

# City of Newark Traffic Analysis



September 2009

Delaware Department of Transportation  
Division of Planning



## **I. Introduction**

This study is in response to a request by the City of Newark for the Delaware Department of Transportation (DelDOT) to undertake a traffic analysis that evaluates the feasibility and potential impacts of several options aimed at reducing existing truck patterns, improving traffic flow, and enhancing pedestrian safety within the western portion of the City. The options analyzed in this report were the result of a meeting between the City, the Wilmington Area Planning Council (WILMAPCO), and DelDOT in early 2009.

## **II. Background**

As a university town, Newark experiences a high level of pedestrian traffic. Much of this foot traffic is concentrated along Elkton Rd, Main St and South College Avenue. Some truck traffic seeking points north of the City of Newark appears to be utilizing eastbound Elkton Road (SR 896) to Delaware Avenue and then proceeding to New London Rd or W. Main St. The City has expressed concerns that the mix of truck traffic and pedestrians could result in possible safety and traffic flow problems.

One of the locations of particular concern to the City is the Delaware Avenue / S. College Avenue intersection. In March 2007, DelDOT completed a report that evaluated the need for modifications to the traffic signal at the intersection. The purpose of the study was to determine the feasibility and potential impacts associated with providing a pedestrian signal on the east leg of the intersection and included the following set of recommendations that have been subsequently implemented by the Department:

- (1) Installation of pedestrian signal heads for the pedestrian crossing on the east leg of the intersection;
- (2) Modification of traffic signal controller to operate with a more “traditional” signal phase assignment;
- (3) Modification of signs;
- (4) Improvement of pavement marking arrows for the intersection

## **III. Study Area**

The study area analyzed for this report lies within the City of Newark in New Castle County, Delaware encompassing Apple Road to the west, West Park Place to the south, East Cleveland Avenue to the north, and College Avenue to the east.

## **IV. Data Collection and Methodology**

### **A. Data Collection**

WILMAPCO conducted peak hour turning movement counts for several intersections within the study area. These counts were taken from 6:00 to 9:00 AM and 4:00 to 6:00 PM (Tuesday, Wednesday, or Thursday) between April 21<sup>st</sup> and April 30<sup>th</sup> 2009. The following intersection counts were utilized in this report:

- S. College Ave (896) and W. Park Place
- S. College Ave (896) and Kent Way

- SR 2 (Del. Ave.) and Orchard Rd
- S. College Ave and Amstel Ave
- Hillside Rd and Apple Rd
- SR 273 (Main St.) and N College Ave

Other older counts were also utilized in this report. These counts were adjusted with annual growth factors to arrive at current 2009 projections and include the following intersections:

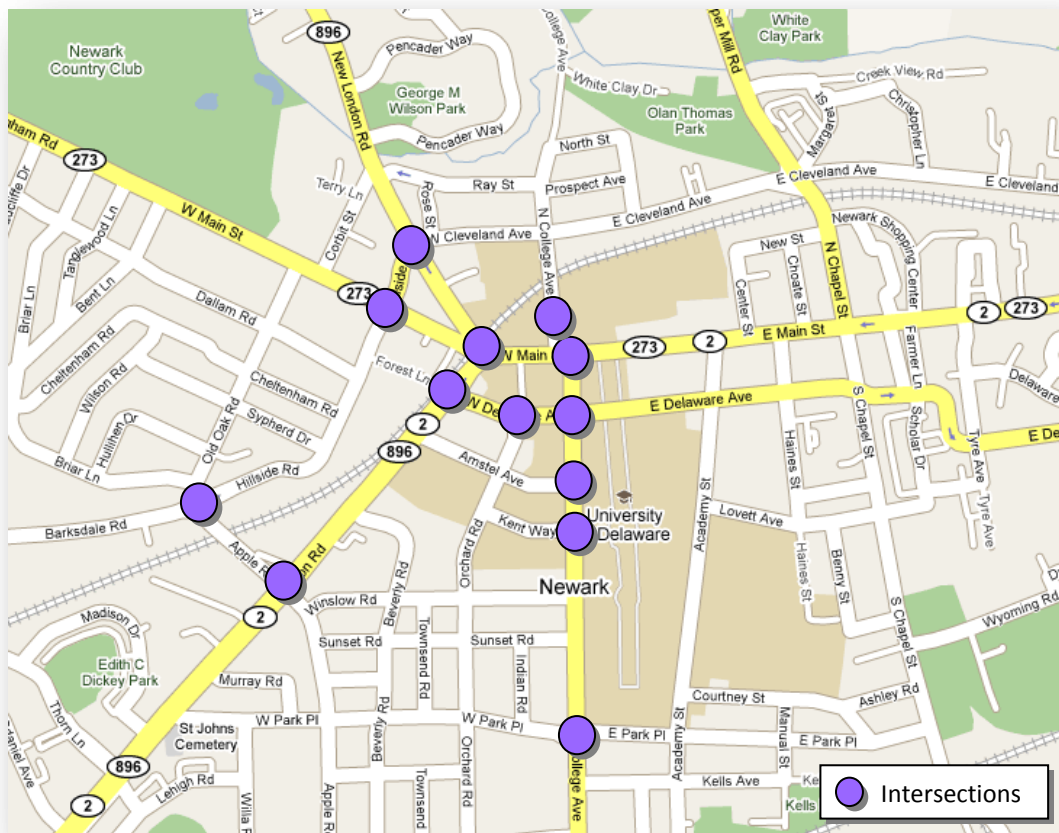
#### Newark Country Club Traffic Impact Study, 2006

- Elkton Rd and Apple Rd
- Elkton Rd and East Main St
- Hillside Rd and West Main St
- Hillside Rd and New London Rd

#### DelDOT Counts

- Elkton Rd and Delaware Ave
- S. College Ave and Delaware Ave
- S. College Ave and Main St

**Figure 1 - Study Area Intersections**



## B. Methodology

Synchro/SimTraffic software was employed to construct a study area traffic model and to assess the performance of the proposed options. The software also provided reports based on the Highway Capacity Manual (HCM) methodology for determining intersection Level of Service (LOS). In addition to LOS, this report also utilized queuing output reports generated in SimTraffic and an overall all performance index score for each option.

Signal timings for each intersection within the traffic model were based on existing DelDOT timings and optimized for splits, cycle length, and network off-sets for each option and future year projections.

It should be noted that a truck survey was not available to determine the origin and destination of trucks that might be using Elkton Rd to access points north of the city via New London Rd and W. Main Street. Truck percentages for roads within the study area were obtained from the DelDOT 2008 Traffic Summary.

## V. Options

The following transportation options were modeled and analyzed for this report for the year 2009 and a 2024 forecast year (for “no-build” and Options A and B).

### Option A

- Conversion of Elkton Rd from Delaware Ave to Main St from one-way to two-way operation;
- Installation of a signal at the intersection of Main St and Elkton Rd

### Option B

- Re-routing truck traffic currently using Elkton Rd and Delaware Ave (to access points north of the City) to Hillside Rd via a mandatory left turn from Elkton Rd onto Apple Rd.

Option A – the purpose of Option A is to look at whether the conversion of the Delaware Avenue and Main Street intersection could function properly as a signalized intersection (including two-way operation of Elkton Rd between Delaware Ave and Main St). Possible benefits associated with this option would be fewer cars and trucks turning right onto Delaware Ave from Elkton Rd which could enhance pedestrian safety at this intersection and the Delaware Ave / S. College Ave intersection.

Possible negative aspects of this option would be traffic queuing problems at the newly signalized Elkton Rd / Main St intersection. In particular, queue lengths on eastbound Elkton Rd at Main Street would be of concern if those queues were to extend back to Delaware Ave. Additionally, queues lengths along westbound Main St are also of concern if those queues were to extend back to College Ave. A new signal at this location would need to be run as a “split” signal which would disallow for any concurrent movements during the cycle length of the traffic signal. The proximity of University buildings and other structures at this intersection and their impact to the feasibility of constructing any needed geometric improvements is of concern but was not addressed in this report.

**Option B** – the purpose of Option B is to assess the possible value of diverting portions of existing truck traffic on eastbound Elkton Rd to Hillside Road via a required left-turn movement onto Apple Rd. The geometric (turning radii requirements), logistics and legal issues related to enforcing this type of traffic diversion were not the subject of this report.

Truck percentages for Route 2 (Elkton Rd) were obtained from the 2008 DeIDOT Traffic Summary. Elkton Rd is categorized by DeIDOT as a Traffic Pattern Group 2 roadway that averages 10.81% truck traffic. This percentage was used in re-assignment of traffic volumes onto northbound Apple Rd under Option B.

**Figure 2 - Study Options**




## VI. Traffic Analysis – Level of Service (LOS)

Capacity analysis was performed for each of the options and existing conditions (“No-build”) to determine the Level of Service (LOS) for various intersections within the study area and is summarized in the following tables. Please note that the existing configuration at the Elktion Rd and Main Street intersection does not allow analysis under current Highway Capacity Analysis (HCM) methodology.

**Table 1**

**Newark Traffic Analysis - Year 2009 AM - Intersection Level of Service (LOS)**

		No-build	Option	Option	No-build	Option	Option
Year 2009 - Peak Hour - AM	Type	LOS	A	B	Delay (sec)	A	B
Intersection			LOS	LOS			
Elktion Rd / Apple Rd	Signal	D	D	D	44.2	44.2	51.2
Elktion Rd / Main St*	Unsignalized**	n/a	E	n/a	n/a	74	n/a
Apple Rd / Hillside Rd	Signal	B	B	B	11.5	11.5	11.6
Hillside Rd / W. Main St	Signal	E	E	F	75.3	75.3	83.1
Hillside Rd / New London Rd	Signal	E	F	E	60.2	63.5	64.2
S. College Ave / Park Place	Signal	C	C	C	27.1	27.1	27.1
S. College Ave / Kent Way	Signal	A	A	A	0.1	0.1	0.1
S. College Ave / Arnstel Ave	Signal	A	A	A	5	5	5
S. College Ave / Delaware Ave	Signal	C	C	C	22.5	21.9	21.7
Delaware Ave / Orchard Rd	Signal	B	B	B	18.3	17.6	17.9
Main St / S. College Ave	Signal	C	C	C	23.2	23.2	23.2
Main St / N. College Ave	Signal	D	D	D	46.4	46.4	46.4


Note: Delay = average delay (seconds).

\* Highway Capacity Software (HCS) does not provide analysis for this intersection's configuration. Level of Service shown is based on Intersection Capacity Utilization (ICU) method.

\*\* Signalized intersection in Option A

**Table 2**

**Newark Traffic Analysis - Year 2024 AM - Intersection Level of Service (LOS)**

		No-build	Option	Option	No-build	Option	Option
Year 2024 - Peak Hour - AM	Type	LOS	A	B	Delay (sec)	A	B
Intersection			LOS	LOS			
Elktion Rd / Apple Rd	Signal	D	D	F	52.7	52.7	85.8
Elktion Rd / Main St	Unsignalized**	n/a	F	n/a	n/a	114.2	n/a
Apple Rd / Hillside Rd	Signal	B	B	B	11.8	11.8	12
Hillside Rd / W. Main St	Signal	F	F	F	86.2	86.2	129.1
Hillside Rd / New London Rd	Signal	E	E	E	78.9	78.9	78.8
S. College Ave / Park Place	Signal	D	D	D	40	40	40
S. College Ave / Kent Way	Signal	A	A	A	0.1	0.1	0.1
S. College Ave / Arnstel Ave	Signal	A	A	A	5.2	5.2	5.2
Delaware Ave / S. College Ave	Signal	C	C	C	25.2	25.2	25.2
Delaware Ave / Orchard Rd	Signal	B	B	B	19.6	18.6	19
Main St / S. College Ave	Signal	C	C	C	24.1	24.1	24.1
Main St / N. College Ave	Signal	E	E	E	63.2	63.2	63.2

Note: Delay = average delay (seconds).


\* Highway Capacity Software (HCS) does not provide analysis for this intersection's configuration. Level of Service shown is based on Intersection Capacity Utilization (ICU) method.

\*\* Signalized intersection in Option A



Table 3

## Newark Traffic Analysis - Year 2009 PM - Intersection Level of Service (LOS)

		No-build	Option	Option	No-build	Option	Option
Year 2009 - Peak Hour - AM	Type	LOS	A	B	Delay (sec)	A	B
Intersection			LOS	LOS		Delay (sec)	Delay (sec)
Elkton Rd / Apple Rd	Signal	E	E	F	78.9	78.9	92.2
Elkton Rd / Main St	Unsignalized**	n/a	F	n/a	n/a	117.9	n/a
Apple Rd / Hillside Rd	Signal	B	B	B	14.1	14.1	14
Hillside Rd / W. Main St	Signal	E	E	F	69.6	76.6	80.5
Hillside Rd / New London Rd	Signal	D	E	E	50	71.2	75.6
S. College Ave / Park Place	Signal	D	D	D	49	49	49
S. College Ave / Kent Way	Signal	A	A	A	0.1	0.1	0.1
S. College Ave / Amstel Ave	Signal	A	A	A	7.3	7.3	7.3
Delaware Ave / S. College Ave	Signal	C	C	C	21.2	20.5	21.2
Delaware Ave / Orchard Rd	Signal	B	B	B	10.8	10.1	10.8
Main St / S. College Ave	Signal	C	C	C	30.4	30.4	30.4
Main St / N. College Ave	Signal	C	C	C	30.5	30.5	30.5


Note: Delay = average delay (seconds).

\* Highway Capacity Software (HCS) does not provide analysis for this intersection's configuration. Level of Service shown is based on Intersection Capacity Utilization (ICU) method.

\*\* Signalized intersection in Option A

Table 4

## Newark Traffic Analysis - Year 2024 PM - Intersection Level of Service (LOS)

		No-build	Option	Option	No-build	Option	Option
Year 2024 - Peak Hour - AM	Type	LOS	A	B	Delay (sec)	A	B
Intersection			LOS	LOS		Delay (sec)	Delay (sec)
Elkton Rd / Apple Rd	Signal	F	F	F	120.7	120.7	135.7
Elkton Rd / Main St	Unsignalized**	n/a	F	n/a	n/a	195.9	n/a
Apple Rd / Hillside Rd	Signal	B	B	B	14.7	14.7	14.7
Hillside Rd / W. Main St	Signal	F	F	F	96.8	96.8	104.4
Hillside Rd / New London Rd	Signal	E	F	F	71.2	89.4	97.7
S. College Ave / Park Place	Signal	E	E	E	62.9	65.7	65.7
S. College Ave / Kent Way	Signal	A	A	A	0.1	0.1	0.1
S. College Ave / Amstel Ave	Signal	A	A	A	7.8	7.8	7.8
Delaware Ave / S. College Ave	Signal	C	C	C	24.9	24.9	24.9
Delaware Ave / Orchard Rd	Signal	B	B	B	11.6	11.2	11.6
Main St / S. College Ave	Signal	D	D	D	38.3	38.3	38.3
Main St / N. College Ave	Signal	D	D	D	41.5	41.5	41.5

Note: Delay = average delay (seconds).

\* Highway Capacity Software (HCS) does not provide analysis for this intersection's configuration. Level of Service shown is based on Intersection Capacity Utilization (ICU) method.

\*\* Signalized intersection in Option A

**Findings: Option A - Level of Service (LOS)**

The Elkton Rd / Main Street intersection is the critical intersection in Option A due to conversion of Elkton Rd from one-way to two-way operation and the installation of a new signal at the intersection.

AM Peak Hour - The Elkton Rd / Main Street intersection is predicted to operate at LOS E (2009) and LOS F (year 2024) if the intersection was signalized and two-way traffic was allowed on Elkton Rd between Delaware Avenue and Main Street (tables 1 and 2).

PM Peak Hour – The Elkton Rd / Main Street intersection is predicted to operate at LOS F (2009) and LOS F (year 2024) if the intersection was signalized and two-way traffic was allowed on Elkton Rd between Delaware Avenue and Main Street (tables 3 and 4).

**Conclusion:**

Level of Service F is not an optimal operation for the Elkton Rd / Main Street intersection under Option A. The constrained geometry of the existing intersection, proximity of nearby structures, and the Norfolk-Southern railroad track would most likely negate the feasibility of constructing any geometric improvements (i.e. additional lanes or storage) that would be necessary to improve the capacity and LOS of the intersection.

**Findings: Option B Level of Service (LOS)**

The Elkton Rd / Apple Rd and Hillside Rd / W. Main Street intersections are the critical intersections in Option B due to the increased eastbound left-turns from Elkton Rd onto Apple Rd which would divert trucks off of eastbound Elkton Rd onto Apple Rd and increase volumes on Hillside Rd.

AM Peak Hour – Additional vehicles diverting to Apple Rd (left-turns) from eastbound Elkton Rd under this Option B is predicted to result in a retention of level of service D (but with increased delay) at the Elkton Rd / Apple Rd intersection for the year 2009. In the year 2024, however, the intersection is projected to degrade from LOS D to LOS F if Option B were implemented.

Level of Service at the Hillside Rd / W. Main Street intersection would degrade from LOS E to LOS F for year 2009 and from LOS F to LOS F for year 2024 (but with greater delay).

PM Peak Hour – The Apple Rd / Elkton Rd intersection is predicted to degrade from existing LOS E in the PM to LOS F for year 2009 if Option B were implemented. The intersection is expected to be at LOS F with or without any of the options by the year 2024. Delay, however, would be at a greater level under Option B. This increase is due to the increased number vehicles utilizing the EB left-turn from Elkton Rd to northbound Apple Rd.

Level of Service at the Hillside Rd / W. Main Street intersection would degrade from LOS E to LOS F for year 2009 and from LOS F to LOS F for year 2024 (but with greater delay).

**Conclusion:**

Option B would impose greater delay at the Apple Rd / Elkton Rd intersection than the current operations at the intersection in both year 2009 and 2024. The slight decreases in delay at the Delaware Avenue / S. College Avenue, and S. College Avenue / Main Street intersections do not seem to justify additional substantial delays incurred at the Apple Rd / Elkton Rd and Hillside Rd / W. Main Street intersections.

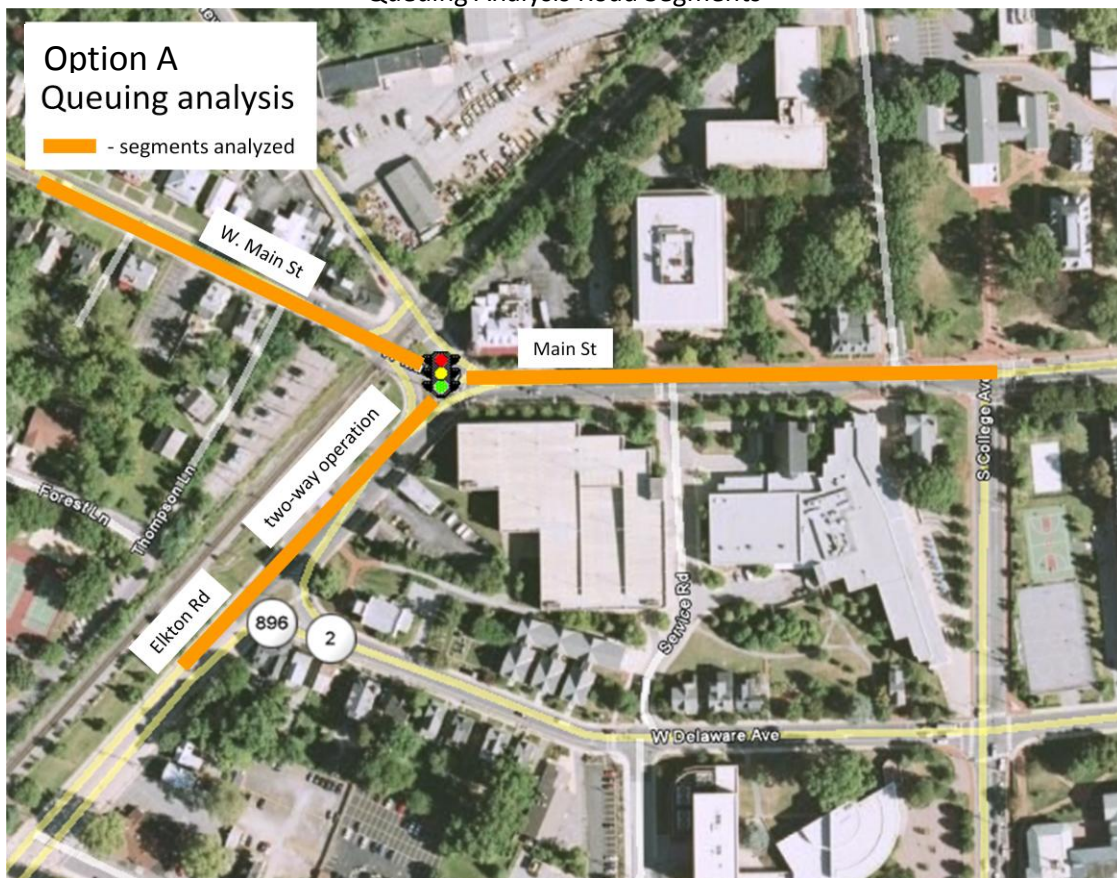


## VII. Queuing Analysis:

SimTraffic software was utilized to evaluate the impacts of queuing for Option A due to proximity of adjacent intersections to the proposed signal at Elkton Rd and Main St. Spillback between intersections and other various traffic flow interactions are better modeled in a simulation model (SimTraffic) than a macroscopic model (Synchro) which provides the a better understanding of how closely spaced intersections interact with other.

Queue output reports from SimTraffic provide Maximum, Average and 95<sup>th</sup> percentile queue lengths. The Maximum queue is the maximum back of a queue observed during an analysis period. Average queues are defined as the average of all two minute maximum queues. The 95<sup>th</sup> percentile queue is equal to the average queue plus 1.65 standard deviations.

**Figure 3**  
Queuing Analysis Road Segments



**Option A – Queuing Analysis Findings:**

The proposed conversion of Elkton Rd from one-way to two-way operation (w/ new signal at Main St) was analysed in SimTraffic to determine if the proposed improvements would lead to queuing problems on Elkton Rd and westbound Main St (see figure 3). Tables 5-6 illustrate the queue analysis that was performed for the “No-Build” Option and Option A. The data included in each table is an output of multiple model run averages (simulating a one hour time period) for each network and option.

**Table 5**  
AM - No-Build (2009) and AM - Option A (2009)  
Queuing Analysis

Elkton Rd & Main St Intersection - AM No-Build (2009)					Elkton Rd & Main St Intersection - AM Option A (2009)				
Road	W. Main St	Main St	Main St	Elkton Rd	Road	W. Main St	Main St	Main St	Elkton Rd
Direction	EB	WB	WBR	NE	Direction	EB	WB	WBR	NE
Movement	Right-Turn	Left-turn	Right-turn	Left-turn	Movement	Right-Turn	change	Left-turn	change
Max. Queue (ft)	150	207	n/a	n/a	Max. Queue (ft)	722	381%	240	16%
Avg. Queue (ft)	34	187	n/a	n/a	Avg. Queue (ft)	408	1100%	194	4%
95th Queue (ft)	89	234	n/a	n/a	95th Queue (ft)	684	669%	240	3%

**Table 6**  
AM - No-Build (2024) and AM - Option A (2024)  
Queuing Analysis

Elkton Rd & Main St Intersection - AM No-Build (2024)					Elkton Rd & Main St Intersection - AM Option A (2024)				
Road	W. Main St	Main St	Main St	Elkton Rd	Road	W. Main St	Main St	Main St	Elkton Rd
Direction	EB	WB	WBR	NE	Direction	EB	WB	WBR	NE
Movement	Right-Turn	Left-turn	Right-turn	Left-turn	Movement	Right-Turn	change	Left-turn	change
Max. Queue (ft)	185	198	n/a	n/a	Max. Queue (ft)	811	338%	156	-21%
Avg. Queue (ft)	39	196	n/a	n/a	Avg. Queue (ft)	491	1159%	154	-21%
95th Queue (ft)	106	218	n/a	n/a	95th Queue (ft)	834	687%	159	-27%

**Table 7**  
PM - No-Build (2009) and PM - Option A (2009)  
Queuing Analysis

Elkton Rd & Main St Intersection - PM No-Build (2009)					Elkton Rd & Main St Intersection - PM Option A (2009)				
Road	W. Main St	Main St	Main St	Elkton Rd	Road	W. Main St	Main St	Main St	Elkton Rd
Direction	EB	WB	WBR	NE	Direction	EB	WB	WBR	NE
Movement	Right-Turn	Left-turn	Right-turn	Left-turn	Movement	Right-Turn	change	Left-turn	change
Max. Queue (ft)	275	84	n/a	n/a	Max. Queue (ft)	639	132%	136	62%
Avg. Queue (ft)	69	28	n/a	n/a	Avg. Queue (ft)	371	438%	127	354%
95th Queue (ft)	219	73	n/a	n/a	95th Queue (ft)	590	169%	143	96%

**Table 8**  
PM - No-Build (2024) and PM - Option A (2024)  
Queuing Analysis

Elkton Rd & Main St Intersection - PM No-Build (2024)					Elkton Rd & Main St Intersection - PM Option A (2024)				
Road	W. Main St	Main St	Main St	Elkton Rd	Road	W. Main St	Main St	Main St	Elkton Rd
Direction	EB	WB	WBR	NE	Direction	EB	WB	WBR	NE
Movement	Right-Turn	Left-turn	Right-turn	Left-turn	Movement	Right-Turn	change	Left-turn	change
Max. Queue (ft)	417	170	n/a	n/a	Max. Queue (ft)	809	94%	135	-21%
Avg. Queue (ft)	189	44	n/a	n/a	Avg. Queue (ft)	621	229%	129	193%
95th Queue (ft)	413	112	n/a	n/a	95th Queue (ft)	853	107%	139	24%

**Findings:**

The conversion of Elkton Rd to two-way operation and the installation of a traffic signal at the Elkton Rd and Main Street intersection under Option A would result queuing at each approach that could negatively impede traffic flow in the Elkton Rd / Main Street area of Newark due to the following reasons:

- Eastbound right-turn average queue lengths from W. Main Street onto westbound Elkton Rd are projected to increase by +1,000% in the AM peak hour for the year 2009 and 2024 under Option A. The result for the year 2024 would be an increase in queues from 185 ft to 811 ft for this movement.
- Eastbound right-turn average queue lengths from New London Rd onto westbound Elkton Rd is projected to increase by +200-400% in the PM peak hour for the year 2009 and 2024 under Option A.
- Queues (95<sup>th</sup> percentile) in the PM for traffic approaching Main Street from Elkton Rd is projected to reach up to 374 ft which could lead to traffic being blocked at the Elkton Rd and Delaware Avenue intersection which would impede vehicles travelling south-east along Elkton Rd from making a left turn onto Delaware Avenue.

**Conclusion:**


Projected queue lengths for each of approach at the Elkton Rd / Main St intersection under Option A appear to be at thresholds that would impose unnecessary delay at the intersection when compared to existing operations.

**VIII. Network-Wide Performance Index**

Synchro/SimTraffic software was utilized to develop a series of network-wide measures of effectiveness (MOES). The table below depicts several MOEs that were compared for existing conditions (no-build) and each of the options. Each MOE represents a combined total for all of the intersections within the study area network model. The Performance Index MOE shown at the bottom of each table is a good indicator of how well each option would function as part of the larger traffic network. Please note that a lower performance index score denotes greater efficiency, less delay and congestion.

**Table 9**  
Network Measures of Effectiveness

Network Totals	AM	AM	AM	AM	AM	AM
	Year 2009	Year 2009	Year 2009	Year 2024	Year 2024	Year 2024
Option	No-Build	Option A	Option B	No-Build	Option A	Option B
Total Delay (hr)	243	279	246	337	400	374
Stops (#)	16155	17373	15868	19349	19962	19939
Average Speed (mph)	12	11	12	10	9	10
Total Travel Time (hr)	393	436	396	510	571	546
Distance Traveled (mi)	4591	4964	4584	5252	5244	5270
Performance Index	287.6	327.6	290.3	390.7	455.5	428.9
Network Totals	PM	PM	PM	PM	PM	PM
	Year 2009	Year 2009	Year 2009	Year 2024	Year 2024	Year 2024
Option	No-Build	Option A	Option B	No-Build	Option A	Option B
Total Delay (hr)	657	719	686	917	1031	1003
Stops (#)	21332	21555	20825	26490	26461	24666
Average Speed (mph)	7	7	7	6	5	6
Total Travel Time (hr)	853	914	882	1143	1255	1229
Distance Traveled (mi)	6040	5995	6040	6946	6895	6947
Performance Index	716	778.8	743.8	991.1	1104.6	1072

 - Option w/ lowest combined stops and delay

### Findings:

Performance index scores indicate that the No-Build option for both year 2009 and 2024 functions more efficiently as part of the larger study area network than either Option A or Option B in terms of combined stops and delay measures.

### Conclusion:

Network measures of effectiveness derived from the traffic model indicate that existing operations (“No-Build”) for the study area appear to minimize study area delay and stops when compared to the two proposed options.

## IX. Summary

As home to a major university, Newark is unique in the various traffic and pedestrian issues it faces when compared to other municipalities in the State. The analysis presented in this report indicates that, despite some existing transportation system deficiencies, the current operations in place for the study area remain preferable to Options A and B. This assessment does not preclude further investigation into improving pedestrian and vehicle safety within Newark. The City is currently in the process of retaining a consultant engineering firm to update Newark’s transportation plan that will be done in conjunction

with DelDOT and the Wilmington Area Planning Council (WILMAPCO). Analysis derived from this report will hopefully provide a valuable contribution to the upcoming revised transportation plan.

**Table 10**  
Option Pro and Cons

Condition	Pros	Cons
<b>Existing Conditions</b>	<ul style="list-style-type: none"> <li>✓ Levels of Service (LOS) and delay within study area currently at acceptable level for most intersections.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Does not address all truck and possible safety problems on Delaware Avenue and South College Avenue.</li> </ul>
<b>Option A</b>	<ul style="list-style-type: none"> <li>✓ Slight decreases in delay at S. College / Delaware Ave and S. College / Main St. intersections.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Major increases in delay (LOS F) at Elkton Rd / Main St intersection.</li> <li>❖ Major increases in queuing problems on W. Main St and Elkton Rd approaches at Main St.</li> <li>❖ Geometric constraints.</li> </ul>
<b>Option B</b>	<ul style="list-style-type: none"> <li>✓ Removes some trucks from sections of Delaware Avenue / S. College Ave and Main St.</li> <li>✓ Slight decreases in delay at S. College / Delaware Ave and S. College / Main St. intersections.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Increases delay at Elkton Rd / Apple Rd intersection (LOS D to LOS F in year 2024).</li> <li>❖ Increases in delay at Hillside Rd / W. Main St intersection.</li> <li>❖ Re-routing of trucks through residential sections of Hillside Rd.</li> <li>❖ Separating local and through truck trips along Elkton Rd difficult to enforce.</li> </ul>

