City of Ketchum

June 13, 2022

Mayor Bradshaw and City Councilors
City of Ketchum
Ketchum, Idaho

Mayor Bradshaw and City Councilors:

Receive Briefing on Main Street Transportation Analysis & Provide Direction

Recommendation and Summary

The city retained HDR Engineering to complete a technical analysis of future transportation enhancements on Main Street and Warm Springs Road. The scope of work for Main Street included:

- New timing plan for the four signalized intersections to improve AM/PM peak traffic flow – (**completed)**
- Evaluate conversion from four lane travel facility to two travel lanes with center turn lane
- Evaluate short- and long-term improvements (vehicular and pedestrian) to each intersection

During the April 11th Council meeting, HDR and staff presented the following recommendations via the attached presentation:

- Request ITD to discontinue the scramble crosswalk while implementing the new signal timing plan for all four intersections. Revert to traditional crosswalk but with new feature of a pedestrian que – ***COUNCIL CONCURRED***
- Advance concept design of new Sun Valley Road intersection to understand pros/cons – ***COUNCIL CONCURRED***
- Not proceed with further analysis related to lane reconfiguration – ***COUNCIL DID NOT APPROVE.***

HDR will present the new scope of work to further investigate long-term lane reconfiguration which involves detailed computer modeling to understand impact to travel time in the corridor.

Sustainability Impact

No direct impact. The project seeks to improve pedestrian and bicycle facilities along the corridor which should increase alternative mobility choices.

Financial Impact

Should the Council support the additional analysis, staff will return with a task order for approval. Adequate funds exist in the Main Street/Warm Springs CIP project to fund the task order.

Attachments

PowerPoint Presentation
Initial Findings Memo
Proposed New Task Order

SCOPE OF SERVICES

Supplemental # 1

Project Description

The purpose of the project is to evaluate alternatives for Main Street (SH-75) between River Street and Saddle Road for the City of Ketchum, Idaho (City).

The original Scope of Services (SOS) includes the data collection, travel demand forecasting, analysis, and alternatives evaluation for Main Street. HDR Engineering, Inc. (HDR) is the prime consultant with L2 Data Collection (L2) as subconsultant.

The purpose of this supplemental SOS is to provide microsimulation models and analysis of the no-build alternative and two build alternatives under future travel demand conditions.

The scope narrative is organized by the following tasks:

- Task 100 Project Management
- Task 600 Alternative Concepts Analysis and Evaluation

Key Understandings

1. The City is the agreement administrator and the project is funded by the City. State and Federal funds will not be used.
2. This supplemental SOS assumes an additional three (3) month project duration for estimating purposes, with report delivery no later than August 19, 2022, based on an NTP of May 20, 2022.
3. In providing opinions of probable construction cost for the project, HDR has no control over cost or price of labor and materials, unknown or latent conditions of existing equipment or structures that might affect operation or maintenance costs, competitive bidding procedures and market conditions, time or quality of performance by operating personnel or third parties, and other economic and operational factors that might materially affect the ultimate cost or schedule. HDR, therefore, will not warranty project costs will not vary from HDR's opinions, analyses, projections, or estimates.
4. All deliverables will be electronic PDF files. Where hard copies are required, it will be noted in the tasks below.

600 ALTERNATIVE CONCEPTS ANALYSIS AND EVALUATION

660 Microsimulation Analysis

To further evaluate the lane reconfiguration alternative, HDR will conduct an operational analysis using microsimulation (Vissim version 2022) for 2042 analysis year conditions. An existing conditions Vissim model will be developed for the same study area as previously analyzed in Synchro/SimTraffic and will be calibrated to existing traffic flow and field observations. The existing conditions Vissim model will model pedestrians at the study intersections including the HAWK signal.

The calibrated existing conditions model will be used to develop and analyze up to three alternatives:

- 2042 No-Build
- 2042 Build Alternative 1: Proposed Lane Reconfiguration (3 lane section)
- 2042 Build Alternative 2: Add Left Turn Lanes at Sun Valley Road Intersection (keep existing 4 lane section on rest of the corridor)

Intersection, multimodal, and roadway segment operations will be estimated for roadways and intersections with assumed intersection control identified through discussions with the City and ITD. Travel times, delay and queuing along Main Street will be documented from Vissim simulation runs of each alternative. Animations created from the Vissim model will provide a visual demonstration of the Build alternatives operations.

Assumptions

- New data collection will not be performed. The Vissim analysis will utilize existing and future traffic volumes previously developed.
- Model calibration will be limited to traffic volumes and field observations provided there is no available travel time data for calibration.
- Model development, calibration, and results will be documented in the Final Report.

Deliverables

- Results and comparison of alternative Vissim model analyses presented in the Final Report
- Visualizations of alternative model runs demonstrating operations under future travel demand

HDR Engineering, Inc.
City of Ketchum Main Street (SH-75) Alternatives Analysis
Supplemental # 1

			HDR					
		TOTAL	Principal in Charge	Quality Control	Project Manager	Senior Traffic Engiener	Traffic Engineer	Accounting
600	**Alternative Concepts Analysis and Evaluation**	**224**	**0**	**8**	**2**	**60**	**150**	**4**
660	Microsimulation Analysis	224		8	2	60	150	4
	Total:	**224**	**0.0**	**8.0**	**2.0**	**60.0**	**150.0**	**4.0**
	Total Check:	**224.0**	**0.0**	**8.0**	**2.0**	**60.0**	**150.0**	**4.0**
	Percent of Project Total:	**100.0%**	**0.0%**	**3.6%**	**0.9%**	**26.8%**	**67.0%**	**1.8%**

CONSULTANT NAME: HDR Engineering, Inc.
PROJECT NAME: City of Ketchum Main Street (SH-75) Alternatives Ana
PROJECT NO.: Supplemental # 1
KEY NO. N/A

DESIGN

A. SUMMARY ESTIMATED MAN-DAY COSTS

		Man-Hours		Rate		Labor Cost
1	Principal in Charge	0.00	@	$319.00	=	$0.00
2	Quality Control	8.00	@	$204.00	=	$1,632.00
3	Project Manager	2.00	@	$235.00	=	$470.00
4	Senior Traffic Engiener	60.00	@	$243.00	=	$14,580.00
5	Traffic Engineer	150.00	@	$149.00	=	$22,350.00
6	Accounting	4.00	@	$90.00	=	$360.00
	TOTAL =	224.00		**TOTAL =**		**$39,392.00**

B. OUT-OF-POCKET EXPENSES

HDR TOTAL ESTIMATED EXPENSE* = **$0.00**

* See attached Direct Expenses for HDR

C. ESCALATION

Anticipated Agreement Date: May 20, 2022
Project Duration: 3 months
Escalation Period: 0 months

Total Labor Cost		Esc Ratio		Annual Esc		
$39,392.00	X	0%	x	3.5%	=	**$0.00**

HDR Subtotal = **$39,392.00**

D. SUBCONSULTANTS

L2 Data Collection

Subconsultant Subtotal = **$0.00**

TOTAL = **$39,392.00**

Main Street Analysis Goals

- Improve vehicle progression along the corridor
- Improve pedestrian and bike facilities and crossings
- Enhance streetscape and pedestrian realm

Planning for Achieving the Goals

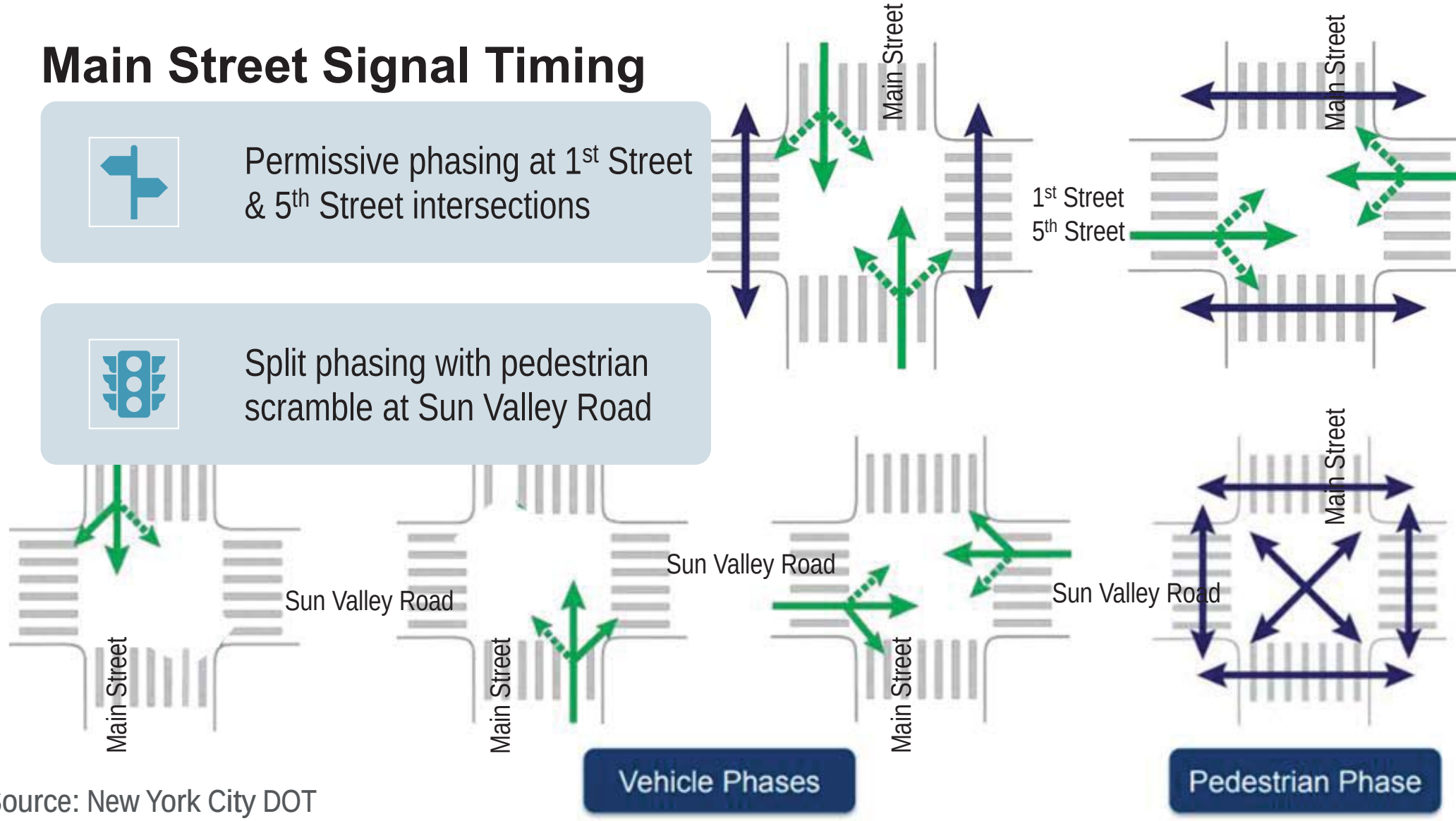
- Short term – By the Fourth of July
  - Coordinate signal timing for improved motorized vehicle flow
- Long Term – beyond 2025
  - Explore lane reconfiguration options along Main Street that:
    - Maintain motorized vehicle flow at low speed on Main Street
    - Avoid diverting traffic to adjacent local streets
  - Improve pedestrian and bike facilities and crossings
- Mid term – 2023 to 2025
  - Improve intersections with upcoming ITD project

1 Main Street Corridor Short Term Improvements

Main Street Signal Timing

Permissive phasing at 1st Street & 5th Street intersections

Split phasing with pedestrian scramble at Sun Valley Road

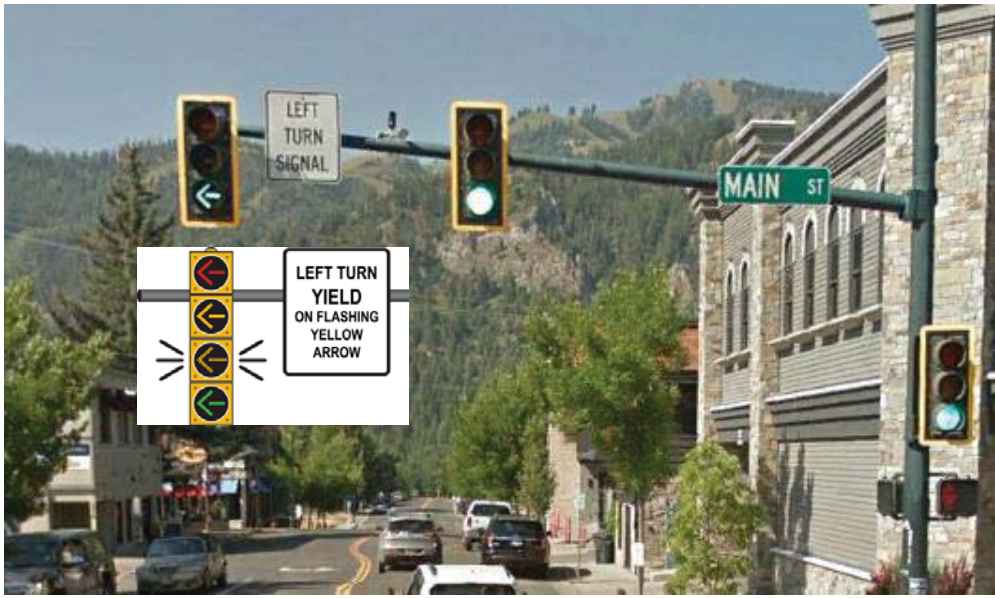


Source: New York City DOT

Main Street Signal Timing

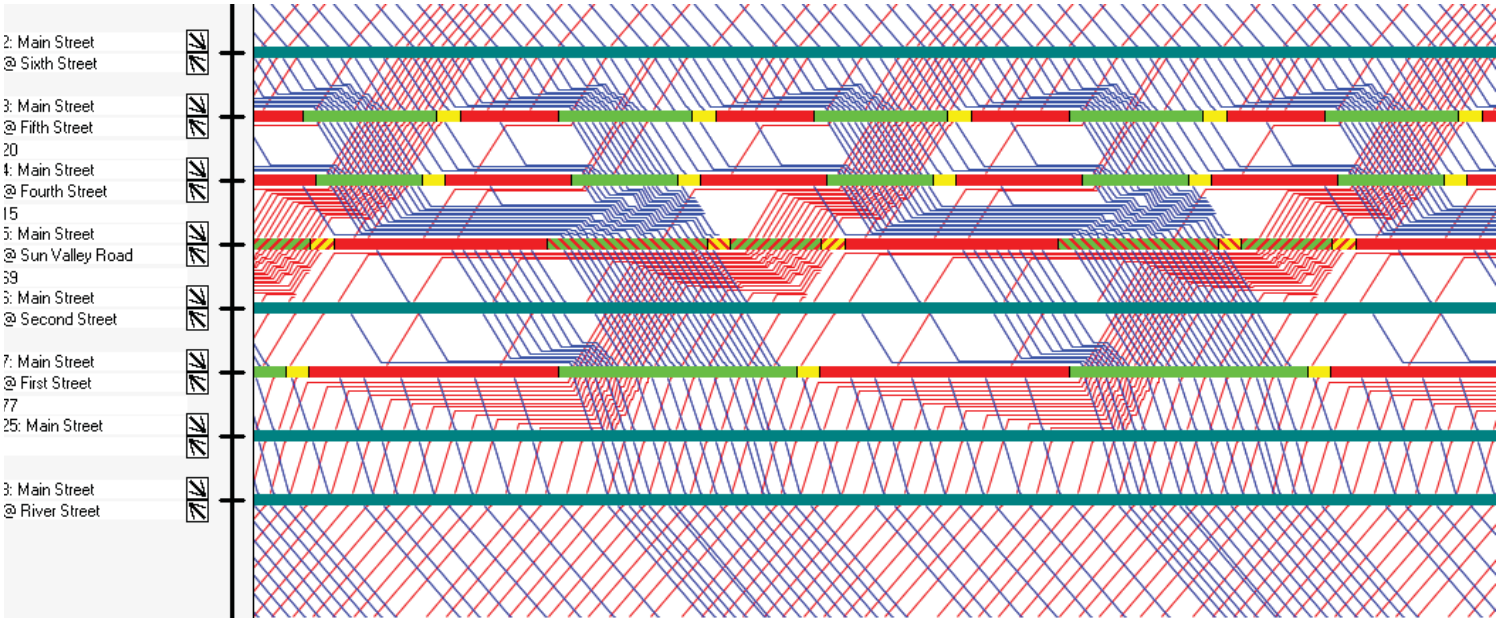
Existing Inefficiencies

- Pedestrian scramble has good intentions but complicates corridor operations and adds delay to both pedestrians and vehicles
- Providing flashing yellow arrows for left turns at Sun Valley Road to be more efficient and could reduce delay
- Southbound merge prior to 1st Street causes congestion



Main Street Signal Timing

- Developed two signal timing plans
  - Proposed: Keeps existing phasing, specifically the pedestrian scramble at Sun Valley Road intersection
  - Alternative: Removes pedestrian scramble



Main Street Signal Timing

- Coordinated with ITD in January 2022, adjusted timing plans
  - Shared observed inefficiencies and opportunities for improvement
  - Kept cycle lengths to 130 seconds or less
  - Provided two cycles of the 4th Street HAWK for each Sun Valley Road cycle

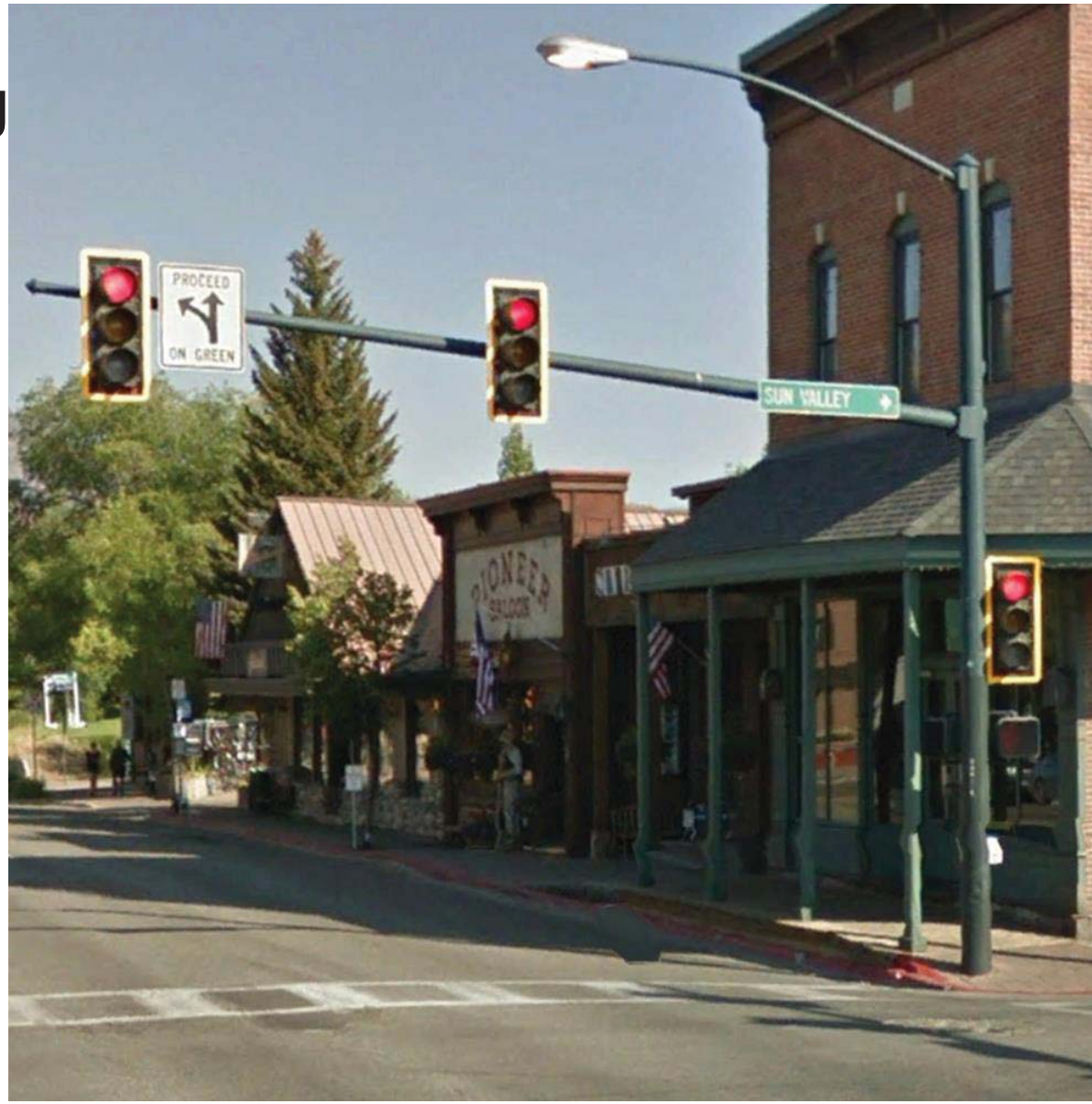
Table 1. Comparison of Signal Timing Plans

Measure of Effectiveness	Proposed AM	Proposed PM	Alternative AM	Alternative PM
Delay Per Veh (secs/veh)	23	35	10	14
Stops Per Veh	0.29	0.30	0.31	0.34
Total Delay (hr)	49	93	22	37
Average Speed (mph)	8	6	13	11
Unserved Vehicles (#)	138	296	0	0

Main Street Signal Timing

Next Steps

- ITD will implement the timing plans once radios are installed to synchronize signal control
  - Evaluate removing pedestrian scramble AND install leading pedestrian interval to help keep pedestrians safer.
  - Leading pedestrian interval puts pedestrians out into crosswalk before vehicles get a green indication.
- Goal to have the timing plans in operation by the 4th of July
- ITD and the City should observe traffic patterns during implementation and make needed adjustments the timing plans

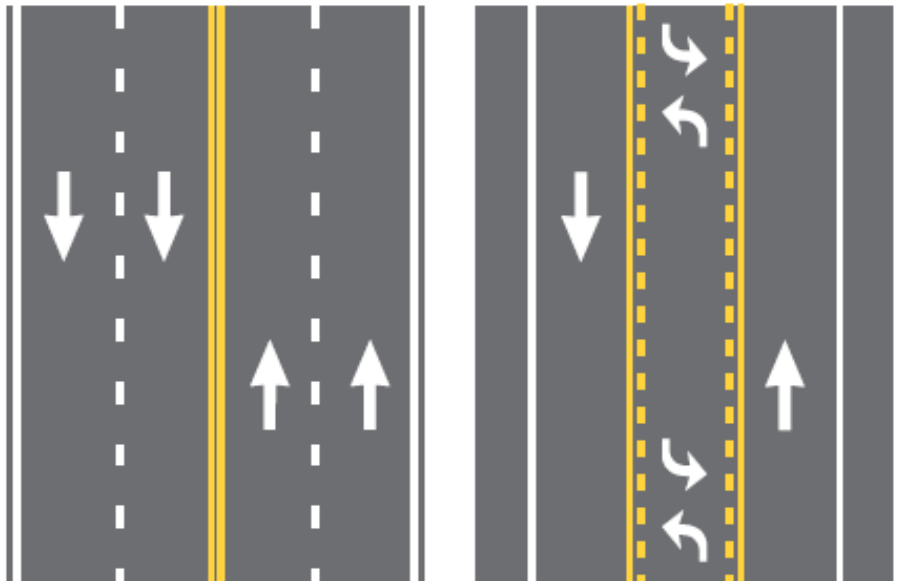


2 Main Street Corridor Long Term Concepts

Main Street Corridor – Long Term

Initial Alternatives

- Investigated future 2042 average and summer conditions
- No-Build Scenario
- Build Scenario - Lane Reconfiguration
  - One lane in each direction, dedicated left turn lane at each intersection on Main Street



Source: Road Diet Informational Guide

Main Street Corridor

Build Scenario Results

- Level of service (LOS) improved at Sun Valley Road with left turn lanes
- Reduced Main Street width allowing parking and streetscape enhancements
- Congestion/gridlock and travel time is estimated to increase significantly due high volumes and less storage capacity on Main Street
- Traffic could shift to local streets with congestion on Main Street

2042 No-Build Summer PM Peak Hour

Main Street Intersection	Overall Intersection		Main Street				Cross Street			
	LOS	Average Delay (s)	Movement	Average Delay (s)	LOS	95th Percentile Queue Length (feet)	Movement	Average Delay (s)	LOS	95th Percentile Queue Length (feet)
River Street	F		NBL	13	B		WBL	108.8	F	110
1st Street	B	14.8	SBT/R	15.7	B	228	WB	18.7	B	267+
			NBT/R	11.8	B	131	EB	13.6	B	83
2nd Street	C		SBL	22.1	C		EBL	21.6	C	25
Sun Valley Road	F	121.4	SBT/R	108	F	520+	WBL	69	E	338+
			NBT/R	213.1	F	435+	EBL	55.6	E	86
4th Street	A									
5th Street	A	9.6	SBT/R	8.1	A	205	WB	19.4	B	95
			NBT/R	5.5	A	91	EB	19.3	B	117
6th Street	B		NBL	11	B	45	EBL	12.4	B	25
Total Delay (hours)	93	26 s/veh								
Total Stops	5,059									
Stops per vehicle	0.39									
Average speed (mph)	7									
Travel time (hours)	132									
Unserved Vehicles	200									

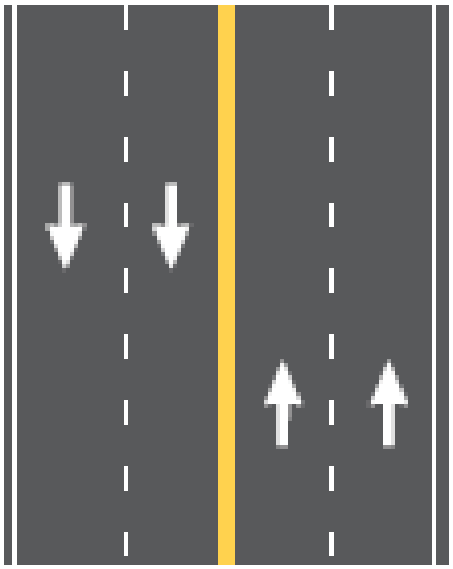
2042 Build Summer PM Peak Hour

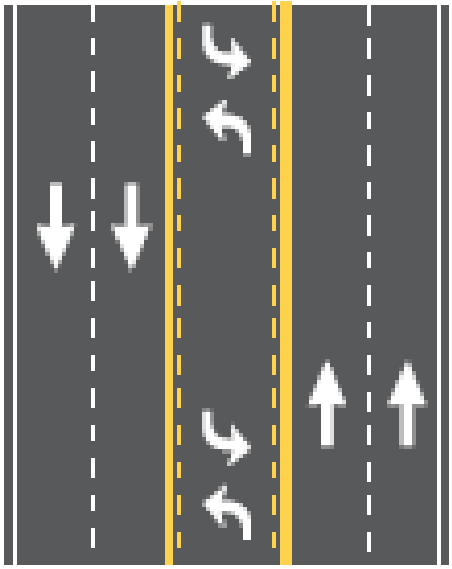
Main Street Intersection	Overall Intersection		Main Street				Cross Street			
	LOS	Average Delay (s)	Movement	Average Delay (s)	LOS	95th Percentile Queue Length (feet)	Movement	Average Delay (s)	LOS	95th Percentile Queue Length (feet)
River Street	F		NBL	13	B		WBL	100.7	F	110
1st Street	E	75.8	SBT/R	116.7	F	838+	WB	84.9	F	511+
			NBT/R	27.1	C	583	EB	28.2	C	136
2nd Street	D		SBL	29.5	D		EBL	30.8	D	27.5
Sun Valley Road	C	30.7	SBT/R	30.9	C	869+	EBT/R	46.6	D	135
			NBT/R	6.3	A	514+	WBL	66.8	E	217
4th Street	A		SBT/R	6.2	A	136				
5th Street	C	23.7	SBT/R	27.1	C	868+	EB	41.9	D	244+
			NBT/R	8.4	A	157	WB	37.8	D	157
6th Street	B		NBL	11	B	45	EBL	12.4	B	25
Total Delay (hours)	105	29 s/veh								
Total Stops	4,667									
Stops per vehicle	0.36									
Average speed (mph)	7									
Travel time (hours)	143									
Unserved Vehicles	200									

Main Street Corridor

Additional Alternatives

1. Add left turn lanes on Main Street at Sun Valley Road, removing split phasing & pedestrian scramble
2. Prohibit left turn movements from Main Street except at Sun Valley Road where left turn lanes are added
3. Install a five-lane section along Main Street with left turn lanes at each intersection





Source: Road Diet Informational Guide

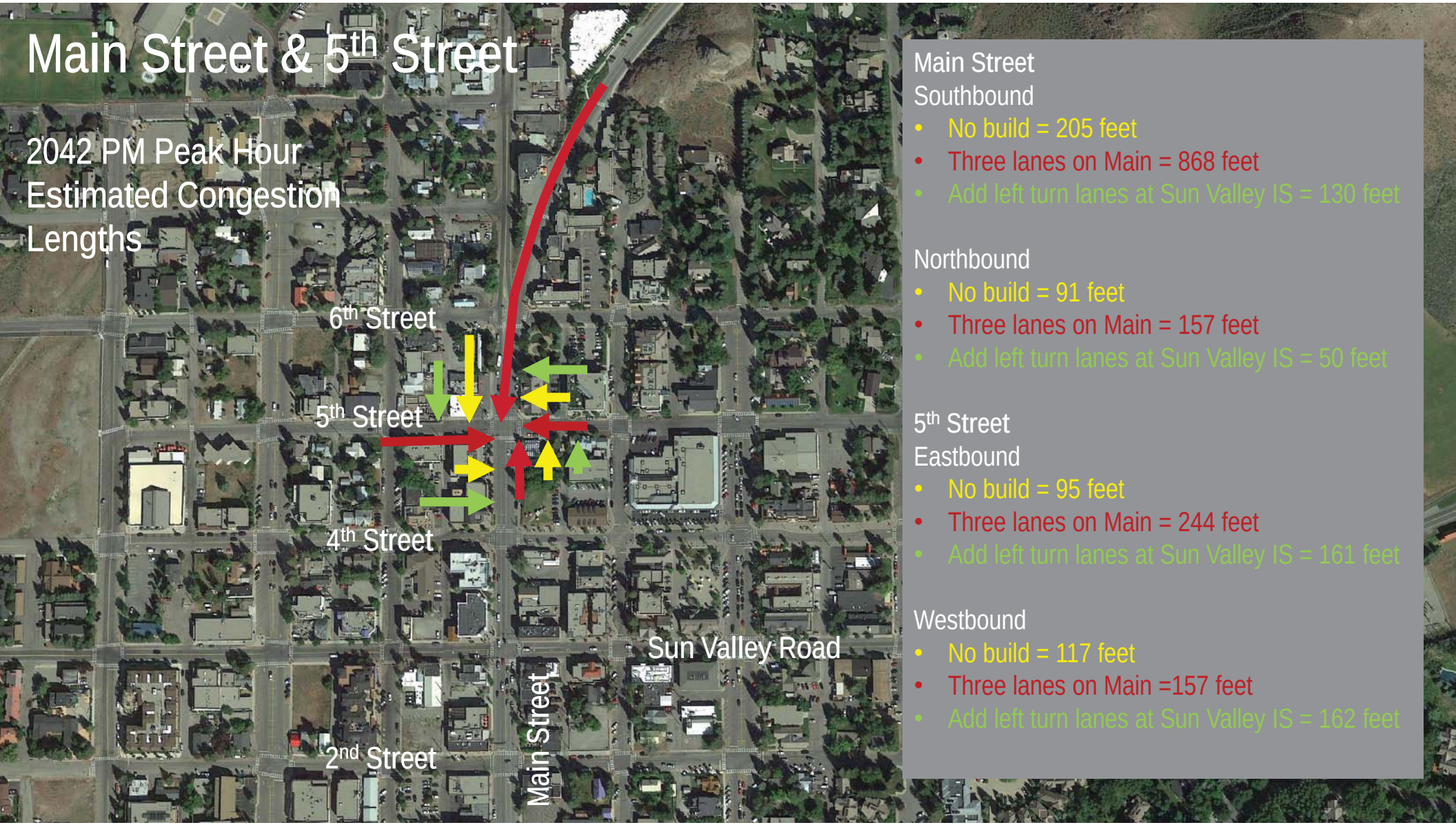
Main Street Corridor

Additional Alternatives

- Each of these alternatives provide:
  - Better LOS
  - Less congestion/gridlock
  - Shorter length of waiting vehicles
  - Better progression and travel time for vehicles, same pedestrian crossing opportunities
  - Shorter cycle lengths = shorter wait times for pedestrians to cross at signalized intersections

Main Street & 5th Street

2042 PM Peak Hour
Estimated Congestion
Lengths



Main Street

Southbound

- No build = 205 feet
- Three lanes on Main = 868 feet
- Add left turn lanes at Sun Valley IS = 130 feet

Northbound

- No build = 91 feet
- Three lanes on Main = 157 feet
- Add left turn lanes at Sun Valley IS = 50 feet

5th Street

Eastbound

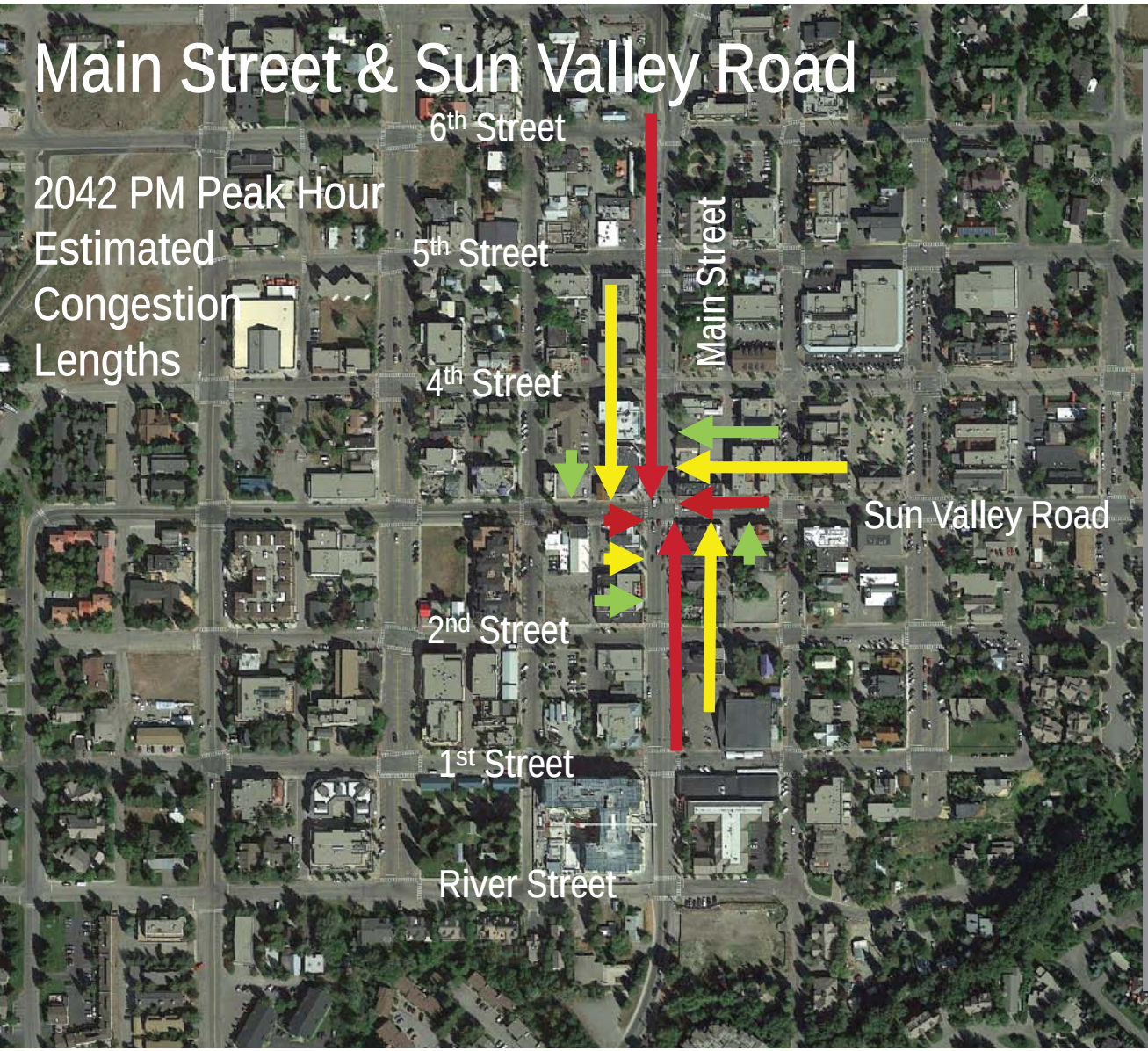
- No build = 95 feet
- Three lanes on Main = 244 feet
- Add left turn lanes at Sun Valley IS = 161 feet

Westbound

- No build = 117 feet
- Three lanes on Main =157 feet
- Add left turn lanes at Sun Valley IS = 162 feet

Main Street & Sun Valley Road

2042 PM Peak Hour Estimated Congestion Lengths



Main Street

Southbound

- No build = 520 feet
- Three lanes on Main = 870 feet
- Add left turn lanes at Sun Valley IS = 64 feet

Northbound

- No build = 435 feet
- Three lanes on Main = 515 feet
- Add left turn lanes at Sun Valley IS = 50 feet

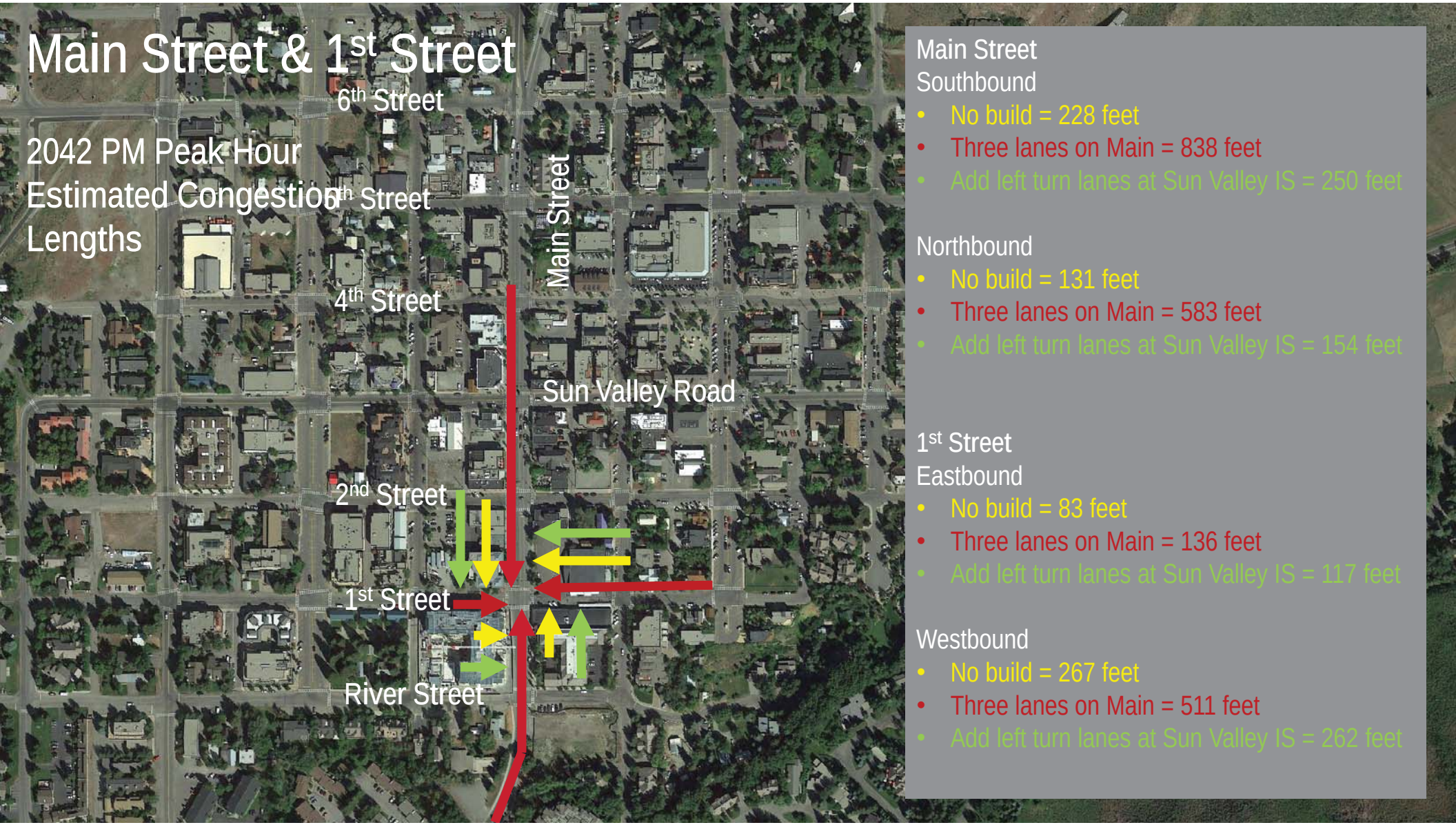
Sun Valley Road

Eastbound

- No build = 90 feet
- Three lanes on Main = 135 feet
- Add left turn lanes at Sun Valley IS = 103 feet

Westbound

- No build = 340 feet
- Three lanes on Main = 220 feet
- Add left turn lanes at Sun Valley IS = 180 feet



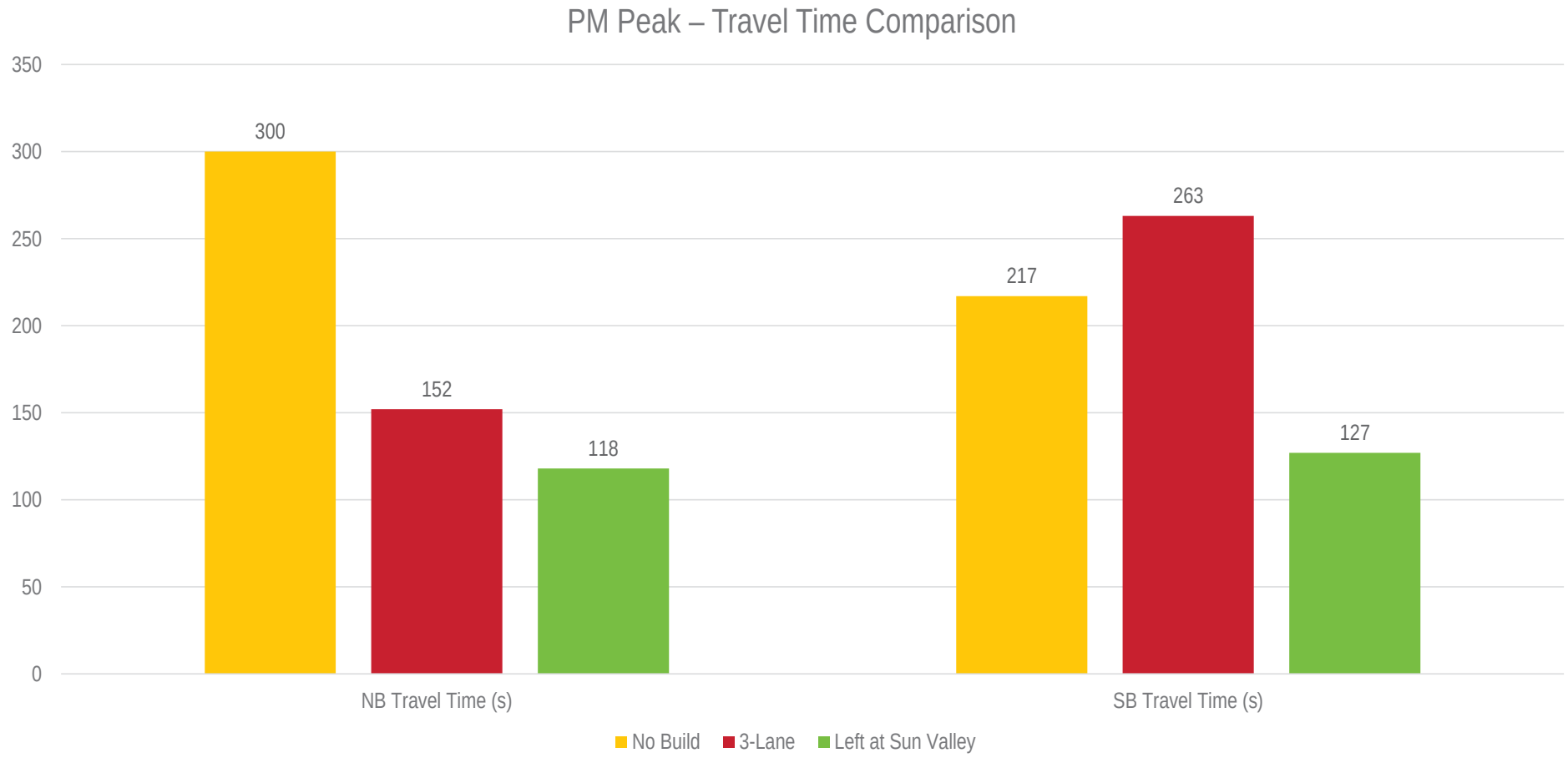
Main Street
Southbound
- No build = 228 feet
- Three lanes on Main = 838 feet
- Add left turn lanes at Sun Valley IS = 250 feet

Northbound
- No build = 131 feet
- Three lanes on Main = 583 feet
- Add left turn lanes at Sun Valley IS = 154 feet

1st Street
Eastbound
- No build = 83 feet
- Three lanes on Main = 136 feet
- Add left turn lanes at Sun Valley IS = 117 feet

Westbound
- No build = 267 feet
- Three lanes on Main = 511 feet
- Add left turn lanes at Sun Valley IS = 262 feet

Main Street Corridor Additional Alternatives



Main Street Corridor

Long Term Recommendations

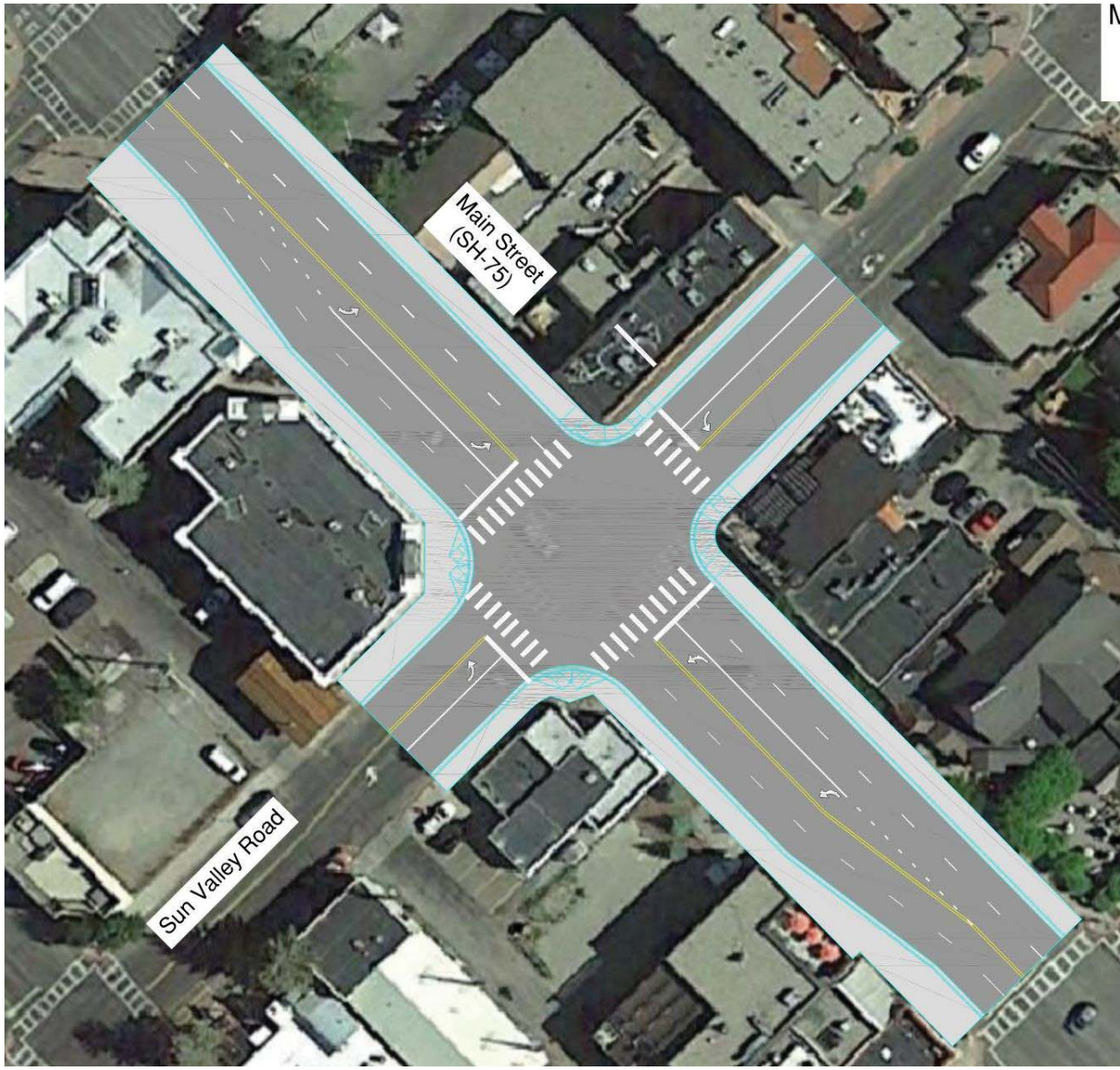
- Do not pursue three lane section
  - Significant impacts to motorized vehicle flow & travel time
  - Congestion on Main Street could cause traffic to use adjacent streets to get through town, increasing volumes, congestion, and conflicts on local streets
- Investigate other alternatives for mid- and long-term concepts

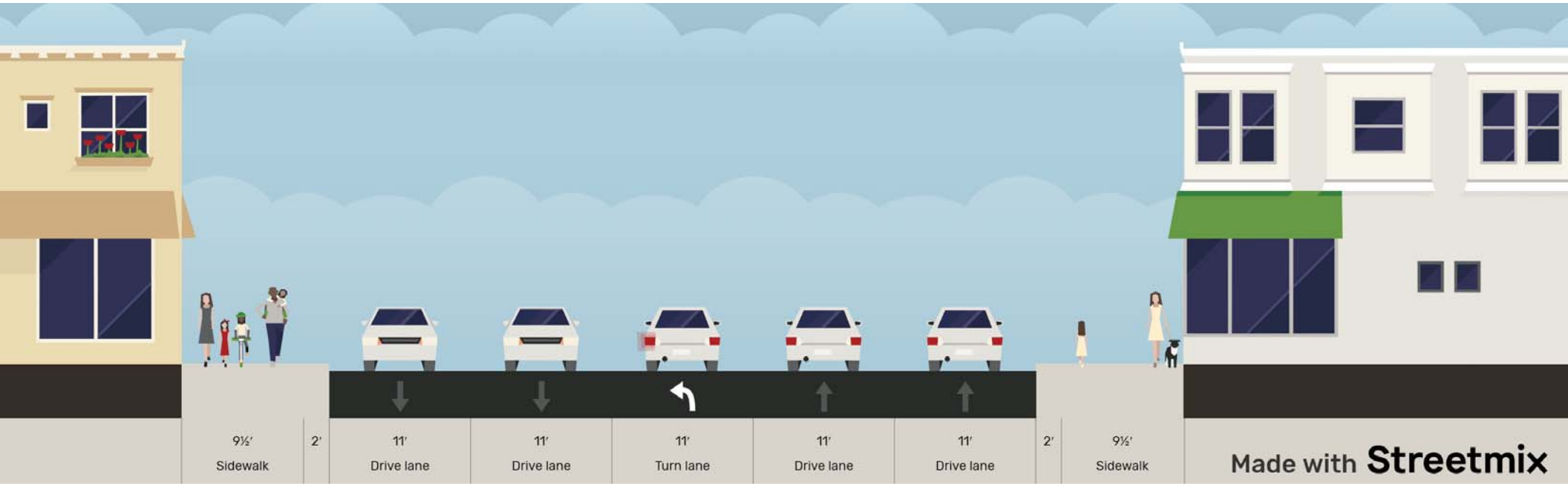
3 Main Street Corridor Mid Term Concept

Main Street / Sun Valley Road

Concept Layout

- Replace pedestrian scramble with leading pedestrian phase
- Investigate adding left turn lanes on Main Street
  - Curb, gutter, and sidewalk replacement
    - Balance sidewalks on each side
    - 11’ lanes, 9.5’ wide sidewalks
  - Remove parking
  - Could be implemented with ITD’s upcoming project





Main Street Corridor – Next Steps

- Continue to refine Sun Valley Road concept
- Review other intersections
  - Potential for similar improvements
  - Close left turns from Main Street at 1st & 5th Streets during peaks
  - Identify pedestrian improvements
  - Evaluate vertical element (planter etc.) to help pedestrian feel safer.