

SR 522 Planning Update



John H. White, WSDOT
Assistant Regional Administrator

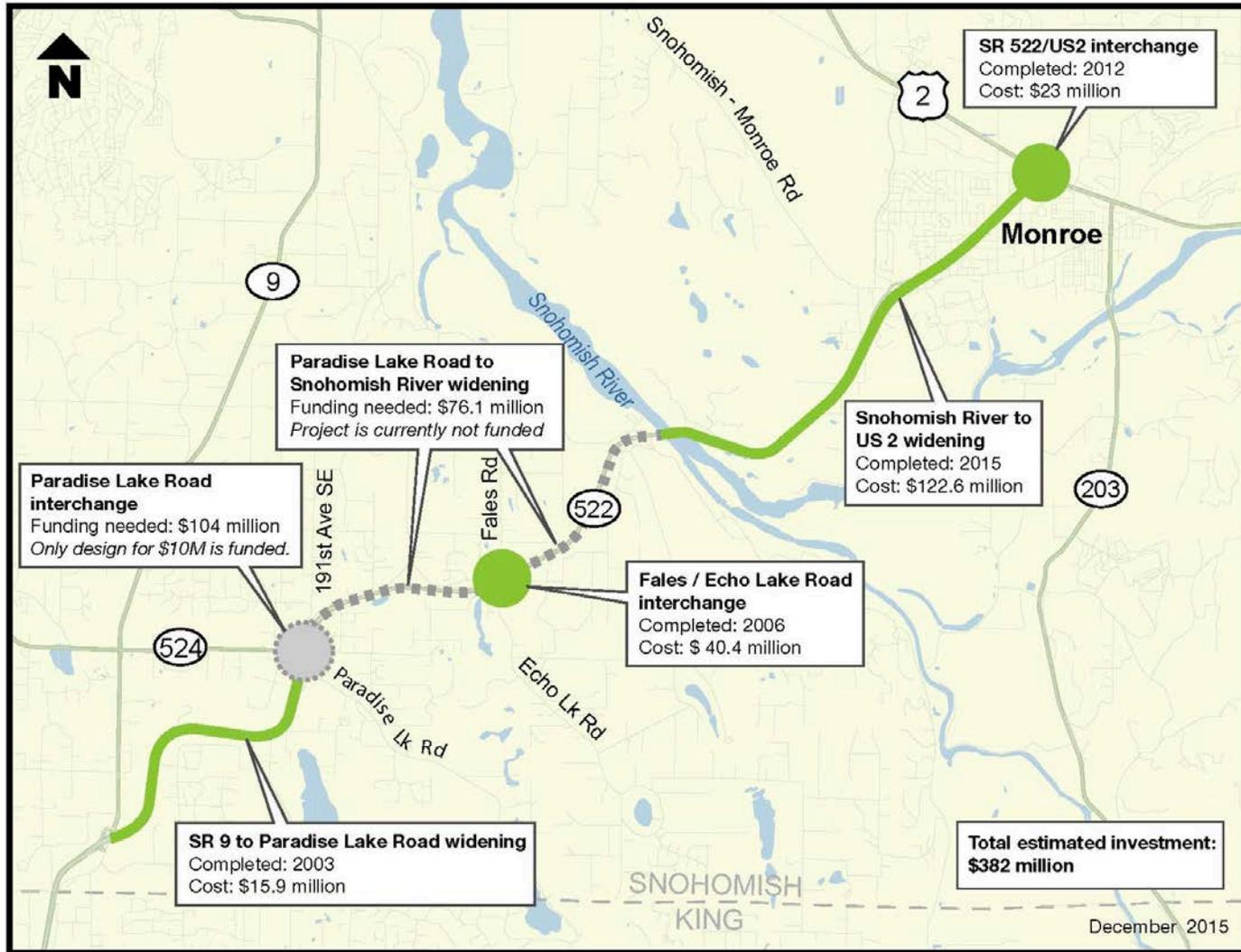
Miguel Gavino, WSDOT
Snohomish County Traffic Engineer

Monroe High School
Performing Arts Center
Monroe, WA
March 8, 2017

Agenda

- Review SR 522 Connecting Washington program funding
- Provide background on 2016 supplement budget Corridor Sketch planning effort
- Overview of the existing traffic conditions
- Review the range of range of potential capital and operational improvements identified
- Q & A

SR 522 Corridor Projects & Existing Funding



Connecting Washington Funding:

2025 - 27:	\$5M
2027 - 29:	\$5M

2016 Supplemental Transportation Budget

“The Corridor Sketch Initiative’s primary goal is to cooperatively **engage with partners** to jointly assess the highway system and identify:

- **Performance expectations**
- What’s working well.
- What needs to change now and in the future.
- **Strategies** to achieve performance expectations and sustain what works well.”

29 (2) \$1,000,000 of the motor vehicle account—federal appropriation
30 is provided solely for the corridor sketch program. Priority must be
31 given to the state route number 522 corridor between Maltby and the
32 Snohomish river bridge. Initial corridors must also include state
33 route number 195, Interstate 5 between Bellingham and the vicinity of
34 Mount Vernon, state route number 160 in the vicinity of Port Orchard,
35 and state route number 28 in the vicinity of East Wenatchee.
36 (3) Within existing resources, the department shall conduct a
37 traffic and access study of the intersection of the Interurban trail
38 and state route number 104. Options to improve safety at this

p. 34

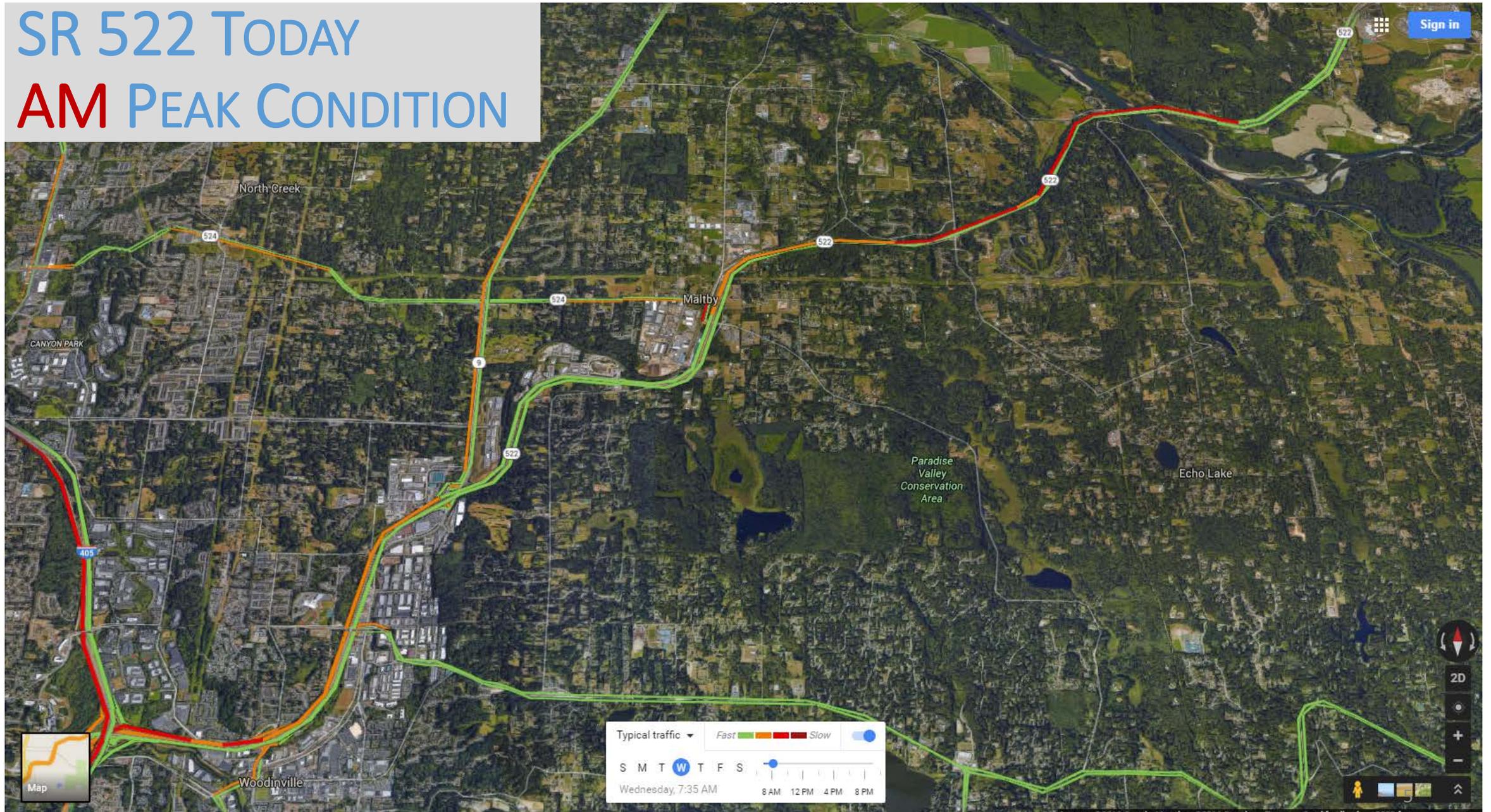
ESHB 2524.SL

The 2016 Supplemental Budget prioritized the SR 522 corridor sketch effort above other corridors. The planning strategy included:

- Update existing traffic data and land use / growth / traffic forecasts
- Brainstorm and identify interim and lower cost concepts that would provide benefit to the users
- Perform limited traffic analysis to show how the concepts generally compare to each other in terms of improved performance
- Conduct a workshop and coordination meetings with the primary stakeholders to review, assess and prioritize improvement concepts
- Issue summary documentation

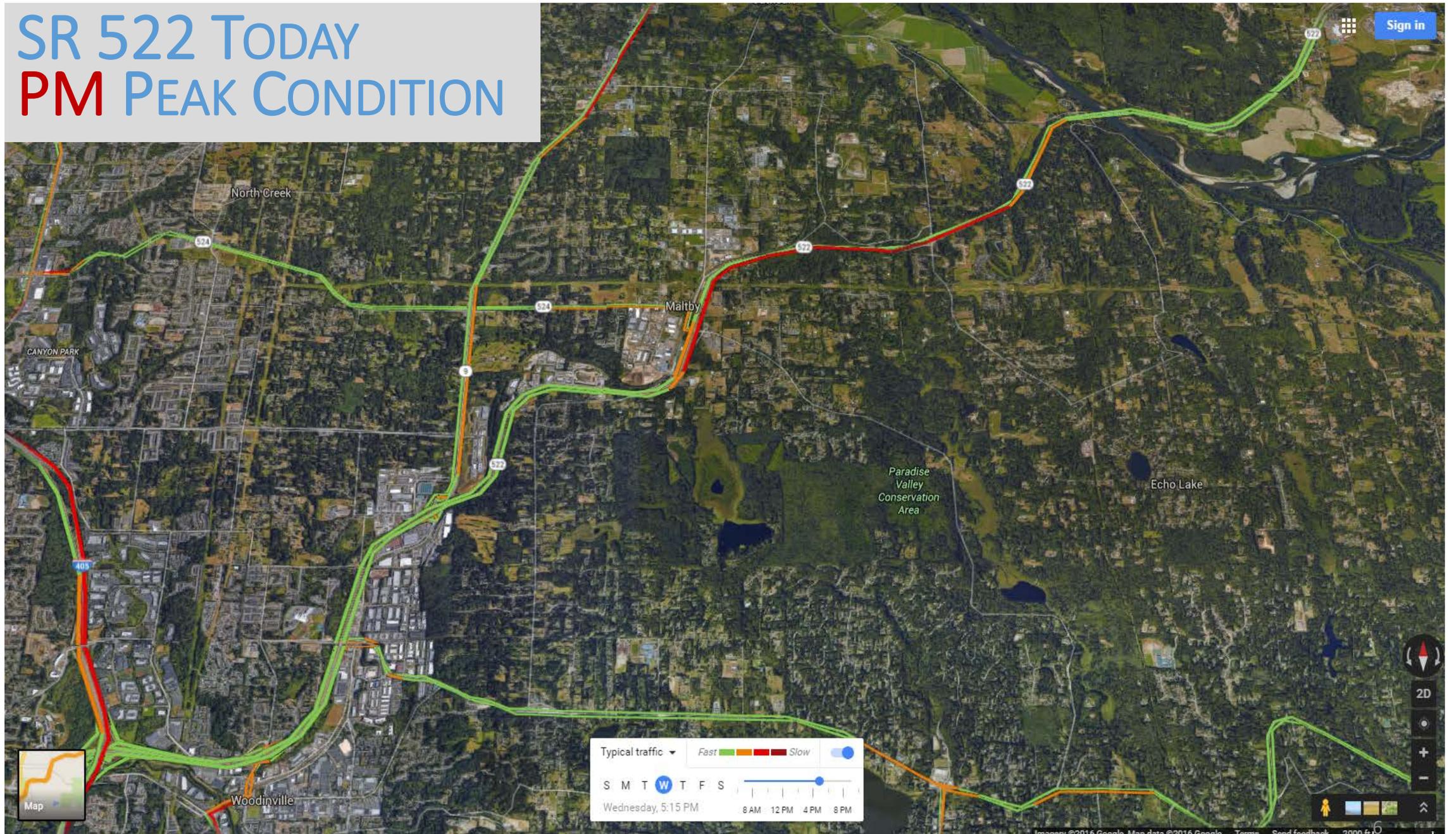
SR 522 TODAY

AM PEAK CONDITION

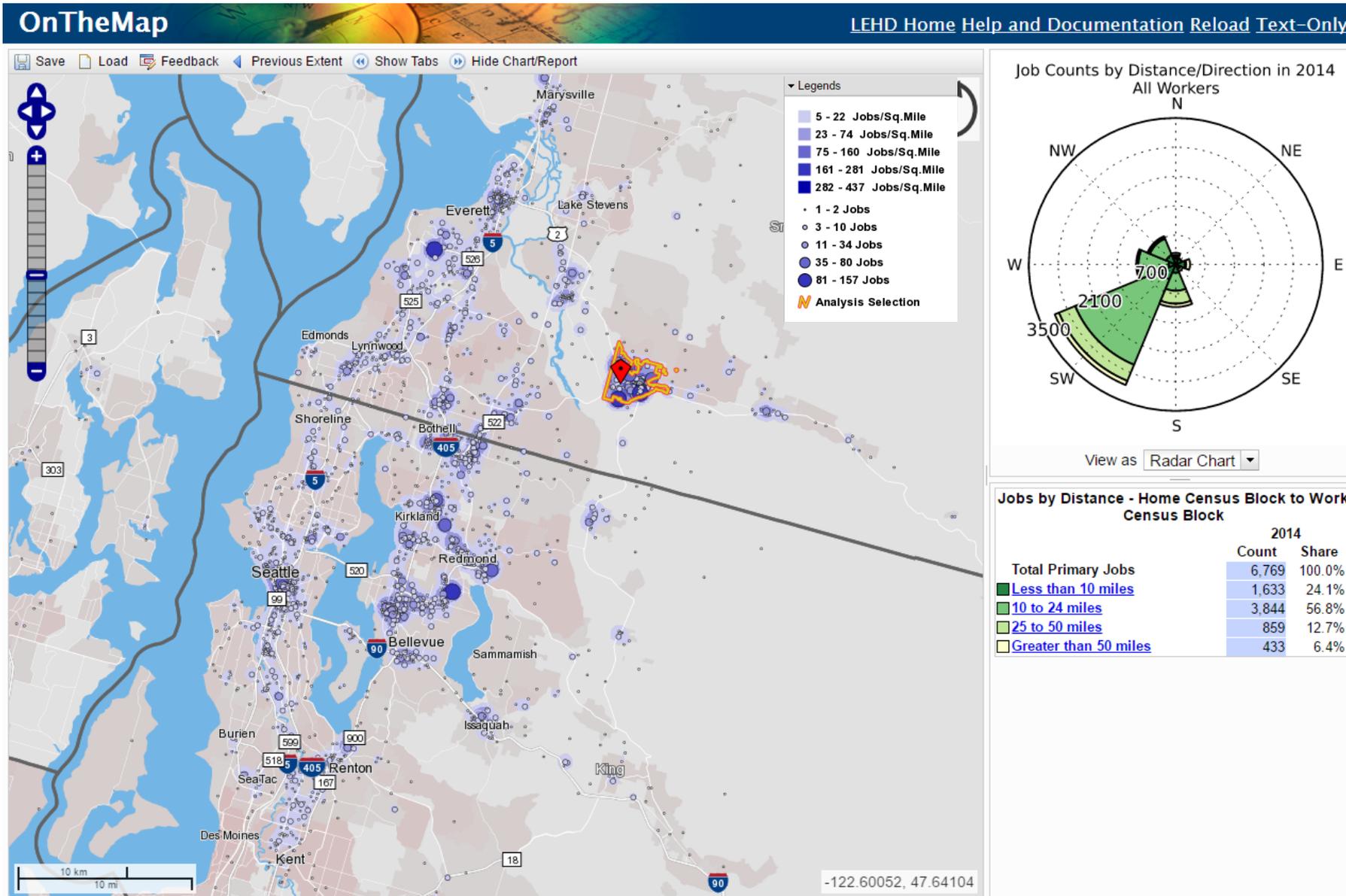


SR 522 TODAY

PM PEAK CONDITION

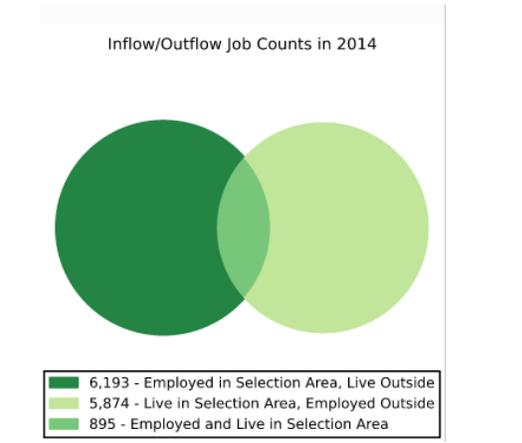


Where Monroe Residents Work (2014)



**Jobs Counts by Places (Cities, CDPs, etc.)
Where Workers are Employed - Primary Jobs
2014**

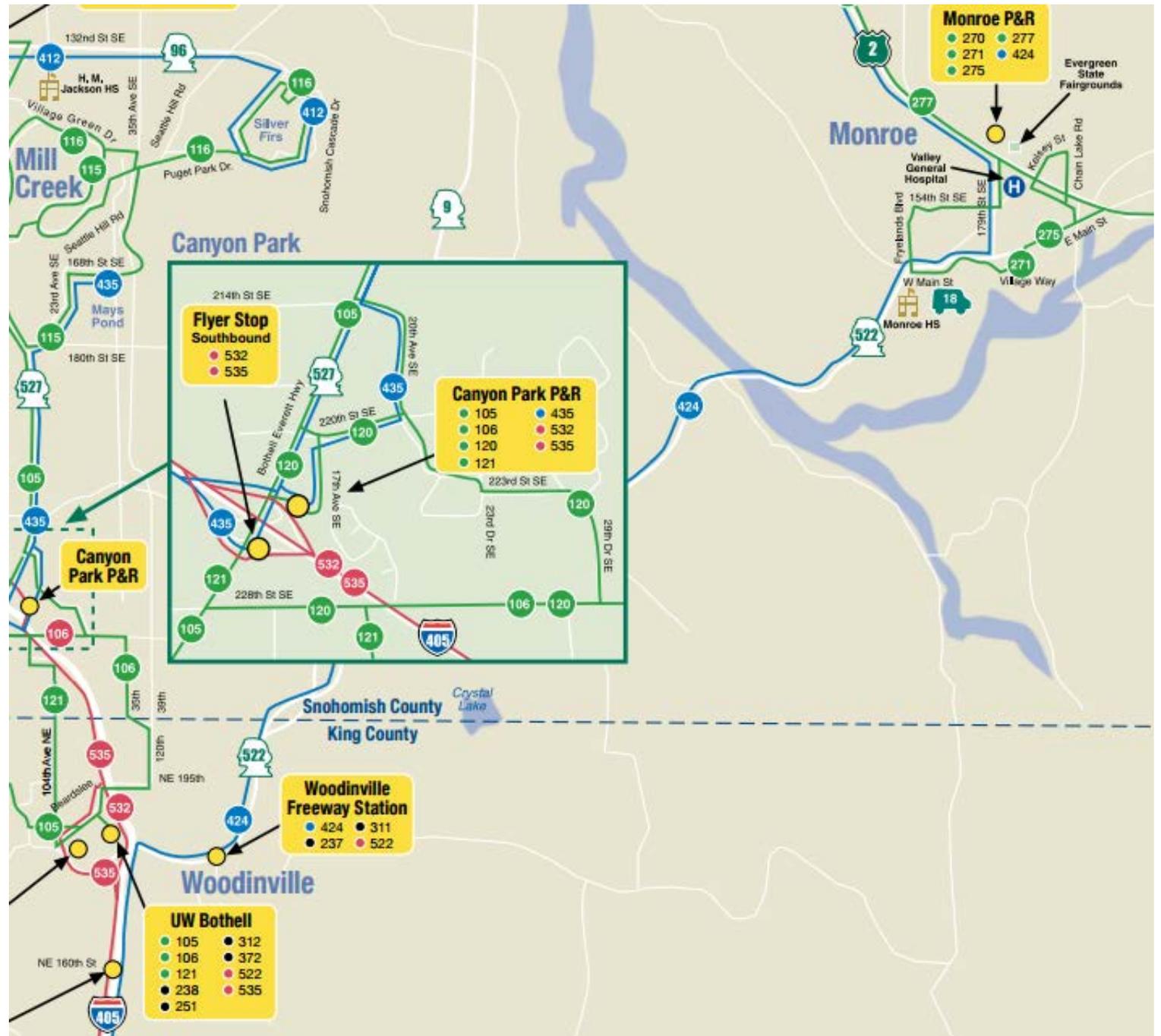
	Count	Share
All Places (Cities, CDPs, etc.)	6,769	100.0%
Monroe city, WA	895	13.2%
Seattle city, WA	873	12.9%
Bellevue city, WA	537	7.9%
Everett city, WA	516	7.6%
Redmond city, WA	497	7.3%
Kirkland city, WA	295	4.4%
Bothell city, WA	264	3.9%
Woodinville city, WA	170	2.5%
Maltby CDP, WA	167	2.5%
Renton city, WA	124	1.8%
All Other Locations	2,431	35.9%



Source: U.S. Census Bureau, Center for Economic Studies: [OnTheMap](#). Accessed 9.28.16.

Community Transit Routes

- Existing service very limited
- Additional service not in current Community Transit plans
- Key factors for considering future service include improvements that provide transit advantages or funding partnership proposals



Workshop Recap

- Reviewed existing and forecast conditions in the corridor, accounting for anticipated land use and growth.
- Identified and considered transit, TDM and managed lane opportunities. Determined that transit enhancements (increased bus service, sponsored van pools) would only be viable when paired with a capital improvement that provided incentive to transit/HOV users through travel time savings.
- Identified and reviewed a range of capital improvements, from low cost localized improvements (ramp meters, Paradise Lake freight friendly right turn lanes) to more expensive corridor mobility improvements (EB and WB peak shoulders, lower cost Paradise Lake interchange designs, reversible lane).
- Compared potential approaches based on performance measures.
- Identified planning level scopes and cost ranges.

Roadway Alternatives

The following options represent potential approaches that would require less than the previous \$180 million estimated to complete the corridor improvements between Paradise Lake Road and the Snohomish River Bridge.

Low Cost Interim Options:

- **SR 522 - Echo/Fales Lake Road Interchange – Ramp Metering**
- **SR 522 / Paradise Lake Rd – EB and WB Right Turn Lane Improvements**

Medium and Higher Cost Options:

- **Peak Use Shoulder Lane Segments**
- **Reversible Lane**
- **Phased 4-lane Construction**
- **Alternate Paradise Lake Road Interchange Design**

Roadway Alternatives

SR 522 - Echo/Fales Lake Road Interchange – Ramp Metering

- Provides single lane ramp metering for both eastbound and westbound on-ramps.
- No widening required.
- Approx. Travel Time Savings: Westbound AM 1.6 mins; Eastbound PM 4.3 mins
- Cost: \$400k to \$500k - Planning Level Estimate (2016 Dollars)

WB On-ramp S1 01815 MP 0.30



EB On-ramp Q1 01923 MP 0.39



Roadway Alternatives

SR 522 / Paradise Lake Rd – EB and WB Right Turn Lane Improvements

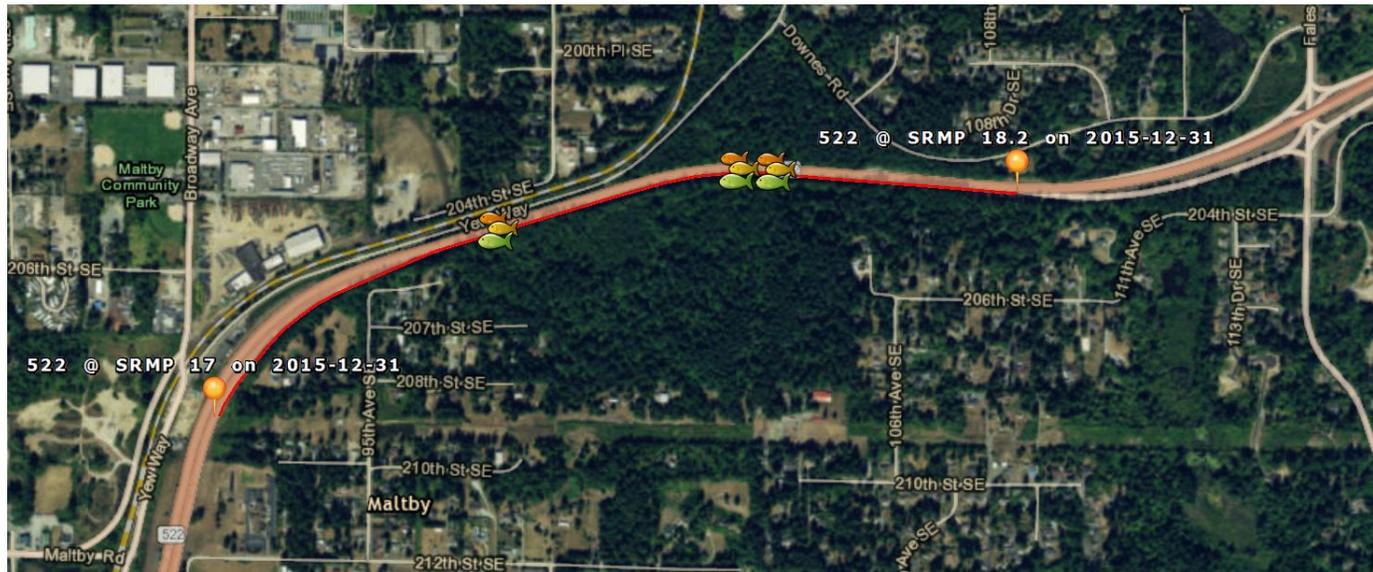
- Provides right turn/deceleration lanes (12 ft. turn lane with 6 ft. shoulder, designed to accommodate trucks) for both eastbound and westbound directions at Paradise Lake Road.
- Estimate includes required stormwater treatment and detention.
- A risk item is the fish passage culvert located on the west leg of the intersection on Paradise Lake Road (not included in the estimate).
- Approx. Travel Time Savings: Westbound AM 1.5 mins; Eastbound PM 1.2 mins
- Cost: \$3.0M to \$3.5M - Planning Level Estimate (2016 Dollars)



Roadway Alternatives – Peak Use Shoulder Lanes

SR 522 EB 210th St SE to Echo/Fales Lake Road – Peak Use Shoulder Lane

- This alternative provides a peak use shoulder lane eastbound from the vicinity of 210th St SE to Echo/Fales Lake Rd I/C – MP 17.00 to 18.20.
- This option would widen eastbound SR 522 by 10 ft. This new section would include the existing 4 ft. median, existing 12 ft. lane and widen the existing 4 ft. shoulder by 10 ft. to accommodate the new 14 ft. peak use lane.
- Estimate includes the replacement of three fish passage culvert locations - ID # 992371, #992632 and # 992631. (\$7.0M)
- Approx. Travel Time Savings: Eastbound PM 1.9 mins
- Cost: \$25M to \$30M - Planning Level Estimate (2016 Dollars)



Roadway Alternatives – Peak Use Shoulder Lanes

SR 522 EB Echo/Fales Lake Road to Snohomish River Bridge – Peak Use Shoulder Lane

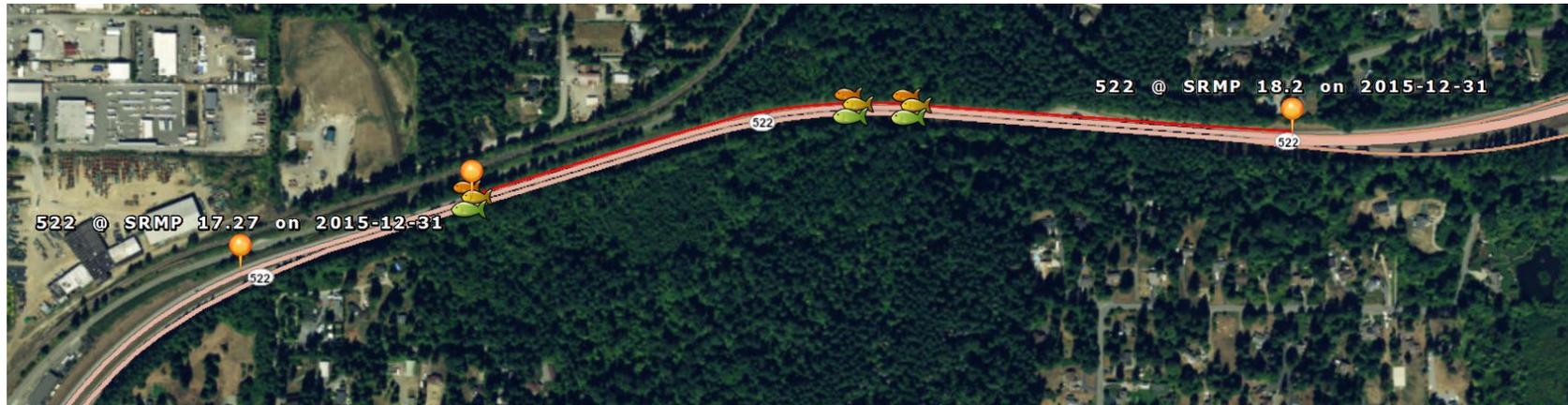
- This alternative provides a peak use shoulder lane eastbound from the Echo/Fales Lake Rd I/C to the Snohomish River Bridge – MP 18.84 to 20.40.
- This option would widen eastbound SR 522 by 10 ft. This new section would include the existing 4 ft. median, existing 12 ft. Lane and widen the existing 4 ft. shoulder by 10 ft. to accommodate the new 14 ft. peak use lane.
- Estimate includes the replacement of four fish passage culvert locations – ID # 992378, #992381, # 992382 and #990139. (\$16.0M).
- Approx. Travel Time Savings: Eastbound PM 5.3 mins
- Cost: \$35M to \$40M - Planning Level Estimate (2016 Dollars)



Roadway Alternatives – Peak Use Shoulder Lanes

SR 522 WB 95th Ave SE to Echo/Fales Lake Rd - Peak Use Shoulder Lane

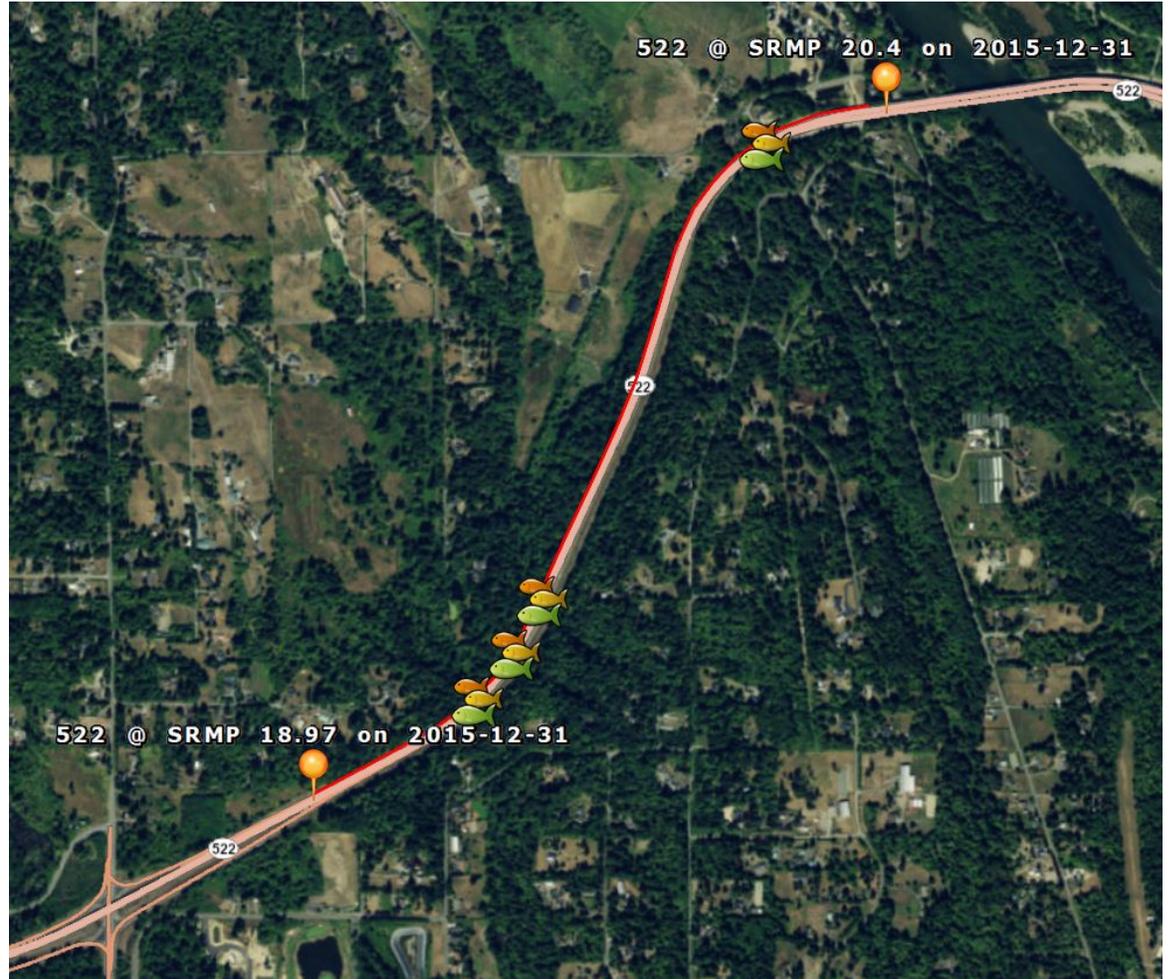
- This alternative provides a peak use shoulder lane westbound from the vicinity of 95th Ave SE to Echo/Fales Lake Rd I/C – MP 17.27 to 18.20.
- This option would widen westbound SR 522 by 4 ft. This new section would include the existing 4 ft. median, existing 12 ft. Lane and widen the existing 10ft shoulder by 4 ft. to accommodate the new 14 ft. peak use lane.
- Estimate includes the replacement of three fish passage culvert locations – ID # 992371, #992632 and # 992631. (\$7.0M)
- Approx. Travel Time Savings: Westbound AM 6.2 minutes
- Cost: \$15M to \$20M - Planning Level Estimate (2016 Dollars)



Roadway Alternatives – Peak Use Shoulder Lanes

SR 522 WB Echo/Fales Lake Road to Snohomish River Bridge – Peak Use Shoulder Lane

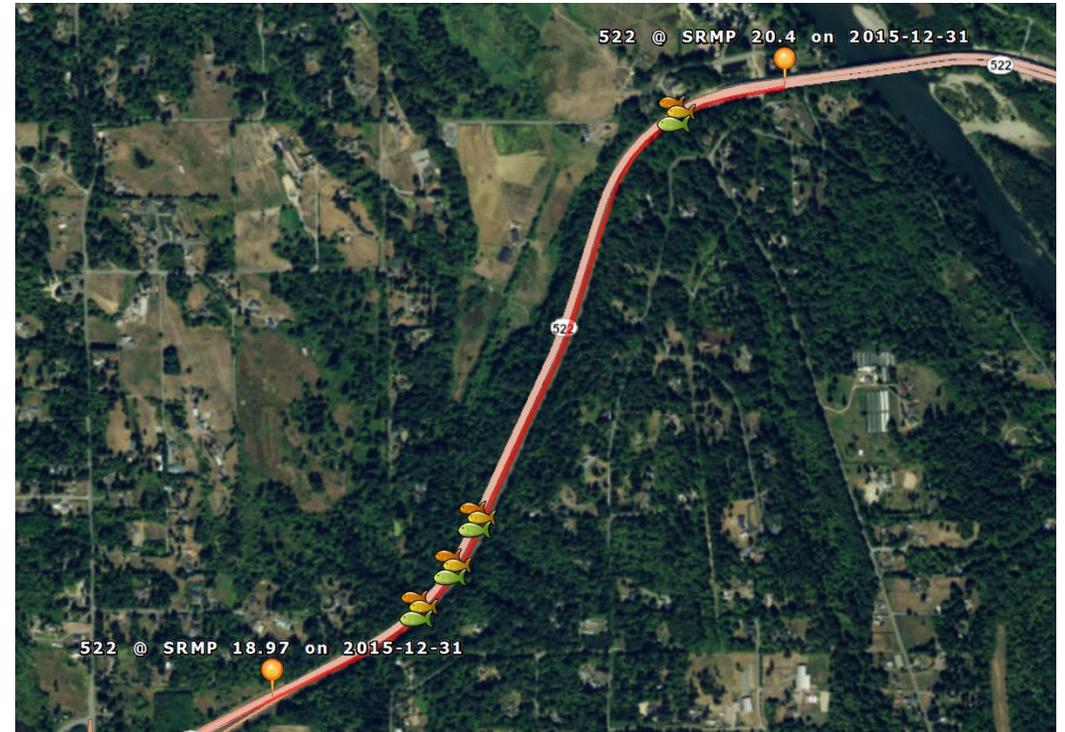
- This alternative provides a peak use shoulder lane westbound from the Echo/Fales Lake Rd I/C to the Snohomish River Bridge – MP 18.97 to 20.40.
- This option would widen westbound SR 522 by 3 ft. This new section would include the existing 4 ft. median, existing 11 ft. Lane (restriped to 12 ft.) and widen the existing 12 ft. shoulder by 3 ft. to accommodate the new 14 ft. peak use lane.
- Estimate includes the replacement of four fish passage culvert locations – ID # 992378, #992381, # 992382 and #990139. (\$16.0M).
- Approx. Travel Time Savings: Westbound AM 4.9 mins
- Cost: \$26M to \$31M - Planning Level Estimate (2016 Dollars)



Roadway Alternatives – Phased 4-lane Widening

SR 522 EB Fales Lake Rd to Snohomish River Bridge - New Lanes

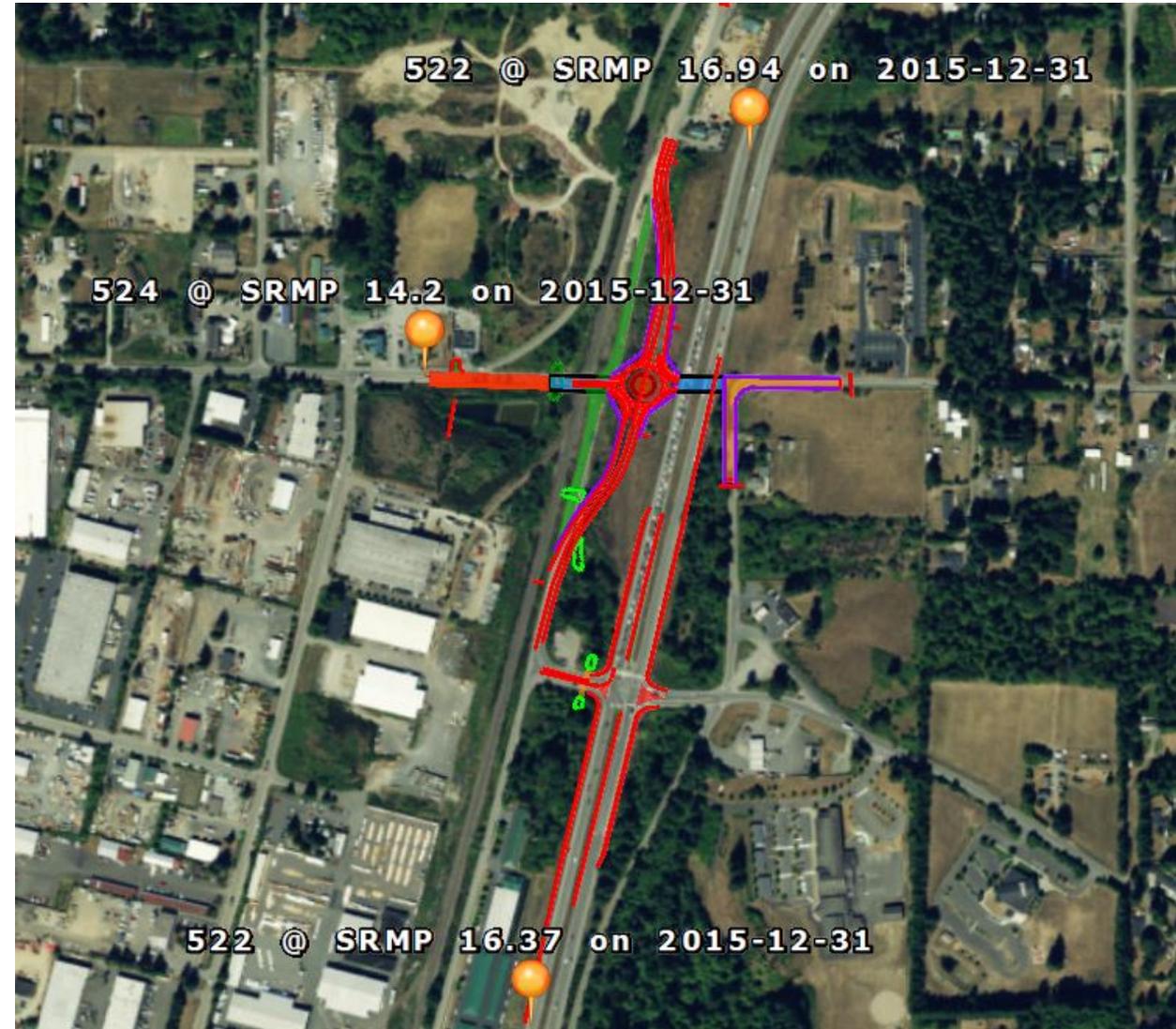
- Builds the 4-lane roadway (providing two new lanes eastbound) between Echo/Fales Lake I/C and the Snohomish River Bridge.
- Utilizes the previously constructed/existing grade for the new eastbound lanes, accommodating two 12 ft. lanes with a 6 ft. inside shoulder and 10 ft. outside shoulder.
- Estimate includes the replacement of four fish passage culvert locations – ID # 992378, #992381, # 992382 and #990139. (\$16.0M).
- Re-configures the westbound direction to two 12 ft. lanes with 10 ft. inside and outside shoulders from the Snohomish River Bridge to Echo/Fales Lake Rd.
- Cost: \$23M to \$28M - Planning Level Estimate (2016 Dollars)



Roadway Alternatives – Paradise Lake Road Interchange

SR 522 Paradise Lake Rd I/C – Compact Interchange Design

- This alternative provides an elevated roundabout (using Structural Earth Walls) between Yew Way and SR 522. This roundabout would be connected from SR 524 with a new bridge over Yew Way/Burlington Northern RR to the roundabout and continuing with a new bridge over SR 522, connecting SR 524 to 212th St SE and Paradise Lake Road via 91st Ave SE.
- Yew Way would be connected to the roundabout with new ramps. The old section of Yew Way under the new bridge would be removed.
- Would eliminate the signal at SR 522/Paradise Lake Rd., reconfiguring SR522/Paradise Lake Rd. to right-in and right-out only.
- Estimate includes the replacement of three fish passage culvert locations – ID # 996460, #994124, and #994123. (\$6.0M).
- Cost: \$50M to \$55M - Planning Level Estimate (2016 Dollars)



Roadway Alternatives – Reversible Lane

SR 522 Paradise Lake Rd to Echo/Fales Lake Rd – Reversible Lane

- The reversible lane option would require a minimum of 19 ft. of lane width to allow vehicles to pass in the event of a collision or stalled vehicle. In addition, it would require another 4 ft. minimum to accommodate concrete barrier on both sides. This would require a total widening of 23 ft.
- Conversely, if we widened 23 ft., it would be more cost effective to use the additional width to add an additional lane each direction, rather than using the width for a reversible lane.
- Echo / Fales Lake Bridge - The total width of this bridge is 44 ft. and would not accommodate the reversible lane widening, requiring a new bridge to be built.
- The reversible lane option would also require gates on each end, two sign bridges, two cantilever sign structures, and ITS fiber optics, along with additional maintenance activity to patrol the reversible lanes at each lane switch.
- Estimate would still include the replacement of three fish passage culvert locations – ID # 992371, #992632 and # 992631. (\$7.0M)
- Cost \$42M to \$47M – Planning Level Estimate (2016 Dollars)

Key Findings

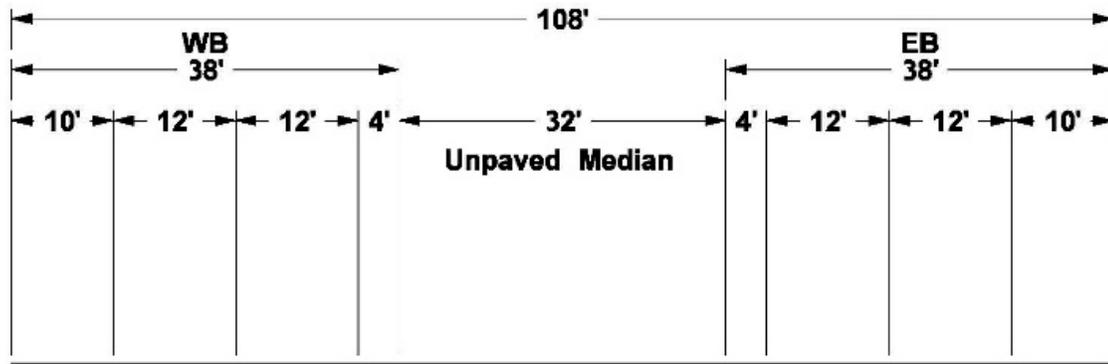
- There are low cost (\$500K to \$3M) localized improvement opportunities that could be pursued when funding is available.
- While the individual peak use shoulder segments cost between \$15M and \$40M, multiple segments need to be combined to achieve corridor wide benefits, which would likely come at a cost that is close or equal to the cost of the ultimate widening.
- The reversible lane option appears to be well over 50% of the cost to widen to 4-lanes, and would involve throwaway work and materials if the ultimate widening were pursued later. Given this, it does not seem like a prudent approach.
- A phased approach to the remaining widening is feasible, with the portion between Echo/Fales Lake Rd and the Snohomish River Bridge being the logical lower cost (\$23M to \$28M) first step.
- A lower cost smaller footprint design at Paradise Lake is feasible, at roughly half of the cost of the original design, with less community/environmental impacts.
- Increased transit service in the corridor is not likely without capital improvements that provide improved performance and service reliability, including better connectivity to the I-405 corridor.
- While TDM opportunities exist and can be pursued, they are unlikely to make a noticeable difference in overall performance unless paired with capital improvements, enhanced transit service, or other performance efficiencies.

Next Steps

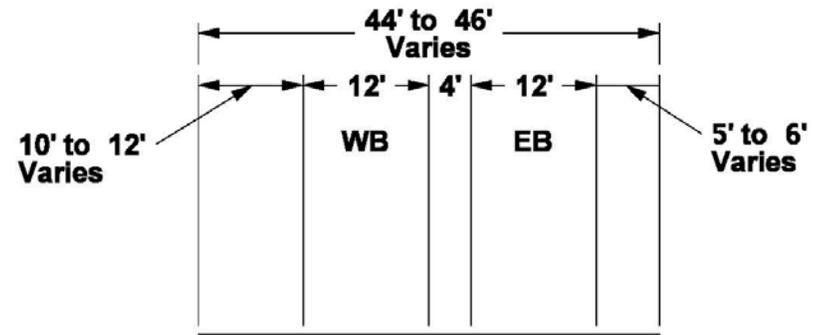
- Support community engagement and outreach activities
- Support legislative and elected outreach activities
- Maintain periodic meetings of the stakeholder partnership group in order to support the pursuit of potential new funding opportunities (local, state, federal)

Questions?

Paradise Lake Rd to Snohomish River Typical Roadway Sections

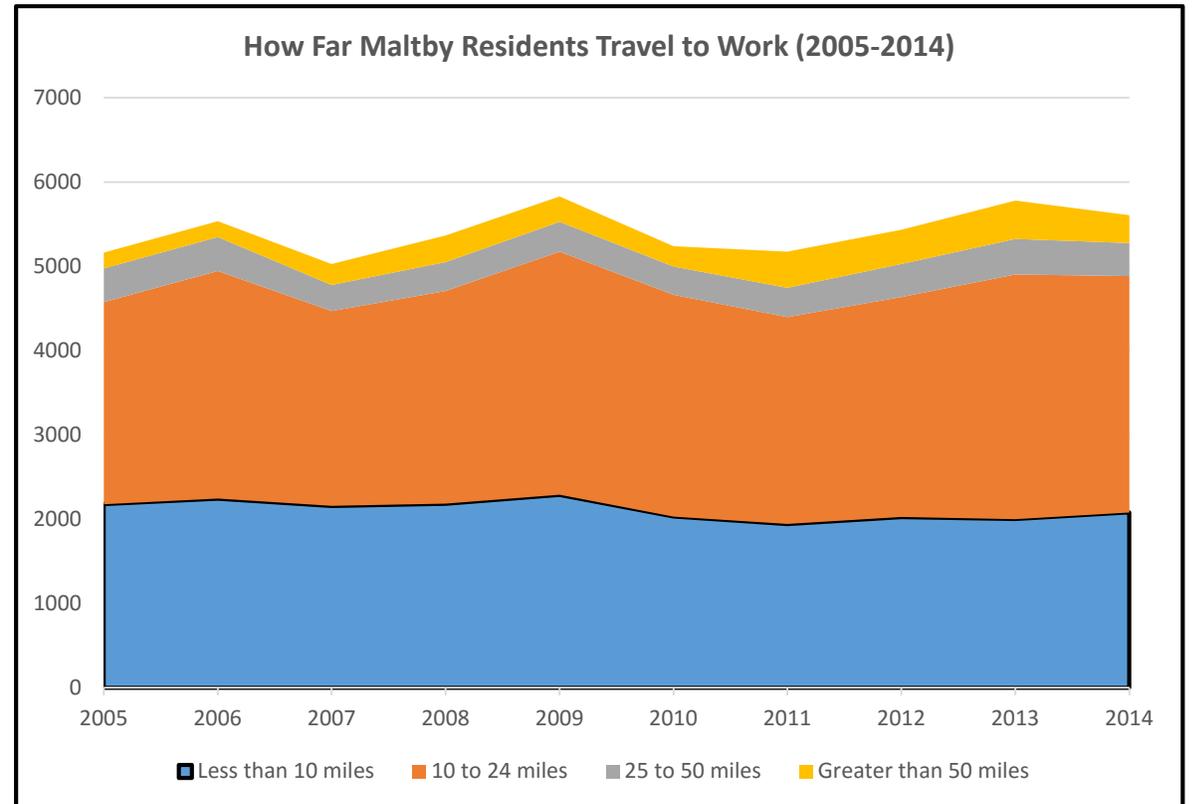
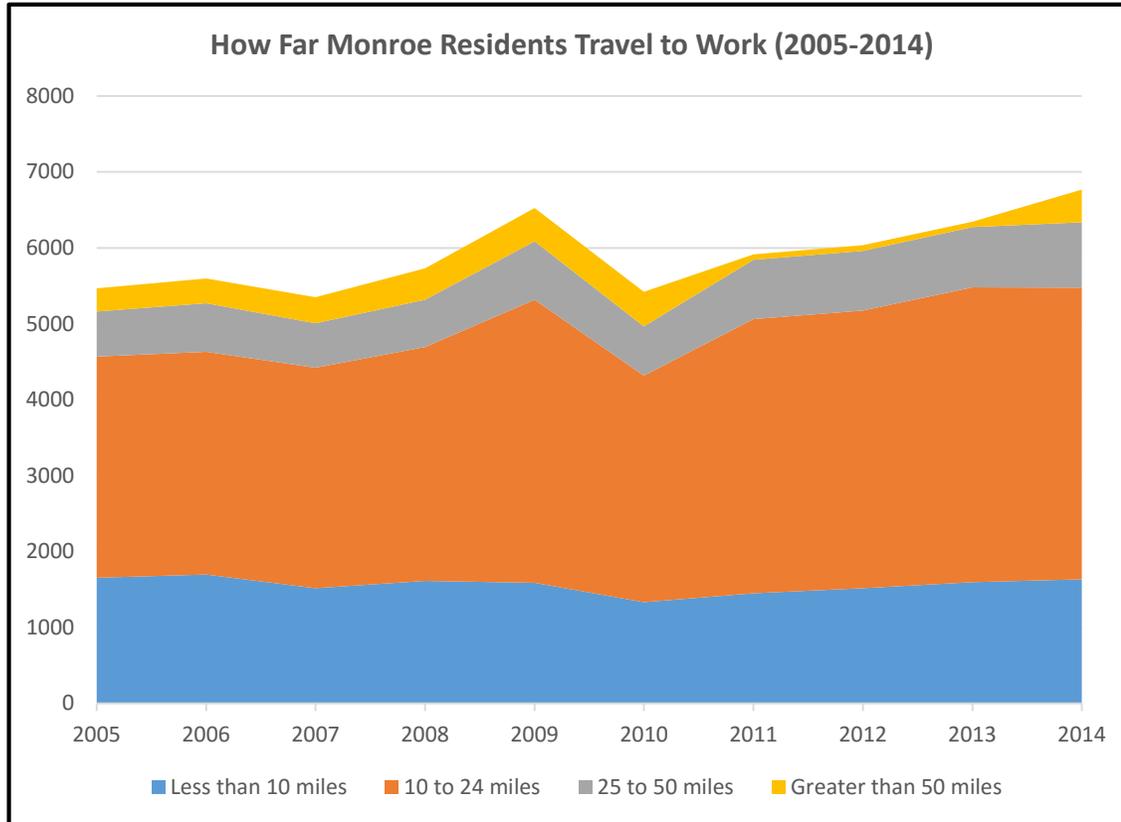


MP 16.60 to MP 17.04
(Paradise Lake Rd. to End of the unpaved median)



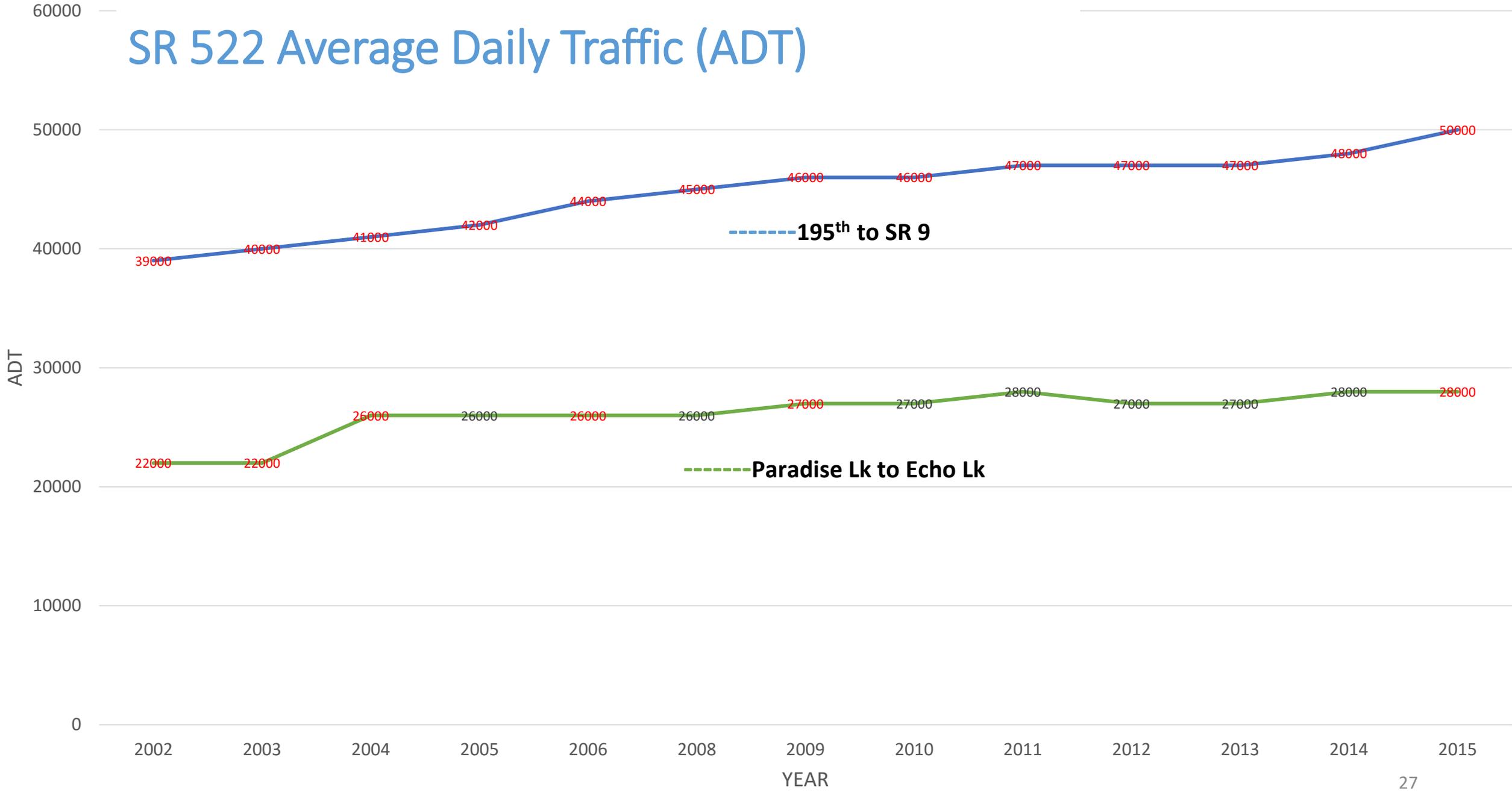
MP 17.04 to MP 20.48
(End of unpaved median to Snohomish River)

Travel Characteristics for Monroe & Maltby Residents



Source: U.S. Census Bureau, Center for Economic Studies: [OnTheMap](#). Accessed 9.28.16.

SR 522 Average Daily Traffic (ADT)



2035 Land Use Forecasts

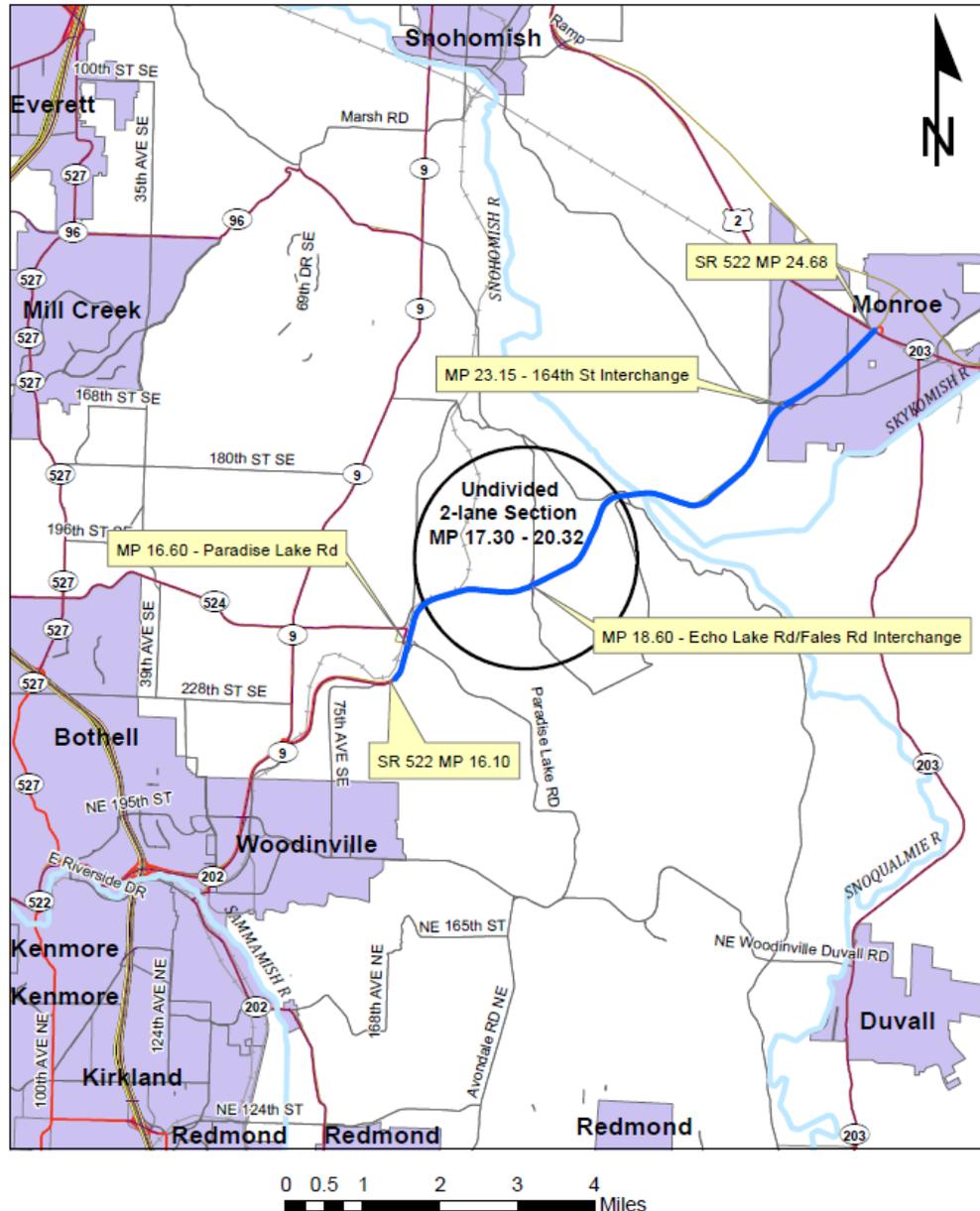
APPENDIX B, Table 3 - 2035 Initial Employment Growth Targets					
Area	2011 Employment Estimates	2035 Initial Employment Targets	2011-2035 Employment Growth		
			Pct of Total Amount County Growth		
Non-S.W. County UGA					
Gold Bar UGA	223	666	443	0.3%	
Gold Bar City	218	661		443	0.3%
Unincorporated	5	5		-	0.0%
Index UGA (incorporated)	20	25	5	0.0%	
Maltby UGA (unincorporated)	3,190	6,374	3,184	2.2%	
Monroe UGA	7,779	11,781	4,002	2.7%	
Monroe City	7,662	11,456	3,794	2.6%	
Unincorporated	117	325	208	0.1%	
Sultan UGA	866	2,081	1,215	0.8%	
Sultan City	862	2,077	1,215	0.8%	
Unincorporated	4	4	-	0.0%	

NOTES: All estimates and targets above are based on December 13, 2012 city boundaries. Employment includes all full- and part-time wage and salary workers and self-employed persons, excluding jobs within the resource (agriculture, forestry, fishing and mining) and construction sectors.

APPENDIX B, Table 5 - 2035 Initial Housing Growth Targets					
Area	2011 Housing Unit Estimates	2035 Initial Housing Unit Targets	2011-2035 Housing Unit Growth		
			Pct of Total Amount County Growth		
Non-S.W. County UGA					
Gold Bar UGA	1,205	1,304	99	0.1%	
Gold Bar City	831	924		93	0.1%
Unincorporated	374	380		6	0.0%
Index UGA (incorporated)	117	127	10	0.0%	
Maltby UGA (unincorporated)	71	71	NA	NA	
Monroe UGA	5,838	7,443	1,605	1.7%	
Monroe City	5,326	6,526	1,200	1.3%	
Unincorporated	512	917	405	0.4%	
Sultan UGA	1,887	3,004	1,117	1.2%	
Sultan City	1,752	2,581	829	0.9%	
Unincorporated	135	422	287	0.3%	

NOTES: All estimates and targets above are based on December 13, 2012 city boundaries; NA = not applicable.

Crash Experience 2015- (Aug) 2016



Crash Type	2015	2016	Total
Rear-end	13	17	30
Sideswipe	8	8	16
Fixed object	9	6	15
Animal	7	1	8
Opposite direction	1	1	2
Other	2	4	6
Grand Total	40	37	77

Injury Type	2015	2016	Total
Serious Injury		2	2
Evident Injury	3	1	4
Possible Injury	4	5	9
No Injury	33	29	62
Total	40	37	77

77 total crashes

- Split: 48 EB/28 WB/1 wrong way – 19% injury
- Cause: 15 inattention, 14 speed, 6 distraction, 5 drowsiness
- 12/28 (43%) WB crashes 5:30AM – 8:00AM weekdays, including a serious injury Rear-end
- 22/48 (46%) EB crashes 2:30PM – 6:30PM weekdays

Evaluating the (Roadway) Alternatives

Common Parameters

- SR 522--between I-405 and US 2
- 2016 Traffic Volumes
 - Except for Option 9 (Full Buildout)—2030 volumes
- AM Peak Hour—WB focus only
- PM Peak Hour—EB focus only
- Travel time experience today
 - AM Peak (WB) = 45 minutes
 - PM Peak (EB) = 24 minutes
 - Non-peak = 15 minutes

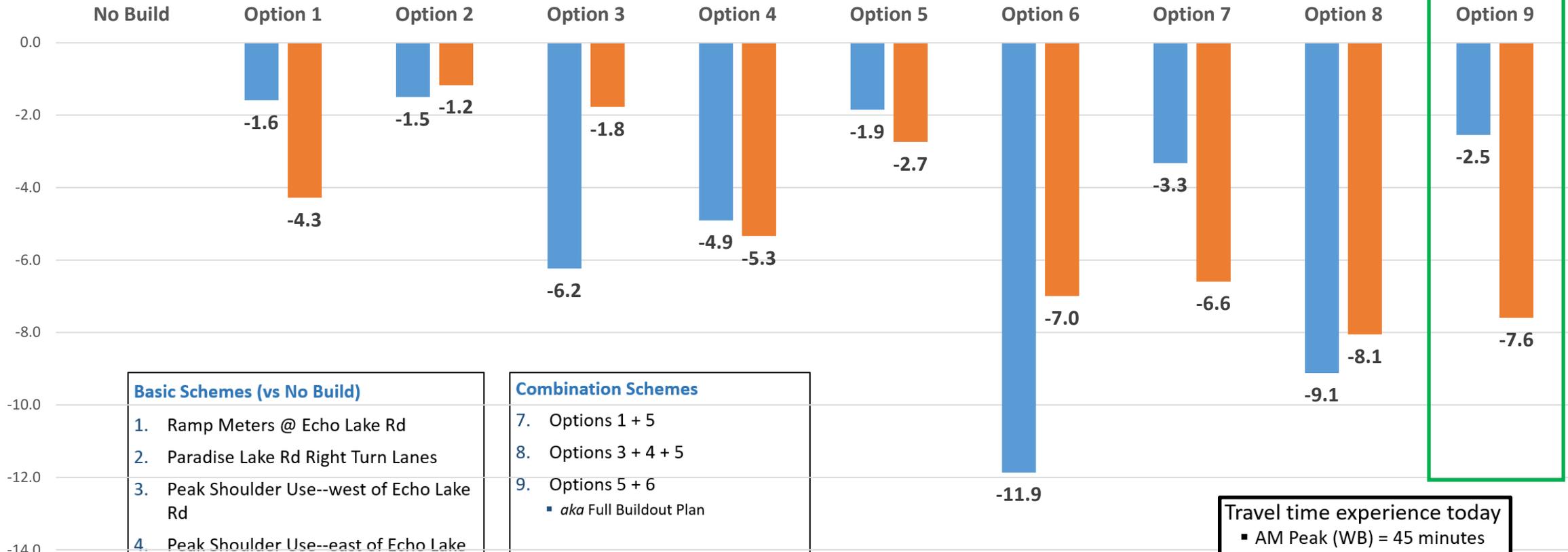
Traffic Performance Measures

- No Build (*aka* Existing) vs Alternative condition
- Travel Time--Seconds or Minutes
- Travel Speed--MPH

Travel Time Reduction--Alternatives vs No Build

Delay Reduction vs No Build (min)

■ SR 522 WB... ■ SR 522 EB...



Alternatives vs. No Build—Travel Speed (MPH)

Basic Schemes (vs No Build)

1. Ramp Meters @ Echo Lake Rd
2. Paradise Lake Rd Right Turn Lanes
3. Peak Shoulder Use--west of Echo Lake Rd
4. Peak Shoulder Use--east of Echo Lake Rd
5. Paradise Lake Rd Interchange
6. Echo Lake Rd Interchange—incl 4-lanes on SR 522

Combination Schemes

7. Options 1 + 5
8. Options 3 + 4 + 5
9. Options 5 + 6
 - aka Full Buildout Plan

■ SR 522 WB (AM Peak) ■ SR 522 EB (PM Peak)

