SR 522 Planning Update





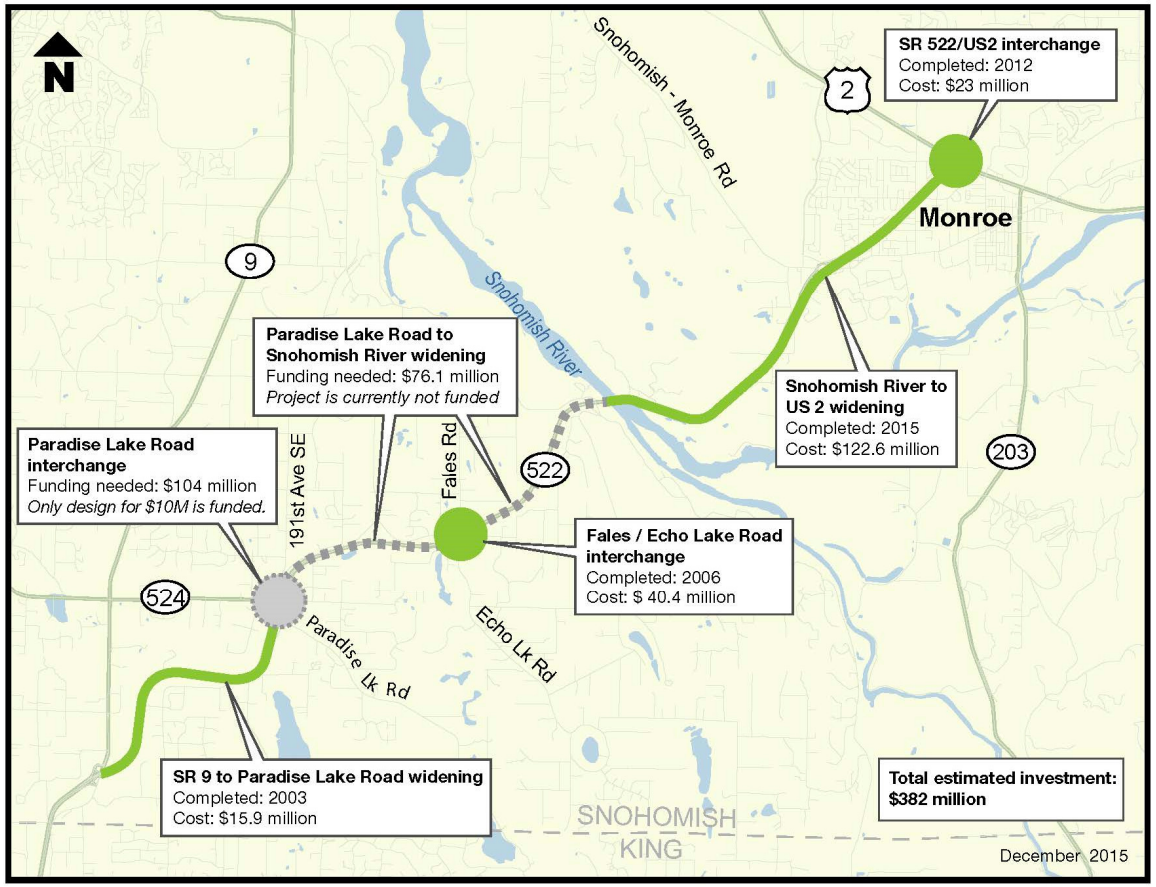
John H. White, WSDOT
Assistant Regional Administrator

Monroe City Council
City Hall Council Chambers
Monroe, WA
December 13, 2016

Agenda

- Review SR 522 Connecting Washington program funding and alignment with previous corridor improvements
- Overview of the existing traffic conditions
- Provide background on 2016 supplement budget Corridor Sketch planning effort
- Review the range of range of potential capital and operational improvements identified
- Discuss next steps and funding possibilities

SR 522 Corridor Projects & Existing Funding



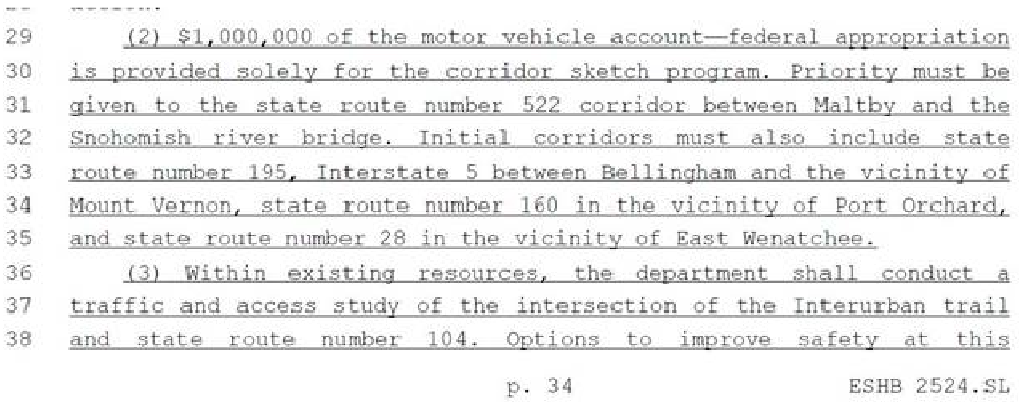
Connecting Washington Funding:

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."



(2) $1,000,000 of the motor vehicle account—federal appropriation is provided solely for the corridor sketch program. Priority must be given to the state route number 522 corridor between Maltby and the Snohomish river bridge. Initial corridors must also include state route number 195, Interstate 5 between Bellingham and the vicinity of Mount Vernon, state route number 160 in the vicinity of Port Orchard, and state route number 28 in the vicinity of East Wenatchee.

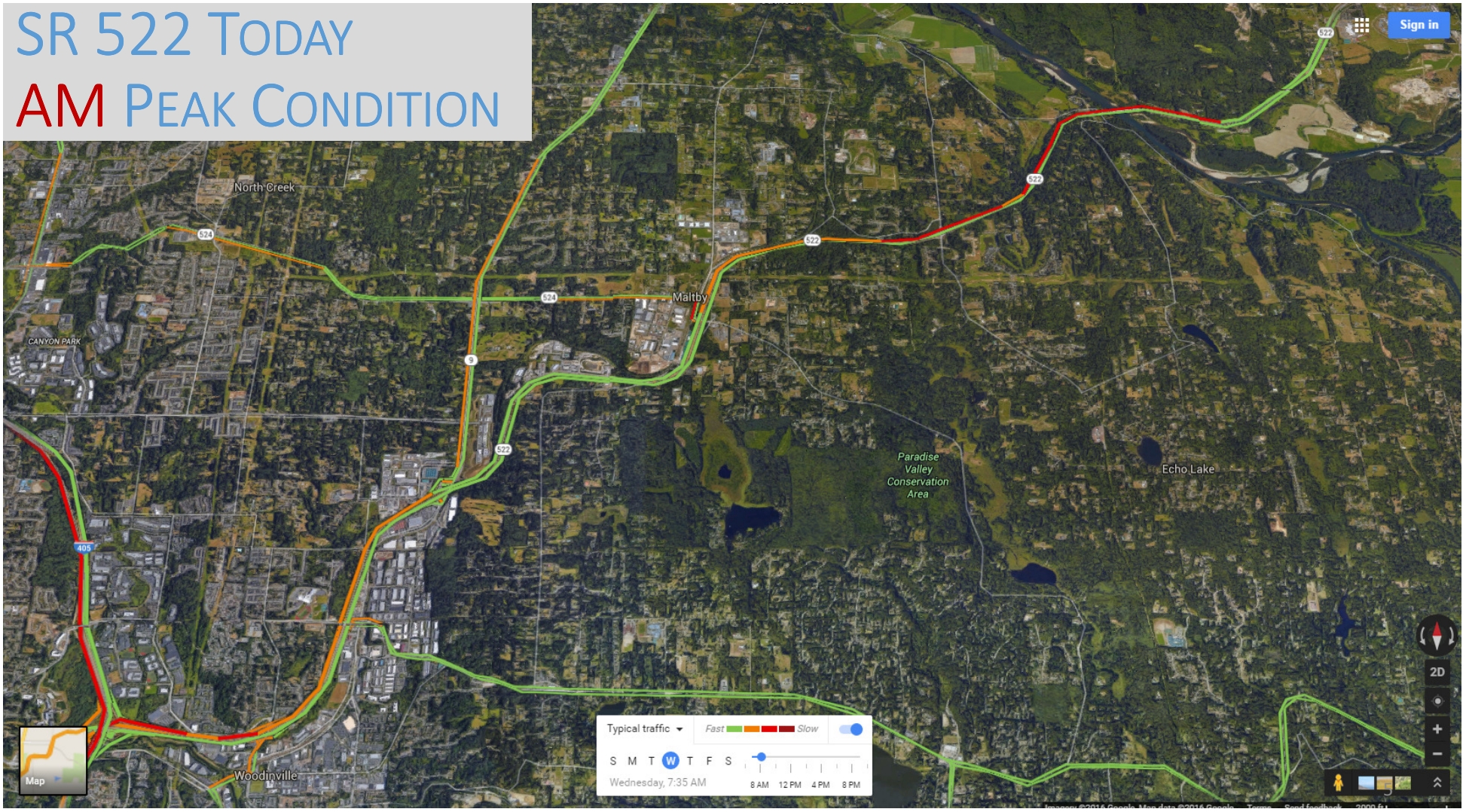
(3) Within existing resources, the department shall conduct a traffic and access study of the intersection of the Interurban trail and state route number 104. Options to improve safety at this

p. 34 ESHB 2524.SL

The 2016 Supplemental Budget prioritized the SR 522 corridor sketch effort above other corridors. The planning strategy set in coordination with the partners 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 compare to each other in terms of improved performance
- Conduct a workshop with the primary stakeholders to review, assess and prioritize improvement concepts
- Issue summary documentation that can assist in pursuit of additional funding

SR 522 Today
AM Peak Condition



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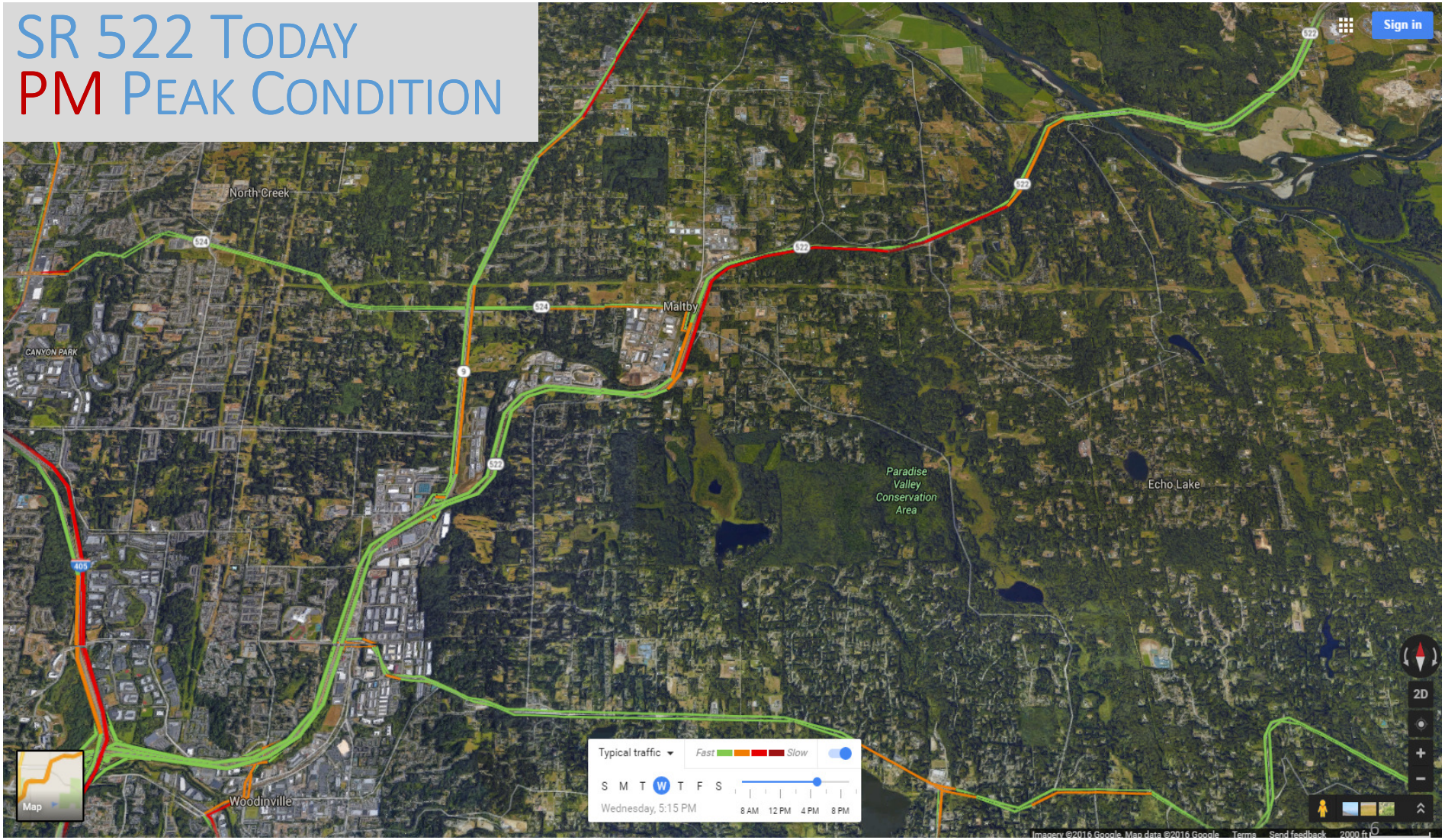
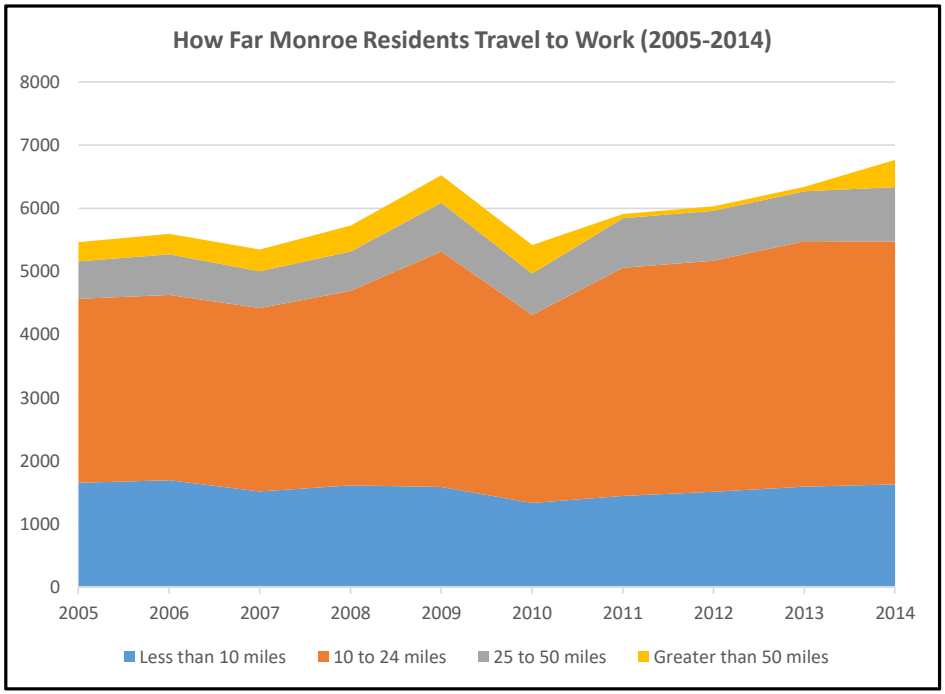
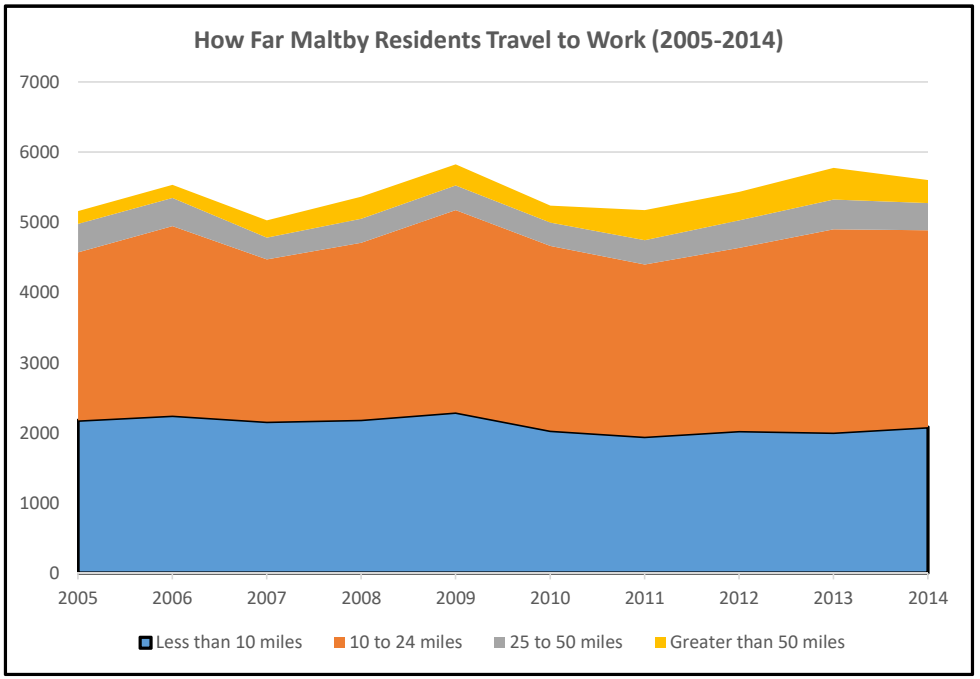


Travel Characteristics for Monroe & Maltby Residents





Source: U.S. Census Bureau, Center for Economic Studies: OnTheMap.
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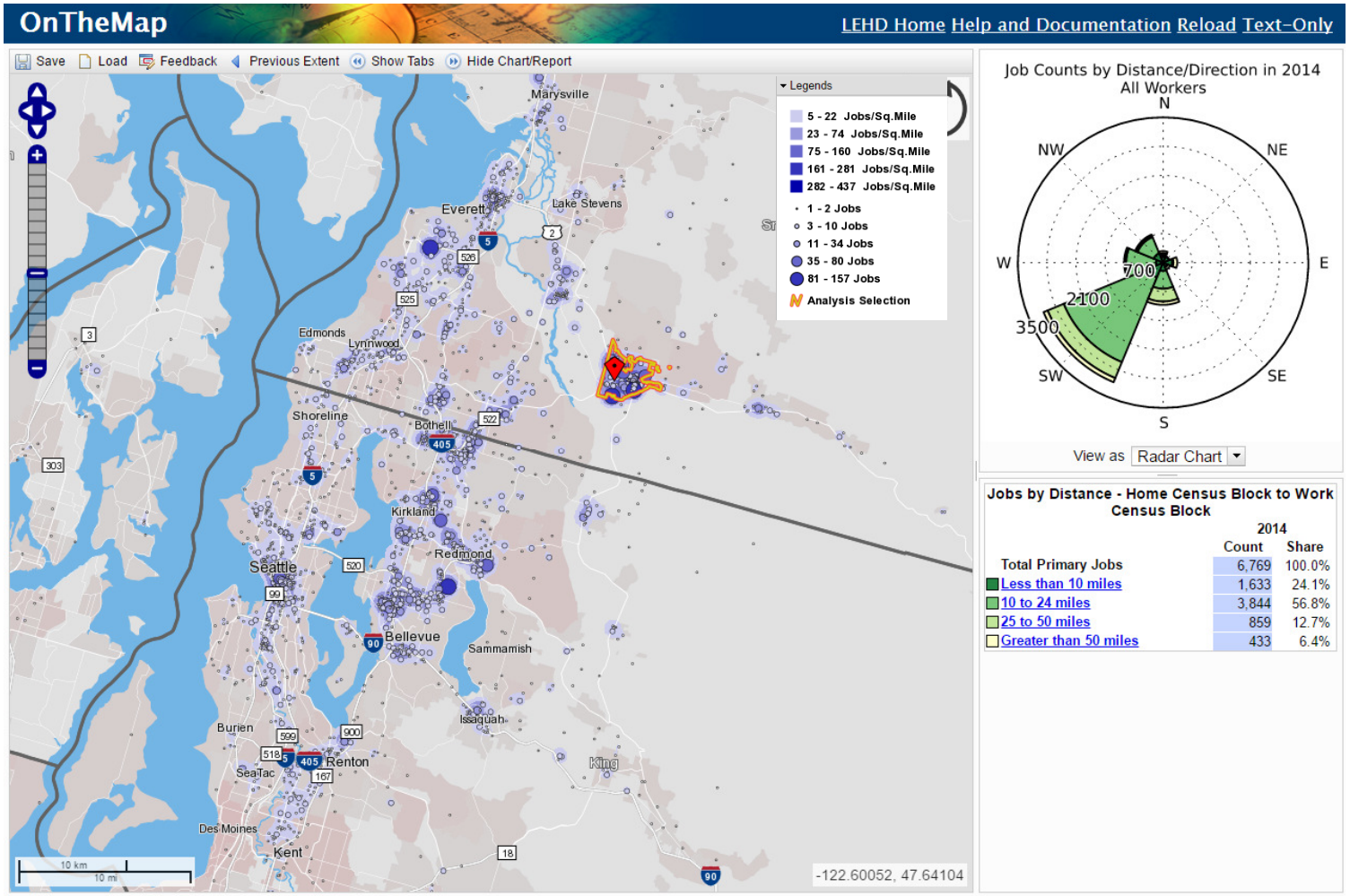

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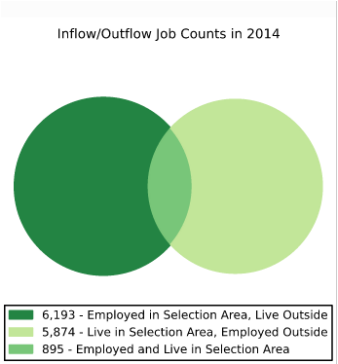

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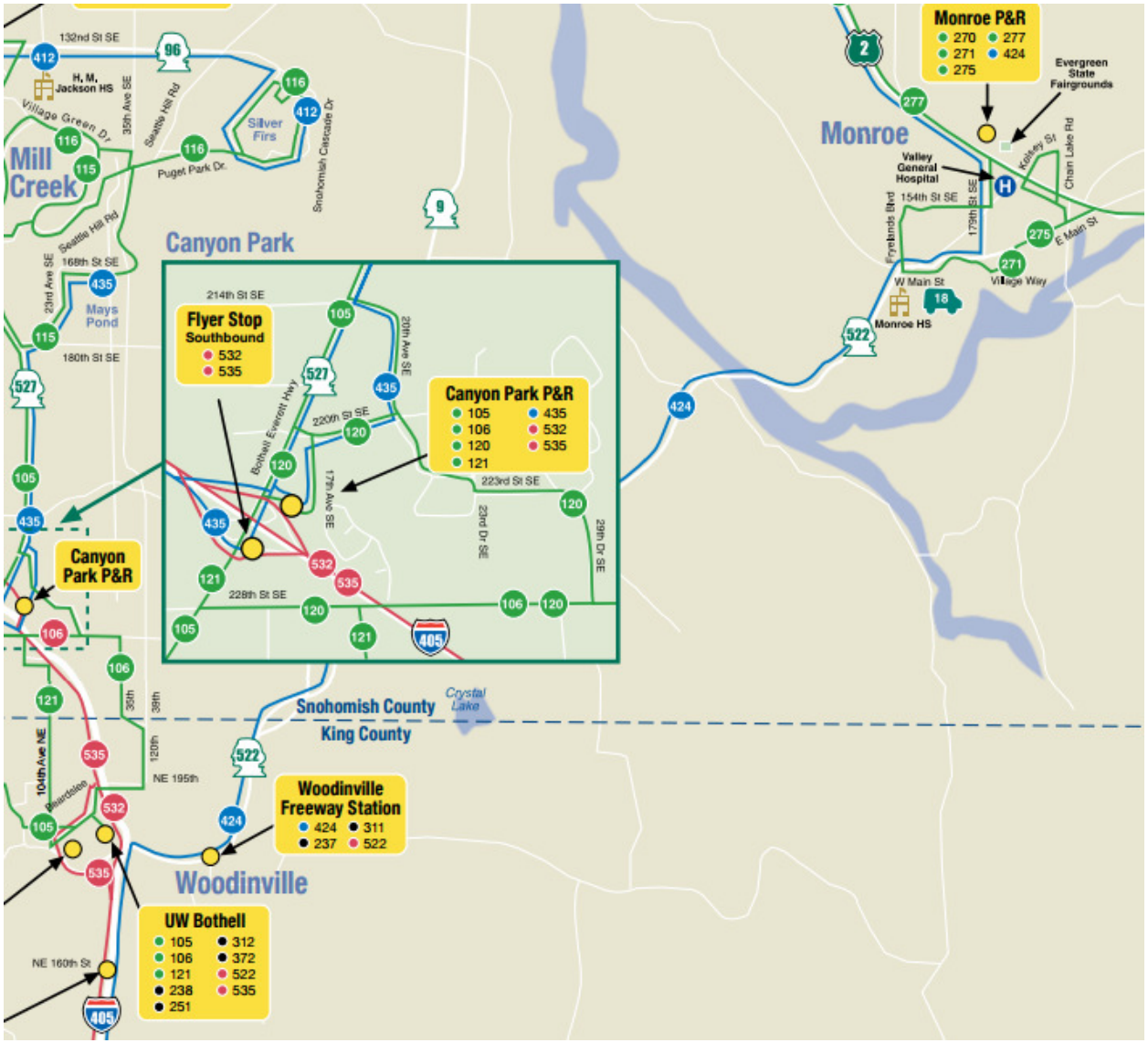
Community Transit Routes



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 next steps, primarily identifying planning level scopes and cost ranges and beginning work on summary documentation.

Roadway Alternatives – Scoping and Estimating Approach

- Utilized best available data and existing information from previous scoping and design efforts.
- Identified key assumptions and cost drivers.
- Presented in cost ranges based upon known and perceived risks and the level of uncertainty in the data/design.
- All mainline SR 522 widening is anticipated to require some degree of fish barrier culvert replacement.
- Basis is 2016 dollars. Assumptions on funding and construction timing will influence the ultimate estimates and should be discussed further before communicating publicly.

Roadway Alternatives

Basic Schemes (vs No Build)

1. Ramp Meters @ Echo Lake Rd
2. Paradise Lake Rd Freight Compatible Right Turn Lanes
3. Peak Shoulder Use (EB+WB)--west of Echo Lake Rd
4. Peak Shoulder Use (EB + WB)--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

New Scheme from Workshop

10. Reversible lane

New Scheme post Workshop

11. Phased 4-lane widening

Roadway Alternatives

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

- This alternative provides single lane ramp metering for both eastbound and westbound on-ramps.
- No widening required.
- Cost: $400k to $500k - <u>Planning Level Estimate (2016 Dollars)</u>

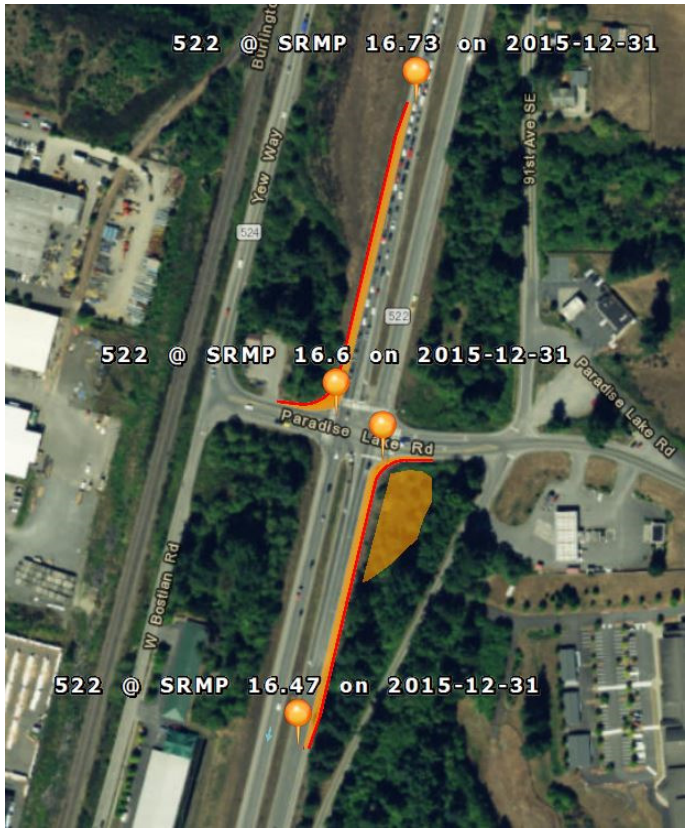
WB On-ramp S1 01815 MP 0.30

EB On-ramp Q1 01923 MP 0.39

Roadway Alternatives

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

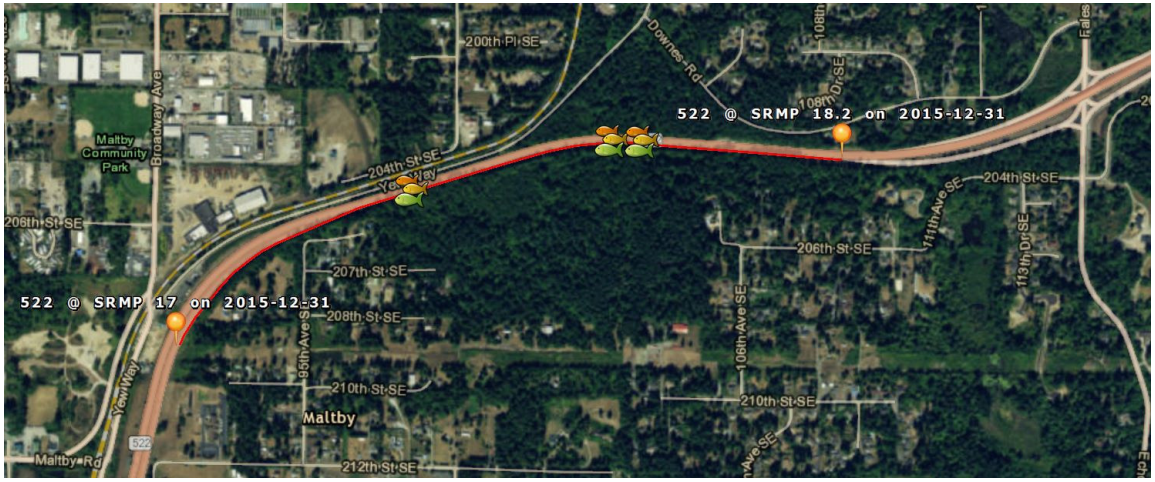
- This alternative would provide right turn/deceleration lanes for both eastbound and westbound directions at Paradise Lake Road.
- This option includes 515 ft. deceleration lanes (both directions) with right lane turning movements accommodating a truck (WB-67) turning radius.
- Estimate includes stormwater treatment and detention.
- Provides an additional 12 ft. right turn lane and 6 ft. shoulders both directions.
- 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).
- Cost: $3.0M to $3.5M - Planning Level Estimate (2016 Dollars)



Roadway Alternatives – Peak Use Shoulder Lanes

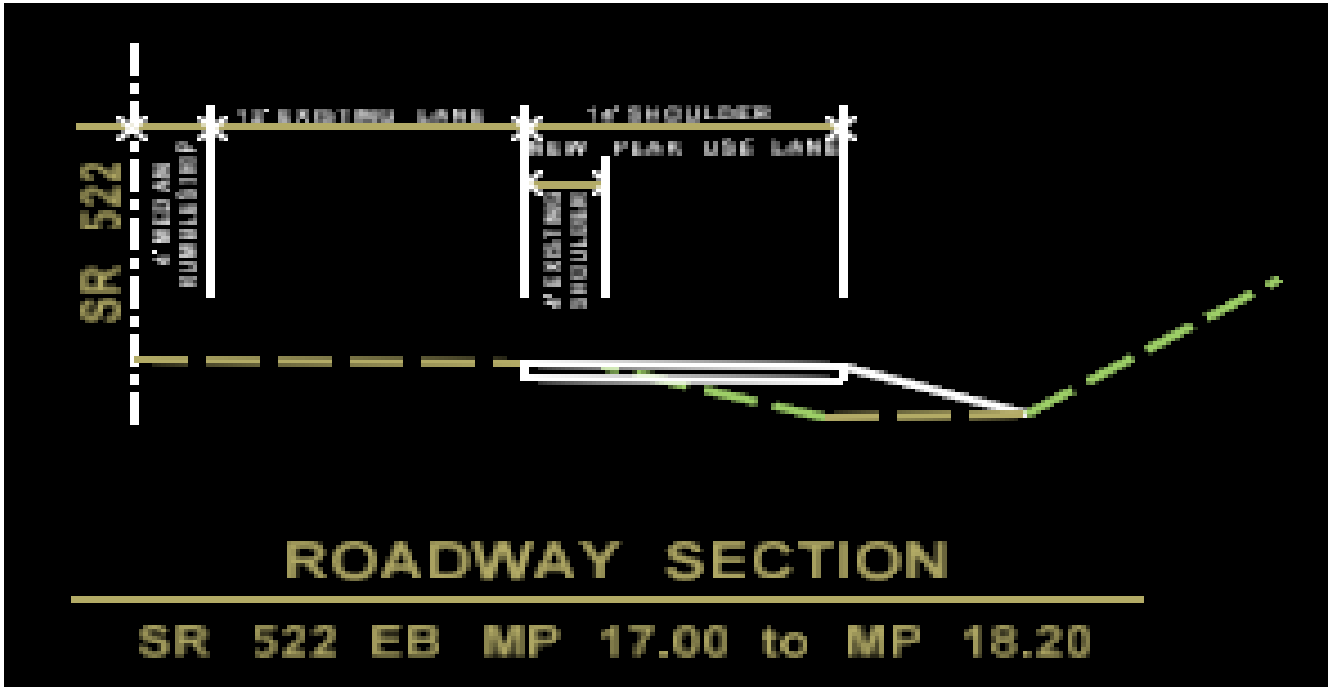
SR 522 EB 210th St SE to Echo/Fales Lake Road – Peak Use Shoulder Lane

- 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)
- Cost: $25M to $30M - <u>Planning Level Estimate (2016 Dollars)</u>



Roadway Alternatives – Peak Use Shoulder Lanes

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



Roadway Alternatives – Peak Use Shoulder Lanes

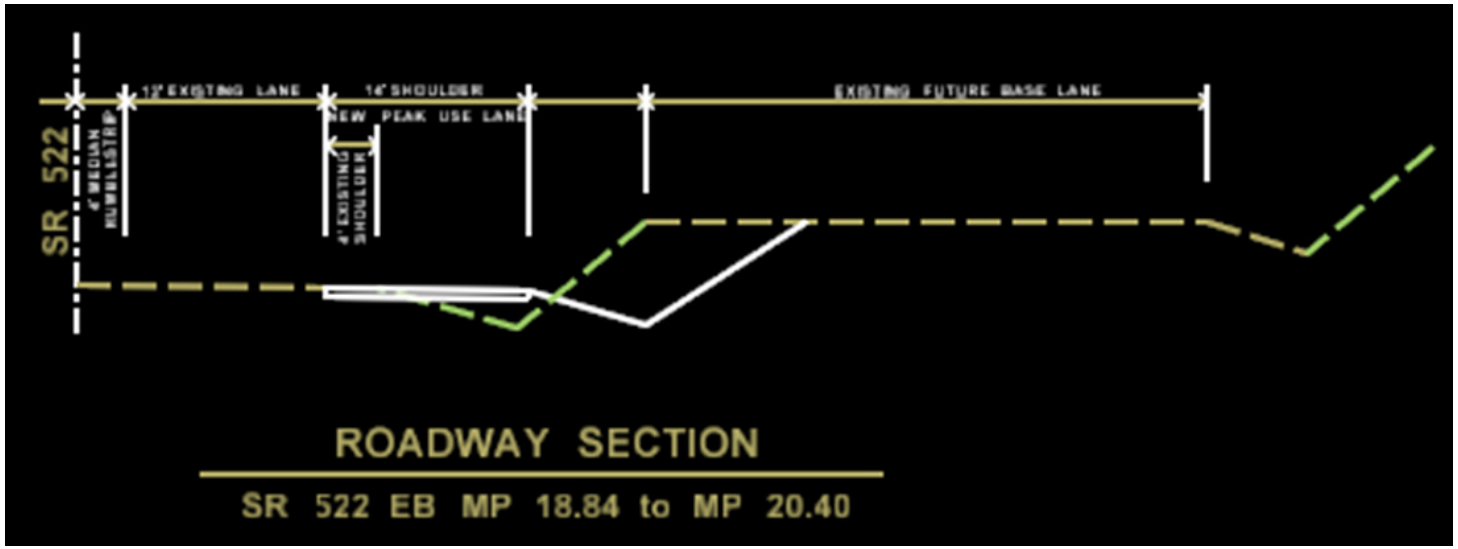
SR 522 EB Echo/Fales Lake Road to Snohomish River Bridge – Peak Use Shoulder Lane

- 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).
- Cost: $35M to $40M - <u>Planning Level Estimate (2016 Dollars)</u>

Roadway Alternatives – Peak Use Shoulder Lanes

SR 522 EB Echo/Fales Lake Road to Snohomish River Bridge

Peak Use Shoulder Lane Roadway Section

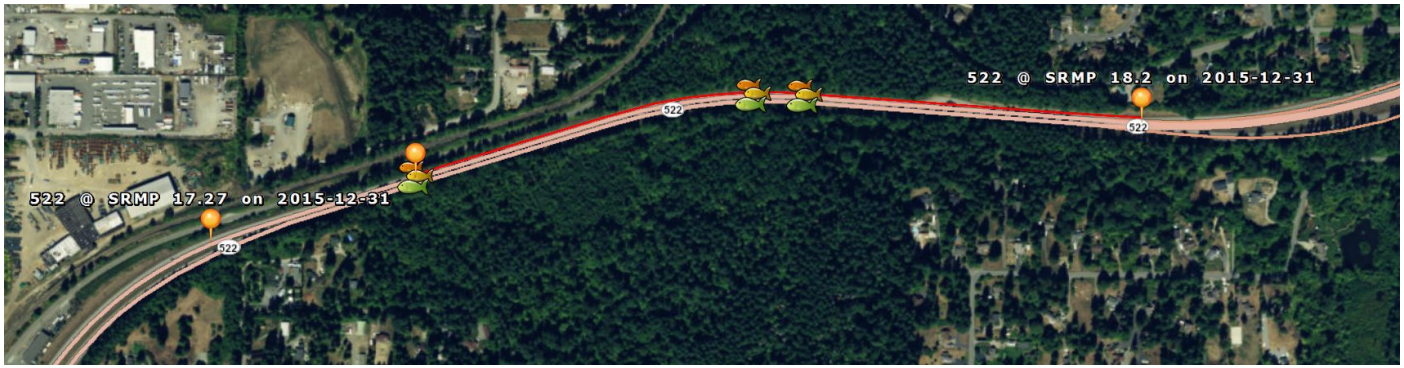


NOTE: This section if built, cuts into the previously constructed grade that will accommodate the future grade separated eastbound lanes from Echo/Fales Lake Rd to the Snohomish River Bridge. This would create throwaway work and additional cost when the full widening project comes through.

Roadway Alternatives – Peak Use Shoulder Lanes

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

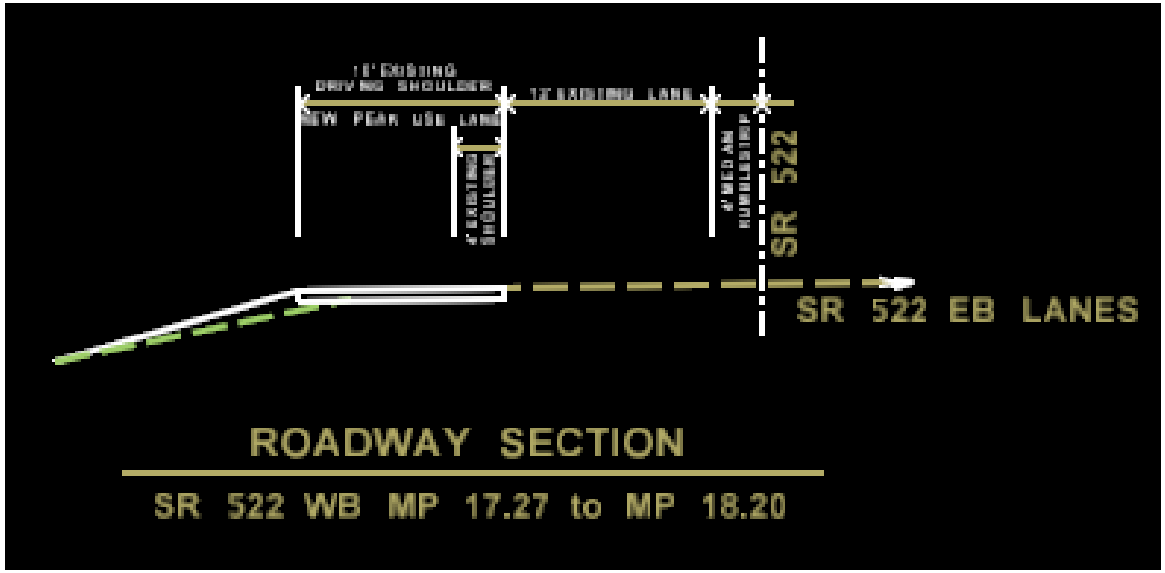
- This alternative provides a peak use shoulder lane westbound from the vicinity of 95th Ave SE to Echo/Fales Lake Rd I/C – MP 17.27 to 18.20.
- This option would widen westbound SR 522 by 4 ft. This new section would include the existing 4 ft. median, existing 12 ft. Lane and widen the existing 10ft 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)
- Cost: $15M to $20M - 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 Roadway Section



Roadway Alternatives – Peak Use Shoulder Lanes

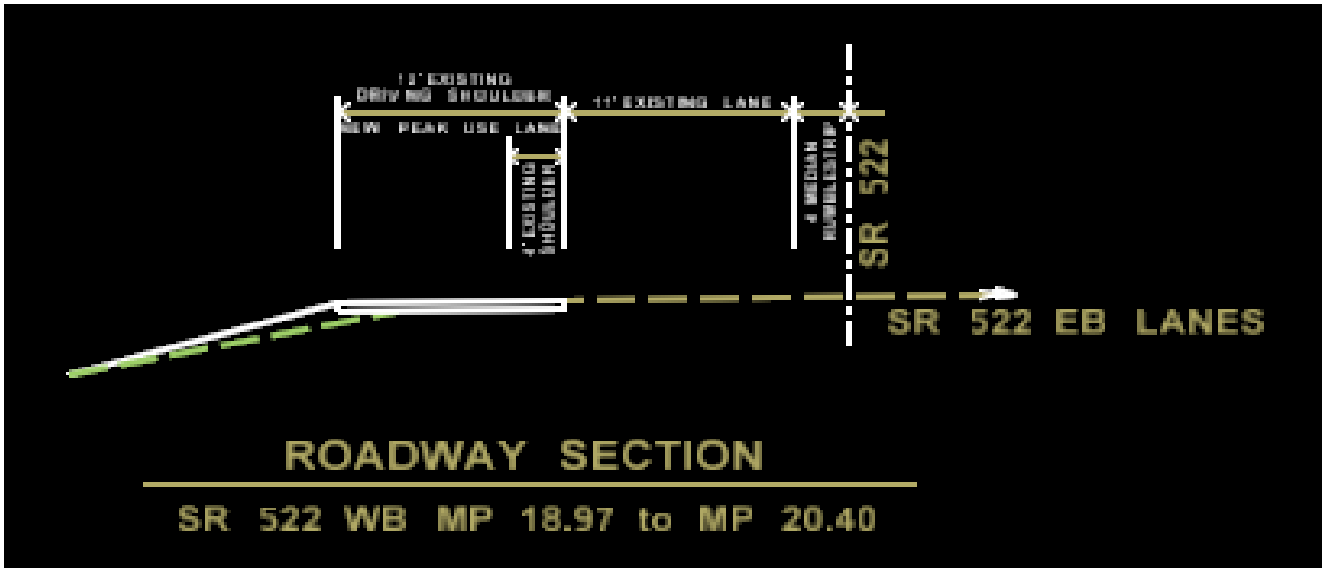
SR 522 WB Echo/Fales Lake Road to Snohomish River Bridge – Peak Use Shoulder Lane

- 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).
- Cost: $26M to $31M - Planning Level Estimate (2016 Dollars)

Roadway Alternatives – Peak Use Shoulder Lanes

SR 522 WB Echo/Fales Lake Road to Snohomish River Bridge

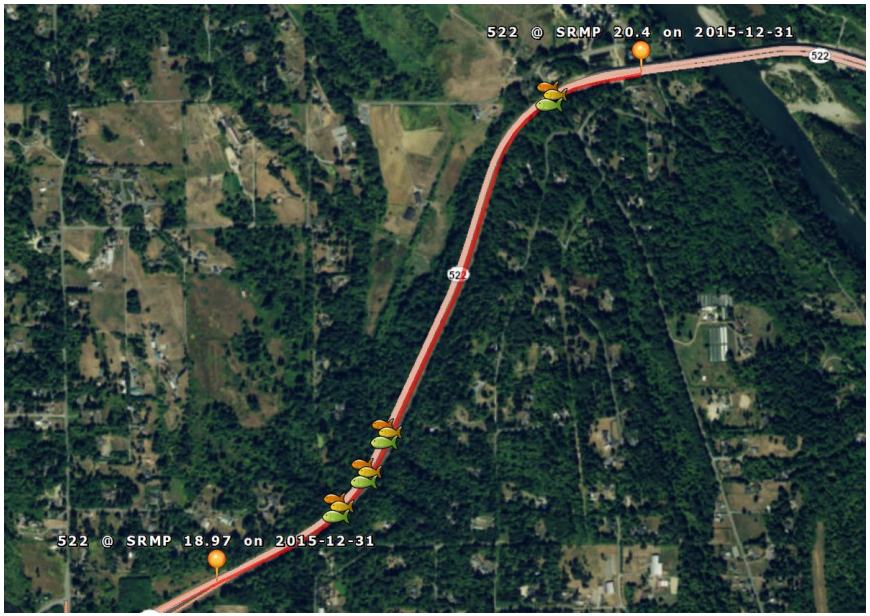
Peak Use Shoulder Lane Roadway Section



Roadway Alternatives – Phased 4-lane Widening

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

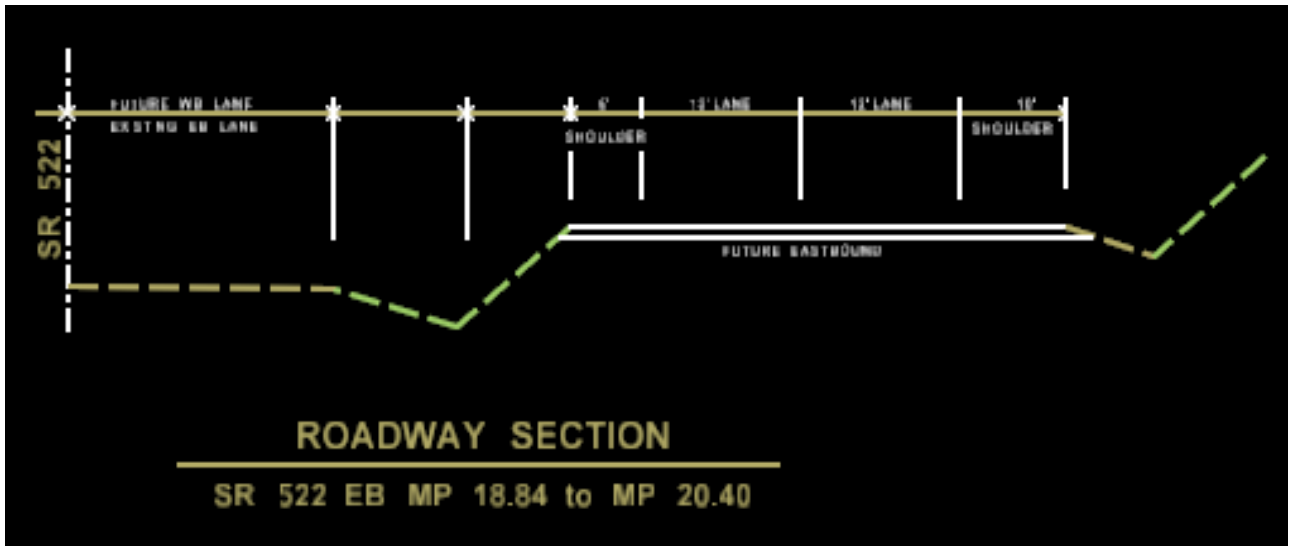
- Builds the 4-lane ultimate configuration between Echo/Fales Lake I/C and the Snohomish River Bridge.
- This alternative provides two new lanes eastbound from the Echo/Fales Lake Rd I/C to the Snohomish River Br. – MP 18.84 to 20.40.
- This option would utilize the existing grade eastbound SR 522, to accommodate two 12 ft. lanes. Includes 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).
- Utilizes the previously constructed/existing grade for the new eastbound lanes.
- Re-configures the westbound direction to two 12 ft. lanes with 10ft 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 – Phased 4-lane Widening

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

4-Lane Roadway Section



Roadway Alternatives – Paradise Lake Road Interchange

SR 522 Paradise Lake Rd I/C – Reduced Cost Interchange Design

- This alternative provides an elevated roundabout (using Structural Earth Walls - SEW) 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.
- Estimate includes the replacement of three fish passage culvert locations – ID # 996460, #994124, and #994123. ($6.0M).
- Would eliminate the signal at SR 522/Paradise Lake Rd.
- Would reconfigure SR522/Paradise Lake Rd to right-in and right-out only.
- 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.
- Bridge 522/135 - 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

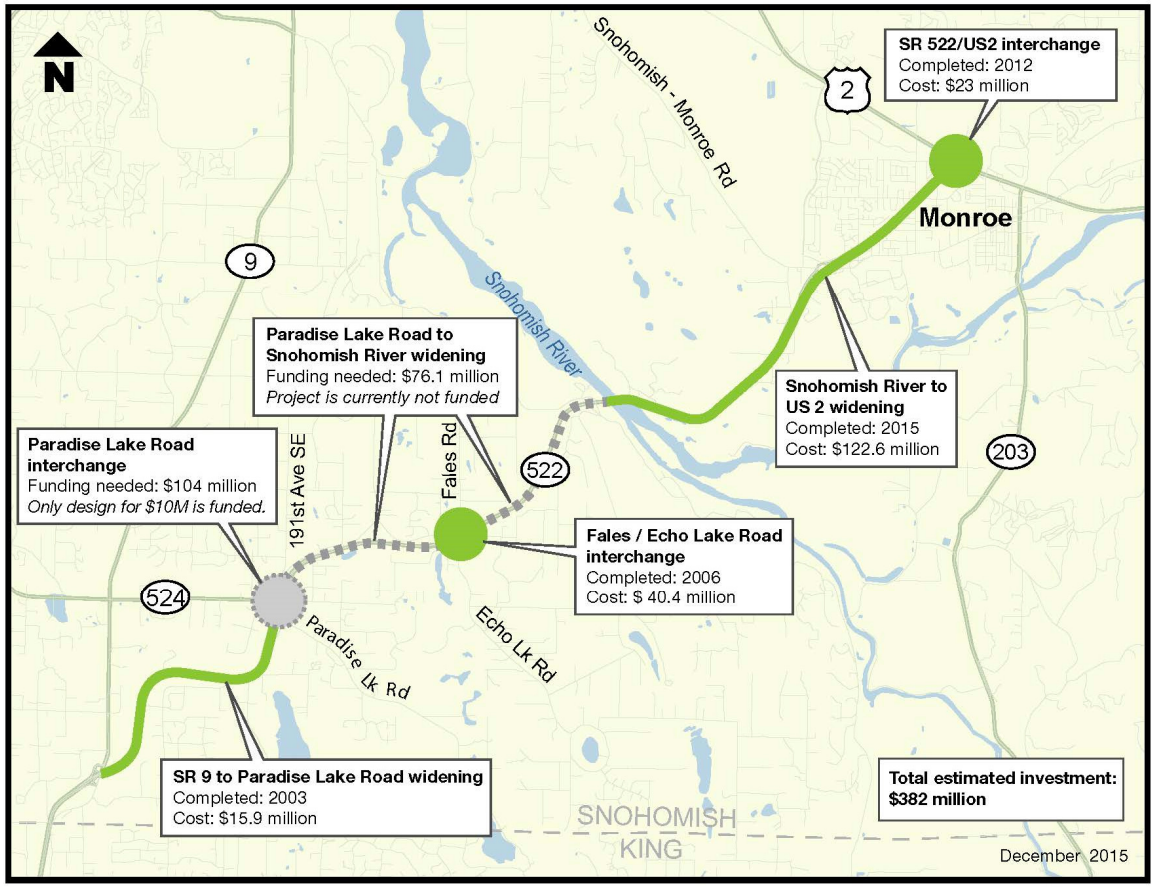
- There are a couple of low cost ($500K to $3M) localized improvement opportunities that could be pursued near term if funding was made available.
- While the individual peak use shoulder segments cost between $15M and $40M, multiple segments need to be combined to achieve corridor wide benefits, which 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 a logical lower cost ($23M to $28M) first step.
- A lower cost more practical 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

- Complete folio and summary materials
- 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 funding opportunities (local, state, federal)

End of Presentation

SR 522 Corridor Projects & Existing Funding



Connecting Washington Funding:

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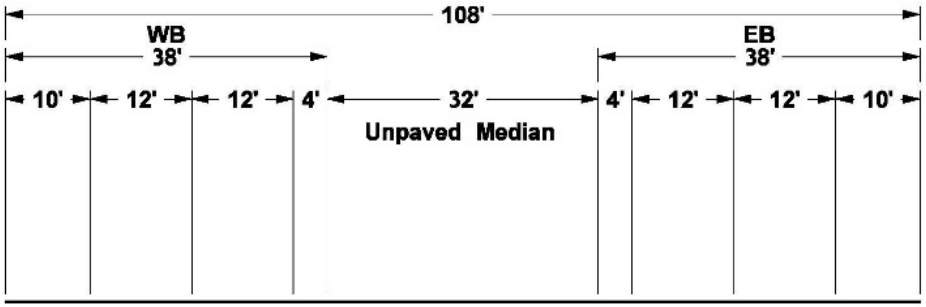
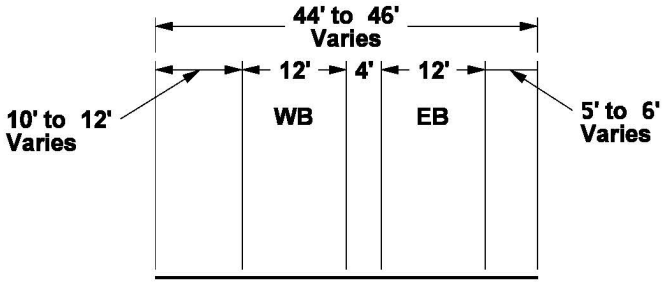
Paradise Lake Rd to Snohomish River
Typical Roadway Sections



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



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

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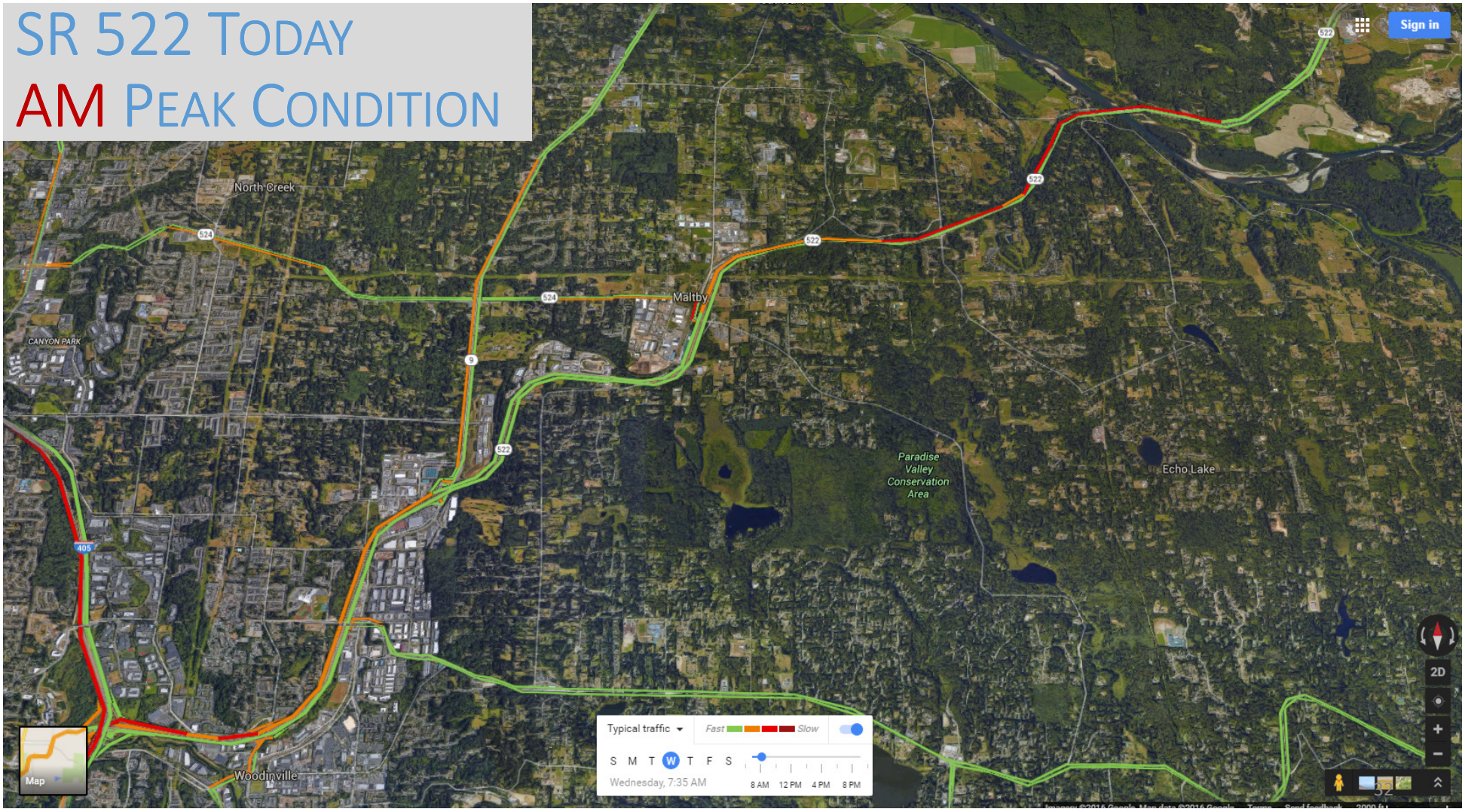

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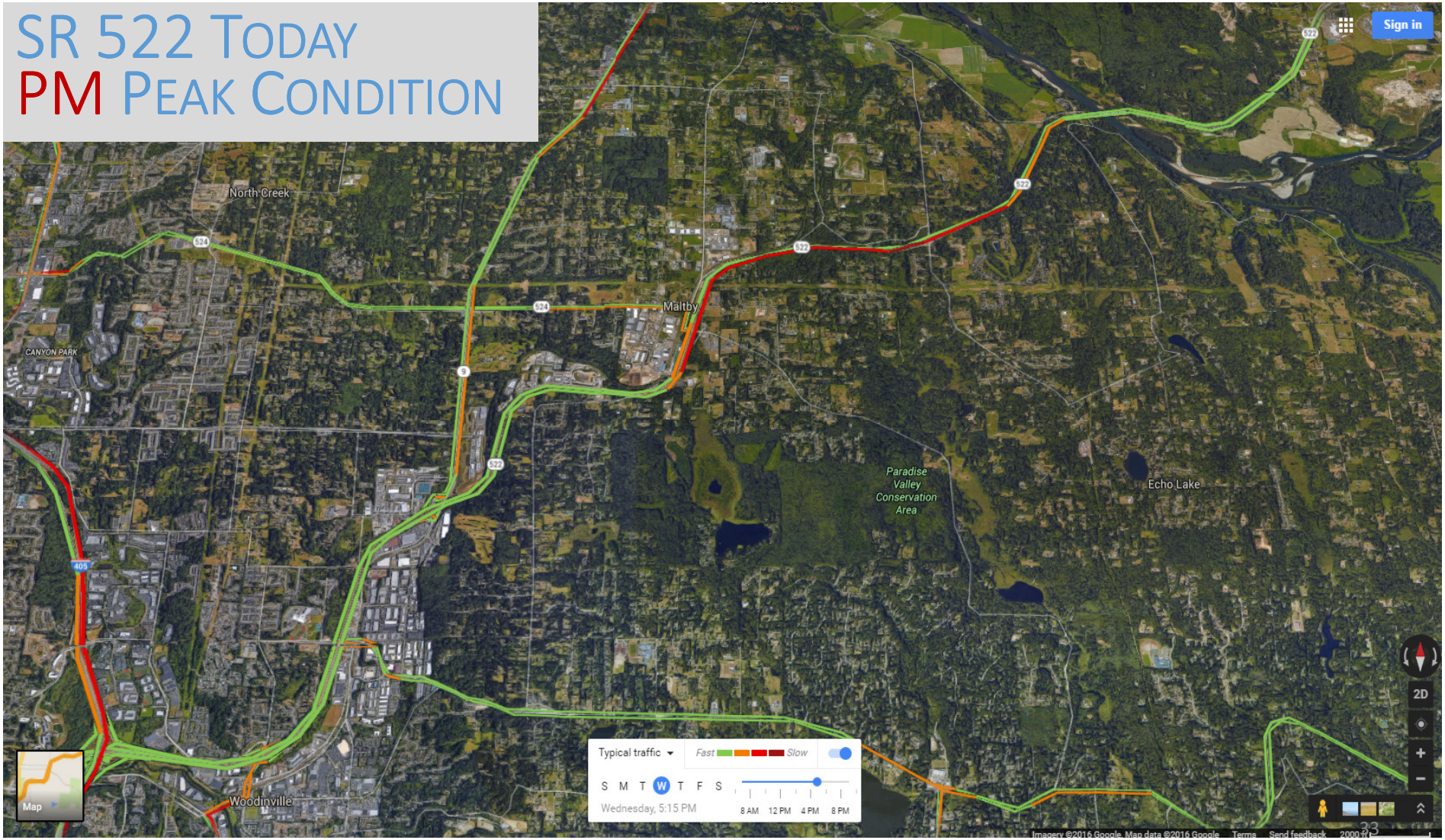

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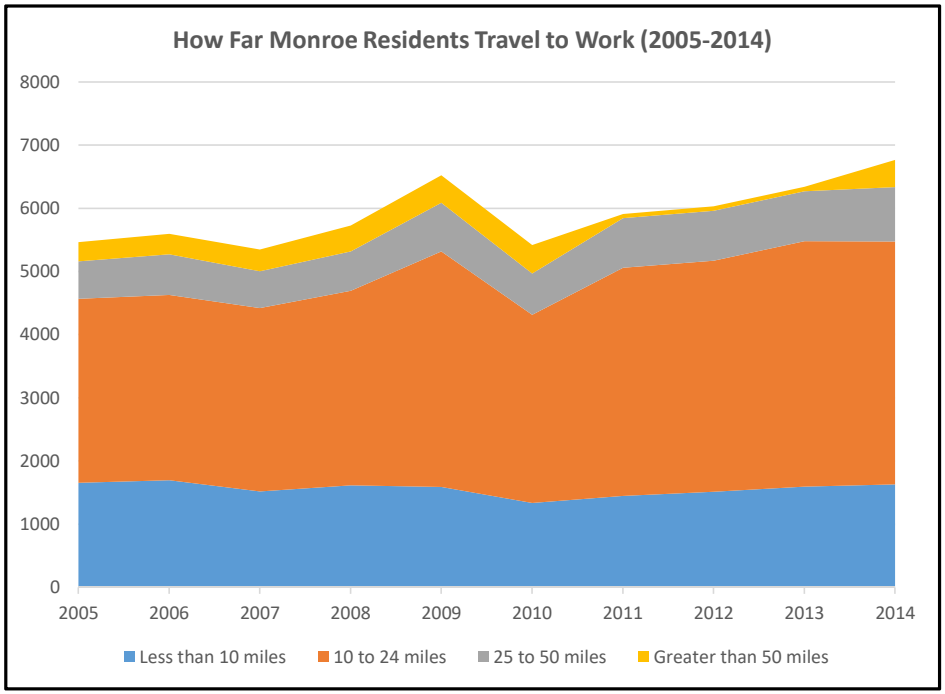

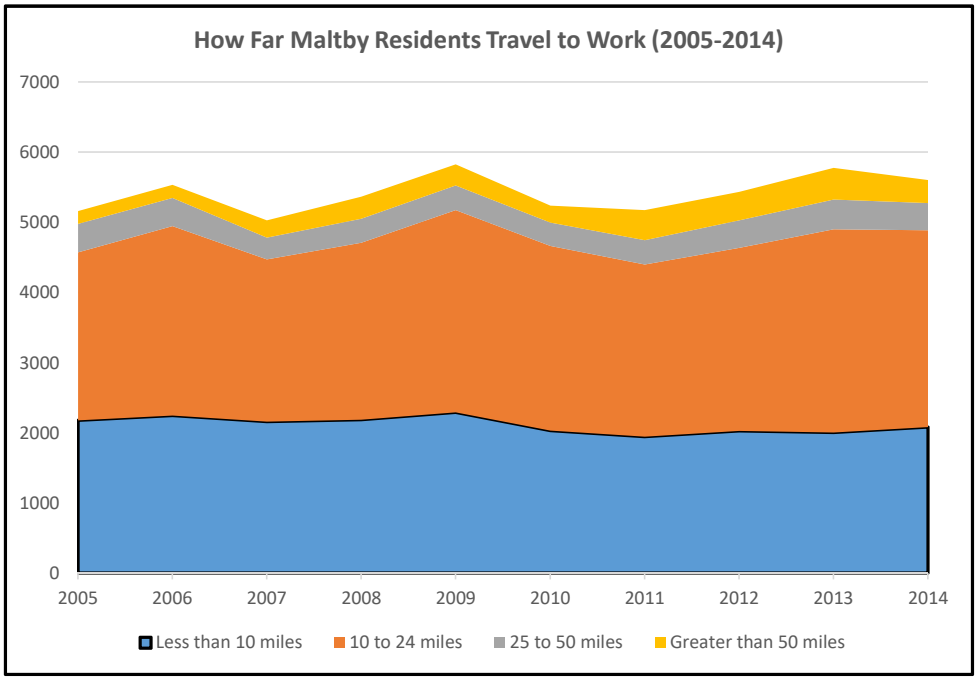

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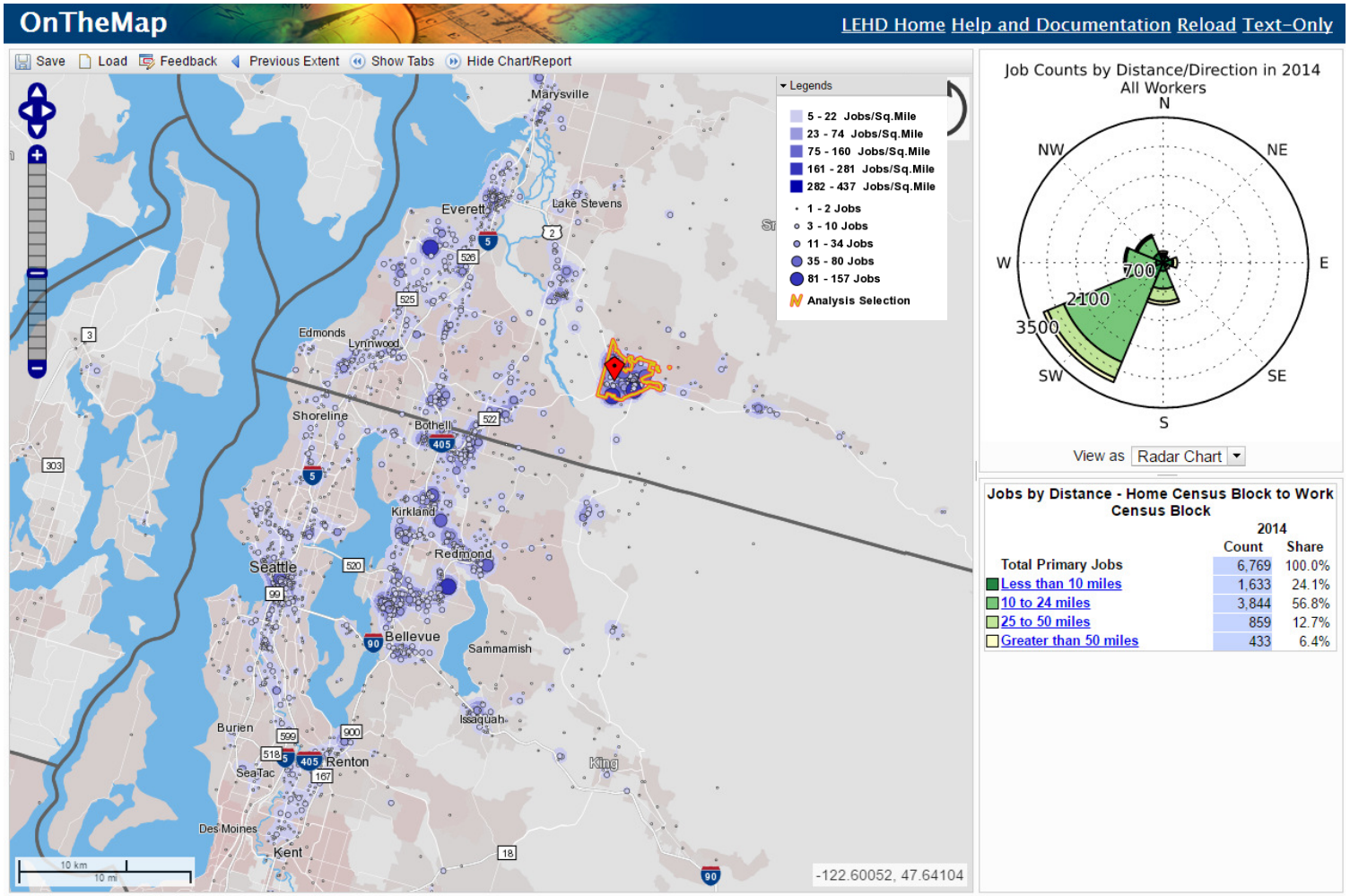

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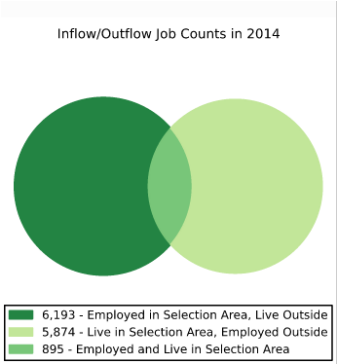

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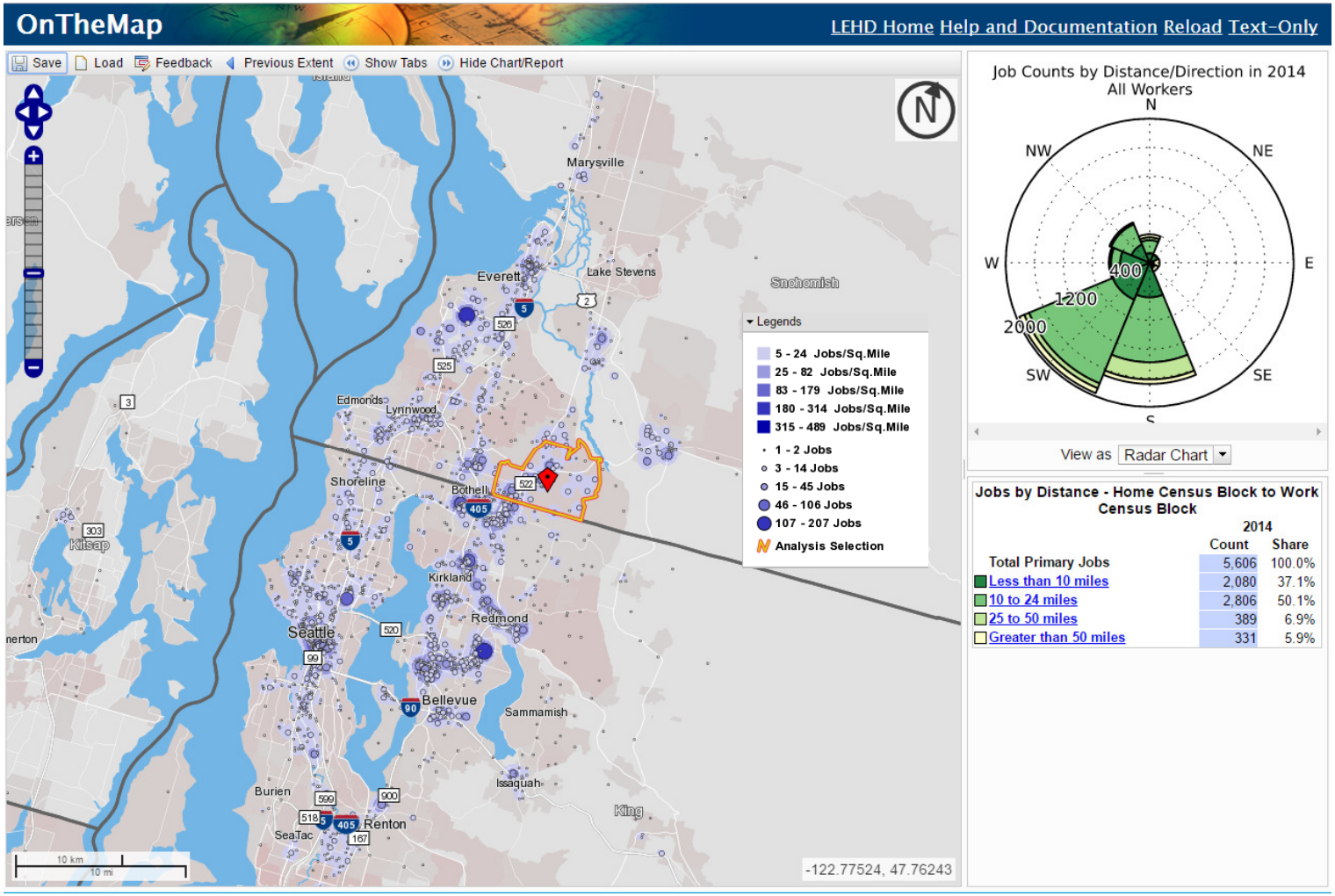

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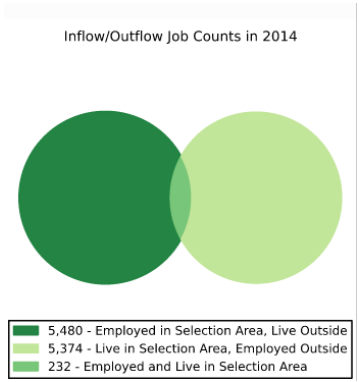
25 to 50 miles	389	6.9%
Greater than 50 miles	331	5.9%

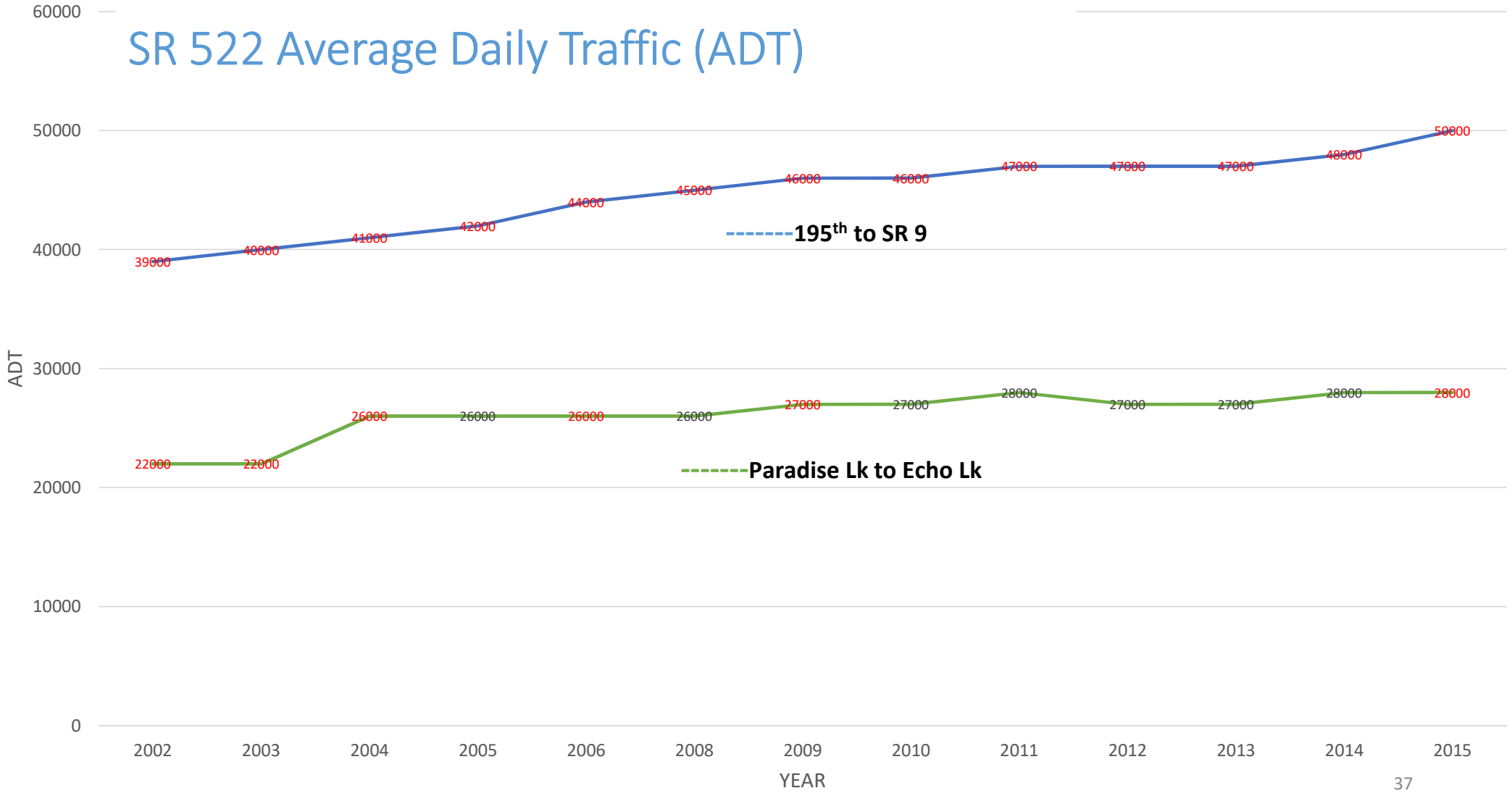
Jobs Counts by Places (Cities, CDPs, etc.) Where Workers are Employed - Primary Jobs

	2014 Count	Share
All Places (Cities, CDPs, etc.)	5,606	100.0%
Seattle city, WA	1,147	20.5%
Redmond city, WA	499	8.9%
Bellevue city, WA	470	8.4%
Everett city, WA	466	8.3%
Bothell city, WA	369	6.6%
Kirkland city, WA	299	5.3%
Maltby CDP, WA	232	4.1%
Woodinville city, WA	203	3.6%
Lynnwood city, WA	143	2.6%
Monroe city, WA	100	1.8%
All Other Locations	1,678	29.9%



Source: U.S. Census Bureau, Center for Economic Studies: OnTheMap. Accessed 9.28.16.

SR 522 Average Daily Traffic (ADT)



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2035 Land Use Forecasts

SNOHOMISH COUNTY PLANNING POLICIES (June 16, 2014)

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%*

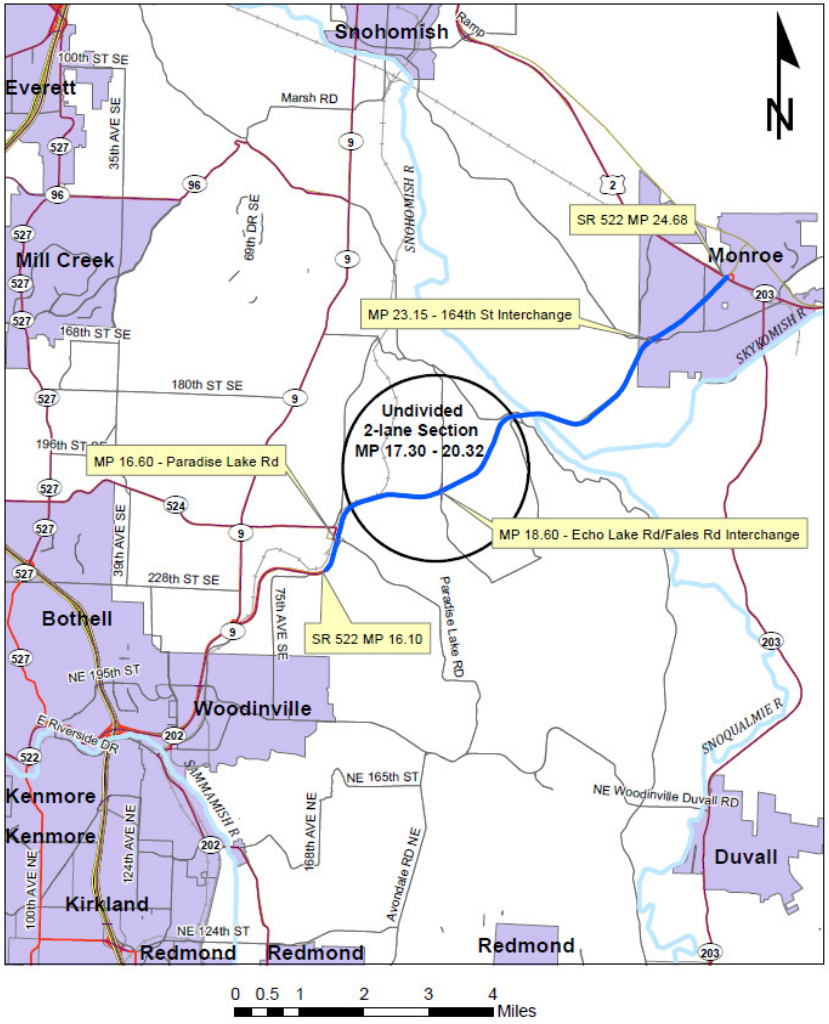
NOTES: All estimates and targets above are based on December 13, 2012 city boundaries.
Employment includes all full- and part-time wage and salary workers and self-employed persons, excluding jobs within the resource (agriculture, forestry, fishing and mining) and construction sectors.

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

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Evaluating the (Roadway) Alternatives

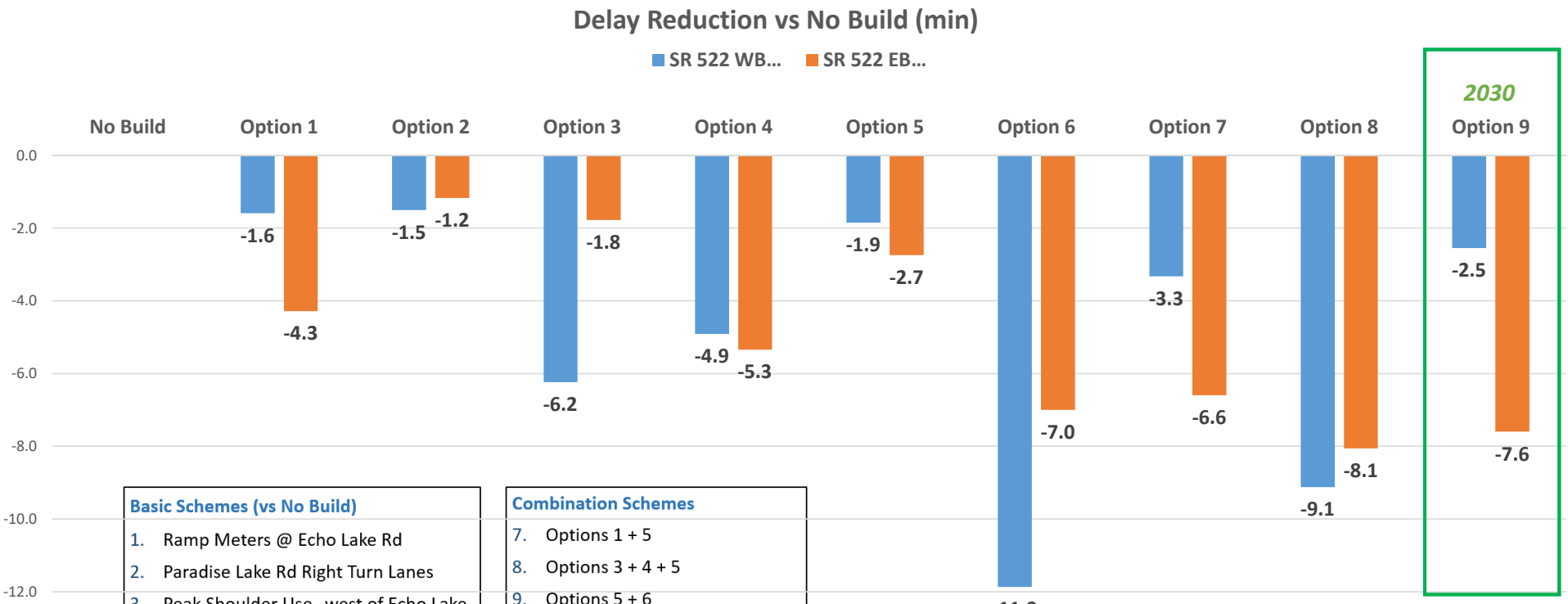
Common Parameters

- 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



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

Travel time experience today
- AM Peak (WB) = 45 minutes
- PM Peak (EB) = 24 minutes
- Non-peak = 15 minutes

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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