Lakeway Drive Bikeway Study

Findings and Recommendations

Transportation Commission

July 11, 2017

City of Bellingham Public Works

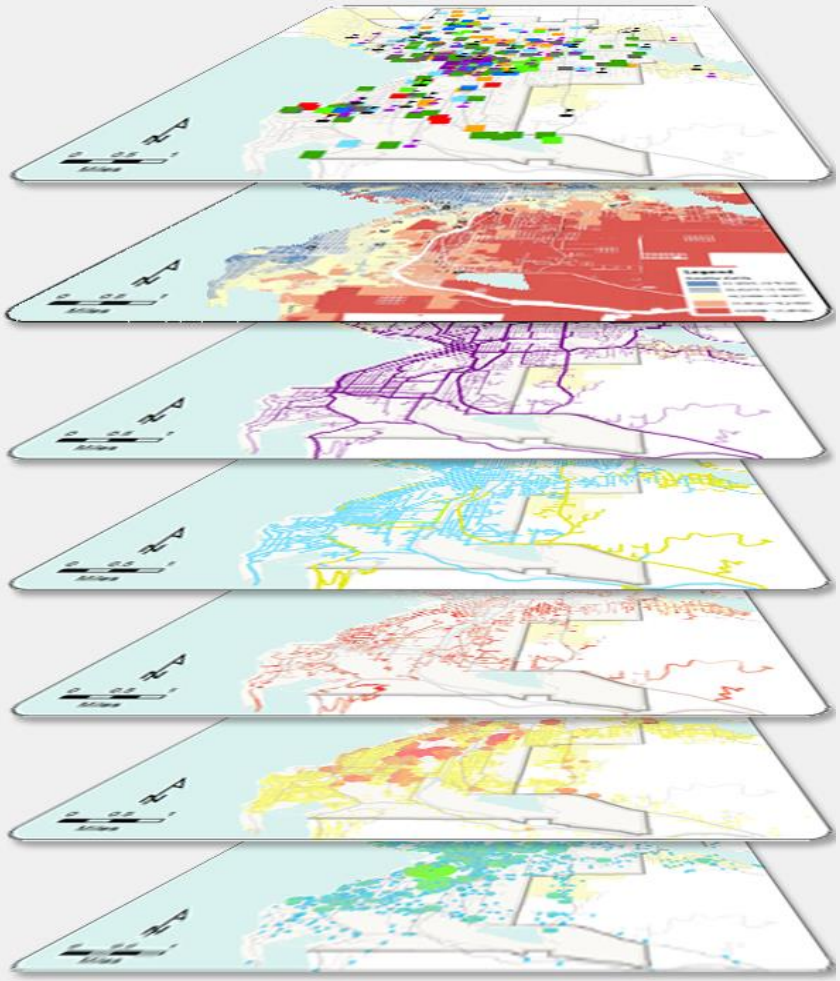
Bellingham Bike Network Analysis

Public Input & Local Knowledge

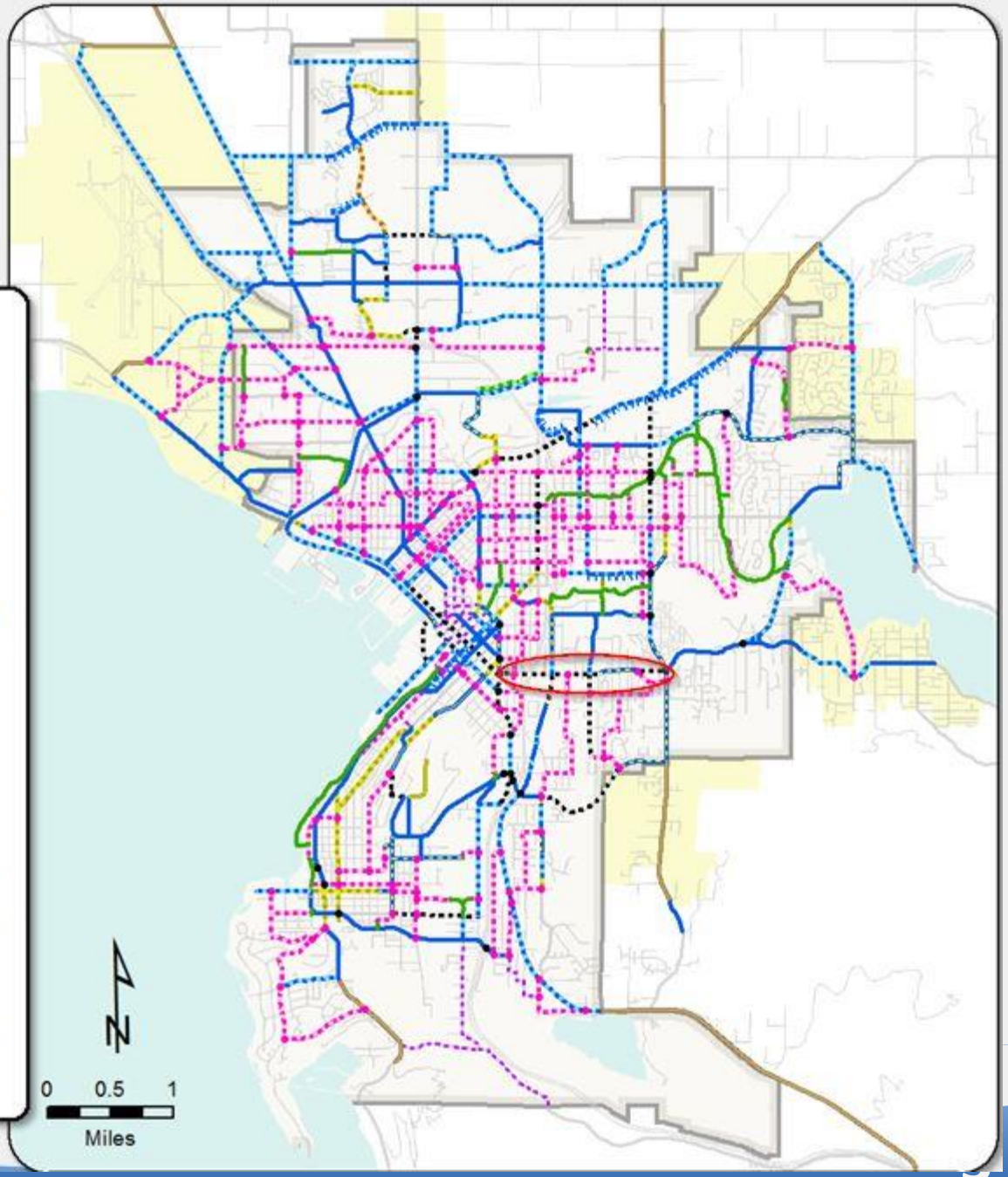
- **Destinations**

  (Schools, Parks, Trails, Shopping, Services, Entertainment, etc.)
- **Connectivity**

  (Route Directness Index *[ViaCity]*, Level of Comfort & Stress Matrix, Mobility Barriers *[I-5, Water, BNSF]*)
- **Traffic volumes** (Safety, comfort)
- **Vehicle speeds** (Safety, comfort)
- **Terrain** (Hills, Curves, etc.)
- **Housing** (Market & Low-Income)
- **Employment** (TDM, CTR, etc.)
- **WTA Transit Service** (Corridors)



Recommended Bike Network



Further Study Needed

Some complex links in the citywide bike network require additional study before facilities can be recommended

Typical Issues:

- Heavy traffic volumes
- Intersections/Signal Timing
- Turning conflicts/Driveways
- Limited physical space

Bellingham Bicycle Master Plan - Recommended Network Project Prioritization List

NOTE: To search this list for specific projects type "Ctrl" + "F" and enter all or part of the street name.

Short-Term Projects

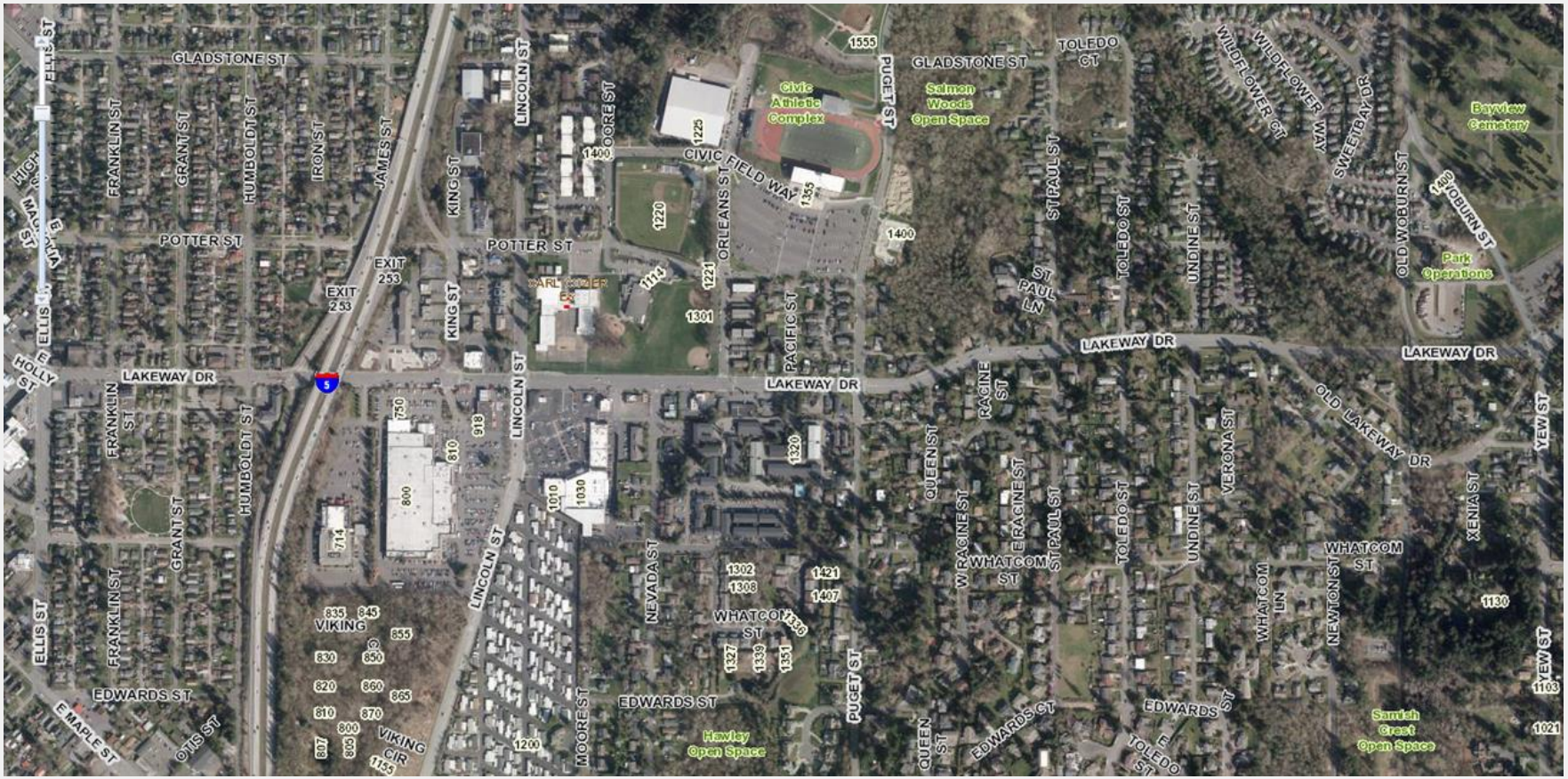
Project ID	Project Street (or route)	From	To	Recommended Improvement	Final Prioritization Score	Planning-Level Estimated Project Costs See Cost Calculator Worksheet for Estimate Rates (red text denotes cost estimates from City Engineer)
CW-16	Young/Kentucky/Nevada/Texas	Halleck	Woburn	Bicycle Boulevard	64.922	$211,780
FSN-5	Lakeway	Queen	Ellis	Further Study Needed	57.312	$0
CW-34	Lincoln/Meador/Grant/Ohio	Lakeway	Cornwall	Mixed	53.217	$63,120
CW-20	Illinois	Woburn	Lynn	Mixed	48.942	$249,733
CW-9A	Holly	Ellis	Bay	Further Study Needed	46.140	$0
CW-9B	Chestnut	Bay	Ellis	Mixed	46.140	$46,158
CW-5	24th	Old Fairhaven Parkway	Douglas	Bicycle Boulevard	45.853	$21,955
FSN-10	James	Illinois	Iowa	Further Study Needed	42.037	$0
CW-33	Byron/34th/Abbott/Pasco/Humboldt/Whatcom/Grant/Potter/Humboldt	Bill McDonald	Gladstone	Bicycle Boulevard	41.608	$164,525
CW-24	Barkley/Chandler/Mcleod	Woburn	Magrath	Upgrade Existing Bike Lane	40.757	$66,133
N-60	Lincoln	North	Iowa	Bicycle Boulevard	40.735	$19,191
N-70	F	Roeder	Cornwall	Bike Lane	40.539	$66,229
CW-35	Mill	12th	24th	Bicycle Boulevard	38.584	$175,809
CW-28	Maplewood/Alderwood/Bennett	Northwest	Airport	Mixed	38.160	$207,179
CW-11	Holly/Elridge/Nequalicum	F	Nome	Mixed	35.805	$87,989
CW-30	Aldrich/Northwest	Horton	Bakerview	Bike Lane	35.442	$79,759
FSN-14	Meridian	McLeod	Telegraph	Further Study Needed	34.868	$0
CW-26	Fruitland/Orchard/Squalicum/Ellis	Fruitland/Division Trail Connection	Illinois	Mixed	34.755	$107,726
N-93	Meridian	McLeod	Squalicum	Bike Lane	31.955	$32,195

Medium-Term Projects

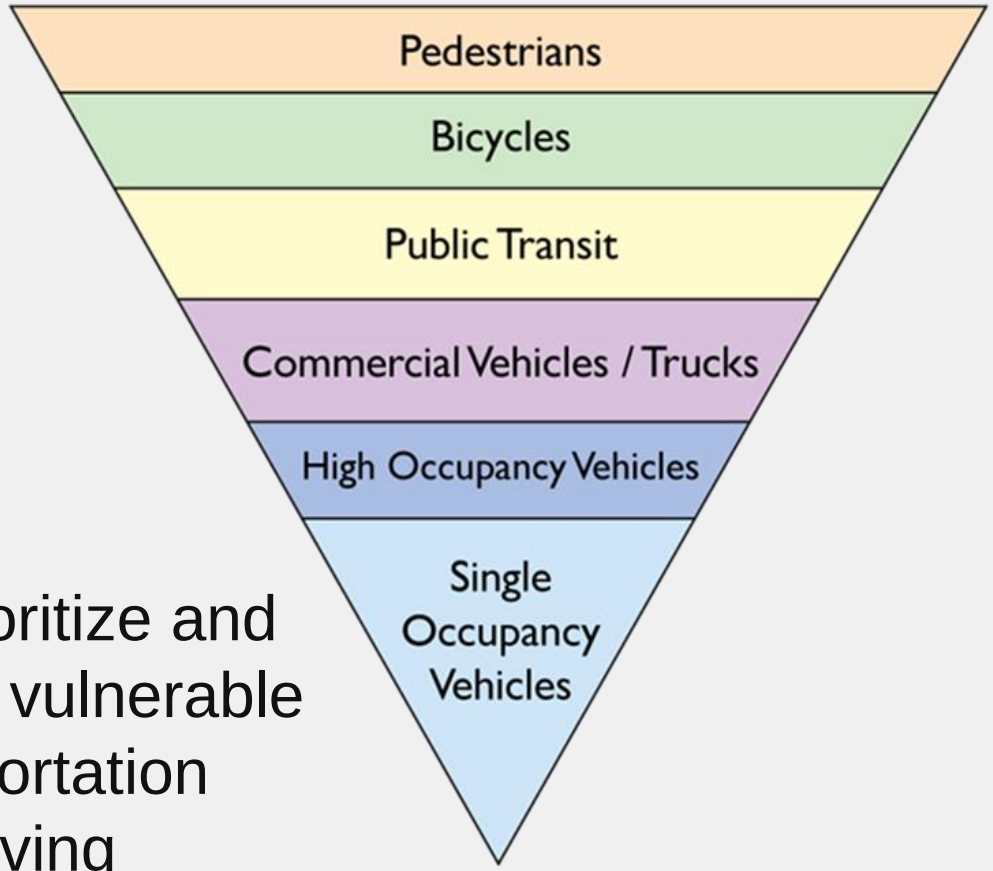
CW-1	State	Wharf	York	Upgrade Existing Bike Lane	31.861	$92,773
N-155	Laurel/Railroad	State	Maple	Bicycle Boulevard	31.782	$5,991
CW-19	Young/Halleck				31.474	$100,554
CW-17	North/Lincoln/RR Trail				31.159	$161,139
N-92	Birchwood				29.835	$38,719
N-63	Grant	Illinois	Ohio	Bicycle Boulevard	29.776	$106,539

Lakeway Drive Bikeway Study

1.36 miles: Ellis/Holly, beneath I-5, to Woburn/Yew



Modal Priority in Transportation Planning



Bellingham is striving to prioritize and improve safety for the most vulnerable users of the citywide transportation network with the goal of moving people, not just cars

Target Audience for Increasing Bicycle Safety and Mode Share

Lakeway Drive Bikeway Study

Project Team

- City of Bellingham
- WTA Transit
- WSDOT
- TranspoGroup & MIG/SvR

Stakeholders

- Neighborhood Associations
- Property Owners
- Businesses
- Bellingham School District

Public Involvement Process

- Public notice mailed to all property owners, businesses, and Neighborhood Associations within 500 feet of Lakeway Drive corridor – March 9, 2016
- Public Works staff outreach/meetings with Bellingham School District, Bellingham Parks Department, Carl Cozier Elementary School Principal, and some businesses
- Public Works staff presentations at Neighborhood meetings:
  - Whatcom Falls Neighborhood – April, 12, 2016: Kulshan Middle School
  - York Neighborhood – April 13, 2016: Garden Street Church
  - Puget Neighborhood – May 17, 2016: Carl Cozier Elementary School
- Public Open House at Carl Cozier Elementary School – September 13, 2016

Consideration of Various Bicycle Facility Types

Bike Lane

Buffered Bike Lane

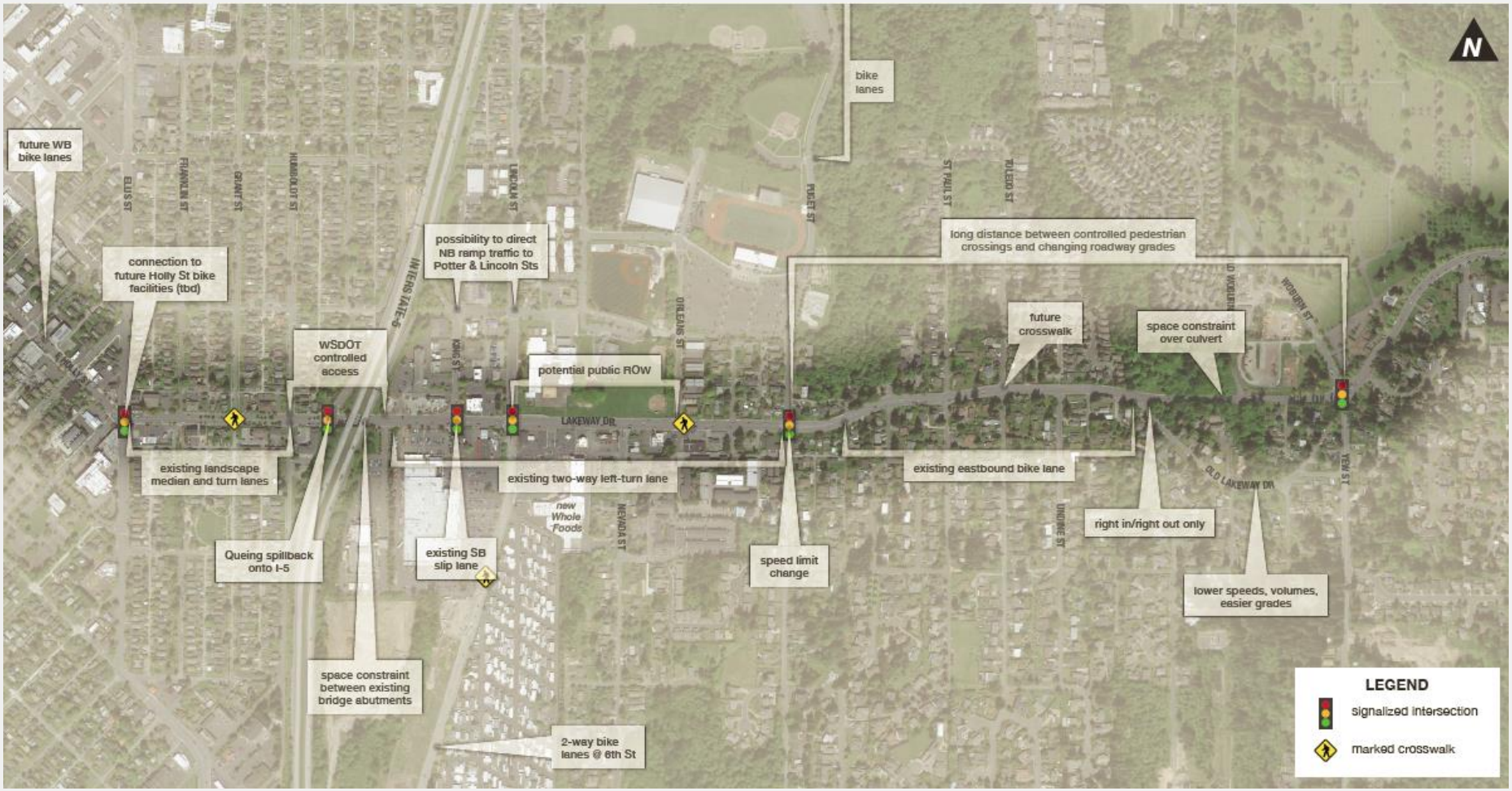
Climbing Lane

Shared Lane

Protected Bike Lane

Bike Boulevards

Existing Conditions



Vehicle Traffic

West: Lakeway/Grant
23,000 vehicles per day

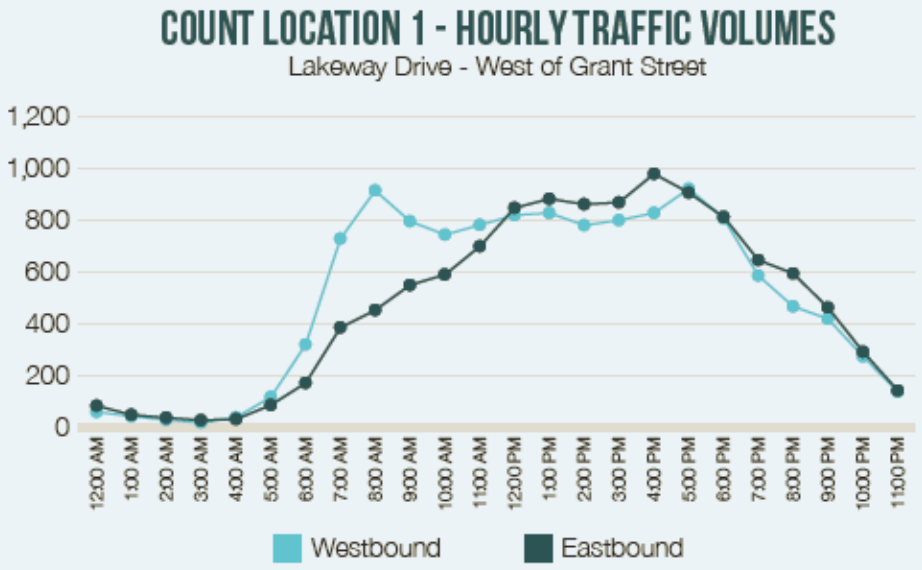
Central: Lakeway/Nevada
26,000 vehicles per day

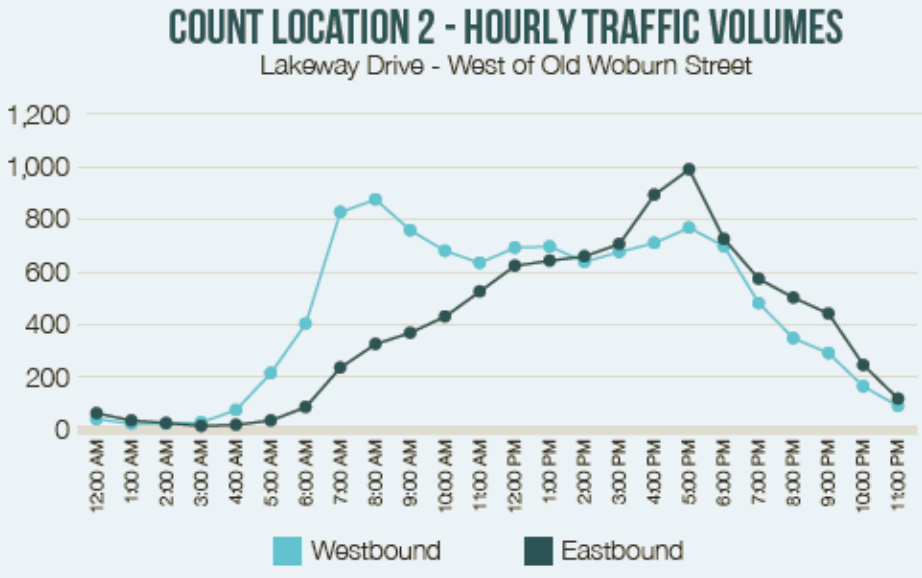
East: Lakeway/Old Woburn
21,000 vehicles per day

Pronounced peak periods
- morning westbound
- evening eastbound
- busy throughout day

Future increased congestion and travel time, especially near I-5

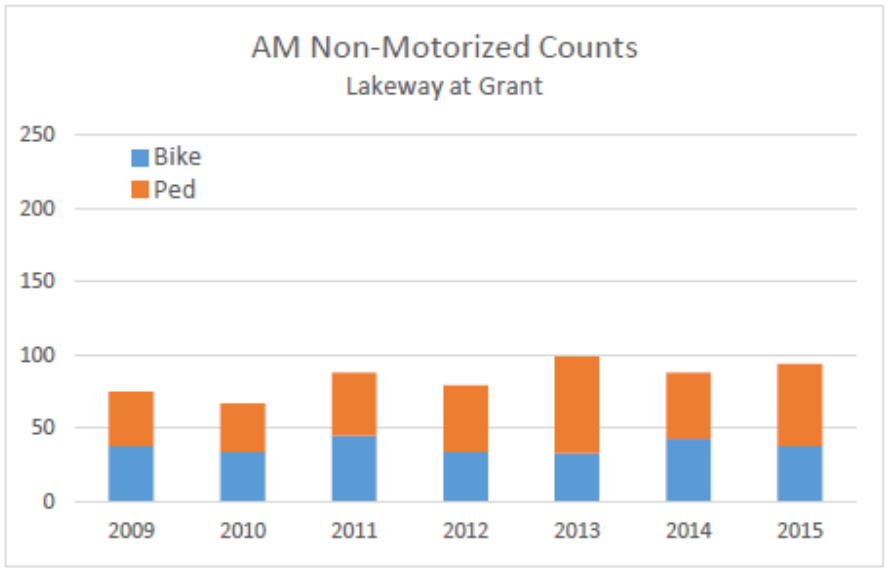
HOURLY TRAFFIC VOLUMES

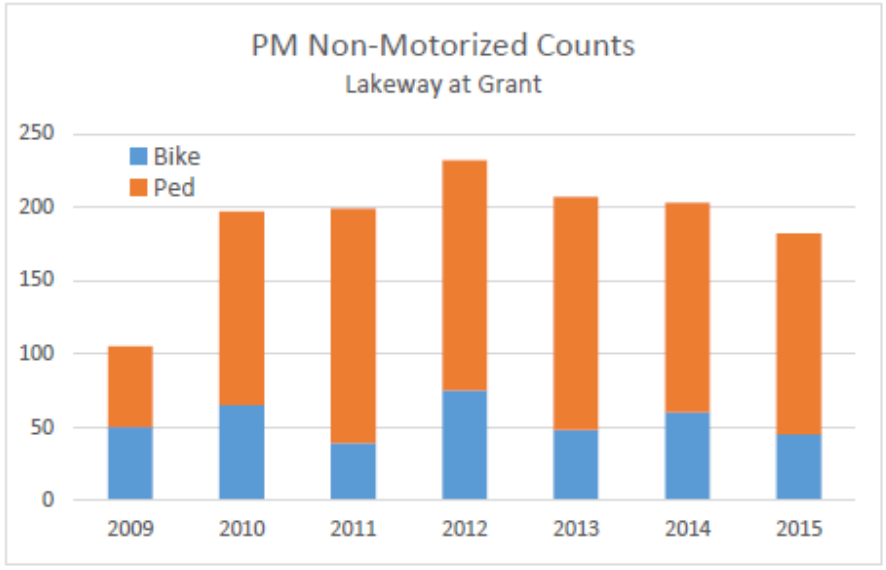


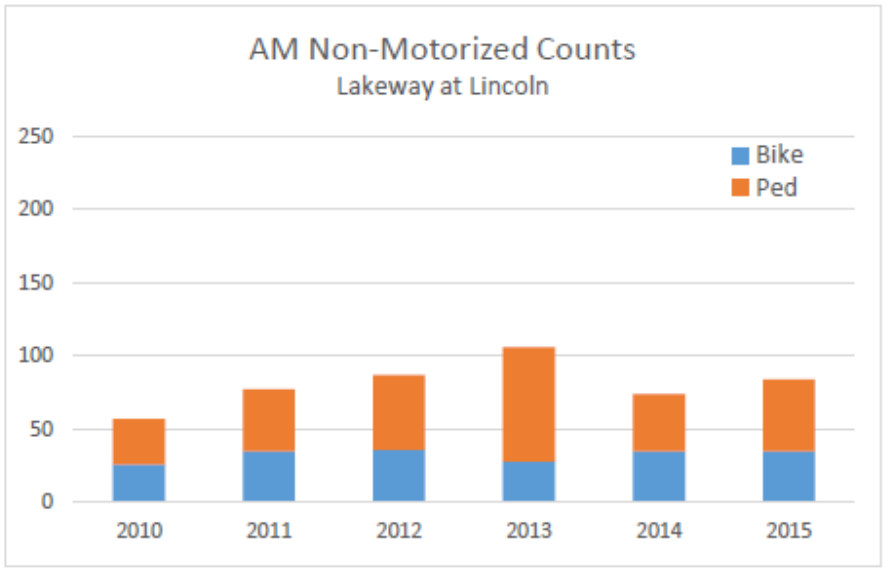


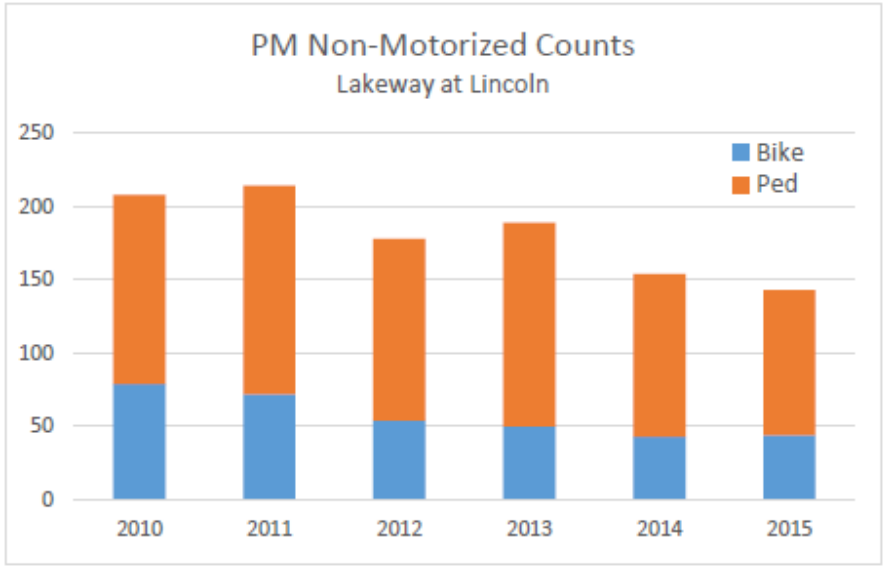
Pedestrian & Bicycle Counts 2009-2015

City of Bellingham Annual Bike/Ped Counts





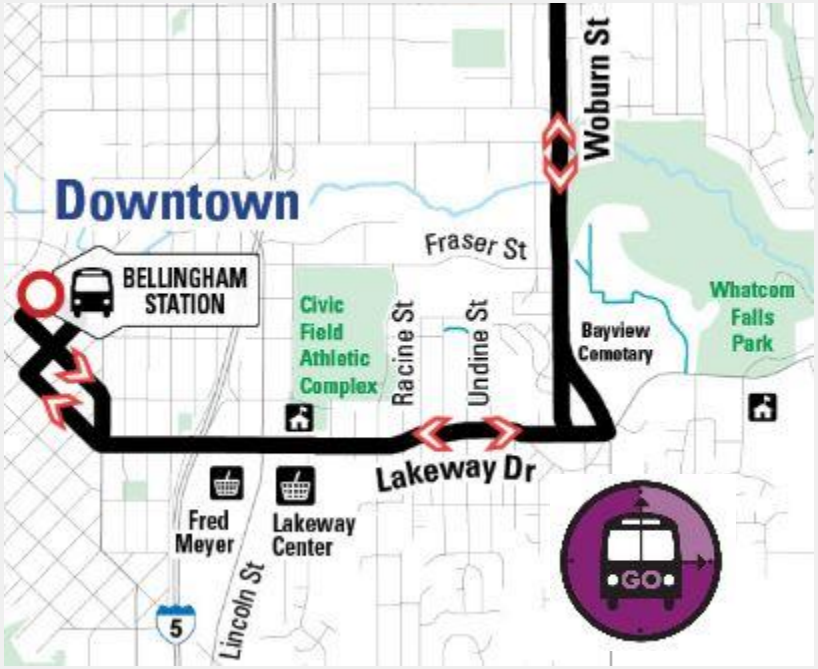




WTA Transit Service (2016)

In March 2017, WTA re-established the high-frequency Plum GO Line on Lakeway Drive between downtown and Woburn Street (Routes 512, 525, 533, and 540)

WTA busses now serve Lakeway Drive every 15 minutes in each direction



LEGEND

- controlled crosswalk
- signalized intersection
- Bus Stops
- Bus Routes

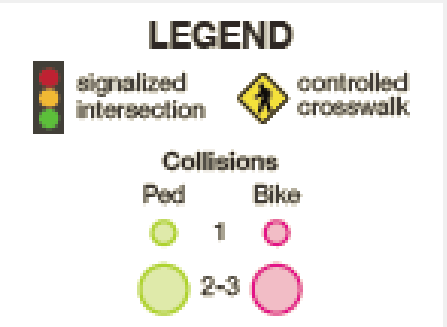
Daily Boardings

XX / XX
on off

Prior to 2017

Collisions: Vehicular

Collisions: Non-motorized



Current Biking Conditions on Lakeway Drive

Video Camera Observation: Bicyclist Travel Patterns and Behavior

Lakeway Drive: King Street to Interstate 5, March 2016 (Data Analysis: Andrew Jungkuntz)

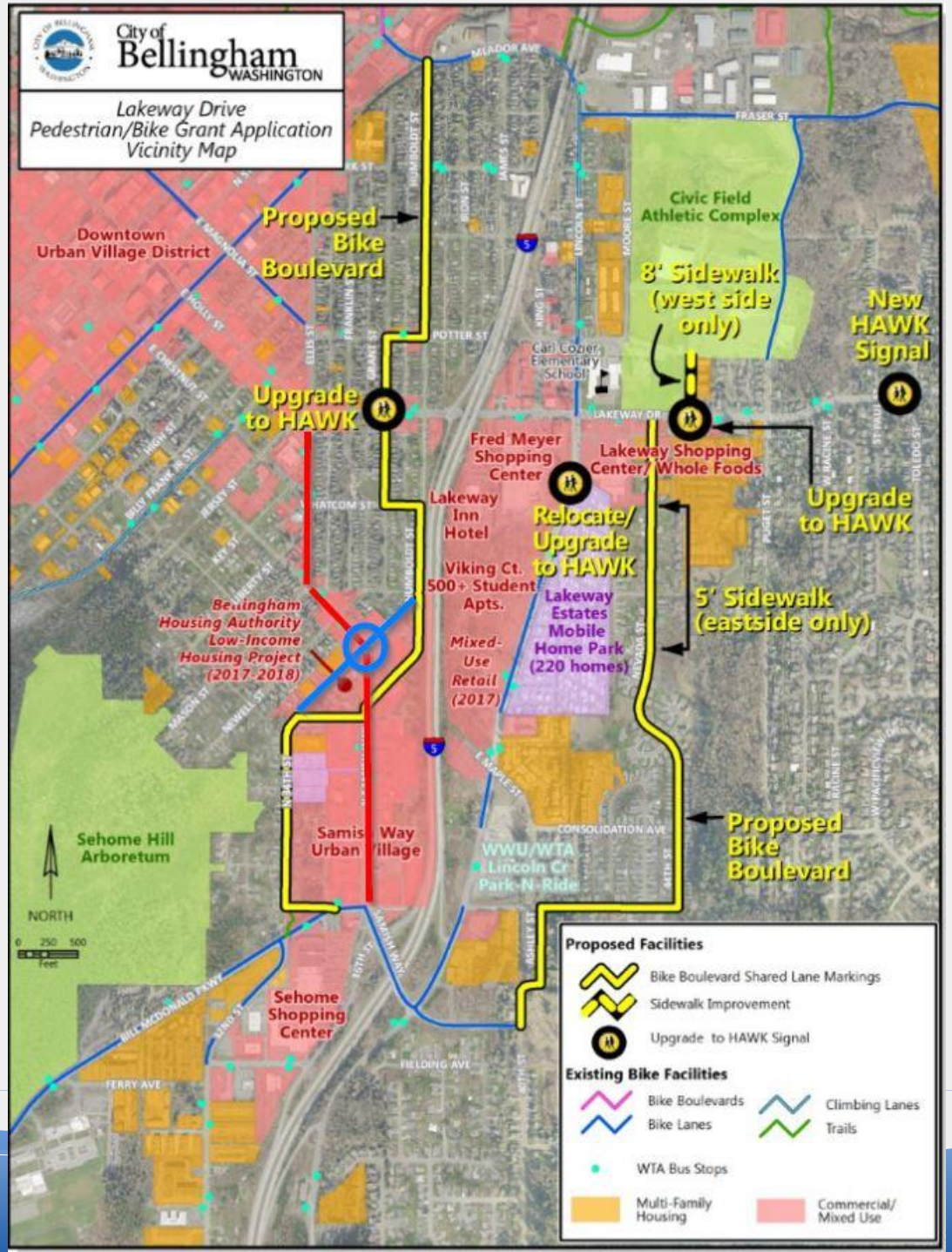
Westbound Bicycle Travel Patterns on Lakeway Drive Between King Street and I-5 Southbound On/Off-Ramps					
Between King + James			Between James + 1-5		
Riding Direction	Number of Cyclists	Percent of Cyclists	Riding Direction	Number of Cyclists	Percent of Cyclists
North Sidewalk (With Traffic)	**6**	**19%**	North Sidewalk (With Traffic)	**7**	**23%**
On Lakeway (With Traffic)	11	35%	On Lakeway (With Traffic)	14	45%
On Lakeway (Against Traffic)	0	0%	On Lakeway (Against Traffic)	0	0%
South Sidewalk (Against Traffic)	**14**	**45%**	South Sidewalk (Against Traffic)	**16**	**52%**
Total Cyclists	31		Total Cyclists	37	
Total Cyclists Riding on Sidewalk	20	**64%**	Total Cyclists Riding on Sidewalk	23	**75%**

Eastbound Bicycle Travel Patterns on Lakeway Drive Between King Street and I-5 Southbound On/Off-Ramps					
Between King + James			Between James + 1-5		
Riding Direction	Number of Cyclists	Percent of Cyclists	Riding Direction	Number of Cyclists	Percent of Cyclists
North Sidewalk (With Traffic)	**6**	**18%**	North Sidewalk (With Traffic)	**3**	**14%**
On Lakeway (With Traffic)	13	38%	On Lakeway (With Traffic)	9	43%
On Lakeway (Against Traffic)	2	6%	On Lakeway (Against Traffic)	1	5%
South Sidewalk (Against Traffic)	**13**	**38%**	South Sidewalk (Against Traffic)	**8**	**38%**
Total Cyclists	34		Total Cyclists	21	
Total Cyclists Riding on Sidewalk	19	**56%**	Total Cyclists Riding on Sidewalk	11	**52%**

Over 50% of all bicyclists rode on sidewalk due to lack of a bicycle facility

Related Improvements

- **$1,250,000 in WSDOT Pedestrian-Bicycle Safety grant funds**
- **Construction Summer 2018**
- **Upgrade 3 flashing amber crossings to red HAWK signals**
  - **Lakeway/Grant**
  - **Lakeway/Orleans**
  - **Lincoln/Fred Meyer**
- **New HAWK signal at Lakeway between Toledo and Undine**
- **Sidewalk on Orleans (west side) from Lakeway to Potter**
- **Sidewalk on Nevada (east side) from Whatcom to Thimbleberry**
- **Nevada-Byron-40th Bike Boulevard from Lakeway to Samish overpass**
- **Grant-Humboldt-34th Bike Boulevard from Meador to Bill McDonald**



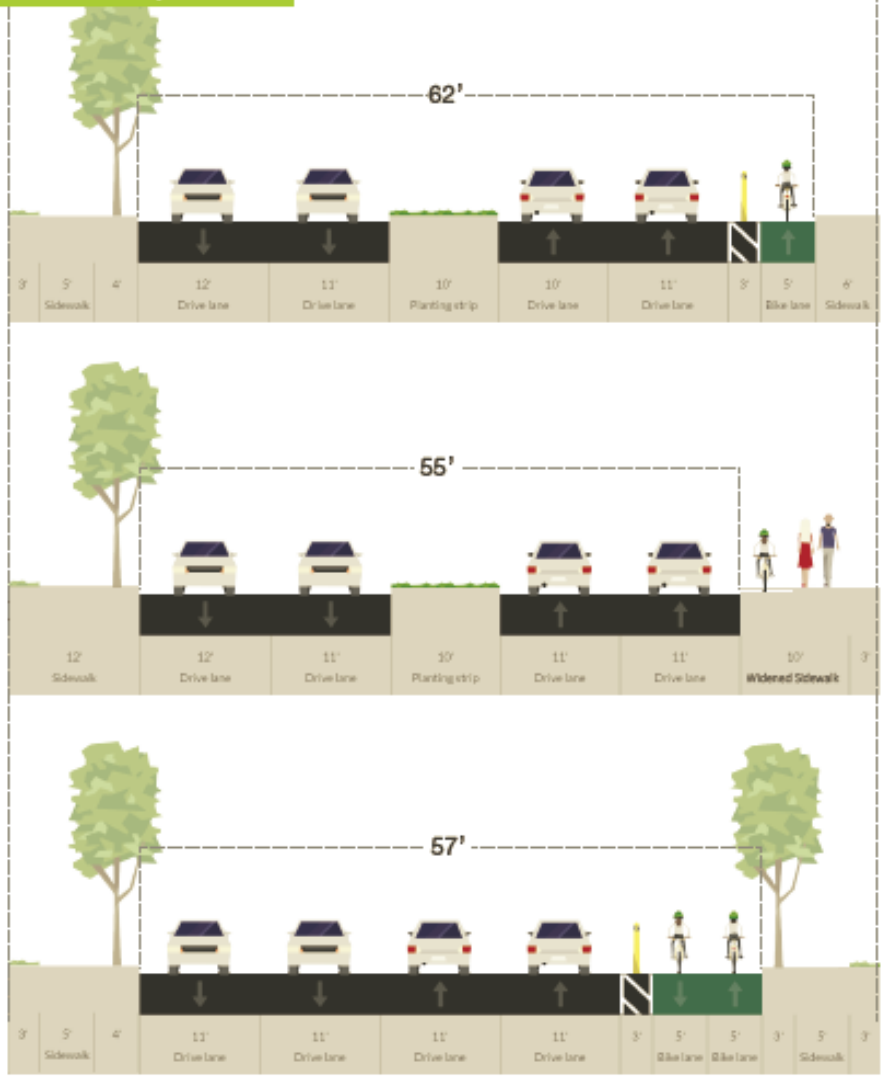
Findings & Recommendations

- ✓ Data collection and evaluation of existing conditions, growth projections, and traffic forecasts
- ✓ Engage and work with project team partners, citizens, users, and stakeholders
- ✓ Neighborhood meetings, design workshop, public open house event
- ✓ Adjustments based on public input, local knowledge, analysis, and technical expertise
- ✓ **Balance** multimodal transportation needs with operational constraints & financial realities
- ✓ Recommend short- & long-term transportation improvements along Lakeway Drive (2017)
  - Seek grant funding for recommended improvements (2018 and beyond)

SEGMENT A
LAKEWAY DR: ELLIS ST TO I-5

Phase 3 - More Detailed Feasibility Evaluation Needed

Potential Options



HYBRID

FROM ELLIS ST TO GRANT ST

ESTIMATED COST: $2,570,000

Hybrid Option: One-way protected bike lane, north side (Ellis St to Grant St)

Note: *Hybrid Option would utilize the Bike Boulevard on Grant Street and Potter Street for eastbound cyclists between Ellis Street and Grant Street.*

See additional details in table (next page) →

A1

FROM GRANT ST TO I-5

ESTIMATED COST: $2,230,000

Option A1: Widened sidewalk, north side (10 ft wide)

See additional details in table (next page) →

A2

ESTIMATED COST: TBD (RELATIVELY EXPENSIVE)

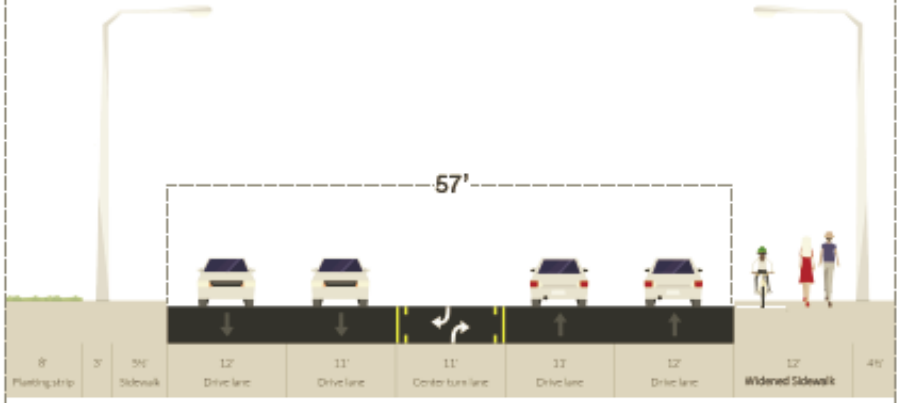
Option A2: Two-way protected bike lanes, north side (remove center median)

Note: *Option A2 would require access restrictions along Lakeway Drive in/out of the York Neighborhood.*

SEGMENT B
LAKEWAY DR: I-5 TO LINCOLN ST

Phase 3 - More Detailed Feasibility Evaluation Needed

Potential Options

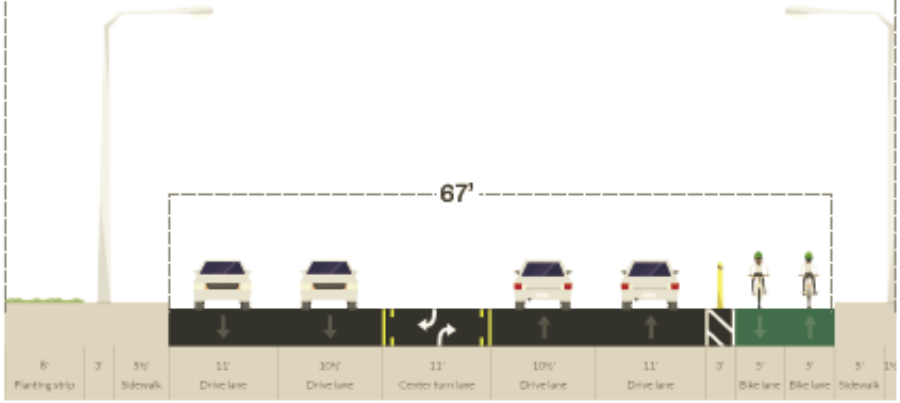


B1

ESTIMATED COST: $2,120,000

Option B1: Widened sidewalk, north side (12 ft wide)

See additional details in table (next page)



B2

ESTIMATED COST: $3,200,000

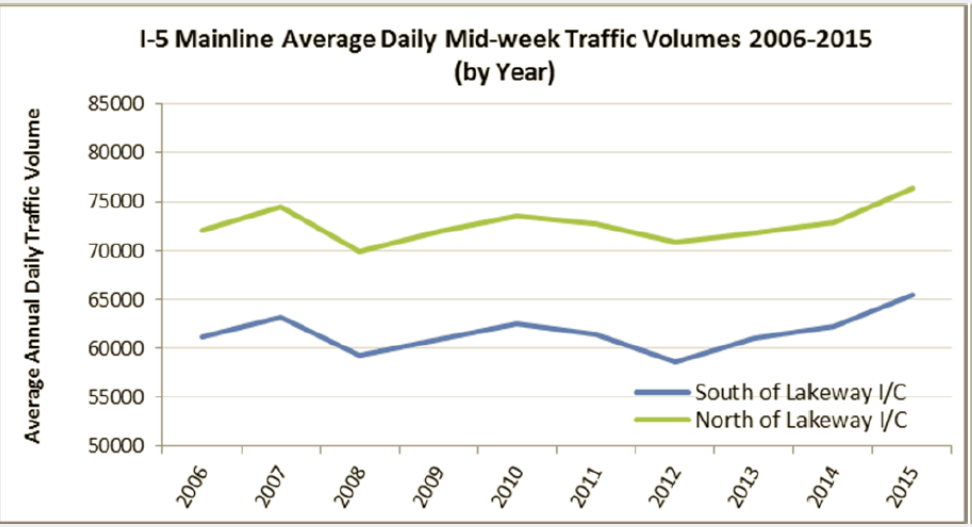
Option B2: Two-way protected bike lanes, north side

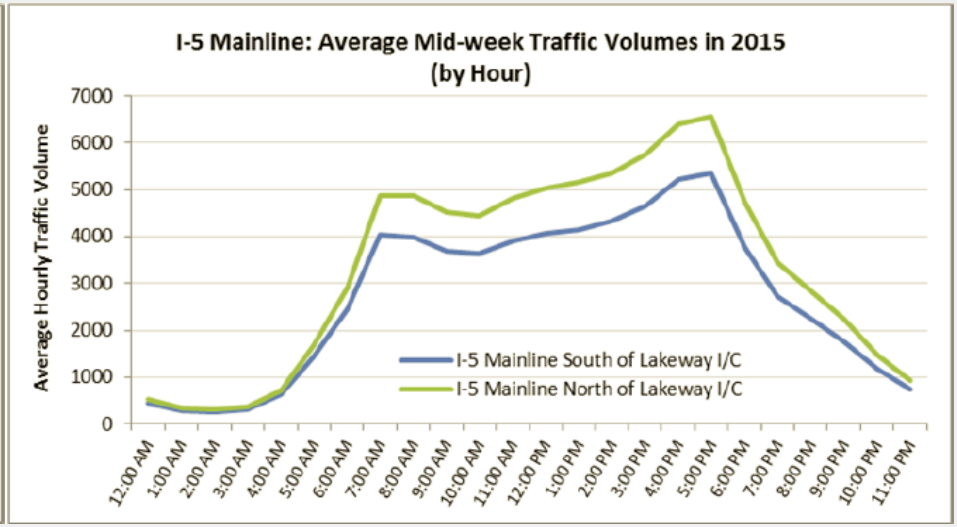
Note: *Option B2 would require off corridor intersection improvements along Potter Street to restrict right-turns onto King Street from Lakeway Drive.*

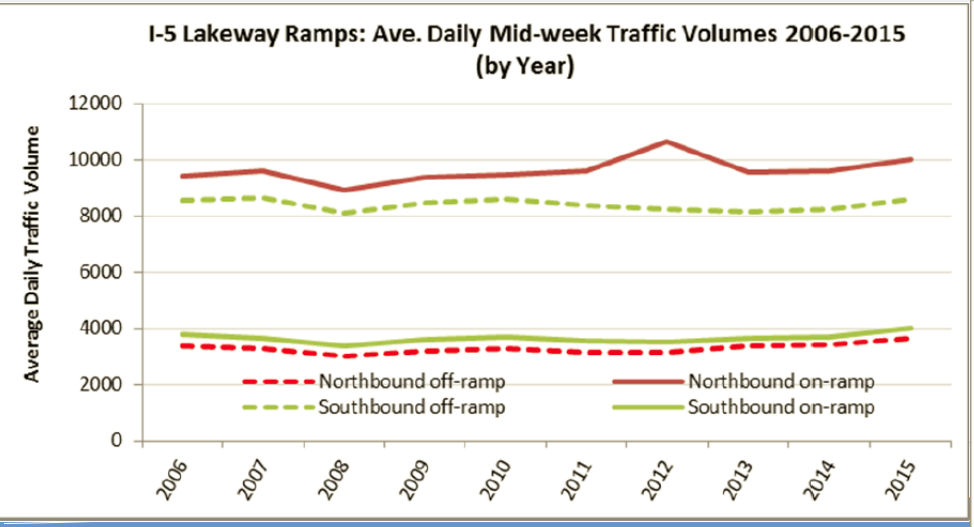
See additional details in table (next page)

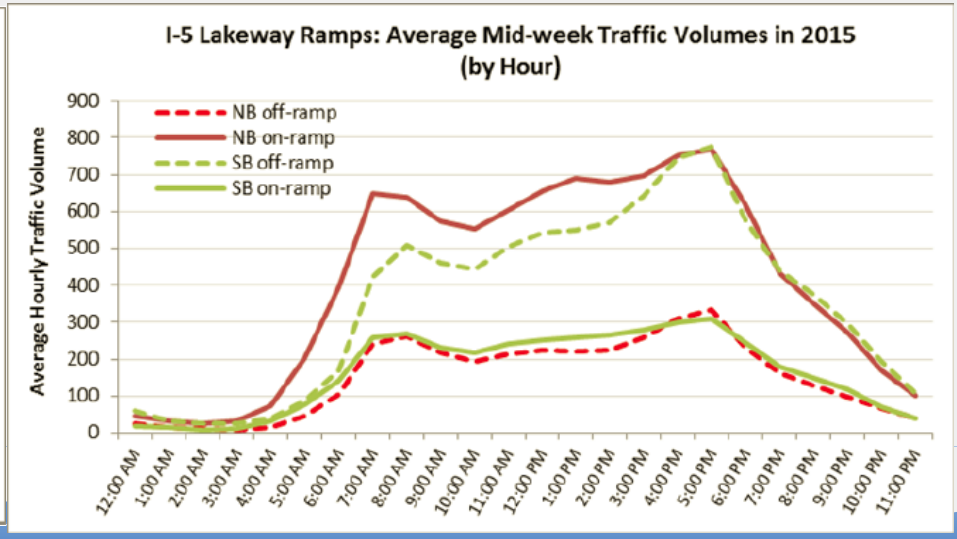
Interchange at Lakeway Drive/Interstate 5 = Mobility Barrier for Bicyclists

- High Volume Left-turns: Lakeway>King>NB on-ramp
- High Volume Right-Turns: Lakeway>King>NB on-ramp
- High Volume Left-turns: I-5 SB off-ramp>Lakeway Drive









Existing Conditions: I-5 to Lincoln Street

- Very high volume vehicle traffic congestion
- Constrictions beneath I-5 overpass

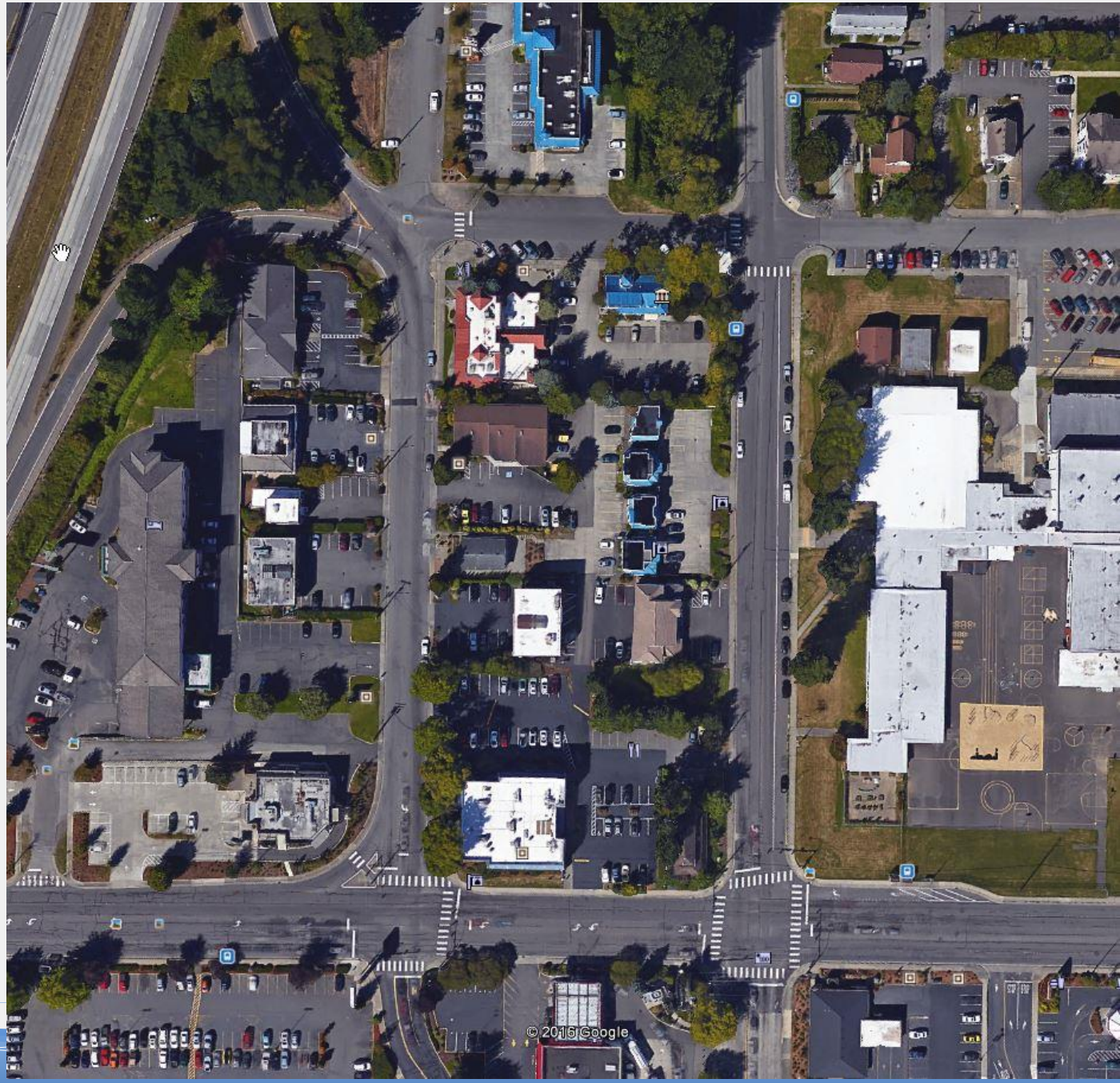
Project Team looked at and considered future circulation changes to Lincoln, King, and I-5

Closely spaced signals at King and Lincoln

Possible elimination of right-turn at King St; safer for bicyclists

Traffic signal required at Lincoln/Potter

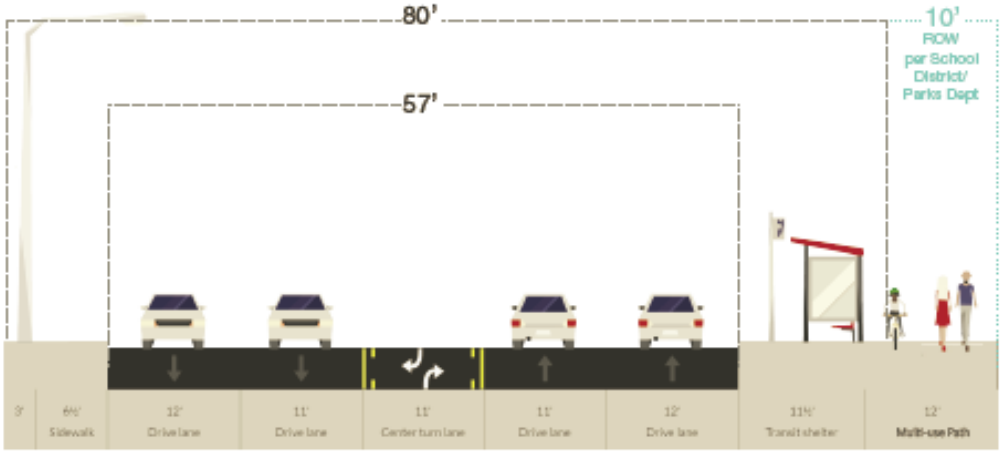
Can’t eliminate lefts at King due to not enough storage at Lincoln to handle high volume left-turns to NB on-ramp to I-5



SEGMENT C
LAKEWAY DR: LINCOLN ST TO ORLEANS ST

Phase 2

Potential Options



C1*

RECOMMENDED FROM LINCOLN ST, TO ORLEANS ST.

ESTIMATED COST: $1,860,000 OR LESS

Option C: Multi-use shared pathway, north side (12 ft wide)

***Note:** Assumes 10 feet of ROW is provided by School District and Parks Department for 90 total feet.*

See additional details in table (next page) →

* Could be a stand-alone Safe Route to School project, but doesn't provide corridor connectivity without adjacent segments

* Could be joint Bellingham School District & Parks Dept improvement

* Could be completed with reconstruction of Carl Cozier ES @ 2025 *(Possibilities for creative re-organization of this superblock to accommodate both new Carl Cozier ES and Parks sports fields)*

Possible Off-Street Shared Use Pathway Northside of Lakeway Drive Orleans-Lincoln

Land Owned by Parks Dept and School District

Existing Conditions - Orleans Street to Lincoln Street

North Side of Lakeway Drive; Owned by City Parks & Bellingham School District

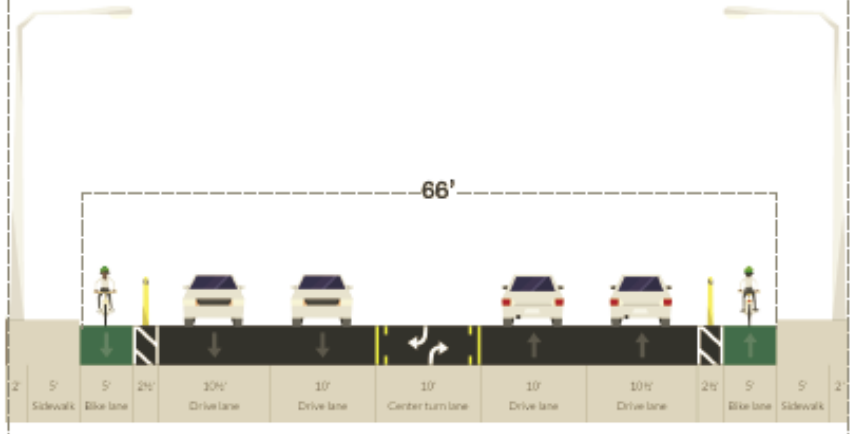
Carl Cozier Elementary School; Arne Hanna Swimming Pool; Sports Fields

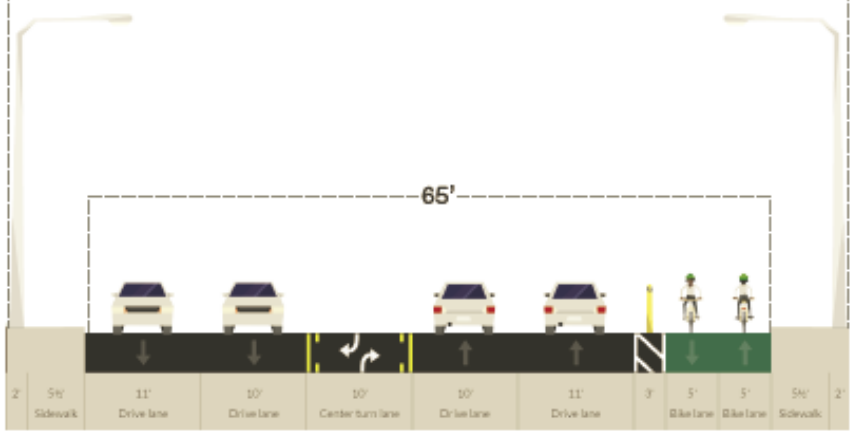
Unfortunately, segment east, Orleans to Puget, is constrained and has construction issues

SEGMENT D
LAKEWAY DR: ORLEANS ST TO PUGET ST

Phase 2

Potential Options





D1
ESTIMATED COST: $3,440,000

Option D1: One-way protected bike lane, both sides

Note: *Assumes the corridor is widened on both sides*

See additional details in table (next page)

D2
ESTIMATED COST: TBD (RELATIVELY EXPENSIVE)

Option D2: Two-way protected bike lanes, north side

Note: *Assumes the corridor is widened on both sides*

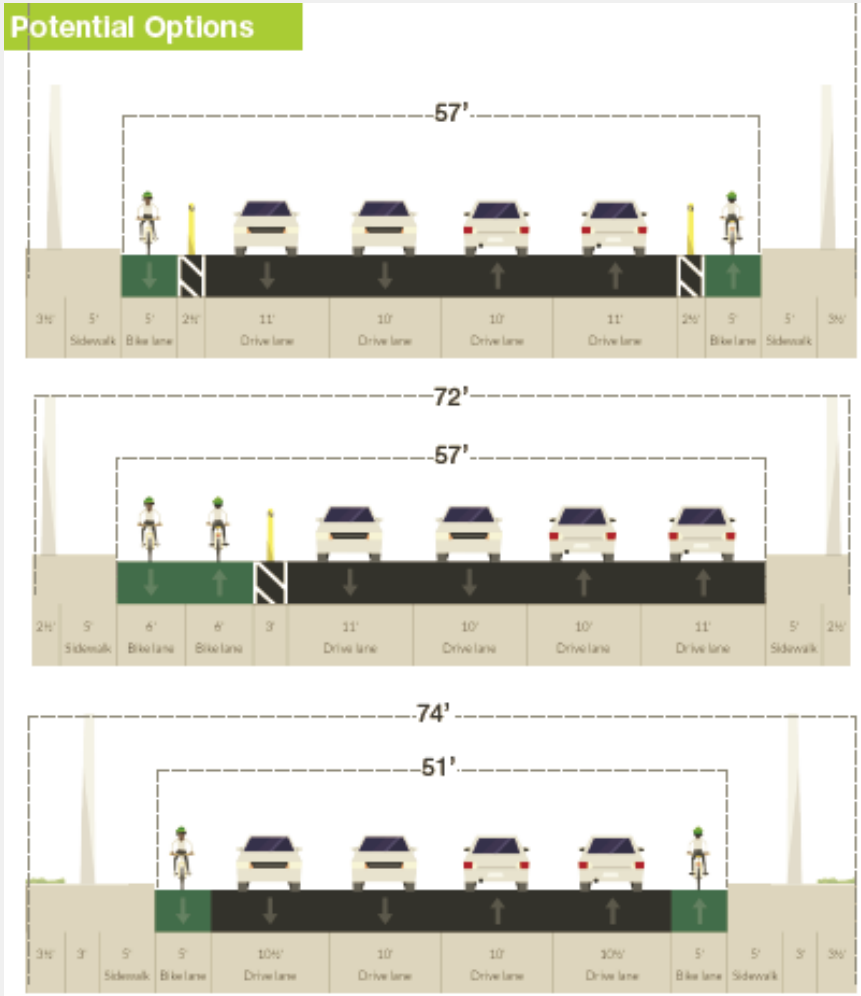
See additional details in table (next page)

Requires ROW acquisition, utility pole relocation, commercial parking impacts/reorganization, and road widening on both sides to get marked, buffered, or protected bike lanes. Very high cost.

SEGMENT E
LAKEWAY DR: PUGET ST TO UNDINE ST

Phase I

Potential Options



E1 "FUTURE RECOMMENDATION"
FROM PUGET ST TO UNDINE ST
ESTIMATED COST: $4,750,000

Option E1: One-way protected bike lane, both sides

Note: *Assumes the corridor is widened on the south side*

See additional details in table (page 12) →

E2
ESTIMATED COST: $4,750,000

Option E2: Two-way protected bike lanes, south side

Note: *Assumes the corridor is widened on on the south side*

See additional details in table (page 12) →

E3* "INTERIM RECOMMENDATION"
FROM PUGET ST TO UNDINE ST
ESTIMATED COST: TBD (RELATIVELY INEXPENSIVE)

Option E3: Bike lanes, both sides

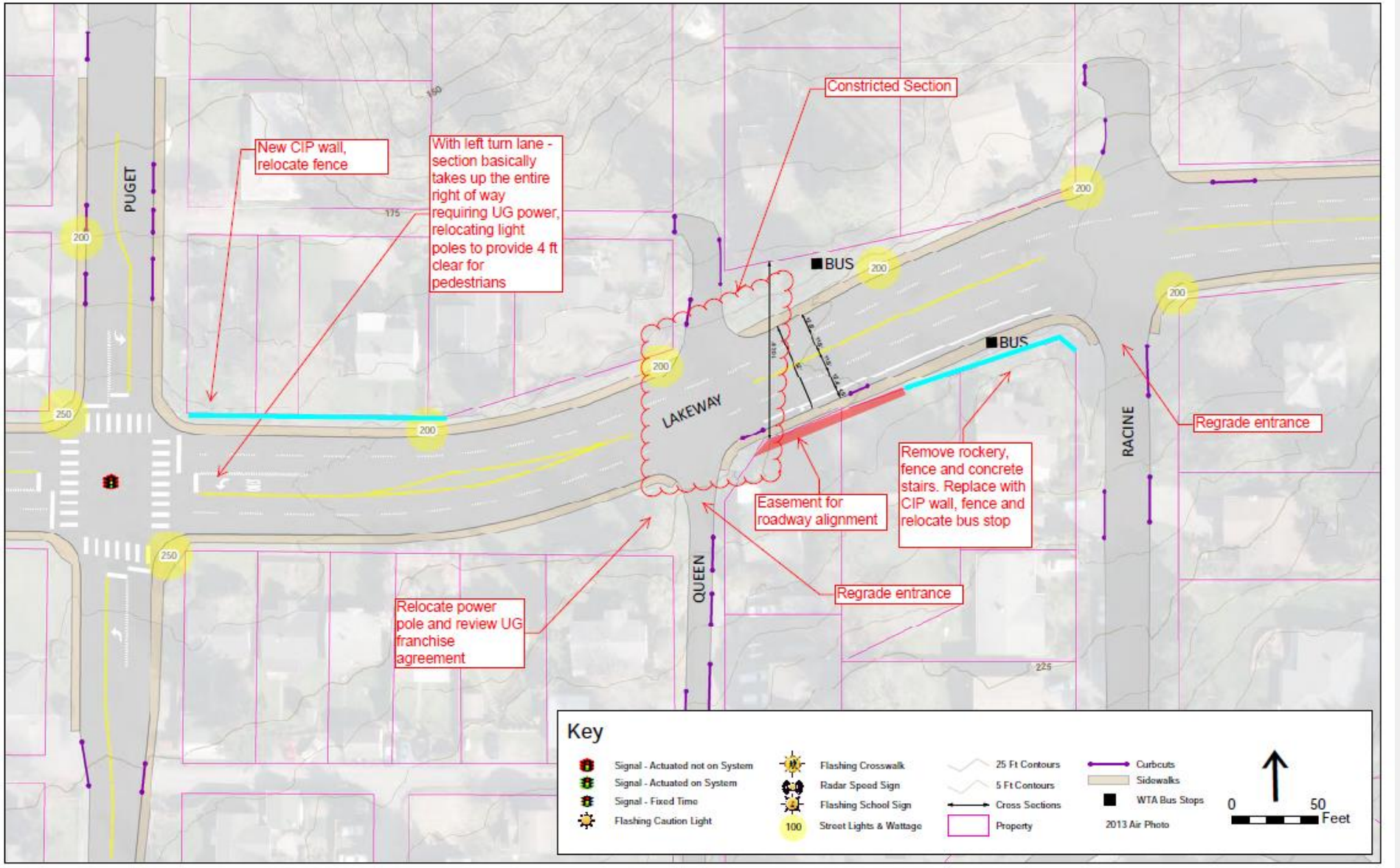
See additional details in table (page 12) →

* Marked 5-foot bicycle lanes on each side to provide connectivity from Undine HAWK to Puget Street marked bike lanes. Low cost.

Segment E Considerations

(Puget St to Toledo St) $4,750,000

- **Issues for Constructing Protected Bike Lane(s)**
  - Right of way and roadway width varies;
  - ROW acquisition required both sides;
  - Significant grade drop on north side;
  - Significant raised grade on south side;
  - Wall removal/relocation/installation between Queen and Toledo; Major excavation into slope;
  - ADA crossing of side streets on south is very likely to require additional infrastructure needs in order to meet ADA cross slope requirements;
  - Utility power poles and street light relocation required on both sides of Lakeway Drive.


New CIP wall, relocate fence
With left turn lane - section basically takes up the entire right of way requiring UG power, relocating light poles to provide 4 ft clear for pedestrians
Constricted Section
Relocate power pole and review UG franchise agreement
Easement for roadway alignment
Regrade entrance
Remove rockery, fence and concrete stairs. Replace with CIP wall, fence and relocate bus stop
Regrade entrance
PUGET
LAKEWAY
QUEEN
RACINE
BUS
BUS
Key
Signal - Actuated not on System
Signal - Actuated on System
Signal - Fixed Time
Flashing Caution Light
Flashing Crosswalk
Radar Speed Sign
Flashing School Sign
Street Lights & Wattage
25 Ft Contours
5 Ft Contours
Cross Sections
Property
Curbcuts
Sidewalks
WTA Bus Stops
2013 Air Photo
0
50
Feet

Total new width = 55 FT

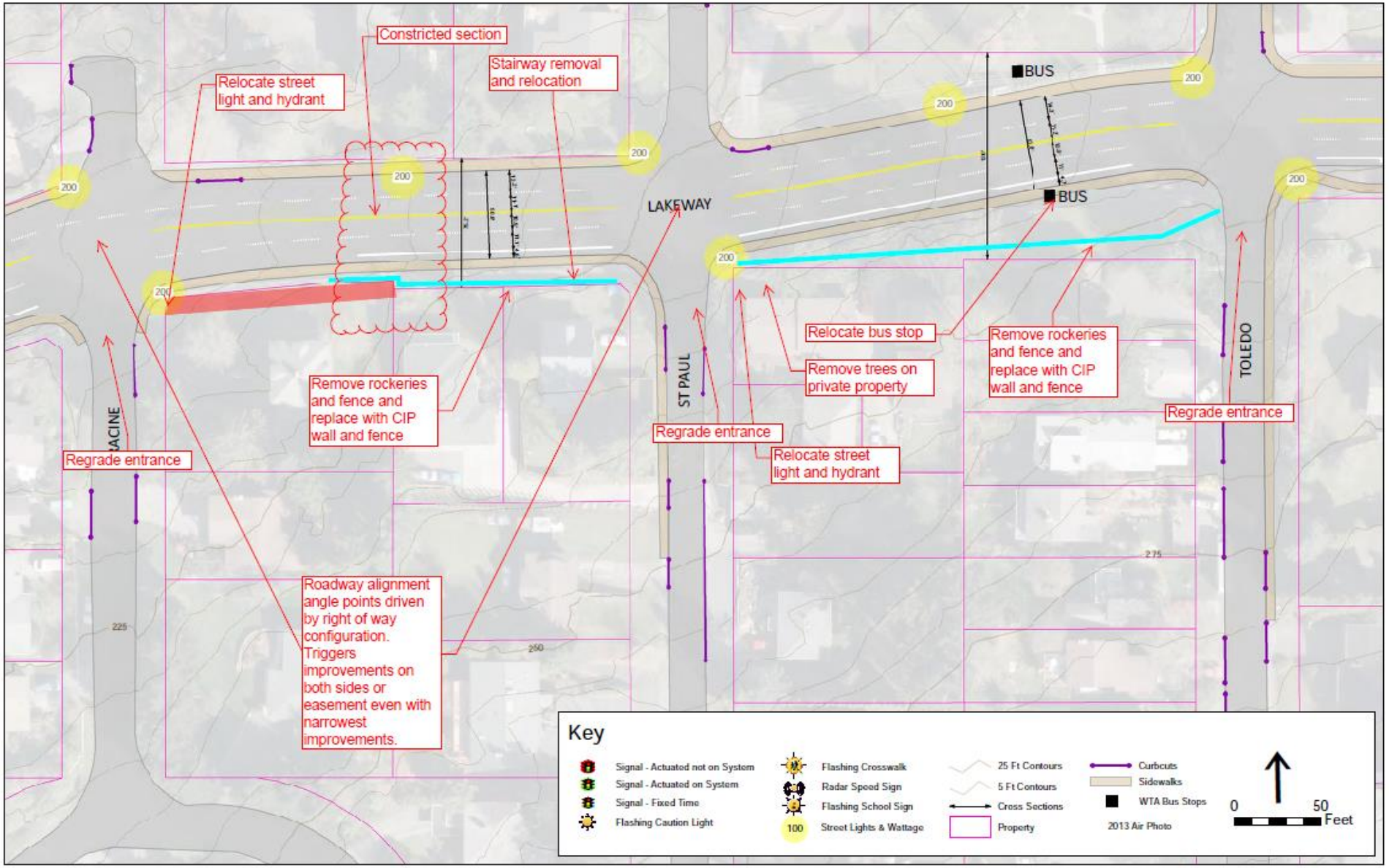
Queens

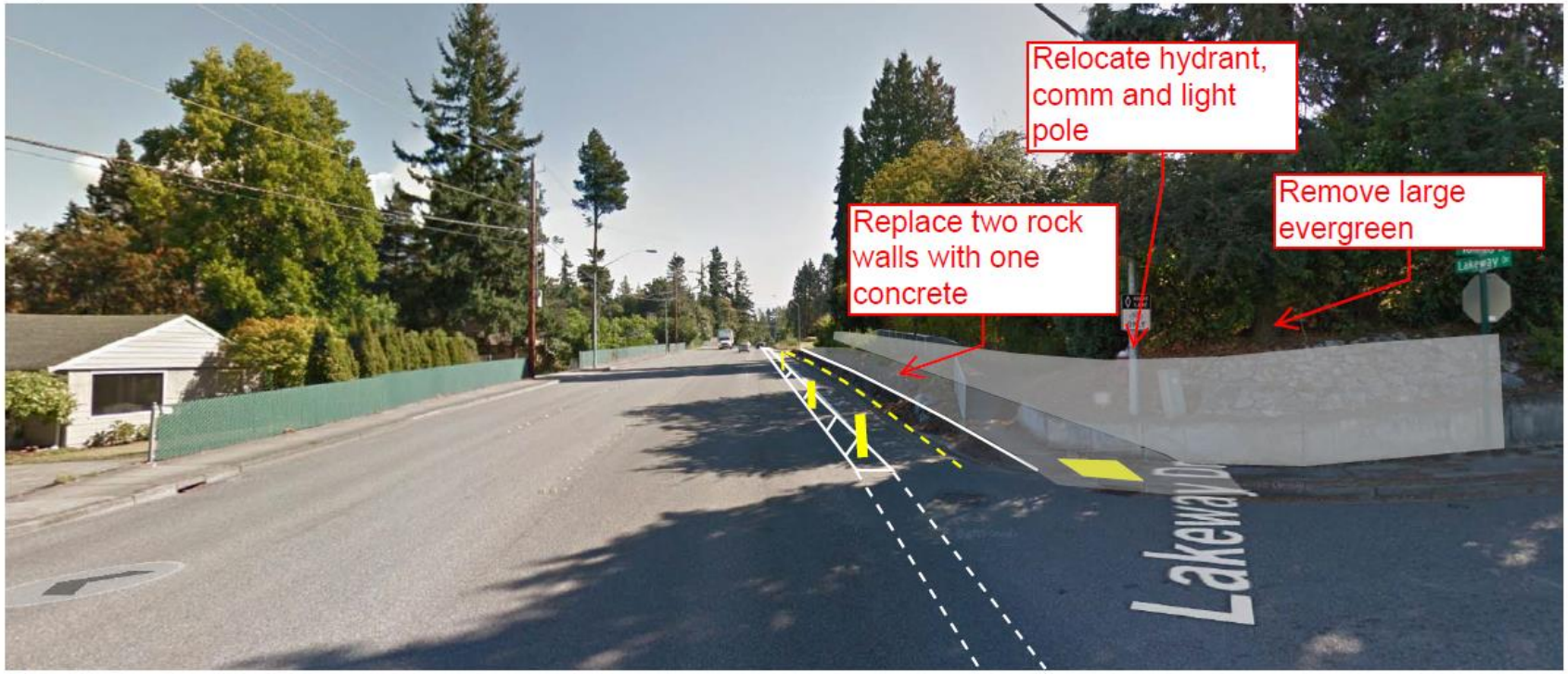
Curb to curb varies from 57 (East) to 52 (West)

Property line is at back of south sidewalk
Travel lanes 42 ft, Buffer 3 feet, 2 way PBL 8 ft (reduced width)
sidewalk 5.5 ft
58.5 feet total required - may need easement at east end.

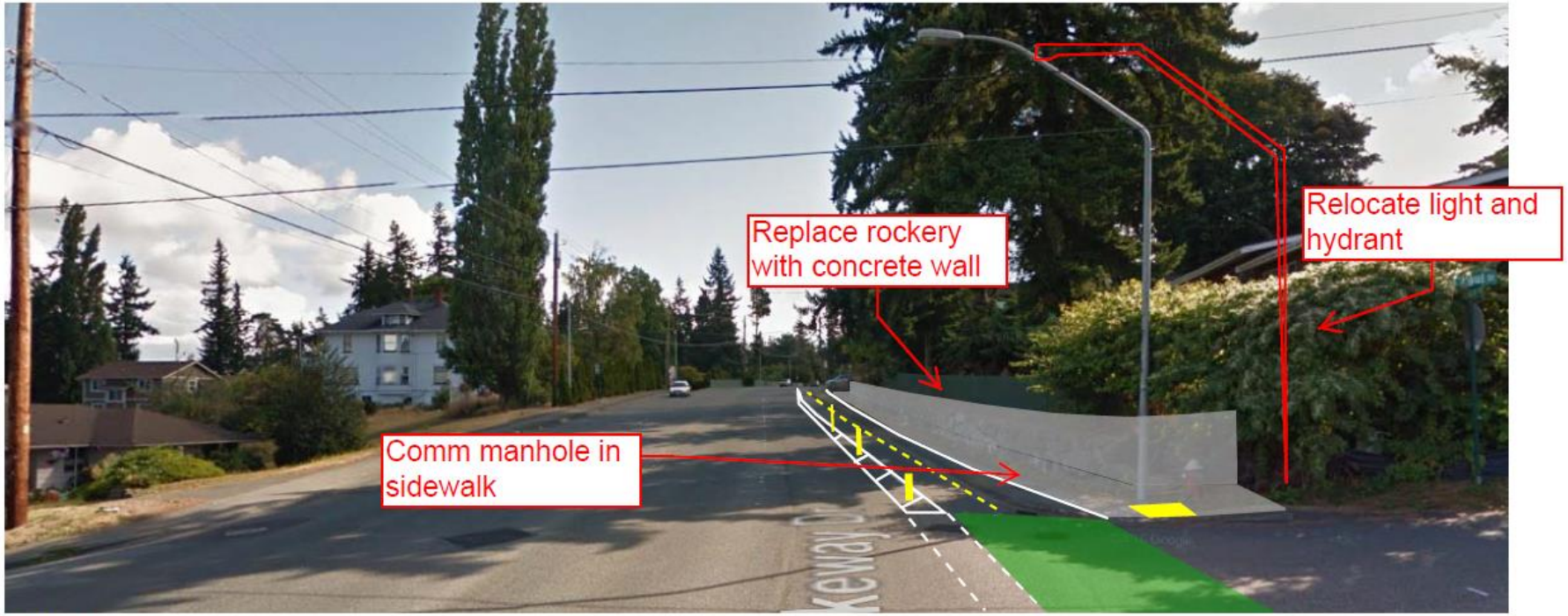
Racine

Existing road curb to curb 51 ft
4 Lanes 11ft , 10ft , 10ft , 11ft
Two way PBL 3ft buffer plus 10 ft


Constricted section
Relocate street light and hydrant
Stairway removal and relocation
BUS
BUS
LAKEWAY
Relocate bus stop
Remove rockeries and fence and replace with CIP wall and fence
Remove trees on private property
Remove rockeries and fence and replace with CIP wall and fence
Regrade entrance
Regrade entrance
Relocate street light and hydrant
Regrade entrance
ST PAUL
TOLEDO
RACINE
Roadway alignment angle points driven by right of way configuration. Triggers improvements on both sides or easement even with narrowest improvements.
Key
Signal - Actuated not on System
Signal - Actuated on System
Signal - Fixed Time
Flashing Caution Light
Flashing Crosswalk
Radar Speed Sign
Flashing School Sign
Street Lights & Wattage
25 Ft Contours
5 Ft Contours
Cross Sections
Property
Curbcuts
Sidewalks
WTA Bus Stops
2013 Air Photo
0
50
Feet



Toledo
Existing road curb to curb 51.5 ft
4 Lanes 11ft , 10ft , 10ft , 11ft
Two way PBL 3ft buffer plus 10 ft
Total new width = 55 FT



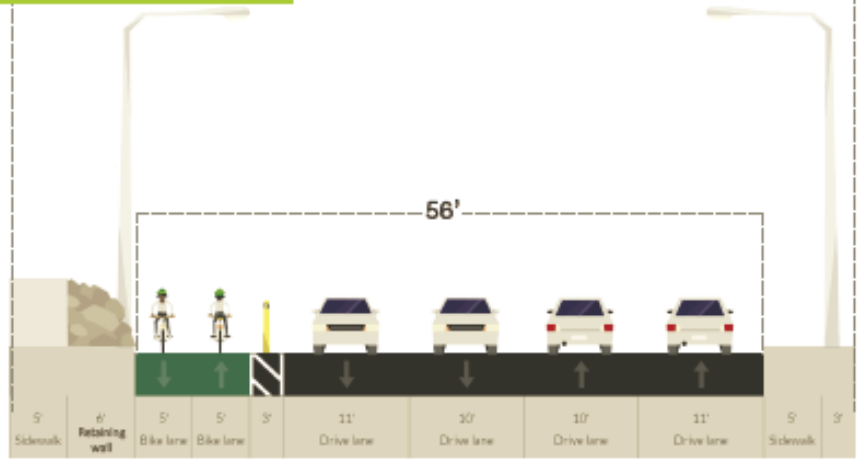
St Paul

Existing road curb to curb 51.5 ft
4 Lanes 11ft , 10ft , 10ft , 11ft
Two way PBL 3ft buffer plus 10 ft
Total new width = 55 FT

SEGMENT F
LAKEWAY DR: UNDINE ST TO OLD LAKEWAY DR

Phase I

Potential Options



F1*

RECOMMENDED FROM UNDINE ST TO OLD LAKEWAY DR

ESTIMATED COST: $1,940,000 OR LESS

Option F1: Two-way protected bike lane, south side

Note: *Assumes the corridor is widened on the south side. Likely to include significant earthwork with retaining walls*

See additional details in table (page 15)

*2-block section (650 linear feet) of 2-way protected bike lane to connect to Old Lakeway Bike Boulevard (segment highlighted yellow)

* Added to 2018-2023 TIP for year 2019-2020, pending grant funding

2018 Construction of HAWK Signal between Toledo & Undine

Would support construction of 2-way protected bike lane from Undine to Old Lakeway

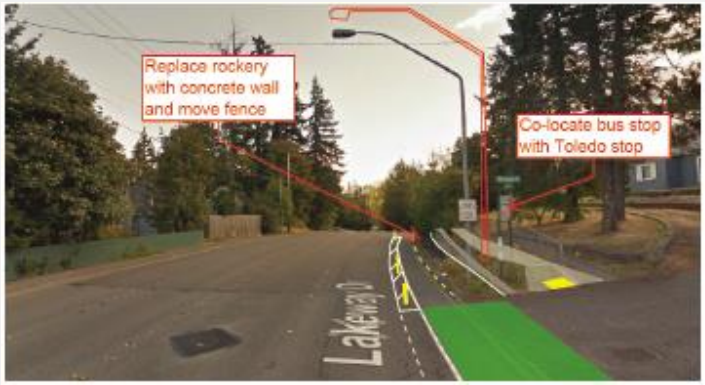
SEGMENT F

Phase I

LAKEWAY DR: UNDINE ST TO OLD LAKEWAY DR

Undine Street

- 50.9' curb-to-curb
- 10' two-way protected bike lanes with 3' buffer
- Widen to 55' curb-to-curb



Verona Driveway

- 50' curb-to-curb
- 10' two-way protected bike lanes with 3' buffer
- Widen to 55' curb-to-curb

Verona Alley

- 50' curb-to-curb
- 10' two-way protected bike lanes with 3' buffer
- Widen to 55' curb-to-curb

Bicyclist Use & Demand at Lakeway Undine – (June 28, 2017 8:45-9:00am)

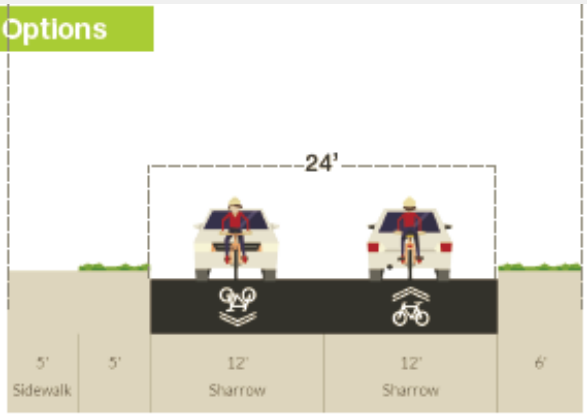
Lakeway Drive Between Toledo and Old Lakeway

Bicyclists Riding on Sidewalks & Pedestrian and ADA Obstructions

SEGMENT G
OLD LAKEWAY DR: LAKEWAY DR TO YEW ST

Phase I

Potential Options



G1*
RECOMMENDED FROM LAKEWAY DR TO YEW ST

ESTIMATED COST: TBD (RELATIVELY INEXPENSIVE)

Option G1: Bike boulevard, shared lanes

See additional details in table (next page) →

* Bike Boulevard with traffic calming, but accommodations for WTA transit route 533 must be included

Existing Conditions – Old Lakeway Drive

Planned Bike Boulevard from Lakeway Drive to Yew Street

East: Connects uphill bike lane on Woburn and bike lanes on Lakeway to City limit

West: Requires 650-foot 2-way Protected Bike Lane to connect Undine HAWK

Assembling this complex puzzle, piece by piece

Short-term (2017 thru 2019)

1.) 2017 - Uphill climbing lane on Woburn (Iowa to Lakeway)
2.) 2017 - Green bike box on north leg at Woburn/Lakeway
3.) 2018 – HAWK signals at three locations on Lakeway Drive
[Lakeway/Undine; Lakeway/Orleans; Lakeway/Grant]
4.) 2018 – WSDOT Ped-Bike Safety grant application for Lakeway protected bike lane from Undine HAWK to Old Lakeway Bike Blvd

Mid-term (2020 thru 2025)

5.) 2020 – ***If*** protected bike lane funded with WSDOT grant, ***then***
- Old Lakeway Bike Blvd (Yew-Lakeway) connect to Woburn/Lakeway
- Marked EB/WB bike lanes from Undine HAWK to Puget bike lanes
- Green bike box on north leg at Puget/Lakeway;
- Bike Blvd thru Civic Field parking lot (Puget-Orleans) & Potter St

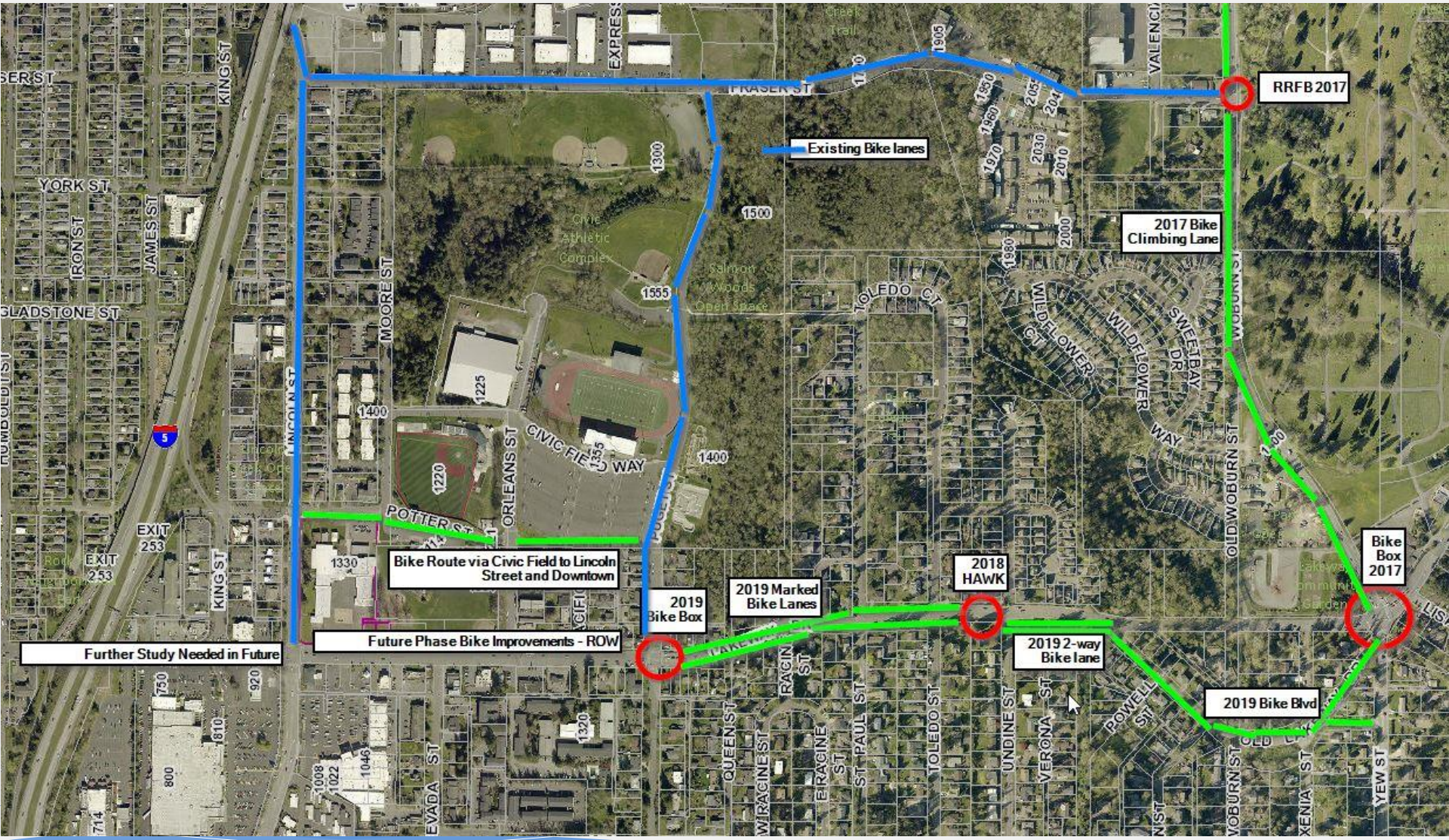
6.) Work with BSD and Parks to re-organize Orleans-Lincoln block
7.) Consider timing of Safe Route to School grant with reconstruction of Carl Cozier Elementary School (2024-2025)

Long-term (2025 and beyond)

8.) Further Study Needed on Lakeway corridor from Lincoln to Ellis

Lakeway Drive Bikeway Study Recommendations

Short-Term (2017-2019) Connectivity of Bicycle Facilities



Questions

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City of Bellingham Public Works