

Project Update Meeting**September 27, 2019****9:00 am – 12:00 pm****Meeting Summary****Attendees**

Darren Brugmann, START
Susan Mick, START
Melissa Turley, Teton Village Association
Amy Ramage, Teton County
Heather Overholser, Teton County
Katherine Dowson, Friends of Pathways
Jared Smith, Citizen Representative
Lynne Whalen, Citizen Representative
Tyler Sinclair, Town of Jackson
Ross MacIntyre, River Hollow HOA
Larry Pardee, Town Administrator
Alyssa Watkins, County Administrator
Kelly Rounds, WYDOT
Meg Mordahl, WYDOT
Hank Doering, WYDOT

Keith Fulton, WYDOT
Dustin Woods, FHWA
Nick Hines, WYDOT
Jeff Booher, WYDOT
Stephanie Harsha, WYDOT
Bob Hammond, WYDOT
Darin Kaufman, WYDOT
Jeffery Mellor, WYDOT
Joel Meena, WYDOT
Keith Compton, WYDOT
Ted Wells, WYDOT
Brian Smalkoski, Kimley-Horn
Brent Crowther, Kimley-Horn

Summary*1. Introductions*

Each attendee provided self-introductions.

B. Crowther reviewed the project purpose and objectives. The project purpose is to identify, evaluate, and select transit improvements that: connect Jackson to Teton Village; reduce transit travel times; and improve transit operations, transit ridership, and traffic operations on the WY 22 and WY 390 corridor.

The project objectives are review corridor recommendations from WY 22 and 390 PELS, and Jackson Integrated Transportation Plan (ITP); develop corridor transit alternatives; determine impact of transit alternatives at intersection of WY 22 / WY 390 and Snake River Bridge; obtain stakeholder and public input on the alternatives.

2. Draft Final Report Review

B. Crowther reviewed the content in the draft Final Report.

B. Crowther provided a summary of the previous plans and studies: Wyoming Highways 22 and 390 Planning and Environmental Linkages Study, Jackson/Teton Integrated Transportation Plan, and Jackson Travel Demand Study.

B. Crowther presented travel time and traffic volume data highlighting the current and anticipated congestion issues.

Refer to the PowerPoint Presentation (attached).

B. Crowther provided an overview of different transit improvement options that were explored to mitigate the current and anticipated congestion issues. He then presented the results from different improvement packages and noted that several provided a more substantial benefit including a transit only signal and relocation of the bus stops to Highway 390.

3. *Discussion of Strategies and Recommendations*

The Transit Subcommittee discussed the strategies and recommendations follows are key discussion items:

- a. The transit-only signal option was discussed and how that could potentially be funded between WYDOT and the transit agency.
- b. Discussion focused on potential impacts to ridership if the stops were moved and resulted in a longer walk for transit users. B. Smalkoski noted that if this option were to be advanced, the master plan for the Stilton Park & Ride would want to be revisited to orient the parking and facilities to the new station.
- c. The question was asked about occupancy assumptions as documented in the report. The 2.5 persons/vehicle occupancy was obtained from the Teton Village Resort Master Plan, PUD, Transportation Element, Final Report, May 200, Table 14.
- d. The TAC discussed the variations between winter and summer traffic. A comparison of intersection volumes, provided by WYDOT, for winter counts and summer counts (see page 19 of the draft Final Report) shows that the volumes passing through the intersection during the peak hour are relatively consistent.
- e. There was a lot of discussion on how to improve travel times eastbound into Jackson, and if shoulder lanes should be expanded to enable shoulder-running BRT. It was explained that the primary source of delay for eastbound traffic are intersections at Spring Gulch and at Broadway. Those intersections are outside of the scope of this analysis, which focused on the WYO 22/WYO 390 intersection. The study model would need to be expanded to Broadway to further explore the causes and extent of eastbound congestion, and the need for shoulder running BRT between the study intersection and Broadway.

- f. It was discussed that the shoulder width on the bridge could be increased to 10'-12' (from 8') so that buses could utilize them.
- g. The Public Open House is scheduled for October 17. It will be a presentation with time for discussion. B. Crowther will prepare a 20-minute presentation to be presented at the Open House. It will be a reduced version of the TAC presentation (attached).

Attachments

- PowerPoint Presentation

SEPTEMBER 27, 2019

Jackson Hole Mountain Resort
TETON VILLAGE

Driggs
Victor
Wilson
Village Road Transit Center
TETON PASS
WY 22
WY 390
Snake River
MOOSE-WILSON ROAD

**TRANSIT IMPROVEMENTS ASSESSMENT FOR THE
JACKSON-WILSON ROAD
(SNAKE RIVER BRIDGE)**

Transit Subcommittee Meeting

Prepared for

Prepared by

Kimley»Horn
Expect More. Experience Better.

Background

- WYO 22/WYO 390 intersection experiences significant delay
- Planned reconstruction: 'Florida-T' configuration
- Past studies recommended improving START Teton Village route to bus rapid transit (BRT)



Study Purposes

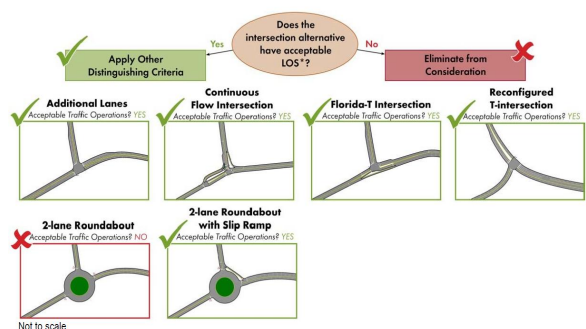
- Review previous studies recommendations
- Review WYO 22/WYO 390 intersection and Snake River Bridge design concept
- Recommend intersection improvements to accommodate future BRT
- Obtain stakeholder and public input on recommended improvements



Previous Planning Studies

Wyoming Highways 22 and 390 PEL Study

- **Recommendations**
 - Congestion during peak seasons on highway corridors
 - Buses negatively impacted by traffic congestion
 - Transit-only or queue jump lanes could improve travel time
 - Five intersection alternatives for WYO 22 / WYO 390,
 - Four recommended for further study

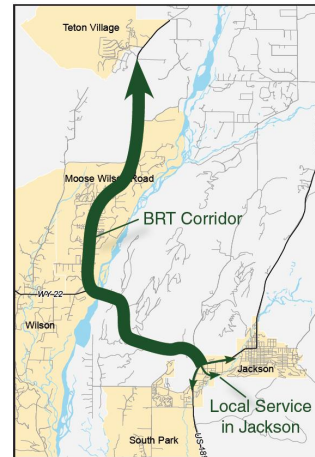


Previous Planning Studies

Jackson/Teton County Integrated Transportation Plan

• Recommendations

- Implement BRT on Teton Village route supported by:
 - Transit-only / HOV lanes on WYO 22
 - Streamlined alignment
 - New branding
 - Off-board fare collection
- Increase summer transit service on Teton Village route, using excess capacity from winter fleet
- Implement travel demand management (TDM) policies with local employers



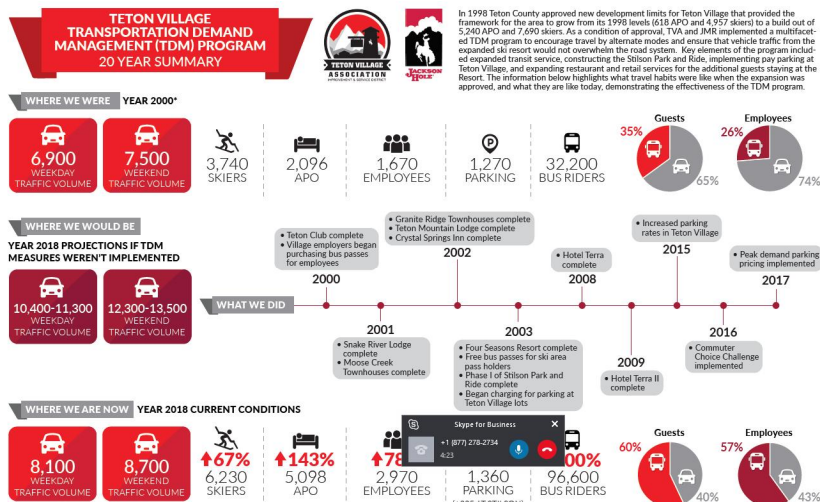
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SEPTEMBER 27, 2019

5

Previous Planning Studies

Teton Village/Jackson Hole Mountain Resort TDM Program



*Program began in 1998, however 2000 was the first year of data monitoring
Data shown is for February 2000 and February 2018

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6

Previous Planning Studies

Master Plan for the Stilson Park-and-Ride

- Construct 1,350 parking spaces as park-and-ride
- Improved loading area for Teton Village Shuttle and START buses
- New START bus pullouts on WYO 390 north of WYO 22



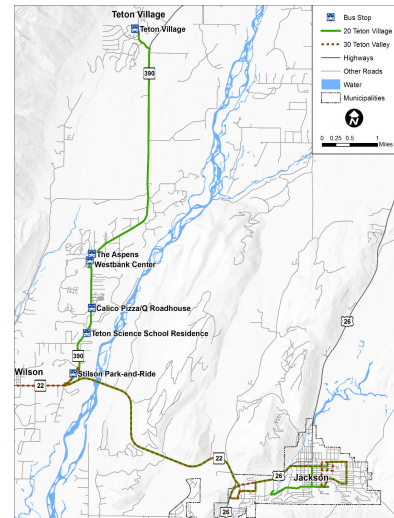
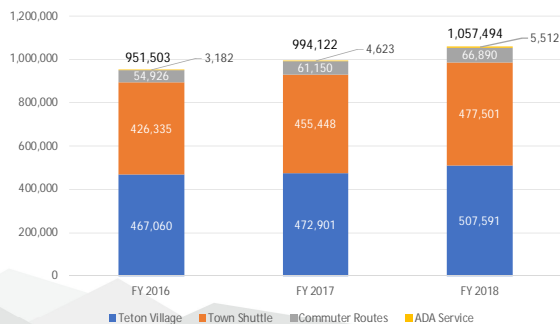
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7

Current Transit Conditions

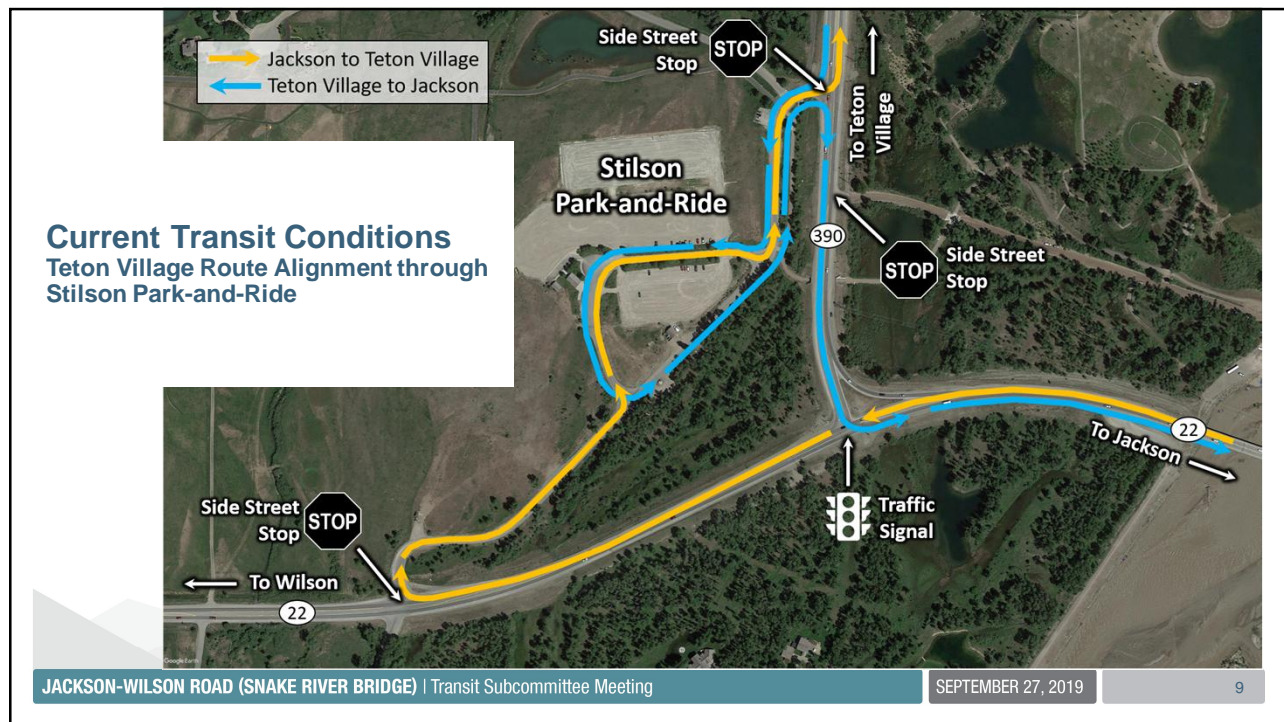
- Ridership increasing
- Teton Village route accounts for 48% of overall START ridership



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SEPTEMBER 27, 2019

8



Current Roadway and Traffic Characteristics

- **WYO 22**
 - Two-lane rural highway, left- and right-turn lanes at most intersections
 - Speed limit, Broadway to WYO 390, ranges from 30 mph – 55 mph
- **WYO 390**
 - Two-lane rural highway, with center turn lane in segments
 - 45 mph south of John Dodge Road, 55 mph north of John Dodge Road
- **WYO 22 / WYO 390 Intersection**
 - Signalized 'T' intersection with channelized westbound right-turn ramp
 - Left-turn and through lane on eastbound approach
 - Left- and right-turn lanes on southbound approach
- **Continuous shared-use paths along both highway corridors**



Current Roadway and Traffic Characteristics

- Highest traffic volumes in July
 - 35% higher than the average annual volume
- Lowest volumes observed in November

Month (Year)	WYO 22 (E of WYO 390)	WYO 22 (W of WYO 390)	WYO 390 (N of WYO 22)
January (2019)	17,299	Not available	11,978
February (2019)	16,968	9,421	11,910
March (2019)	17,617	10,278	12,044
April (2019)	12,896	9,145	7,399
May (2019)	15,662	11,104	9,709
June (2019)	20,799	14,116	13,848
July (2019)	23,283	15,810	15,173
August (2018)	22,086	14,698	Not available
September (2018)	19,889	13,371	12,369
October (2018)	15,640	10,944	9,509
November (2018)	12,630	8,797	7,737
December (2018)	16,329	10,222	11,171
Average	17,577	11,606	11,211

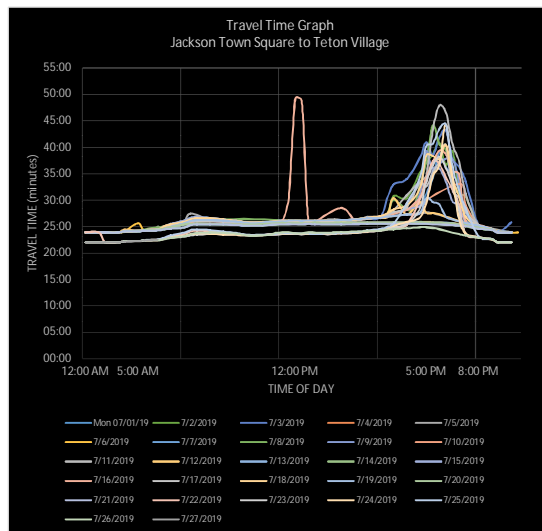
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SEPTEMBER 27, 2019

11

Current Roadway and Traffic Characteristics

- Corridor Travel Times – Jackson Town Square to Teton Village
 - Uncongested time: 25 min
 - Congestion typical between 5:00 pm and 6:00 pm
 - Peak hour travel times: 35-40 min



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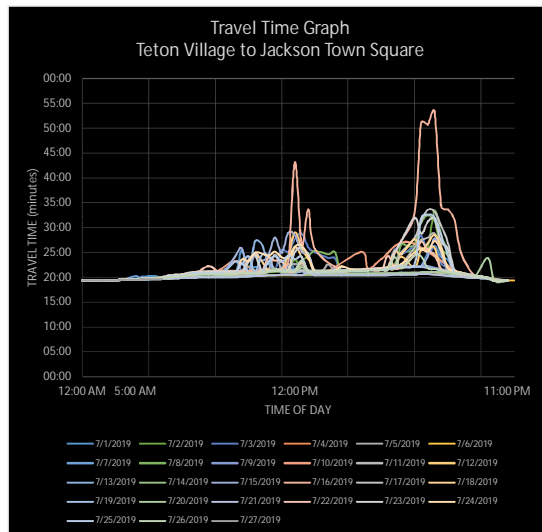
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12

Current Roadway and Traffic Characteristics

• Corridor Travel Times – Teton Village to Jackson Town Square

- Uncongested time: 20 min
- Congestion typical 10:00am-12:00pm and 5:00pm-6:30pm
- Peak hour travel times: 31-33 min



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SEPTEMBER 27, 2019

13

Current Roadway and Traffic Characteristics

• WYO 22/WYO 390 peak hour traffic

- Intersection operates at LOS D
- Westbound through movement operates at LOS E, 780' average queue
- Southbound left movement operates at LOS D, 395' average queue

rates at

Intersection	Direction	Movement	Average Delay (sec/veh)	LOS	Approach Delay (sec/veh)	Approach LOS	Avg. Queue (ft)	Max. Queue (ft)
WYO 22/ WYO 390	EB	Left	47.7	D	30.1	C	25	260
		Through	22.8	C			50	480
	WB	Through	55.0	E	42.3	D	780	1665
		Right	23.7	C			5	210
	SB	Left	52.1	D	57.1	D	395	1425
		Right	27.1	C			15	135
	Intersection			41.1	D	-	-	-

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SEPTEMBER 27, 2019

14

Future Conditions

• Traffic Volumes

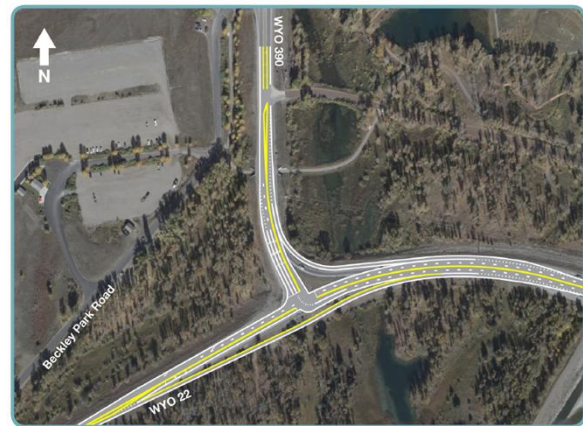
- Daily traffic forecasts obtained from PEL study
- Peak hour traffic forecasts obtained from WYDOT, consistent with WYO 22/WYO 390 forecasts
- Substantial growth in traffic volumes anticipated

Segment	Current Volume	Forecasted Volume	Annual Growth Rate
WYO 22 (WYO 390 – Broadway)	23,000 (Daily)	35,000 (Daily)	2.06%
WYO 390 (WYO 22 – Indian Creek)	16,000 (Daily)	23,000 (Daily)	1.3%
WYO 22 / WYO 390 Intersection	2,300 (Peak Hour)	3,600 (Peak Hour)	2.5%

Future Conditions

• WYO 22 / WYO 390 intersection and Snake River Bridge reconstruction

- Widen Snake River Bridge to four lanes
- Second westbound through lane
- Second southbound left-turn lane
- Eastbound bypass lane for through traffic



Future Conditions

- **2040 WYO 22/WYO 390 peak hour traffic**

- Overall intersection operates at a LOS C
- Westbound through movement improves from LOS E to LOS C, average queue improves from 780' to 75'
- Southbound left movement improves from LOS D to LOS C, average queue improves from 395' to 225'

			Average Delay (sec/veh)	LOS	Approach Delay (sec/veh)	Approach LOS	Avg. Queue (ft)	Max. Queue (ft)
Intersection	Direction	Movement						
WYO 22/ WYO 390	EB	Left	100+	F	29.4	C	190	700
		Through	6.8	A			56	330
	WB	Through	32.6	C	18.9	B	75	355
		Right	3.4	A			0	0
	SB	Left	32.9	C	29.0	C	225	1,530
		Right	16.3	B			20	235
	Intersection			25.1	C	-	-	-

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SEPTEMBER 27, 2019

17

Future Conditions

- **How many buses would eliminate need to widen WYO 22, between Broadway and WY 390?**

- **2040 traffic volumes:**
 - 35,000 vehicles/day
 - 1,780 vehicles/hour/direction (peak hour)

- **Assumptions:**

- **Occupancy**
 - 2.5 persons/vehicle
 - 47 passengers/bus
- **2040 vehicle demand**
 - 1,780 vehicles per hour
- **Peak hour factor**
 - 0.9
- **LOS D threshold**
 - 680 vehicles per hour
- **To achieve LOS D, need to remove:**
 - 1,100 vehicles/hour
 - 2,750 persons
- **59 buses during peak hour to keep the 2-lane road at LOS D**

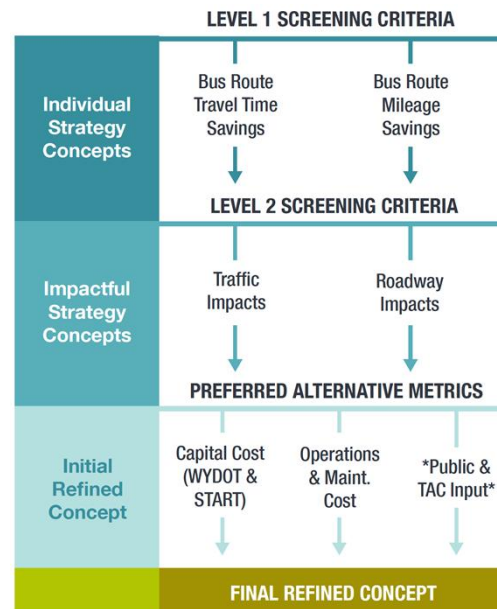
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SEPTEMBER 27, 2019

18

Project Refinement Process

- Multi-tier process to identify and advance impactful transit strategies
- Considers transit and other roadway users



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SEPTEMBER 27, 2019

19

Project Refinement Process

SCREENING CRITERIA	
Level 1	• Bus route travel time savings: Quantify the improvement in bus travel times based on VISSIM modeling.
	• Bus route mileage savings: Utilize geographic information systems (GIS) to determine the impacts of the different alternatives on the length of the Teton Village and Teton Valley routes.
Level 2	• Traffic impacts: Utilize VISSIM modeling to identify negative impacts to vehicular delay or mobility due to the proposed transit improvements.
	• Roadway impacts: Determine whether each improvement would expand the environmental limits required for the proposed 'Florida-T' intersection design as well as if the concept would require WYDOT to acquire additional right-of-way.
Preferred Alternative	• Project capital cost: Relative costs to WYDOT or START.
	• Operations and maintenance cost: Relative costs to WYDOT or START.
	• Public and TAC input: Feedback on the initial refined concept will be sought from the Public Transit Subcommittee as well as from the public through a public meeting.

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SEPTEMBER 27, 2019

20

Strategy Concepts

Strategy Concept	WESTBOUND WYO 22	
1.	Construct a westbound queue jump approach lane at the intersection	• Queue jump lane within channelized westbound right-turn island to accommodate buses traveling westbound through the intersection
2.	Construct a westbound queue jump receiving merge lane west of WYO 390	• Merge lane west of the intersection; westbound buses merge into the outside lane west of the intersection
3.	Implement TSP at the intersection	• TSP to prioritize transit through the intersection
WYO 390		
4.	Construct a southbound queue jump lane at the WYO 22/ WYO 390 intersection	• Transit-only lane between outside southbound left-turn and right-turn lanes to accommodate buses making the southbound left-turn at the intersection
5.	Implement transit-only signal on WYO 390	• Separate, transit-only egress from Stilson Park-and-Ride, 700' north of WYO 22 with a signal activated by buses exiting the park-and-ride
6.	Construct a northbound left-turn lane on WYO 390 at the new transit-only signal	• Northbound left-turn lane to accommodate northbound bus left-in movements to the Stilson Park-and-Ride at the new signal
7.	Move the Teton Village bus stops to WYO 390	• On-street bus stops on WYO 390 north of WYO 22
8.	Construct a new traffic signal on WYO 390 at Stilson Ranch Road	• New signal to facilitate egress from Stilson Park-and-Ride; signal would be used by buses and vehicles

Note: Shoulder-running bus operations considered, and considered unnecessary due to shorter queues at WYO 22/WYO 390 intersection with 'Florida-T'

Concept 1 – Westbound Queue Jump Lane



Concept 2 – Westbound Queue Jump with Receiving Lane



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SEPTEMBER 27, 2019

23

Concept 3 – TSP at WYO 22/WYO 390 Intersection



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SEPTEMBER 27, 2019

24

Concept 4 – Southbound Queue Jump Lane



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SEPTEMBER 27, 2019

25

Concept 5 – Traffic Signal with Bus-Only Access



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SEPTEMBER 27, 2019

26

Concept 6 – Traffic Signal with NB Left-Turn Lane to Bus-Only Access



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SEPTEMBER 27, 2019

27

Concept 7 – Bus Stops on WYO 390



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28

Concept 8 – New Traffic Signal at Stilson Ranch Road



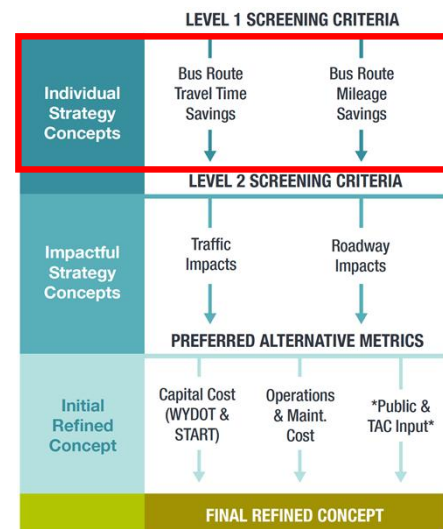
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SEPTEMBER 27, 2019

29

Level 1 Screening Results

Transit Strategy Concept	Description	Bus Route Travel Times (min:sec)		Bus Route Travel Time Savings (min:sec)		Bus Route Mileage Savings (mi.)
		Jackson to Teton Village	Teton Village to Jackson	Jackson to Teton Village	Teton Village to Jackson	
-	2040 baseline	4:40	3:19	-	-	-
1	WB queue jump	4:25	3:19	0:15	0:00	0
2	WB queue jump and receiving lane	4:24	3:19	0:16	0:00	0
3	TSP at WYO 22/390 intersection	4:31	3:01	0:09	0:18	0
4	SB queue jump	4:40	2:58	0:00	0:21	0
5	Transit-only signal	3:38	3:04	1:02	0:15	0.10
6	Transit-only signal and NB left-turn lane	2:48	3:00	1:52	0:19	0.27
7	Move bus stops to WYO 390	1:24	1:59	3:16	1:20	1.18
8	Traffic signal at Stilson Ranch Road	3:04	3:19	1:36	0:00	0.05



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SEPTEMBER 27, 2019

30

Level 1 Screening Results

- **Strategies 5-8** provide the most time and distance benefits
 - Advanced to Level 2 screening
- **Strategy 7 (stops on 390)** provides most benefit to time and distance
- **Strategies 1-4** provide positive, but less significant travel time savings

Transit Strategy Concept	Description	Bus Route Travel Times (min:sec)		Bus Route Travel Time Savings (min:sec)		Bus Route Mileage Savings (mi.)
		Jackson to Teton Village	Teton Village to Jackson	Jackson to Teton Village	Teton Village to Jackson	
-	2040 baseline	4:40	3:19	-	-	-
1	WB queue jump	4:25	3:19	0:15	0:00	0
2	WB queue jump and receiving lane	4:24	3:19	0:16	0:00	0
3	TSP at WYO 22/390 intersection	4:31	3:01	0:09	0:18	0
4	SB queue jump	4:40	2:58	0:00	0:21	0
5	Transit-only signal	3:38	3:04	1:02	0:15	0.10
6	Transit-only signal and NB left-turn lane	2:48	3:00	1:52	0:19	0.27
7	Move bus stops to WYO 390	1:24	1:59	3:16	1:20	1.18
8	Traffic signal at Stilson Ranch Road	3:04	3:19	1:36	0:00	0.05

Level 2 Screening Results

Transit Strategy Concept	Intersection LOS (Delay [sec/veh] (LOS))							Additional Pavement (sq. ft.)
	Overall	EBL	EBT	WBT	WBR	SBL	SBR	
Baseline	22.4 (C)	92.9 (F)	4.7 (A)	32.4 (C)	3.5 (A)	25.9 (C)	20.6 (C)	-
5	25.4 (C)	100 (F)	3.0 (A)	33.7 (C)	3.0 (A)	33.1 (C)	20.0 (B)	4,050
6	24.4 (C)	100 (F)	4.2 (A)	33.3 (C)	3.6 (A)	30.9 (C)	19.0 (B)	4,050
7	23.5 (C)	100 (F)	4.1 (A)	34.0 (C)	3.6 (A)	25.8 (C)	18.9 (B)	6,120
8	24.0 (C)	96.7 (F)	2.3 (A)	33.1 (C)	3.1 (A)	32.2 (C)	18.7 (B)	0

- None of the alternatives had significant negative impacts to the WYO 22/WYO 390 intersection
- Strategy 7 requires the most new pavement

Recommendations

- **Short-term:**
 - Strategy 6, or
 - Strategy 8
- **Long-term:**
 - Strategy 7
 - Supports future BRT
 - Provides the most travel time and mileage savings
- **Long-term:**
 - Implement TSP along the entire route

	Recommendation	Timeframe
1A	Construct a traffic signal on WYO 390 at the existing boat launch access road along with a transit-only access roadway to Beckley Park Way with a northbound left-turn lane for buses only (Strategy 6)	The traffic signal should be constructed when delay experienced by buses making a left turn from Beckley Park Way to northbound WYO 390 significantly impacts on-time bus performance or poses a safety risk.
	OR	It should be noted that a traffic signal at Beckley Park Way that is open to general traffic would likely not meet traffic signal warrants as specified in the Manual on Uniform Traffic Control Devices (MUTCD).
1B	Construct a traffic signal at the existing intersection of WYO 390 and Stilson Ranch Road (Strategy 8)	
2	Relocate transit stops to WYO 390 consistent with the Stilson Master Plan (Strategy 7).	Relocation of bus stops to WYO 390 provides significant travel time savings and reduces bus route distance. However, the bus stops should only be relocated upon redevelopment of the Stilson Park-and-Ride. Pedestrian improvements are required for both northbound and southbound WYO 390 between the park-and-ride and the bus stops.
3	Implement system-wide TSP	Implement TSP at WYO 22/WYO 390 when system-wide BRT implemented is on the Teton Village route. At that time, TSP should also be implemented at all major signals along the route.

Preferred Alternative Metrics

	Recommendation	Capital Cost	Annual Operations/ Maintenance Savings
1A	Construct a traffic signal on WYO 390 at the existing boat launch access road along with a transit-only access roadway to Stilson Ranch Road/Beckley Park Way with a northbound left-turn lane for buses only (Strategy 6)	\$300,000	\$87,500
	OR		
1B	Construct a traffic signal at the existing intersection of WYO 390 and Stilson Ranch Road/Beckley Park Way (Strategy 8)	\$210,000	\$64,200
2	Relocate transit stops to WYO 390 consistent with the Stilson Master Plan	\$165,000	\$184,700
3	Implement system-wide TSP*	N/A*	\$18,100**

Open Discussion

- Questions
- Observations

