvements necessary.	No improvements necessary.	No improvements necessary.	Adjust signal timing.
Route 9 / Boght Rd / Route 9R	Construct left-turn lanes on all approaches and replace existing signal.	Provide three lanes NB and SB through this intersection.	Existing geometry includes NB and SB lefts. Construct a WB right-turn lane in addition to the EB and WB left-turn lanes recommended for 2004 improvements. Investigate construction of a roundabout.	Provide three lanes NB and SB through this intersection. Investigate construction of a roundabout.
Route 9 / Dunsbach Ferry Rd	Realign Dunsbach Ferry Rd opposite a new connector road and install a traffic signal.	Provide three lanes NB and SB through this intersection.	No improvements beyond traffic signal installation recommended for 2004 improvements.	Provide three lanes NB and SB through this intersection and provide 2 WB left-turn lanes.
Route 9 / Century Hill Dr	Provide a 2 nd EB lane for separate left and right turns and construct a SB right-turn lane.	Provide three lanes NB and SB through this intersection.	Existing geometry includes separate EB turn lanes. Construct a SB right-turn lane and adjust signal timing.	Provide three lanes NB and SB through this intersection. The SB right-turn lane necessary during 2009 conditions can be converted to a thru lane.
Route 9 / Old Loudon Rd / Latham Auto Park	No improvements necessary.	Provide three lanes NB and SB through this intersection.	Install a traffic signal and realign Old Loudon Rd to approach Route 9 at approximately 90°. Access management potential for a cross-connection to Century Hill Dr should be considered.	Provide a 2 nd WB Right-turn lane and provide three NB and SB lanes through this intersection. Access management potential for a cross-connection to Century Hill Dr should be considered.
Route 9 / Columbia St / Route 9R	Provide three lanes NB and SB through this intersection and an additional lane between Route 9 and Johnson Rd.	No improvements necessary.	Provide three lanes NB and SB through this intersection and construct a 2 nd SB left-turn lane. Re-stripe one of the EB right-turn lanes as a thru lane and add a 2 nd left-turn lane. In addition, add a WB thru lane. Reconstruct the NB right-turn lane. (See Fig 3.8)	No additional improvements are feasible. However, it should be noted that this intersection will operate at an overall LOS F during the PM peak hour.
Route 9R / Old Loudon Rd	Construct an additional lane between Route 9 and Johnson Rd.	No improvements necessary.	No improvements necessary.	Construct exclusive left-turn lanes on all approaches and provide a separate EB right-turn lane. (See Fig 3.8)
Route 9R / Johnson Rd	No improvements necessary.	No improvements necessary.	No improvements necessary.	Adjust signal timing.
Route 9R / Baker Ave / Boght Rd	No improvements necessary.	Install a traffic signal.	No improvements necessary.	Install a traffic signal or construct a roundabout.
Route 9R / Vliet St	Install a traffic signal.	Provide NB and SB left-turn lanes.	No improvements necessary.	Install a traffic signal.
Route 9R / Columbia St / Baker Ave	Construct left-turn lanes on all approaches.	Construct a separate SB right-turn lane.	Construct EB and WB left-turn lanes and improve signal timing or construct a roundabout.	No improvements necessary after construction of 2009 recommendations.

Intersection	Intersection Improvements			
	Source: 1989 DGEIS		Source: DGEIS Update	
	1999	2009	2009	2020
Baker Ave / Johnson Rd / Boght Rd	No improvements necessary.	Reconstruct to a conventional "T" intersection and install a traffic signal. In addition, provide an exclusive EB left-turn lane.	The 2004 recommendation proposed reconstruction to a roundabout or T-intersection. Install traffic signal if T-intersection geometry.	No improvements necessary.
Boght Rd / Haswell Rd / Elm St	No improvements necessary.	Install a traffic signal.	No improvements necessary beyond all-way stop control installation in 2004.	Install a traffic signal or accept LOS E conditions.
Johnson Rd/Miller Rd	Install a traffic signal.	Construct separate NB left and right turn lanes.	No improvements necessary.	No improvements are necessary although the NB approach will operate at LOS E. A traffic signal will allow this intersection to operate at LOS B.
Miller Rd/Latham Ridge Rd	No improvements necessary.	Install a traffic signal.	No improvements necessary.	No improvements necessary.
Haswell Rd / Swatling Rd	No improvements necessary.	Install a traffic signal.	No improvements necessary.	No improvements are necessary although the NB approach will operate at LOS E. Construction of separate NB left and right turn lanes will allow this intersection to operate at LOS D or better.
Route 2 / Swatling Rd	Construct a WB right turn lane.	Construct separate SB left and right turn lanes.	Adjust signal timing.	Adjust signal timing.
Old Loudon Rd / Cobee Rd / Jeanne Jugan Ln	Install a traffic signal.	Construct an exclusive NB left-turn lane.	The EB approach will operate at LOS E under null conditions. Installation of a traffic signal will result in a LOS C or better on all approaches.	Installation of a traffic signal is necessary during 2020 conditions. No additional improvements are necessary due to LOS deficiencies but the construction of a NB left-turn lane should be provided if a SB left-turn lane is constructed at the adjacent southern intersection during 2020 conditions.
Old Loudon Rd / Latham Ridge Rd	Install a traffic signal.	Construct an exclusive SB left-turn lane.	No improvements beyond the 2004 traffic signal installation recommendation.	Construct an exclusive SB left-turn lane.
Dunsbach Ferry Rd / Boght Rd	No improvements necessary.	No improvements necessary.	No improvements necessary.	No improvements necessary.
Dunsbach Ferry Rd / Pollack Rd	No improvements necessary.	No improvements necessary.	No improvements necessary.	No improvements necessary.

The intersection improvements in the table are the measures required to mitigate operational deficiencies throughout the study area. However, the *recommended* study area improvements will be defined in consultation with the Town as an amendment of the GEIS Statement of Findings relative to transportation impacts.

Figure 3.1 – Future Land Uses

Figure 3.2 – 2009 Projected Traffic Volumes

Figure 3.3 – 2020 Projected Traffic Volumes

Figure 3.4 – 2009 Traffic Deficiencies

Figure 3.5 – 2020 Traffic Deficiencies

Figure 3.6 – 2009 Mitigation Measures

Figure 3.7 – 2020 Mitigation Measures

Figure 3.8 – Rt 9/Rt 9R and Old Loudon Rd/Rt 9R Intersection Improvements