

# Memorandum

To: Paul Hesse, City of Poughkeepsie  
From: Sam Frommer, *Sam Schwartz*  
Date: October 16, 2017  
Re: Poughkeepsie City Center Project  
Two-Way Market Street - Traffic Analysis

## Introduction

*Sam Schwartz*, in partnership with Street Plans Collaborative, has been working with the City of Poughkeepsie to create a complete streets plan for City Center to help create a safer and more enjoyable environment for people traveling by all modes and to foster economic development. Known as the Poughkeepsie City Center Connectivity Project (PCCCP), it is part of a long-term transportation planning initiative closely linked with the city's broader efforts to revitalize its downtown and promote transit-oriented economic development. This impact analysis identifies, at a high-level, the potential traffic, SEQRA, and cost implications of the preferred alternative outlined in Justification for Preferred Alternative memo. As recommended in that memo, this analysis explores in more detail the two-way Market Street option, providing a level of service (LOS) traffic analysis and a more detailed cost estimate. The other components of the preferred alternative are evaluated at a higher level.

## Two-Way Market Street – Traffic Analysis

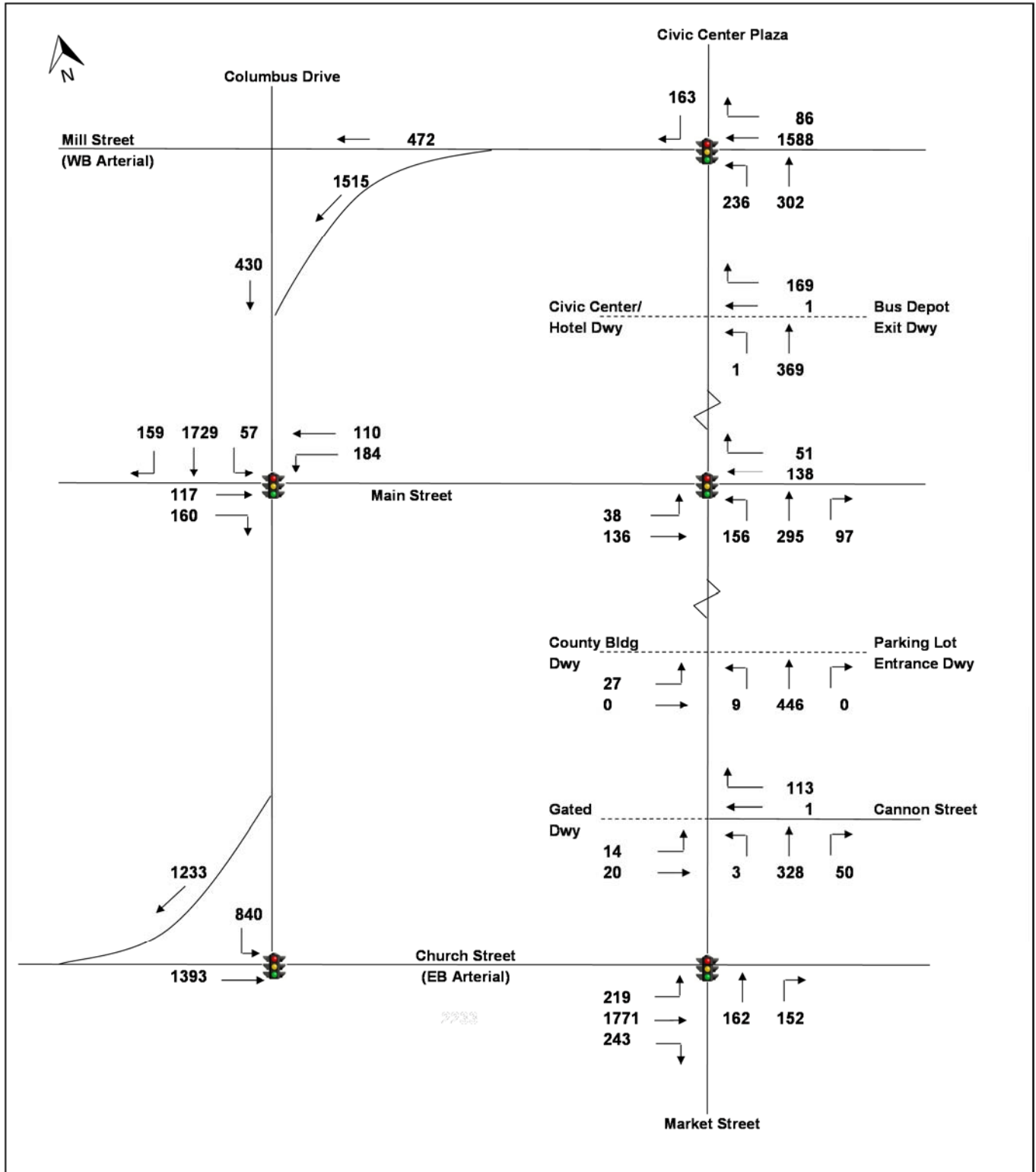
*Sam Schwartz* developed Scenario 1: Two-Way Market Street that considers allowing two-way traffic along Market Street from Church Street to the south and Mill Street / Civic Center Plaza to the north. There are many land uses along this section of Market street, including driveways, stop controlled intersections and signalized intersections.

In an effort to estimate the number of vehicles that would travel southbound on a potential two-way Market Street, the potential users of this new travel pattern were first identified. Vehicles traveling south on Washington Street and traveling westbound on Mill Street were the starting point. Market Street is used to access local land uses and could be a conduit for some through traffic. The 2016 Existing PM Peak Hour traffic volumes were used as a base for the following assumptions:

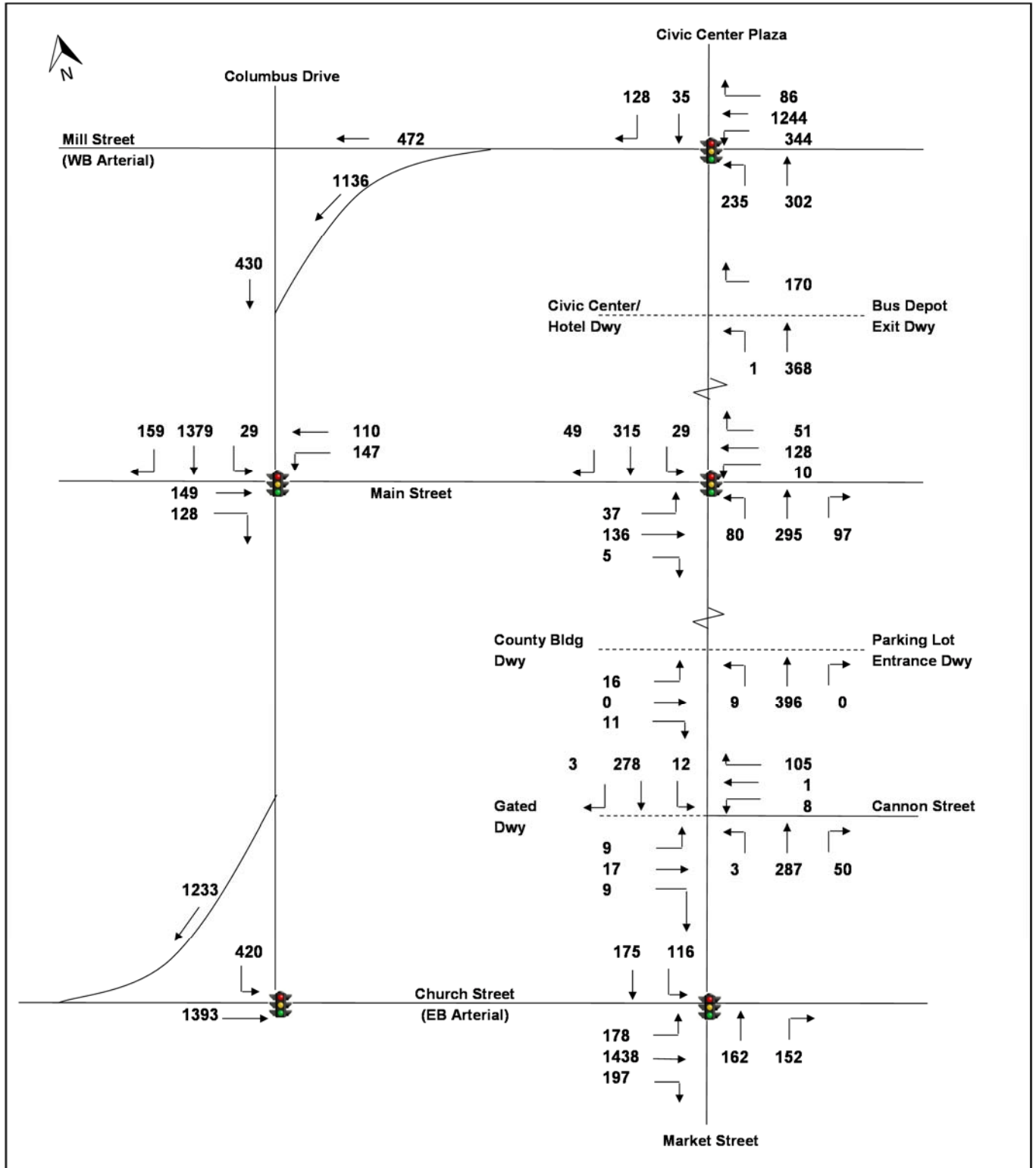
1. 50% of the southbound left turn movement at the intersection of Columbus Drive and Main Street would be diverted to Market Street southbound.
2. 50% of the southbound left turn movement at the intersection of Columbus Drive and Church Street would be diverted to Market Street southbound.
3. Most of diverted vehicles would travel along Market Street with some turning onto Main Street, Cannon Street, and other driveways.
4. 50% of vehicles exiting the County Building and other driveways would turn onto Market Street southbound as a preferred movement with the exception of the Financial Plaza parking garage driveway. Due to the geometry of the Financial Plaza parking garage intersection which is offset from the hotel pick-up/drop-off driveway and is unsignalized, vehicles exiting this driveway would be prohibited from turning left for southbound travel along Market Street.
5. 60% of traffic flow would continue southbound at the intersection of Market Street and Church Street, 40% would turn left onto Church Street eastbound.

The 2016 Proposed Traffic Volumes – Two-Way Market Street (PM Peak Hour) and the assumptions described above are illustrated in the following two pages:

### Traffic Volumes Existing Condition Weekday Evening Peak Hour



### Traffic Volumes Proposed Condition with Two-Way Market Street Weekday Evening Peak Hour



## Future Conditions

The proposed scenario provides for a two-way Market Street from Church Street to Mill Street/Civic Center Plaza, approximately three blocks in length and includes four signalized intersections. The 2016 Existing PM Peak Hour traffic volumes were modified based on the assumptions above to produce the 2016 Scenario 1 PM Peak Hour traffic volumes. The proposed layout and operation of each intersection is provided below. Level of Service (LOS) tables and signal phasing plans are included as appendices.

### Intersection 1 – Market Street and Church Street

#### Existing Condition

Church Street intersects Market Street to form a four-leg signalized intersection. The eastbound Church Street approach provides a shared left-turn/through lane, through lane, and shared through/right-turn lane. The northbound Market Street approach provides for one shared through/right-turn lane. Ladder-type painted crosswalks, pedestrian signals, and pushbuttons are provided for all approach crossings.

#### Proposed Two-Way Market Street Scenario

In the proposed two-way condition, the northbound Market Street approach and eastbound Church Street approach would remain similar to the existing condition. The proposed southbound Market Street approach would provide for an exclusive left-turn lane and exclusive through lane. New traffic signal heads would be required to accommodate the proposed southbound Market Street approach. The traffic signal cycle length would remain similar to the existing condition and there would be a new lead southbound approach signal phase in advanced of the northbound/southbound signal phase. The existing ladder-type crosswalks would remain similar to the existing condition and new countdown pedestrian signals and audible pushbuttons would be provided for all approaches. A curb extension would also be installed on the southeast corner. There would not be a significant change in the LOS for the intersection or any of the lane groups. The overall intersection would continue to operate at LOS C. See Figure 1 below which shows the intersection of Market Street and Church Street in a two-way Market Street scenario.



Figure 1: Intersection of Market Street and Church Street in a two-way Market Street scenario.

### Intersection 2 – Market Street and Cannon Street

#### Existing Condition

The intersection of Market Street and Cannon Street is currently signalized. The northbound Market Street approach provides for a shared left-turn/through lane and shared through/right-turn lane. The eastbound approach is formed by a gated driveway which provides access to/from a parking area. Cannon Street

forms the westbound approach and provides for a shared through/right-turn lane. Ladder-type painted crosswalks are provided along all approaches. Field observations indicate that only one traffic signal assembly is present at this intersection which provides for a single red-yellow-green signal for each approach. Additionally, pedestrian signal heads are not provided at the intersection.

Proposed Two-Way Market Street Scenario

The proposed northbound and southbound Market Street approaches would each provide for one shared left-turn/through/right-turn lane. The eastbound driveway and westbound Cannon Street approaches would each provide a single lane to accommodate left-turn, through, and right-turn movements. New traffic signal equipment would be installed to provide additional signal heads for the northbound and southbound Market Street approaches, and a span wire signal is recommended for consistency with the adjacent traffic signals. The traffic signal cycle length and signal phasing would remain similar to the existing condition. Pedestrian crosswalks, countdown pedestrian signals, and audible pushbuttons would be provided on all approaches. Additionally, curb extensions would be provided on all intersection corners to reduce pedestrian crossing distances. There would not be a significant change in the LOS for the intersection or any of the lane groups. The overall intersection would continue to operate at LOS B. Figure 2 below shows the intersection of Market Street and Cannon Street in a two-way scenario.



Figure 2: Intersection of Market Street and Cannon Street in a two-way Market Street scenario.

**Intersection 3 – Market Street and County Office Building Driveway**

Existing Condition

The intersection of Market Street and the County Office Building driveway is an unsignalized, three-leg intersection. The northbound Market Street approach provides for a shared left-turn/through lane and through lane. The County Office Building ingress/egress driveway forms the eastbound approach and provides for left-turn movements only from the driveway. No crosswalks are provided at this intersection.

Proposed Two-Way Market Street Scenario

The proposed northbound Market Street approach would provide for two exclusive through lanes. The southbound Market Street approach would provide one exclusive through lane. The eastbound County Building driveway approach would continue to be one-way and provide for shared left-turn/right-turn movements and continue to operate under stop control. Pedestrian crosswalks would be provided for all approaches and curb extensions provided on all corners. There would not be a significant change in the LOS for the intersection or any of the lane groups. The overall intersection would continue to operate at LOS A. Figure 3 below shows the intersection of Market Street and the County Office Building Driveway in a two-way Market Street scenario.

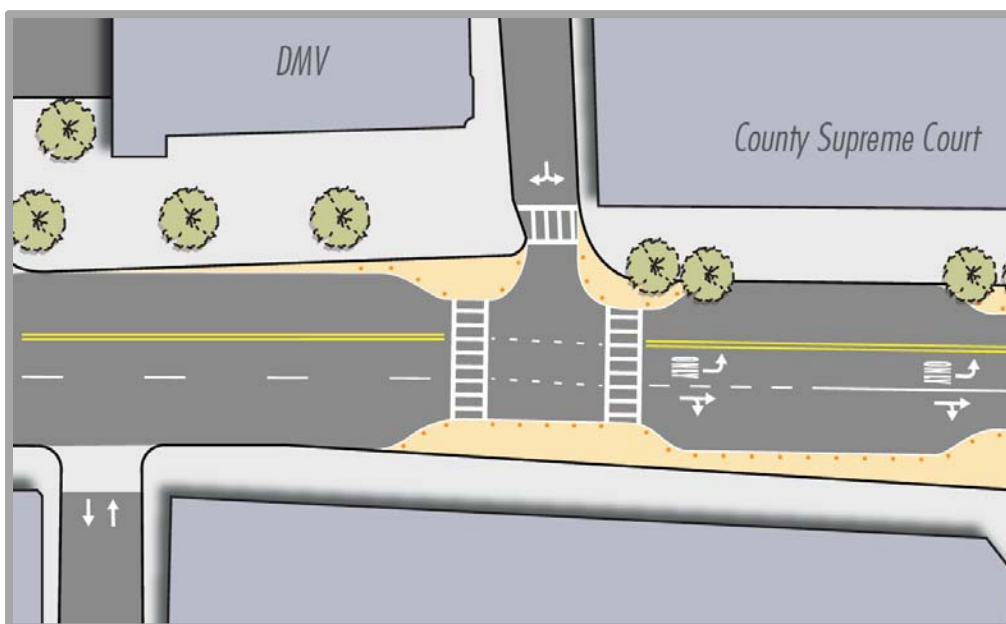


Figure 3: Intersection of Market Street and County Office Building Driveway in a two-way Market Street scenario.

#### Intersection 4 – Market Street at Main Street

##### Existing Condition

Main Street intersects Market Street to form a four-leg signalized intersection. The northbound Market Street approach provides for an exclusive left-turn lane, through lane, and shared through/right-turn lane. At this intersection, the northbound Market Street approach lanes are slightly offset from the receiving lanes requiring vehicles to perform a “jog” maneuver when traveling northbound through the intersection. The eastbound Main Street approach provides a through lane and left-turn lane, however it is less than 40 feet long and functionally acts as a combined through and left-turn lane. The westbound Main Street approach provides for one shared through/right-turn lane. “No Turn on Red” signage is posted along the northbound Market Street and westbound Main Street approaches. Ladder-type painted crosswalks, pedestrian signals, and pushbuttons are provided on all approaches and curb extensions are provided on the westbound Main Street approach.

##### Proposed Two-Way Market Street Scenario

The proposed northbound Market Street approach would provide for an exclusive left-turn lane and shared through/right-turn lane. The southbound Market Street approach would provide for an exclusive left-turn lane and a shared through/right-turn lane. The eastbound Main Street approach would provide for an exclusive left-turn lane and shared through/right turn lane. The westbound Main Street approach would provide for one shared left-turn/through/right-turn lane. New traffic signal equipment would be installed to accommodate the southbound Market Street approach. The traffic signal cycle length and signal phasing would remain similar to the existing condition, however the green signal time for eastbound and westbound Main Street would increase by 5 seconds. This shift in green signal time would seek to reduce potential vehicle queues on Main Street. Ladder-type crosswalks, pedestrian countdown signal heads, and audible pushbuttons would be installed on all approaches. Additionally, curb extensions would be provided on all intersection corners and the existing curb extensions along the westbound Main Street approach would be further extended along Market Street. There would not be a significant change in the LOS for the intersection or any of the lane groups and the westbound Main Street approach would improve from LOS D to C. The overall intersection would decrease from LOS B to an acceptable LOS C. Figure 4 below shows the intersection of Market Street and Main Street in a two-way Market Street scenario.



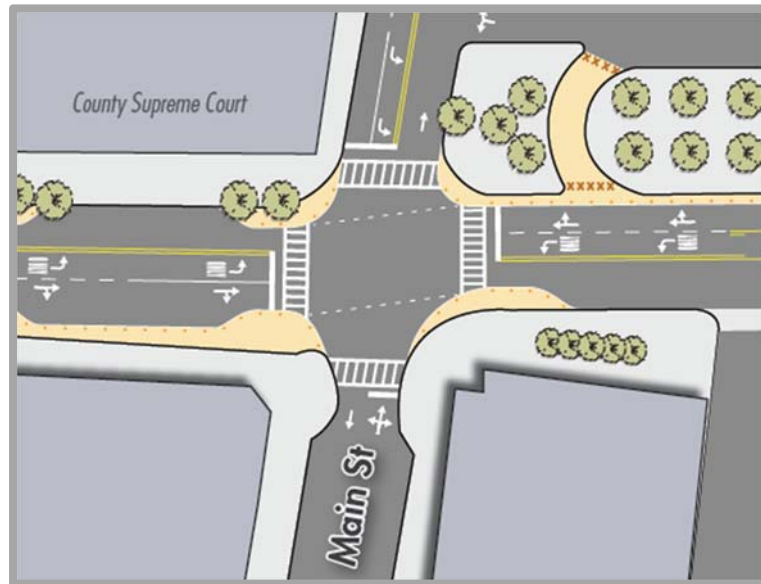


Figure 4: Intersection of Market Street and Main Street in a two-way Market Street scenario.

### Intersection 5 – Civic Center Plaza at Hotel and Transit Hub Driveways

#### Existing Condition

The Civic Center Plaza intersection with the hotel ingress driveway and transit hub egress driveway is unsignalized. The northbound Civic Center Plaza approach provides for a shared left-turn/through lane, a through lane, and a shared through/right-turn lane. The eastbound approach is formed by the hotel entrance driveway and is one-way in the westbound direction. The transit hub egress driveway forms the westbound intersection approach and provides for right-turn only movements. The hotel ingress and transit hub egress driveways are slightly offset. On-street metered parking is available along Civic Center Plaza in front of One Civic Plaza and the transit hub. Crosswalks are provided along the northbound Civic Center Plaza and hotel ingress driveway approaches. A third crosswalk is located along Civic Center Plaza between the hotel ingress and transit hub egress driveways. This crosswalk is oriented at a skewed angle which increases pedestrian crossing distance. The crosswalk types at this intersection are variable and include parallel line, ladder, and continental styles.

#### Proposed Two-Way Market Street Scenario

The proposed northbound and southbound Civic Center Plaza approaches would each provide one shared through/right-turn lane. Vehicles traveling along Civic Center Plaza and seeking to turn left into either the hotel driveway or transit hub driveway would do so via a center left-turn lane. It should be noted that southbound Civic Center Plaza left-turns into the transit hub would be prohibited for buses only due to the limited vehicle storage space available along southbound Civic Center Plaza. The driveway entrances to the Civic Center parking garage and hotel port cochere would remain as one-way inbound. The Civic Center/hotel driveway which currently exits onto northbound Civic Center Plaza would be closed to accommodate southbound travel on Market Street and all exiting movements would be made via the existing Main Street exit where left- and right-turn movements would be permitted. The existing egress driveway from the transit hub parking garage would continue to operate as a dual right-turn out movement similar to the existing condition due to the offset nature of the intersection. The LOS at this intersection would be similar to the existing condition. This option needs to be explored further with the operators of the hotel and Civic Center.

Ladder-type crosswalks would be provided along the hotel and Civic Center ingress driveways. For pedestrians crossing Civic Center Plaza, a ladder-type crosswalk would be provided between the transit hub ingress and egress driveways and curb extensions would be constructed on both sides of the street to minimize pedestrian crossing distances and reduce the overall street width. Figure 5 below shows the intersection of Civic Center Plaza and the hotel/transit hub driveways in a two-way Market Street scenario.

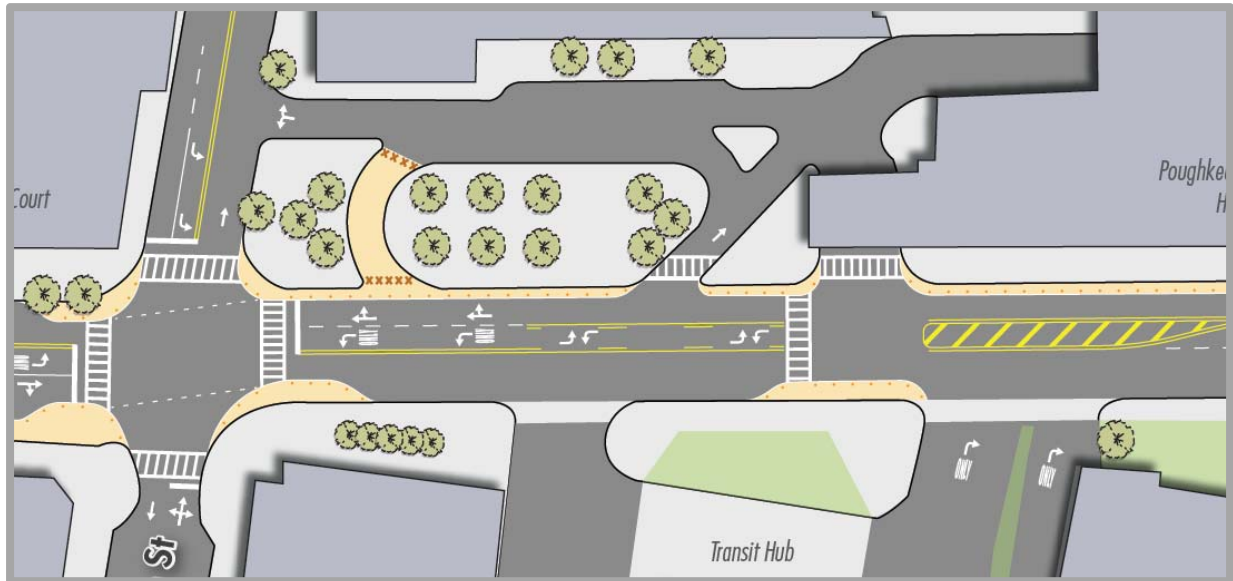


Figure 5: Intersection of Civic Center Plaza and hotel/transit hub driveways in a two-way Market Street scenario.

## Intersection 6 – Civic Center Plaza at Mill Street

### Existing Condition

Civic Center Plaza intersects Mill Street to form a four-leg signalized intersection. The northbound Civic Center Plaza approach provides for an exclusive left-turn lane, shared left-turn/through lane and through lane. Parking is permitted on the east-side of the northbound Civic Center Plaza approach. No on-street parking is provided along the west-side of Civic Center Plaza. The southbound Civic Center Plaza approach provides for an exclusive right-turn lane and is signed as “No Turn on Red”. The westbound Mill Street approach provides for two through lanes and a shared through/right-turn lane. Crosswalks are provided on all legs of the intersection, except for the western leg which is signed as “No Pedestrian Crossing”. This is likely due to the northbound Civic Center Plaza approach signal phase which provides dual left-turn movements for vehicles.

### Proposed Two-Way Market Street Scenario

The proposed northbound Civic Center Plaza approach would provide for an exclusive left-turn lane and exclusive through lane. The southbound Civic Center Plaza approach would provide for an exclusive through lane and exclusive right-turn lane. The westbound Mill Street would provide for a shared left-turn/through lane, exclusive through lane, and shared through/right-turn lane. New traffic signal equipment would be installed to accommodate a southbound Civic Center Plaza. The traffic signal would be modified to provide for a northbound Civic Center Plaza left-turn lead phase while the overall signal cycle length would remain similar to the existing condition. With the changes to the signal phasing, the northbound Civic Center Plaza left-turn lane would degrade to LOS E and the through movement would improve from LOS C to B. The southbound Civic Center Plaza approach would significantly improve from LOS F to LOS E/D. Pedestrian crosswalks, countdown pedestrian signal heads, and audible pushbuttons would be provided along all approaches. This is a significant improvement as compared to the existing condition in which pedestrian crosswalks are provided on only three of the four intersection approaches. The overall intersection LOS would remain similar to the existing condition. Figure 6 below shows the intersection of Civic Center Plaza and Mill Street in a two-way Market Street scenario.





Figure 6: Intersection of Civic Center Plaza and Mill Street in a two-way Market Street scenario.

### Intersection 7 – Columbus Drive at Main Street

#### Existing Condition

Main Street intersects Columbus Drive to form a four-leg, signalized intersection. The southbound Columbus Drive approach provides a shared left-turn/through lane, two exclusive through lanes, and a shared through/right-turn lane. On-street parking is not permitted along Columbus Drive in the vicinity of the intersection, however on-street parking is provided along Main Street. The eastbound Main Street approach provides for a shared through/right-turn lane and is signed as “No Turn on Red”. The westbound Main Street approach provides for a shared left-turn/through lane. Crosswalks are provided on all intersection approaches, however observations indicate that they are faded and barely visible.

#### Proposed Two-Way Market Street Scenario

The westbound Main Street approach would be reconfigured to provide an exclusive left-turn lane and exclusive through lane. The creation of the exclusive left-turn lane would not necessarily require the removal of parking because of the existing No Parking zone and hydrant along this approach. Pedestrian operations would continue similar to the existing condition and new pedestrian countdown signals and audible pushbuttons would be installed. The overall intersection would remain unchanged at LOS C, however the westbound Main Street approach would improve significantly from LOS F to LOS B/C with the proposed exclusive left-turn lane.

### Intersection 8 – Columbus Drive at Church Street

#### Existing Condition

The intersection of Columbus Drive at Church Street is a signalized, three-leg intersection. The southbound Columbus Drive approach provides two lanes for left-turn only movements to Church Street. The eastbound Church Street approach provides for three exclusive through lanes. No turns are permitted from the eastbound Church Street approach. Crosswalks are provided on all intersection approaches. No parking is provided on either the Columbus Drive or Church Street approaches.

#### Proposed Two-Way Market Street Scenario

In a two-way Market Street scenario, no changes are proposed at this intersection and the overall intersection would remain at LOS B.

## New York State Environmental Quality Review Act (SEQRA)

A high-level analysis of the elements of the proposed project have been evaluated against SEQRA criteria to understand which could cause adverse impacts. These categories have been flagged and include transportation; noise, odor, and light; and land. This analysis is not a substitute for a more in-depth study, and is meant only to advise the City of Poughkeepsie of the likely categories that would be impacted by the proposed project.

SEQRA Impact Categories	PCCCP Preferred Alternative Project Elements						
	Short-Term		Long-Term				
	Two-Way Market Street <sup>1</sup>	Two-Way Streets for Downtown <sup>2</sup>	Promote Main Street	Connect Liberty Street	Connect Cannon Street	Union Street Pedestrian Connection	Garden Street Bicycle Connection
<b>Impact on Transportation</b>							
<b>The proposed action may result in a change to existing transportation systems</b>	<b>Yes</b>	<b>Yes</b>	<b>No</b>	<b>Yes</b>	<b>Yes</b>	<b>No</b>	<b>YES</b>
<i>a. Projected traffic increase may exceed capacity of existing road network.</i>	No, or small impact may occur	Moderate to large impact may occur		No, or small impact may occur	No, or small impact may occur		
<i>b. The proposed action may result in the construction of paved parking area for 500 or more vehicles.</i>	No, or small impact may occur	No, or small impact may occur		No, or small impact may occur	No, or small impact may occur		
<i>c. The proposed action will degrade existing transit access.</i>	No, or small impact may occur	No, or small impact may occur		No, or small impact may occur	No, or small impact may occur		
<i>d. The proposed action will degrade existing pedestrian or bicycle accommodations.</i>	No, or small impact may occur	No, or small impact may occur		No, or small impact may occur	No, or small impact may occur		
<i>e. The proposed action may alter the present pattern of movement of people or goods</i>	Moderate to large impact may occur	Moderate to large impact may occur		No, or small impact may occur	No, or small impact may occur		No, or small impact may occur
<b>Impact on Noise, Odor, and Light</b>							
<b>The proposed action may result in an increase in noise, odors, or outdoor lighting.</b>	<b>Yes</b>	<b>Yes</b>	<b>No</b>	<b>Yes</b>	<b>Yes</b>	<b>No</b>	<b>No</b>
<i>a. The proposed action may produce sound above noise levels established by local regulation.</i>	No, or small impact may occur	No, or small impact may occur		No, or small impact may occur	No, or small impact may occur		
<i>b. The proposed action may result in blasting within 1,500 feet of any residence, hospital, school, licensed day care center, or nursing home.</i>	No, or small impact may occur	No, or small impact may occur		No, or small impact may occur	No, or small impact may occur		
<i>c. The proposed action may result in routine odors for more than one hour per day</i>	No, or small impact may occur	No, or small impact may occur		No, or small impact may occur	No, or small impact may occur		
<i>d. The proposed action may result in light shining onto adjoining properties.</i>	No, or small impact may occur	No, or small impact may occur		No, or small impact may occur	No, or small impact may occur		
<i>e. The proposed action may result in lighting creating sky-glow brighter than existing area conditions.</i>	No, or small impact may occur	No, or small impact may occur		No, or small impact may occur	No, or small impact may occur		

PCCCP Preferred Alternative Project Elements

SEQR Impact Categories	Short-Term		Long-Term				
	Two-Way Market Street <sup>1</sup>	Two-Way Streets for Downtown <sup>2</sup>	Promote Main Street	Connect Liberty Street	Connect Cannon Street	Union Street Pedestrian Connection	Garden Street Bicycle Connection
<b>Impact on Land</b>							
Proposed action may involve construction on, or physical alteration of, the land surface of the proposed site.	No	Yes	No	Yes	Yes	Yes	No
<i>a. The proposed action may involve construction on land where depth to water table is less than 3 feet.</i>		No, or small impact may occur		No, or small impact may occur	No, or small impact may occur	No, or small impact may occur	
<i>b. The proposed action may involve construction on slopes of 15% or greater.</i>		No, or small impact may occur		No, or small impact may occur	No, or small impact may occur	No, or small impact may occur	
<i>c. The proposed action may involve construction on land where bedrock is exposed, or generally within 5 feet of existing ground surface.</i>		No, or small impact may occur		No, or small impact may occur	No, or small impact may occur	No, or small impact may occur	
<i>d. The proposed action may involve the excavation and removal of more than 1,000 tons of natural material</i>		No, or small impact may occur		No, or small impact may occur	No, or small impact may occur	No, or small impact may occur	
<i>e. The proposed action may involve construction that continues for more than one year or in multiple phases.</i>		Moderate to large impact may occur		No, or small impact may occur	No, or small impact may occur	No, or small impact may occur	
<i>f. The proposed action may result in increased erosion, whether from physical disturbance or vegetation removal (including from treatment by herbicides).</i>		No, or small impact may occur		No, or small impact may occur	No, or small impact may occur	No, or small impact may occur	
<i>g. The proposed action is, or may be, located within a Coastal Erosion hazard area</i>		No, or small impact may occur		No, or small impact may occur	No, or small impact may occur	No, or small impact may occur	

<sup>1</sup>A two-way Market Street was identified as a short-term actionable project within the larger scope of the PCCCP preferred alternative (Option D) due to its relative low-cost, ease of implementation with interim materials, and city-ownership of the right-of-way.

<sup>2</sup>Two-way streets include: Market Street, Columbus Drive, and Church Street and Mill Street between Columbus Drive and Market Street

## Cost Estimate

A budget-level cost estimate is provided for the two-way Market Street scenario, for both an interim implementation and full replacement (e.g., major capital reconstruction). An interim scenario is envisioned as a short-term, temporary condition where to the extent possible, inexpensive materials (e.g. potted planters, use of flexible bollards to delineate curb extensions, etc.) would be used and existing signal equipment would be modified as appropriate. In a full replacement condition, long-term, permanent materials would be used (e.g. tree plantings, physical curb extensions, decorative crosswalks, etc.) and existing traffic signals would be removed and replaced with all new traffic signal equipment. In addition, to the estimate provided below, Market Street should be milled and repaved in conjunction with the improvements identified in this analysis.

Intersection	Two-Way Market Street	Interim	Full Replacement
#1	Install (2) Traffic Signal heads on existing span wire facing southbound traffic flow	\$50,000	\$250,000
#2	Install (1) Traffic Signal head in the southbound direction	\$25,000	\$150,000
#3	Install Stop Sign controls and pavement markings	\$5,000	\$5,000
#4	Install (1) Traffic Signal head in the southbound direction on the existing span wire, change traffic signal timing / phasing / detection	\$75,000	\$200,000
#5	Changes to the driveway configurations	\$25,000	\$25,000
#6	Replacement of (1) Traffic Signal head, repositioning on existing span wire, change traffic signal timing / phasing / detection	\$75,000	\$200,000
#7	Replacement of (1) Traffic Signal head for exclusive westbound left turn, repositioning on existing span wire, change traffic signal timing / phasing / detection, crosswalk pavement markings	\$25,000	\$25,000
#8	No changes	\$0	\$0
Corridor	Removing existing signs, new signs, new roadway pavement markings	\$100,000	\$100,000
Total		\$380,000	\$955,000

Additional	Streetscape improvements	\$40,000	\$500,000
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An order of magnitude cost for the remaining project elements are listed below. No interim costs are given because these project elements require major capital improvement.

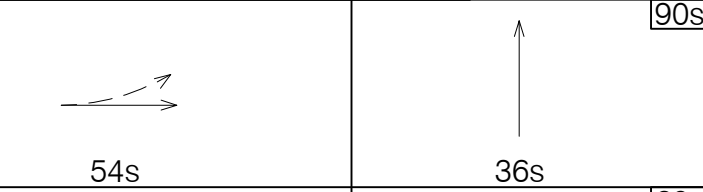
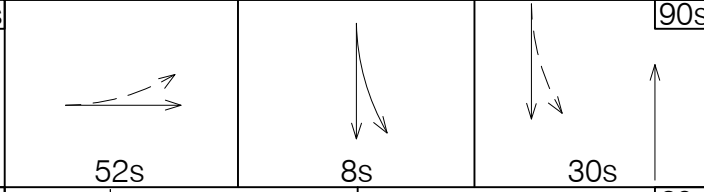
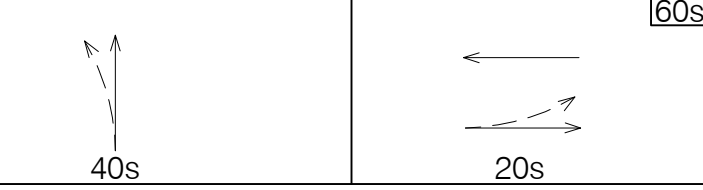
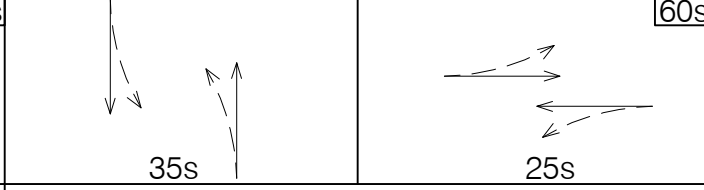
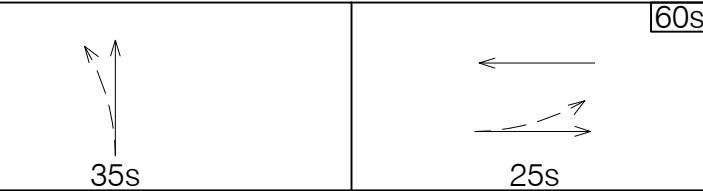
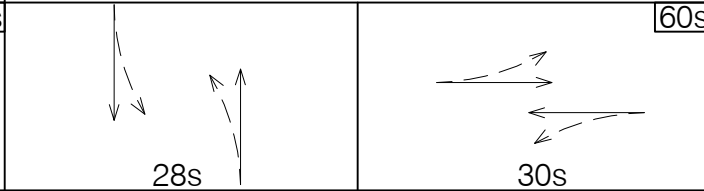
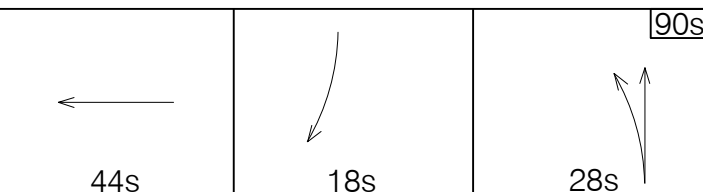
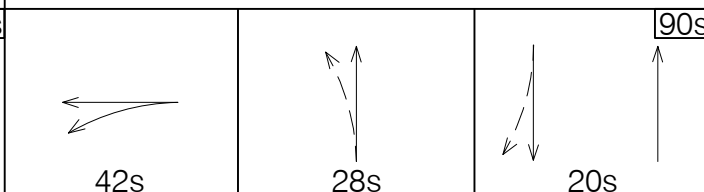
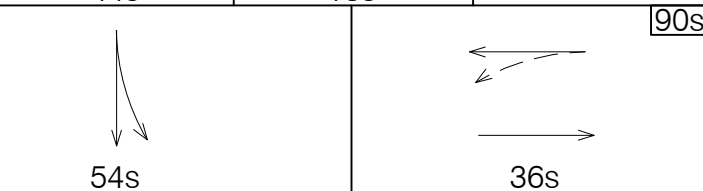
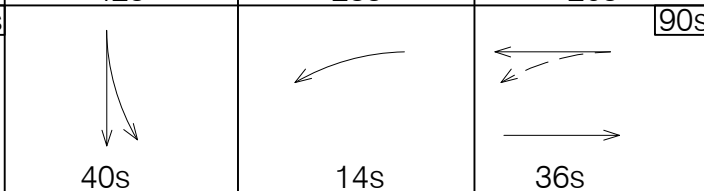
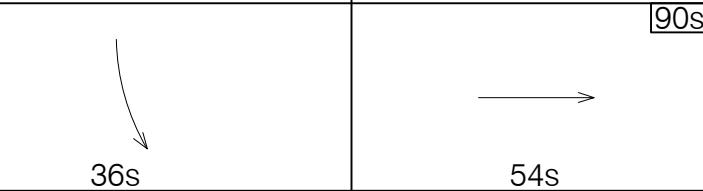
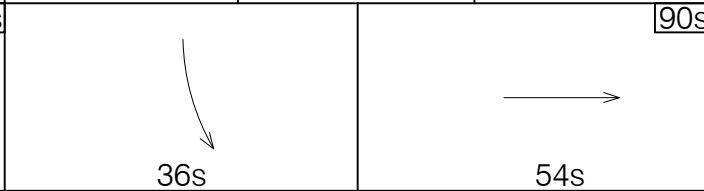
Recommendation	Order of Magnitude Cost (in millions of dollars)
Two-way streets for downtown: Columbus Drive, Church Street and Mill Street between Columbus Drive and Market, Market St	\$10
Connect Liberty Street	\$0.25
Connect Cannon Street	\$1
Union Street pedestrian connection	\$1.5
Garden Street bicycle connection (includes new signalized intersection)	\$0.25

Operations and maintenance (O&M) costs are assumed to be between 5% and 10% more than current existing conditions due to the increase in signals and signage.

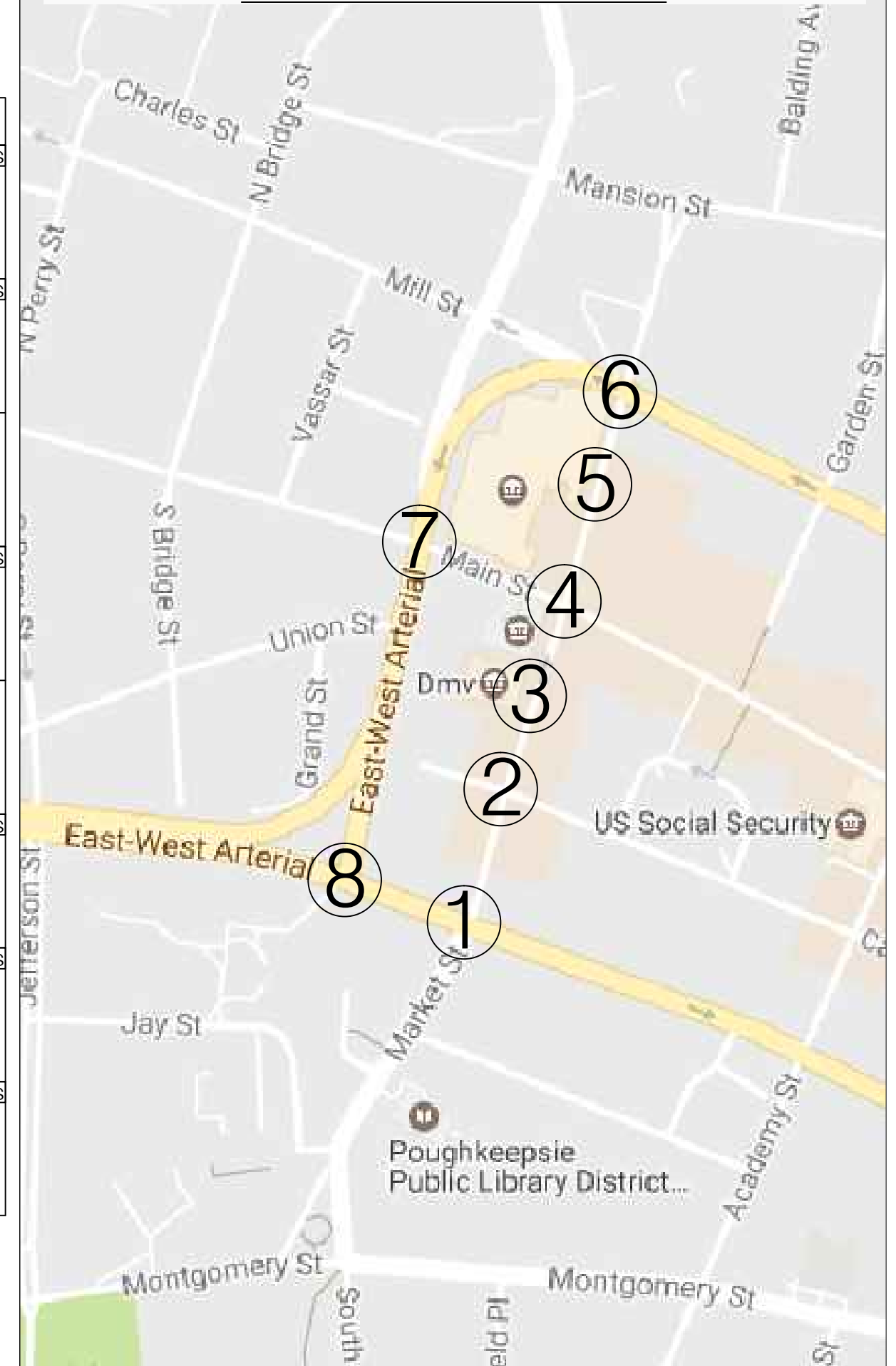
## **Appendix**

1. LOS Summary for Existing and Two-Way Market Street Scenario
2. Existing and Proposed Signal Phasing

# EXISTING AND PROPOSED SIGNAL TIMING COMPARISON

INTERSECTION	EXISTING CONDITION		S1 CONDITION			
① MARKET STREET AND CHURCH STREET						
② MARKET STREET AND CANNON STREET						
③ MARKET STREET AND COUNTY BUILDING	STOP		STOP			
④ MARKET STREET AND MAIN STREET						
⑤ MARKET STREET AND HOTEL/CIVIC CENTER	STOP		STOP			
⑥ MARKET STREET AND WB ARTERIAL/MILL STR						
⑦ COLUMBUS DRIVE AND MAIN STREET						
⑧ COLUMBUS DRIVE AND EB ARTERIAL						

# INTERSECTION KEY MAP





Level of Service Summary

			2016 Existing			
			PM			
			LOS	Delay (s)	v/c	Queues (ft)
<b>Intersection 1: Market Street &amp; Church Street - Signalized</b>						
Market Street	NB	TR	D	49.0	0.86	268
Church Street	EB	LTR	C	21.4	0.90	605
Overall Intersection			C	25.1	-	-
<b>Intersection 2: Market Street &amp; Cannon Street/Driveway - Signalized</b>						
Market Street	NB	LTR	A	5.8	0.26	49
Driveway	EB	LT	B	19.7	0.15	29
Cannon Street	WB	TR	C	29.2	0.58	26
Overall Intersection			B	13.1	-	-
<b>Intersection 3: Market Street &amp; County Office Building Driveway - Unsignalized</b>						
Overall Intersection			A	-	-	-
<b>Intersection 4: Market Street &amp; Main Street - Signalized</b>						
Market Street	NB	L	A	8.2	0.27	47
		TR	A	7.9	0.31	52
Main Street	WB	LT	C	21.2	0.49	97
		TR	D	49.0	0.85	199
Overall Intersection			B	19.4	-	-
<b>Intersection 5: Civic Center Plaza &amp; Hotel Driveway/Transit Hub Exit Driveway - Unsignalized</b>						
Transit Hub Exit Dwy	WB	TR	C	19.9	-	-
<b>Intersection 6: Civic Center Plaza &amp; Mill Street - Signalized</b>						
Civic Center Plaza	NB	L	C	25.4	0.64	59
		LT	C	32.5	0.74	169
Mill Street	WB	R	F	162.8	1.19	213
		TR	C	30.1	0.89	476
Overall Intersection			D	41.0	-	-
<b>Intersection 7: Columbus Drive &amp; Main Street - Signalized</b>						
Columbus Drive	SB	LTR	B	12.4	0.70	205
Main Street	WB	TR	C	33.1	0.65	206
		LT	F	172.6	1.26	370
Overall Intersection			C	33.0	-	-
<b>Intersection 8: Columbus Drive &amp; Church Street - Signalized</b>						
Columbus Drive	SB	L	C	20.3	0.86	192
Church Street	EB	T	B	14.1	0.55	240
Overall Intersection			B	16.4	-	-

Note: 95th percentile queue length (feet) is reported

			Scenario 1 - Two-way Market Street				Notes
			PM				
			LOS	Delay (s)	v/c	Queues (ft)	
<b>Intersection 1: Market Street &amp; Church Street - Signalized</b>							
Market Street	NB	TR	D	49.8	0.87	285	Added SB phasing. Adjusted signal phase settings and timings.
		L	C	28.1	0.54	85	
Church Street	EB	LTR	C	21.5	0.82	379	
Overall Intersection			C	25.7	-	-	
<b>Intersection 2: Market Street &amp; Cannon Street/Driveway - Signalized</b>							
Market Street	NB	LTR	B	12.4	0.50	148	Added SB phasing. Adjusted signal phase settings and timings.
		LTR	A	6.1	0.40	53	
Driveway	EB	LTR	B	13.0	0.1	22	
Cannon Street	WB	LTR	C	20.4	0.43	22	
Overall Intersection			B	12.0	-	-	
<b>Intersection 3: Market Street &amp; County Office Building Driveway - Unsignalized</b>							
Overall Intersection			A	0.8	0.26	-	
<b>Intersection 4: Market Street &amp; Main Street - Signalized</b>							
Market Street	NB	L	B	18.4	0.37	55	Added SB phasing. Adjusted signal phase settings and timings.
		TR	C	23.4	0.73	199	
	SB	L	B	15.0	0.15	25	
		TR	B	20.0	0.60	191	
Main Street	WB	LTR	B	13.6	0.36	78	
		LTR	C	23.0	0.64	162	
Overall Intersection			C	20.4	-	-	
<b>Intersection 5: Civic Center Plaza &amp; Hotel Driveway/Transit Hub Exit Driveway - Unsignalized</b>							
Market Street	NB	LT	A	0.1	0.00	0	
		LR	A	0.0	0.24	0	
Transit Hub Exit Dwy	WB	R	C	19.6	0.58	91	
Overall Intersection			A	5.5	0.58	-	
<b>Intersection 6: Civic Center Plaza &amp; Mill Street - Signalized</b>							
Civic Center Plaza	NB	L	E	55.6	0.91	180	Added SB phasing. Adjusted signal phase settings and timings.
		T	B	17.1	0.40	178	
	SB	T	D	41.0	0.23	51	
		R	E	63.3	0.88	105	
Mill Street	WB	LTR	D	36.1	0.94	471	
Overall Intersection			D	38.7	-	-	
<b>Intersection 7: Columbus Drive &amp; Main Street - Signalized</b>							
Columbus Drive	SB	LTR	C	24.3	0.68	257	Added exclusive left turn signal for Main St WB. Adjusted ped timing (walk time = 7s, FDW = 22s) for the south crosswalk. Adjusted existing signal timing.
		TR	D	45.9	0.81	210	
Main Street	WB	L	B	17.9	0.44	82	
		T	C	25.6	0.26	89	
Overall Intersection			C	26.7	-	-	
<b>Intersection 8: Columbus Drive &amp; Church Street - Signalized</b>							
Columbus Drive	SB	L	C	24	0.70	89	No change to existing traffic signal.
Church Street	EB	T	A	7.2	0.46	182	
Overall Intersection			B	11.1	-	-	