

11.0

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Appendix — Implementation Matrix

Implementation Matrix

	ACTION	LEAD AGENCY/PARTNERS	IMPLEMENTATION TIMELINE Adopt with Plan Initiate Upon Adoption Short-term (0-5 years) Medium-term (5-10 years) Long-term (10+ years) Ongoing	STATUS 1 = Funded or resourced (staffed) 2 = City considering allocating funding in future (e.g., C/P and/or budget process/ staffing) 3 = Long-range Vision
LAND USE				
1	Adopt a Form-Based Code and urban design guidelines to accommodate the growth targets based on the capacity analyzed in the Station Area Plan FSEIS.	City of Kirkland	Adopt with Plan (FBC/Design Guidelines)	1
2	Maintain collaborative relationships with service providers in the Station Area (e.g., KCHA, Helen’s Place) and identify opportunities to complement and enhance their services.	City of Kirkland / King County Housing Authority / Helen’s Place / Salthouse Church	Ongoing	1
3	Pursue opportunities to utilize WSDOT right-of-way for transit-supportive uses that could include future development, recreational amenities, and/or managed open spaces through the City’s legislative agenda.	City of Kirkland / WSDOT	Ongoing	3
HOUSING				
4	Adopt an incentive zoning program in the Station Area Form-based Code that creates development bonuses for affordable housing, with an emphasis on creating units in excess of the City’s current 10% inclusionary zoning and, or providing units at deeper levels of affordability.	City of Kirkland / ARCH	Adopt with Plan (FBC)	1
5	Direct affordable housing in-lieu payments or commercial incentive contributions to support affordable housing within the Station Area boundary.	City of Kirkland / ARCH	Short-term	1

Implementation Matrix

	ACTION	LEAD AGENCY/PARTNERS	IMPLEMENTATION TIMELINE Adopt with Plan Initiate Upon Adoption Short-term (0-5 years) Medium-term (5-10 years) Long-term (10+ years) Ongoing	STATUS 1 = Funded or resourced (staffed) 2 = City considering allocating funding in future (e.g., C/P and/or budget process/ staffing) 3 = Long-range Vision
HOUSING				
6	Establish an affordable housing target within the Station Area boundaries (as a subset of Citywide targets); create and maintain a monitoring program to track progress of implementation measures towards housing targets.	City of Kirkland	Short-term	1
7	Conduct a nexus study for commercial linkage fees as a method to support affordable housing targets by collecting fees new commercial development. To the extent new State-wide enabling legislation is needed, add to the City's legislative agenda.	City of Kirkland	Medium-term	2
8	Adopt a Tax Increment Financing district and project list that identifies infrastructure projects in the Station Area that are necessary to encourage and support future redevelopment and housing production.	City of Kirkland	Short-term	2
ECONOMIC DEVELOPMENT				
9	Adopt development standards that accommodate a range of commercial spaces, particularly smaller scale commercial spaces that are accessible to small, local businesses.	City of Kirkland	Adopt with Plan (FBC)	1
10	Identify opportunities for multi-benefit partnerships and programs between private, public, and non-profit organizations in the Station Area to create community benefits.	City of Kirkland	Initiate Upon Adoption	1

Implementation Matrix

	ACTION	LEAD AGENCY/PARTNERS	IMPLEMENTATION TIMELINE Adopt with Plan Initiate Upon Adoption Short-term (0-5 years) Medium-term (5-10 years) Long-term (10+ years) Ongoing	STATUS 1 = Funded or resourced (staffed) 2 = City considering allocating funding in future (e.g., C/P and/or budget process/ staffing) 3 = Long-range Vision
NATURAL ENVIRONMENT AND SUSTAINABILITY				
11	Implement the City’s Sustainability Master Plan goals in the Station Area and develop a monitoring program to track.	City of Kirkland	Initiate Upon Adoption	1
12	Integrate strategies into sustainability regulations for the district that “future-proof” the plan to ensure development is not precluding future innovation in the field.	City of Kirkland	Adopt with Plan (FBC)	1
13	Identify programs that support achievement of state and regional greenhouse gas emissions reductions goals.	City of Kirkland	Initiate Upon Adoption	1
14	Identify programs that reduce air pollution and greenhouse gas emissions by increasing alternatives to driving alone.	City of Kirkland	Initiate Upon Adoption	1
15	Expand electric transportation infrastructure in the Station Area.	City of Kirkland / Transit Agencies / Private development	Short-term	2
16	Identify programs that encourage retrofitting of existing buildings to reduce building energy use.	City of Kirkland	Short-term	2
17	Identify programs that promote wise use of services and resources (including conserving water and energy, reducing waste, treating stormwater).	City of Kirkland	Initiate Upon Adoption	1
18	Explore partnership opportunities to treat stormwater from the public right-of-way on project sites with shared facilities.	City of Kirkland / Private property-owners	Initiate upon adoption	2

Implementation Matrix

	ACTION	LEAD AGENCY/PARTNERS	IMPLEMENTATION TIMELINE Adopt with Plan Initiate Upon Adoption Short-term (0-5 years) Medium-term (5-10 years) Long-term (10+ years) Ongoing	STATUS 1 = Funded or resourced (staffed) 2 = City considering allocating funding in future (e.g., C/P and/or budget process/ staffing) 3 = Long-range Vision
NATURAL ENVIRONMENT AND SUSTAINABILITY				
19	Establish a Green Factor Code that encourages visible, functional, green spaces and high-quality habitat.	City of Kirkland	Adopt with Plan (FBC)	1
PARKS AND OPEN SPACE				
20	Identify and minimize gaps in equitable access to parks and open spaces in order to make more efficient use of existing parks and open spaces in the area.	City of Kirkland	Adopt with Plan (SAP and PROS Plan)	1
21	Leverage public assets and partnerships, including excess WSDOT right-of-way, for potential active recreational areas, managed natural areas, stormwater treatment, or sustainable landscape areas.	City of Kirkland / WSDOT	Short-term	1
22	Expand access to and through Forbes Lake Park to provide multiple benefits of environmental enhancement and education, improved nonmotorized transportation connections, and access to open space and recreation.	City of Kirkland	Short-term	2
23	Identify locations to enhance the Cross Kirkland Corridor to create recreational and open space amenities and improve active transportation connections to the Corridor.	City of Kirkland	Short-term	2
24	Identify locations for required mid-block green connections that provide opportunities for landscaping, active, and passive recreation.	City of Kirkland	Adopt with Plan (FBC)	1

Implementation Matrix

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PARKS AND OPEN SPACE				
25	Adopt an incentive zoning program in the Station Area Form-Based Code that creates development bonuses for new development to provide on-site public open space (e.g., plazas, pocket parks, etc.), enhanced on-site common spaces, recreation amenities, and linear parks.	City of Kirkland	Adopt with Plan (FBC)	1
26	Incorporate identified Station Area Parks projects into the City’s Capital Improvement Program.	City of Kirkland	Initiate Upon Adoption	1
27	As part of a Tax Increment Financing district, identify candidate Parks and Open Space infrastructure projects needed to serve the Station Area.	City of Kirkland	Short-term	2
TRANSPORTATION AND MOBILITY				
28	Incorporate identified Station Area Transportation projects into the City’s Capital Improvement Program, Capital Facilities Plan, and Transportation Master Plan.	City of Kirkland	Initiate Upon Adoption	1
29	Incorporate identified Station Area Transportation projects into a Planned Action Ordinance as required mitigation for future private development to construct.	City of Kirkland	Adopt with Plan (PAO)	1
30	Evaluate how Station Area Plan projects should be reflected in Transportation Impact Fee calculations, including the option of establishing an overlay for the Station Area.	City of Kirkland	Short-term	2

Implementation Matrix

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TRANSPORTATION AND MOBILITY				
31	Develop street standards that serve all users, including pedestrians, bicyclists, other forms of micromobility (e.g., scooters), transit users, vehicles, and – where appropriate – freight (“Complete Streets” vision 2040).	City of Kirkland	Adopt with Plan (FBC)	1
32	Establish parking ratios that reflect the vision for a vibrant transit-oriented district, recommended transportation investments to achieve a balanced multi-modal network, and robust Transportation Demand Management (TDM) strategies for future development.	City of Kirkland	Adopt with Plan (FBC)	1
33	Establish a TDM monitoring program for the Station Area.	City of Kirkland	Initiate Upon Adoption	1
34	Develop bicycle parking guidelines as a Public Works pre-approved policy.	City of Kirkland	Short-term	1
35	Develop passenger load/unload areas as Public Works pre-approved roadway policy.	City of Kirkland	Short-term	1
36	Utilize parking management strategies like residential parking zones, time limitations and enforcement around large commercial projects and pick up and drop off facilities and monitor parking congestion in the Station Area.	City of Kirkland	Short-term	2
37	As part of a Tax Increment Financing district, identify candidate Transportation infrastructure projects in the Station Area.	City of Kirkland	Short-term	2
38	Conduct a study to evaluate transportation solutions to connect the BRT to downtown.	City of Kirkland	Medium-term	2

Implementation Matrix

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PUBLIC SERVICES AND PUBLIC FACILITIES				
39	Incorporate identified Station Area Water, Sewer, and Stormwater projects into the City's Capital Improvement Program.	City of Kirkland	Initiate Upon Adoption	1
40	Incorporate identified Station Area Water, Sewer, and Stormwater projects into a Planned Action Ordinance as required mitigation for future private development to construct.	City of Kirkland	Initiate Upon Adoption	1
41	Adopt an incentive zoning program in the Station Area Form-Based Code that creates development bonuses for new development to provide school space.	City of Kirkland	Adopt with Plan (FBC)	1
42	Adopt development standards that can provide Lake Washington School District with more development capacity to build additional school space on current district-owned sites.	City of Kirkland	Adopt with Plan (FBC)	1
43	Remove potential development barriers in current regulations that might preclude siting of school facilities on private properties as part of mixed use developments.	City of Kirkland	Adopt with Plan (FBC)	1
44	Conduct a Citywide assessment of zoning regulations to remove potential barriers to LWSD capacity projects on current district-owned sites and possible public/private partnership sites.	City of Kirkland / LWSD	Short-term	1
45	As part of a Tax Increment Financing district, identify possible candidate Sewer infrastructure projects in the Station Area.	City of Kirkland	Short-term	2

Implementation Matrix

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ADMINISTRATIVE				
46	Develop City application materials, a fee structure, and legal agreements to implement the incentive zoning program, including forms that ensure provision of bonus incentives in perpetuity.	City of Kirkland	Short-term	1
47	Develop a Station Area implementation tracking program and establish a cadence of Council and Planning Commission updates on implementation progress.	City of Kirkland	Short-term	1
48	Adopt a Planned Action Ordinance for the Station Area, and a supplemental checklist form for projects applying to be reviewed as a Planned Action.	City of Kirkland	Initiate Upon Adoption	1
49	Adopt amendments to the Comprehensive Plan General elements and neighborhood plan chapters to ensure consistency with the adoption of the Station Area Plan Subarea chapter.	City of Kirkland	Short-term	1
50	Update City forms and publications for consistency with Station Area Plan development regulations.	City of Kirkland	Initiate Upon Adoption	1
51	As part of the City’s routine budget and CIP processes, identify and prioritize Station Area funding and expenditures to support infrastructure investments and service delivery.	City of Kirkland	Short-term	2






11.2

Appendix — Recommendations List

Recommendations List: Land Use and Urban Design

[illegible]

Recommendations List: Parks and Open Space

Parks and Open Space	Mechanism					Co-Benefits / Community Benefits				
	Goal	Initiative	Project	Standard	Incentive					
Integrate parks and open spaces throughout the area and ensure all residents have access to open space within a 10-minute walk										
Preserve existing trees and support enhanced canopy to support the SMP 40% tree canopy cover goal including native drought tolerant species										
Support habitat and stream, lake, and wetlands health including stormwater management, pesticide and pollutant reduction and sediment control										
Support bird safe and dark sky environment standards										
Improve access to Everest Park from the Station Area through 80th pedestrian bridge and CKC connection										
Improve access to Peter Kirk Park from the Station Area through 80th pedestrian bridge and bike lanes										
Improve access to North Rose Hill Woodland Park through Forbes Lake boardwalk and crossing										
Improve access to South Rose Hill Meadows Park through mid-block green connections										
Enhance and expand use of existing parks, open spaces and trails										
Forbes Lake Park enhancements										
CKC trail enhancements at 7th and at 90th/public works building										
Reference Peter Kirk and Everest Park enhancements										

Recommendations List: Parks and Open Space






[illegible]

Recommendations List: Transportation and Mobility

Transportation and Mobility	Mechanism					Co-Benefits / Community Benefits				
	Goal	Initiative	Project	Standard	Incentive					
Shift toward more urban streets and support of successful places and away from throughput										
Shift mode share toward active modes										
Transit station amenities and design										
Street design standards for pedestrians and cyclists including lighting										
Intersection design standards for pedestrians and cyclists										
Reduce parking ratios										
Support electric vehicle infrastructure										
Support shared off-street parking										
Transportation Demand Management strategies										
Shuttle services or other first/last mile strategies										
Unbundled parking or charge fees for off-street parking										
Intelligent Transportation Systems signal timing										
Encourage CTR programs, emergency ride home, ridematch, and other pro-grams										
Transit pass provision										
Partner with TNCs for pooled ridesharing										
Bike amenities										
Bikeshare and micro-mobility systems										

For a list of recommended projects see appendix 11.3

Recommendations List: Utilities and Services

Utilities and Services	Mechanism					Objective	Co-Benefits / Community Benefits				
	Goal	Initiative	Project	Standard	Incentive	Inclusion					
Support childcare and educational spaces											
Increase development capacity for Lake Washington School District											
Allow and encourage childcare and educational spaces in mixed use developments and active frontage areas											
Provide police, fire, and emergency response services											
Support decarbonization and 100% renewable energy and NZE development by 2030											
Support reduced potable water demand including 20% water efficiency by 2030 compared to 2019 baseline											
Support a local green economy and explore green infrastructure or other sustainable business workforce development											
Support multi-benefit projects including green infrastructure											
Support distributed and shared infrastructure											

For a list of recommended projects see appendix 11.3






11.3

Appendix — Recommended Projects List






Recommendations List: Transportation Capital Projects

Transportation Capital Projects			Mechanism		Co-Benefits / Community Benefits				
	Description	Project							
1. Lee Johnson East Access	NE 83rd St/120th Ave NE signalized access, and 120th Ave NE corridor improvements of added sidewalks and NB left turn lane (NE 83rd St to NE 85th St)								
2. Lee Johnson South Access	NE 80th St/118th Ave NE mini roundabout, and 118th Ave complete street								
3. NE 80th St/ 120th Ave NE Intersection Improvement	Added SB left turn pocket, signal revisions, and 120th Ave NE corridor improvements of added sidewalks and SB bike lane (NE 80th St to NE 83rd St)								
4. 124th Ave NE Roadway Widening	Widen roadway to five lane cross section from NE 85th St through the NE 90th St intersection, widened sidewalks and raised protected bike lanes from NE 84th Ln through NE 90th St intersection								
5. NE 85th St/120th Ave NE Intersection Improvement	Revised signalization for added NB left turn lane, and curb ramps, crosswalk striping, signalization for shared use paths								
6. 5th Ave to Kirkland Way Shared Use Trail Improvements	Widen existing trail to 12 feet, minimize grade, and add lighting								
7. 5th Ave Greenway	Add pavement markings and signage for greenway designation from 6th St to 10th St								
8. 6th St Widened Sidewalks	Widen sidewalks on the east side of 6th St from Kirkland Way to NE 85th St								
9. Kirkland Way Complete Street	Add buffered bike lanes and continuous sidewalks from 6th St to NE 85th St								
10. 7th Ave/NE 87th St Complete Street	Widened sidewalks and buffered bike lanes from 6th St to 116th Ave NE. Parking lane protecting the south side (EB) bike lane from 6th St to the CKC, and landscape strips added to sidewalks from the CKC to 116th Ave NE								
11. 116th Ave NE Complete Street (NE 87th St to NE 90th St)	Buffered bike lanes and sidewalk infill from NE 87th St to NE 90th St								
12. 116th Ave NE Complete Street (NE 90th St to NE 100th St)	Buffered bike lanes and sidewalk infill from NE 90th St to NE 100th St								
13a. I-405/NE 85th St Shared Use Trail (SW Quadrant)	Shared use trail connecting BRT station to 116th Ave NE								
13b. I-405/NE 85th St Shared Use Trail (NE Quadrant)	Shared use trail connecting BRT station to Slater Ave NE								
13c. I-405/NE 85th St Shared Use Trail (SE Quadrant)	Shared use trail connecting BRT station to NE 80th St								
14. 90th Street Complete Street (I-405 to 122nd Ave NE)	Add shared use path and landscape strip on the north side of roadway, and sidewalk and landscape strip on south side of roadway								
15. 90th Street Complete Street (122nd Ave NE to 128th Ave NE)	Buffered bike lanes and sidewalks with landscape strips from 122nd Ave NE to 124th Ave NE, greenway treatments including new sidewalks and curb ramps, pavement markings and signage from 124th Ave NE to 128th Ave NE								
16. 122nd Ave NE Bike Route	Widen sidewalks, add lighting, and stripe buffered bike lanes from NE 80th St to NE 90th St								

Recommendations List: Transportation Capital Projects

Transportation Capital Projects	Mechanism		Co-Benefits / Community Benefits				
	Description	Project					
17. NE 82nd Green Mid-block Connection Share Use trail connection between 120th Ave NE to 122nd Ave NE in the vicinity of NE	NE 83rd St/120th Ave NE signalized access, and 120th Ave NE corridor improvements of added sidewalks and NB left turn lane (NE 83rd St to NE 85th St)						
18a. NE 85th St Shared Use Paths (I-405	NE 80th St/118th Ave NE mini roundabout, and 118th Ave complete street						
18b. NE 85th St Enhanced Sidewalks and Raised Pro-ected Bike Lanes (120th Ave NE to 122nd Ave NE)	Widened sidewalks, landscape strips, and raised protected one-way bike lanes (120th Ave NE to 122nd Ave NE)						
18c. NE 85th St Enhanced Sidewalks and Raised Protected Bike Lanes (122nd Ave NE to 124th Ave NE)	Widened sidewalks, landscape strips, and raised protected one-way bike lanes (122nd Ave NE to 124th Ave NE)						
18d. NE 85th St Enhanced Sidewalks and Raised Protected Bike Lanes (124th Ave NE to 126th Ave NE)	Widened sidewalks, landscape strips, and raised protected one-way bike lanes (124th Ave NE to 126th Ave NE)						
18e. NE 85th St Enhanced Sidewalks and Raised Protected Bike Lanes (126th Ave NE to 128th Ave NE)	Widened sidewalks, landscape strips, and raised protected one-way bike lanes (126th Ave NE to 128th Ave NE)						
19.116th Ave NE Ped/Bike Overcrossing Access Improvements	Widen sidewalk and bike lane on the northwest side of 116th Ave NE from NE 80th St to existing I-405 ped/bike bridge, includes RRFB crossing of 116th Ave NE to the south						
20. 120th Ave NE Corridor Improvements (NE 85th St to NE 90th St)	Overlay and sidewalk infill between NE 85th St and NE 90th St						
P1. 6th St/7th Ave Intersection Improvements	Bike lane striping and sidewalk improvements at the intersection to connect to 7th Ave complete street improvements						
P2. NE 85th St/122nd Ave NE Protected Intersection	Striping, signalization changes, and protection islands at the interesection for sidewalks and raised protected bike lanes on NE 85th St						
P1. 6th St/7th Ave Intersection Improvements	Bike lane striping and sidewalk improvements at the intersection to connect to 7th Ave complete street improvements						
P2. NE 85th St/122nd Ave NE Protected Intersection	Striping, signalization changes, and protection islands at the interesection for sidewalks and raised protected bike lanes on NE 85th St						
P3. NE 87th St/116th Ave NE Intersection Improvement	Mini roundabout and associated striping and sidewalk changes						
P4. NE 80th St/122nd Ave NE Intersection Improvement	South side curb extension, crosswalks, and RRFBs added for north-south walking and biking connection to Lake Washington High School						

Recommendations List: Transportation Capital Projects

Transportation Capital Projects	Mechanism		Co-Benefits / Community Benefits				
	Description	Project					
P5. 6th St/NE 85th St Protected Intersection	Striping, signalization changes, and protection islands at the interesection for sidewalks and raised protected bike lanes on NE 85th St						
P6. 6th and Kirkland Way Protected Intersection	Striping, signalization changes, and protection islands at the interesection for sidewalks and buffered bike lanes on Kirkland Way						






Recommendations List: Utilities and Infrastructure Project List

Transportation Capital Projects		Mechanism	Co-Benefits / Community Benefits				
	Description	Project					
WM2. Water in I-405, 24" diameter	From NE 85th St to NE 87th St						
97-R. Water in I-405 Off-ramp, 16" diameter	From NE 87th St to NE 85th St						
133. Water in 124th Ave NE, 16" diameter	From NE 85th St to Honda of Kirkland, 1242 NE 85th St						
134. Water in NE 92nd St, 12" diameter	From 124th Ave NE to dead end						
135-R. Water in 122nd Ave NE, 16" diameter	From NE 85th to NE 90th						
136. Water in Slater Ave/Costco, 16" diameter	From 120th Ave NE to 120th Ave NE						
137. Water in 120th Ave NE, 20" diameter	Includes 76 Gas Station, 11848 NE 85th, from NE 85th to 76 Gas Station and from 120th Ave NE to dead end						
146. Water in NE 87th, 16" diameter	Includes McLeod Auto Body, 1015 7th Ave #220, from NE 87th St to dead end						
150-R. Water in 6th St, Central Ave, and 6th Ave, 8-16" diameter	From 15th Ave to 7th Ave						
153. Water in 8th St, 8-16" diameter	From 7th Ave to 12th Ave						
169. Water in 7th Ave, 12-20" diameter	From 3rd St to 8th St						
170. Water in 6th St, 12-16" diameter	From 7th Ave to Central Way						
174. Water in NE 85th St., 24" diameter	From 116th Ave NE to 114th Ave NE						
175. Water in 128th Ave NE/NE 3rd Ct, 12" diameter	From NE 85th St to NE 80th St						
176. Water in 126th Ave NE, 8-16" diameter	From NE 85th St to NE 80th St						
177-R. Water in Safeway Parcel, 12519 NE 85th St, 12-16" diameter	From 124th Ave NE to 126th Ave NE						
178. Water in 124th Ave NE, 12" diameter	From NE 85th St to NE 80th St						
179. Water in 122nd Ave NE, 12-16" diameter	From NE 85th St to NE 80th St and in unnamed road south of 824 122nd Ave NE from 122nd Ave NE to dead ends						

Recommendations List: Utilities and Infrastructure Project List

Transportation Capital Projects	Mechanism		Co-Benefits / Community Benefits				
	Description	Project					
180. Water in NE 80th St, Taco Time NW, 12005 NE 85th St, 12" diameter	From 120th Ave NE to dead end and in NE 80th St from 120th Ave NE to 118th Ct NE						
184. Water in 118th Ave NE, 12" diameter	From NE 80th St to 120th Ave NE						
185. Water in 118th Ct NE, 12" diameter	From NE 80th St to dead end						
186. Water in 114th Ave NE, Kirkland Way, Ohde Ave, and Slater St, 12-20" diameter	From NE 85th to Kirkland Ave						
187. Water in 4th Ave, 5th Ave, 10th St, 3rd Ave, 9th St, 2nd Ave, and 99th Ln, 12-16" diameter	From Kirkland Way to 6th St						
536. Water in 120th Ave NE, 20" diameter	From 12020 NE 8th St PRV to Fire lane south of Costco						
537. Water in Costco, 8629 120th Ave NE, 16" diameter	From 120th Ave NE						
SAP-1 Sewer in Walgreens, 12405 NE 85th St, 12" diameter	From NE 85th to MH No. 2837						
SAP-2 Sewer in NE 85th St, 12" diameter	From 124th Ave NE to MH No. 2835						
SAP-3 Sewer in 124th Ave NE, 12" diameter	From NE 85th St to NE 90th St						
SAP- 4 Sewer in NE 90th St, 12-21" diameter	From 124th Ave NE to 122nd Ave NE (12"), 122nd Ave NE to 120th Ave NE (15"), and 120th Ave NE to I-405 (21")						
SAP-5 Sewer in 122nd Ave NE, 12" diameter	From NE 90th St to MH No. 2669						
SAP-6 Sewer in Lee Johnson, 11845 NE 85th St, 12" diameter	From MH No. 2554 to MH No. 2578						
SAP-7 Sewer in 120th Ave NE, 12" diameter	From NE 85th St to NE 90th St						
SAP-8 Sewer in I-405 and NE 87th St, 18" diameter	From Costco, NE 90th St/Slater Ave to MH No. 2322						
SAP-9 Sewer in NE 87th St, 18" diameter	From King County – East Side Interceptor to MH No. 2322						

Recommendations List: Utilities and Infrastructure Project List

Transportation Capital Projects	Mechanism		Co-Benefits / Community Benefits				
	Description	Project					
SAP-10 Sewer in 6th St, 12” diameter	From 7th Ave to Central Way						
Stormwater Basin 2 160k CF Detention Vault	26,570 SF						
Stormwater Basin 210k CF Detention Vault	35,350 SF						
Stormwater Conveyance Improvements within Station Area Plan	Increased conveyance pipe diameters: <ul style="list-style-type: none">• Pipe 7493 (near PETCO) from 18 to 30-inch• Pipe 40640 to Pipe-5 (along 124th Ave NE) from 12 to 18-inch• Pipes 23048, 23047 and 23018 (north of NE 80th St) from 16 to 18-inch• Pipes 45955 and 7563 from 18 to 24-inch Modified conveyance pipe materials: <ul style="list-style-type: none">• Pipes 6496, 6462, and 6460 (last three pipe segments in model) from CAP to RCP• Pipes C1 and 40642 (along 124th Ave NE) from CAP to SWPE• Pipes 40640 to Pipe-5 (along 124th Ave NE) from CAP, RCP, and PVC to SWPE• Pipes 45955 and 7606 (along NE 80th St) from CAP to SWPE						
Stormwater Conveyance Improvements upstream of Station Area Plan	685 LF						

11.4

Appendix — Supporting Plan Summary

	Themes
WSDOT I-405/SR 167 Corridor Program	Long term vision to address Interstate 405's congestion problems. Major features include two new lanes in each direction, a managed lanes system, local street improvements, transit improvements (including Bus Rapid Transit system), and bicycle and pedestrian improvements. Includes urban design guidelines for the corridor.
Sound Transit I-405 Bus Rapid Transit	This project establishes Bus Rapid Transit (BRT) from the Lynnwood Transit Center to the Burien Transit Center via I-405 and SR 518. The project relies on the I-405 express toll system where available, including through Kirkland Approved by voters as part of the ST3 package.
Kirkland 2035 Comprehensive Plan	Community Character, Environment, Land use, Housing, Economic Development, Transportation, Parks and Recreation, Public Utilities, Public Services, Human Services, Capital Facilities, Implementation Strategies, Neighborhood Plans
Vision Statement	We are a vibrant, attractive, green and welcoming place to live, work and play. Civic engagement, innovation and diversity are highly valued. We are respectful, fair, and inclusive. We honor our rich heritage while embracing the future. Safe, walkable, bike-able and friendly neighborhoods are connected to each other and to thriving mixed use activity centers, schools, parks and our scenic waterfront. Convenient transit service provides a viable alternative to driving. Diverse and affordable housing is available throughout the city. Kirkland strives to be a model, sustainable city that values preserving and enhancing our natural environment for our enjoyment and future generations.
Goals	Livable: High Quality of Life, Diverse and Affordable, High quality Community Design. Sustainable: Ecologically, Economically and Socially. Connected: Sense of Community , Accessible, Technology
Future Trends	Aging population and Workforce, increasing ethnic and cultural diversity, increase demand for MF housing due to increasing housing costs, changing technology, climate change resulting in increasing use of alt energy sources, demand for more transportation options, maintaining aging infrastructure
Community Character	Public Policy should help to build a strong community through: Providing open spaces, trails, and recreation; supporting formal and informal community organizations; encouraging citizen participation. Plans should accommodate change in a way the maintains and strengthens Kirkland's livability, natural environment, and neighborhood identities.
Environment	Development regulations to protect critical areas and maintain their ecological function and value are required by The Growth Management Act. Tree Code aims to increase citywide tree canopy to 40%. Green Building Program encourages new homes to be built to LEED for Homes and Built Green standards. The Climate Protection Action Plan provides goals for reductions in green house gas emissions.
Land use	Preserving existing community character while accommodating the predicted +8,361 housing units and +22,435 jobs (between '13-'35) will be a major challenge. The city is primarily residential; a greater mix of uses is desired to provide employment and diminish congestion and emissions. The growing elderly population has special housing and transportation needs, transit and shops close to home will support this group.
Housing	Critical housing needs include: adding housing to meet the needs of the growing employment base; Affordable rental units for those earning 0-50% AMI; ownership housing for 80-120% AMI; Provision of housing for residents with special needs (Inc. Victims of domestic violence, homeless families, adults with developmental disabilities, and the elderly); increased diversity in housing types including small lot SFD and mid to high housing densities infilled into mixed use areas, and more ADUs.

Relevance to SAP	Extents
Master plan includes an innovative triple decker interchange that will replace the I-405/NE 85th Cloverleaf. Improvements will maintain an at-grade under crossing of I-405 at NE 85th and create a new second level for HOV lanes, bike and pedestrian traffic, and bus traffic.	Within the I-405 WSDOT ROW
Includes design and construction of the BRT station with the new I-405/NE 85th St Interchange, which will support frequent transit service connecting Kirkland to Bellevue and Tukwilla, and from there to the Link Light rail to Seattle, SeaTac Airport, and eventually Tacoma and Everett.	I-405 from Lynnwood Transit Center to Burien Transit Center
	All of Kirkland, Inc. 2011 annexation
The SAP endeavors to address these predicted trends and help Kirkland grow in a smart and inclusive fashion.	
The SAP will explore opportunities for new open spaces and create connections to existing facilities. Engagement and participation has been integrated into every phase of the SAP planning process.	
Protection of Critical Areas and opportunities to preserve and expand Kirkland's Tree Canopy are further explored in this report and will be addressed in the SAP. Additional methods to encourage green building techniques will be explored. Alternatives will be analyzed to evaluate which path forward provides the greatest reduction in GHG emissions, among other considerations.	
The plan should consider the unique identity of adjacent neighborhoods, and create effective transitions between different land uses. The Comprehensive Plan identifies the area east of the BRT station and along the NE 85th St Corridor for increased commercial development. The SAP will seek to facilitate a greater mix of uses and increased density near transit.	
The SAP will address policies to support additional housing units, including affordable housing. As a transit-oriented neighborhood, provision of affordable housing can increase access to opportunity. A women and family shelter is currently under construction in the station area; the SAP should consider their needs as well.	

Economic Development	Seeks to provide: A sustainable and resilient economy, diverse tax base, access to job opportunities and goods and services for the community. Promotes living wage jobs, exports goods and services and encourages small, start up, locally owned companies to achieve this. Economic growth should be focused in downtown and commercial areas. King County-wide Planning Policies have assigned +22,435 jobs to Kirkland for 2035, for a total of 61,147.
Transportation	Principles: Safely Move People w/all viable forms of transportation. Link to land use. Be sustainable over the next 50 years. Actively build and maintain partnerships locally, regionally and nationally. Adopts a "Vision Zero" plan to create a safe, accessible environment for walking and biking.
Parks and Recreation	Parks are key to the character neighborhoods. The 588 ac park system greatly contributes to the quality of life. As the City responds to growth, new investments will be necessary to meet the needs of the community, support youth development, provide options for residents to lead healthy active lives and foster greater social and community connections. To ensure that each person receives access to a constant amount of parks and recreational facilities as the community grows, use the formula Investment per Person= Replacement Value Capital Of Parks & Recreation Inventory/Population
Public Utilities	Utility planning has contributed to a high quality of life for Kirkland residents and businesses by ensuring efficient utility delivery. Kirkland's existing utility infrastructure is generally adequate to meet the growth needs of the City for many years. The City's objective is to meet the needs of the present without compromising the ability of future generations to meet their own needs.
Public Services	Fire, emergency management and police services face the challenge of maintaining an appropriate level of service as growth increases demand. Solid waste garbage and recycling endeavors to encourage recycling and reduce solid waste disposal to lessen the capacity problems of at the regional transfer stations and landfills and to increase recycling diversion. The Lake Washington School District is seeking ways to be flexible and responsive to fluctuating demand for services. Libraries face the challenge of remaining relevant in the face of technological changes and filling the gaps in access for under served communities.
Human Services	Demographic, economic and social changes have dramatically increased the need for health and human services. Diversity and social equity are two important overarching foundations for youth services, senior services and human services. Human Services are essential to supporting other goals and elements of the comp plan.
Capital Facilities	A funded six-year financing plan to pay for transportation, parks, and fire and building capital projects that support existing and future development on the Land Use Map. Contains level of service standards for each type of capital facilities and a 20-year list of transportation projects, many not funded. Establishes that roads, water and sewer facilities must be available concurrent with new development or redevelopment. Establishes policies for implementing sustainable development principles with the design and construction of public facilities.
Rose Hill Neighborhood Plan	A survey shows that proximity to amenities and greenspace are Rose Hill's most treasured characteristics. Residents would like to see future development maintain neighborhood built form, traffic flow and calming improvements, and pedestrian improvements.
Everest Neighborhood Plan	The emphasis is on encouraging a range of residential uses and permitting limited economic activities. Recognizes the trend away from industrial and office uses adjacent to the Cross Kirkland Corridor, and encourages connections to the trail and innovative uses that may benefit from pedestrian and bicycle trail users redevelopment opportunities adjoining the Corridor arise.

As a transit-oriented and well connected neighborhood, the station area is well suited to accommodate a significant portion of Kirkland's housing and employment targets. The SAP will explore economic development potential of the area.		
Safe, intuitive, accessible and appealing walking and biking connections to transit will be a major consideration of the Station Area Plan. The plan will support robust non-motorized access to the Sound Transit BRT transit facility as recommended in the Comprehensive Plan.		
The SAP will highlight opportunities to expand Kirkland's Parks system within its boundaries. Initial analysis suggests that this area is under served by existing facilities and additional investment would help meet Kirkland's goals of providing equitable access to parks. The concept of Investment per person in parks will be valuable in evaluating open space alternatives. The SAP will connect with and build upon Kirkland's trail network. Programming considerations should seek to meet the needs of diverse users, including marginalized communities or those with special needs.		
The SAP will evaluate how to support efficient and sustainable utilities required for potential future development. The SAP will consider how adjustment to the public utilities network can be used as a lever to incentive new development.		
The SAP will assess overcrowding in the Lake Washington School District and explore recommendations to improve conditions. The SAP should also consider how potential future development may affect demand on other public services, and how to support a high level of service for current and future residents.		
The SAP will assess progress towards promoting diversity and social equity using the King County Equity Impact Review tool.		
The concurrency requirements described in this section will be important to consider when designing levers to encourage the desired development types.		
Respondents have shown that their top priorities relate to community greenspaces. The respondents would like to be more informed about transportation infrastructure plans and proposals.	Between Interstate 405 and 132nd Avenue NE bordering Redmond	
Planning participants generally value the low density SFD development in their neighborhood, and identify the east Everest area, which is part of the SAP, as appropriate for slightly higher residential densities. The stormwater aspect of the SAP will consider how to preserve and improve natural streams for drainage and as a neighborhood amenity.	Between the Cross Kirkland Corridor and I-405, and between NE 68th Street and NE 85th Street	

Highlands Neighborhood Plan	Residents value limited vehicle access, convenient walking access to downtown and the neighborhoods many parks, and preserving the tree canopy. Goals include preserving the predominately SFD character, but allow innovative residential development styles when specific public benefits are demonstrated.
Norkirk Neighborhood Plan	Resident priorities include: Maintaining LIT businesses to provide services and job growth and not allowing residential and retail. Improving transitions from industrial to single family with uses like office or multifamily Preserving the Cannery building.
Sustainability Master Plan	Will identify community priorities for environmental, economic, and social sustainability; Explore specific actions that to support the identified priorities; and prioritize action items in an implementation plan.
Transportation Master plan	Encourages a multimodal approach to congestion. Transportation decisions should reflect the hierarchy of modes: 1. Walking 2. Biking 3. Transit 4. Motor vehicles
Cross Kirkland Corridor Master plan	Re-imagines the Corridor as a as a central spine and destination that unites Kirkland’s neighborhoods. The corridor will serve a broad range of users providing a wide range of uses including recreation, transportation, the preservation and creation of wildlife habitat, and activating business development and investment.
Missing Middle Housing Code Amendments	Amendments include: parking space reductions for units within 1/2 mile of frequent transit service; design guidelines specific to two and three unit homes,which would replace guidelines which state that they should be consistent with single family homes in bulk, height and scale; allowing lots to be subdivided with no minimum size.

The SAP should consider how development in the station area can support character goals of surrounding areas and provide public benefits. Managing potential traffic will be important to Highlands residents. Additional bike and pedestrian connections in the neighborhood are desired.	North of NE 85th Street, bounded by Interstate 405 to the east and the Cross Kirkland Corridor to the north and west.
Improving transitions from the SAP to adjacent areas is a goal of the SAP. The Cannery is within the proposed SAP boundary, and the Norkirk Plan identifies the Cannery preservation as important to the residents.	Between the Cross Kirkland Corridor on the east, Market Street on the west, downtown on the south, and 20th Avenue, on the north
The SAP will coordinate with ongoing development of the Sustainability Master plan, and incorporate the priorities that have already been developed into alternatives analysis.	City wide
The plan will consider different options for last mile connectivity to the BRT station, and will incorporate the hierarchy of modes as described in the Comprehensive Plan into alternatives analysis.	City wide
SAP recognizes the Cross Kirkland Corridor as a key asset to the area. Development adjacent to the CKC will seek to enrich master plan goals of connecting Kirkland, shaping a place unique to Kirkland, fostering a greener Kirkland, and evolving with time.	The Cross Kirkland Corridor and adjacent development, form Woodinville to Bellevue
The Missing Middle Housing Code will be important in informing the approach to encouraging the development of affordable and workforce housing within the Station Area.	City wide

Connected Kirkland

The future BRT station at 85th St won't just serve the immediate locations surrounding it. It will be part of a larger network of mobility option that connect Kirkland to destinations both within the city and across the region.

Major employers, shopping districts, and residential neighborhoods should be evaluated as major destinations which will need connections to this station. These last mile connections will benefit from a "portfolio" of transportation options that can meet the diverse range of future users.

A "Portfolio" of last-mile connections



Walking



Bikes



Shuttles



Increased Bus Service



Shared Mobility

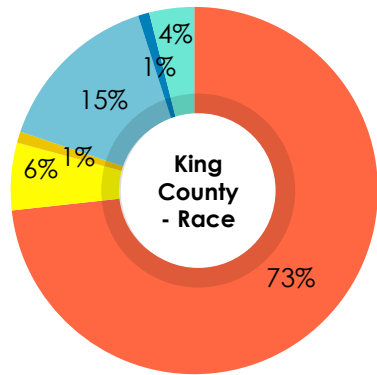
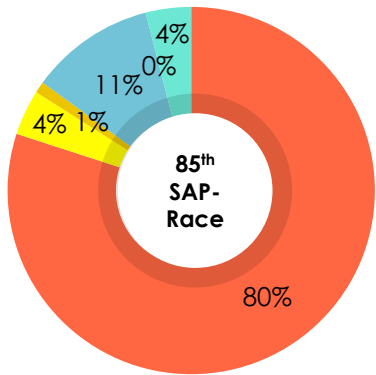


Pick up/Drop Off

Photos by Sergio Ruiz : <https://www.flickr.com/photos/urbanists>

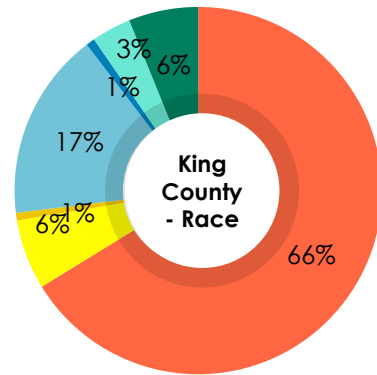
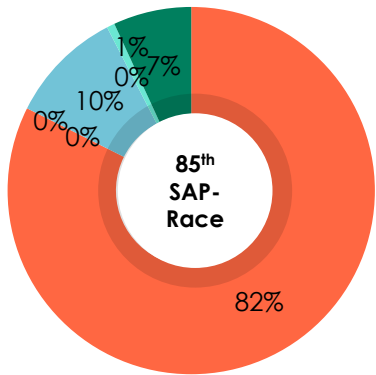


Employee Demographics

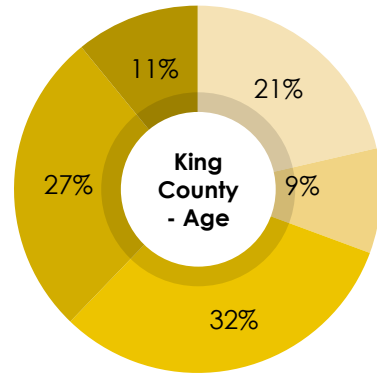
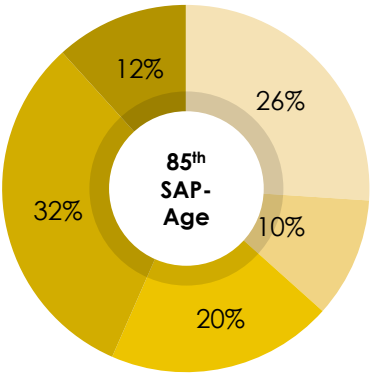


- White
- Black
- American Indian
- Asian
- Pacific Islander
- Two or More races

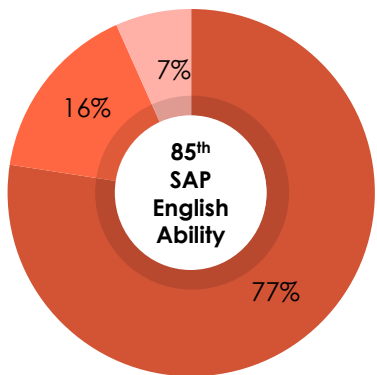
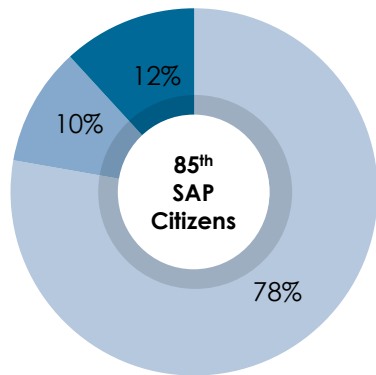
Resident Demographics



- White
- Black
- American Indian
- Asian
- Pacific Islander
- Other
- Two or More races



- Under 18
- 18-24
- 25-44
- 45-64
- 65 and over



- Speak only English
- Speak English Very Well
- Speak English Less than very well

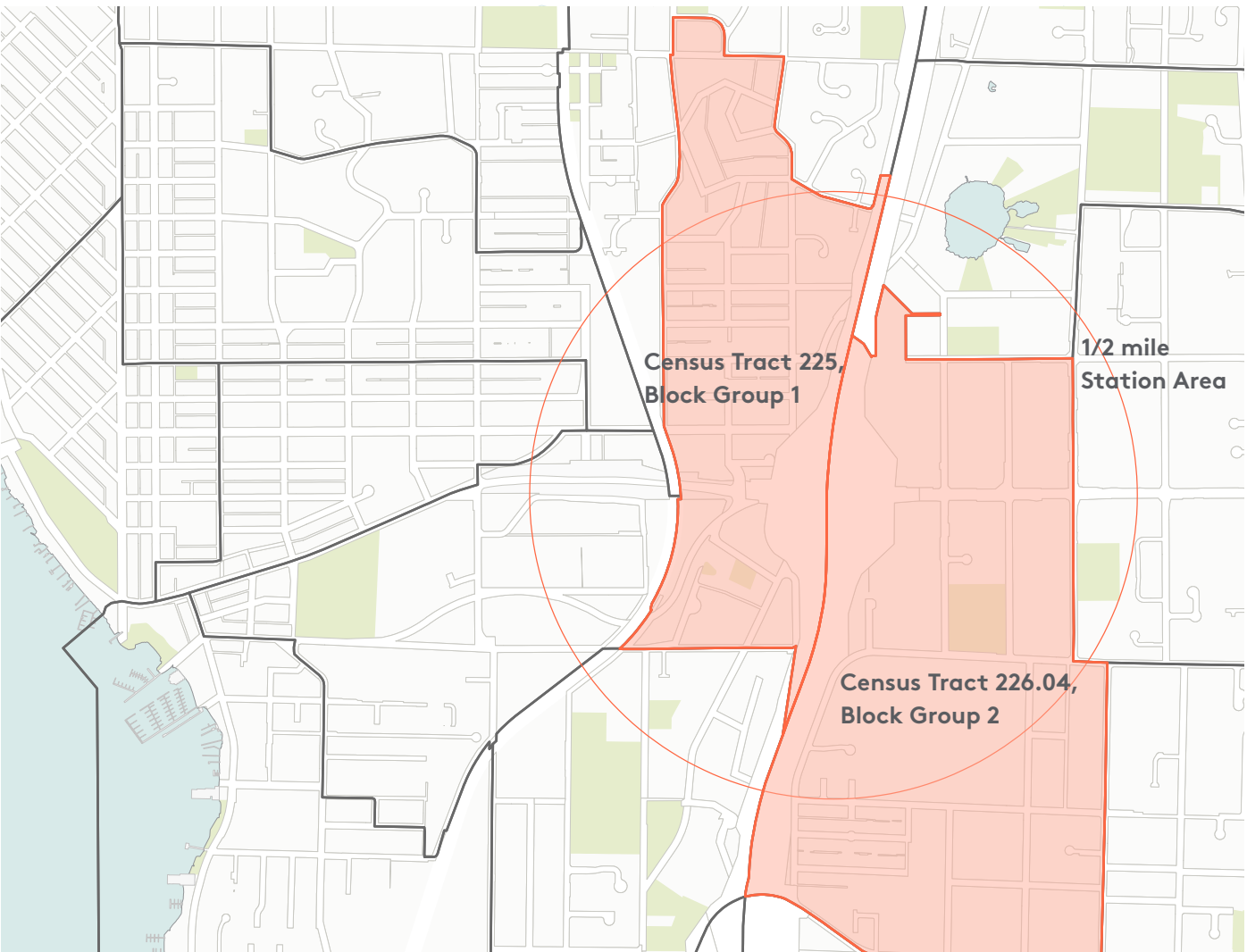
Who Will Be Affected?

A preliminary list of affected parties includes:

- Lake Washington High School students
- Rose Hill Elementary School Students
- Employees who work within 1 mile from the station for a variety of businesses and public institutions
- Transit users accessing the BRT to travel to points north and south
- Residents within the Station Area
- Future Residents and Employees - Individuals seeking housing or employment within Kirkland
- Kirkland residents, employees, and employers who live and/or work outside of the Station Area but have a stake or interest in city-wide development decisions

Special efforts will be made to include marginalized populations within the study area.

Based on analysis, marginalized populations include: residents of color (18%), limited English speakers (7%) and linguistically isolated populations (EJ Mapper estimates 1.4%), seniors (32%), youth, (26%), renters (36%), and households experiencing poverty (6%), including clients of Kirkland’s new adult women and family shelter.



All Census and American Community Survey Data for the Station Area references Census Tract 225, Block Group 1, and Census Tract 226.04, Block Group 2 (shown right) unless otherwise noted.

Equity Context Assessment

The baseline equity assessment framework includes determinant or root causes based on the Social Determinants model in the King County EIR. These include Housing, Early Childhood Development, Schools, Jobs, Health and Human Services, Food Systems, Parks and Natural Resources, Built and Natural Environment, Transportation, Community and Economic Development, Neighborhoods, and Community and Public Safety. The purpose of this baseline scan of the Station Area is to assess any disparities and key issues for the project area, consider which factors the SAP can influence, and establish priority equity issues for action.

The Determinants of Equity indicator data and lived experience data from Phase One engagement show that the City of Kirkland as a whole has a high quality of life. In fact, the life expectancy of 84 years is higher than the King County average, schools are high performing, crime rates are low, and there is excellent access to high quality parks citywide.

Residents who live in the Station Area also have high access to opportunity, with a home ownership rate of 72% and only 6% of residents making below \$40,000 per year. However, there are several unique challenges within the Station Area that may contribute to inequities, many which are related to infrastructure and determinants in the auto-dominated built environment.

Determinants Of Equity	Indicator
Housing	Average Housing and Transportation Costs as a Percentage of Income
	Average Monthly Housing Cost
Early Childhood Development	Test Scores By Race
Education	On-Time High School Graduation Rates
	Student to Teacher Ratios
Job Training and Jobs	Living Wage Gap % Residents making below \$40,000 a year %Employees making below \$40,000 a year
	Daytime pop. Density

1 All Data are the average of Block Group 1 Census tract 225 and Block Group 2 Census Tract 226.04 unless otherwise noted

2 H+T Index uses 2015 ACS for Housing Costs. Transportation Costs developed by CNT using 2014 Longitudinal Employer-Household Dynamics data. htaindex.cnt.org/map/

3 2018 American Community Survey

4 2018 American Community Survey

5 The Test Score Rating examines how students at this school performed on standardized tests compared with other schools in the state. The Test Rating was created using 2017 MSP data from Washington Office of Superintendent of Public Instruction, using 2017 WA EOC data from Washington Office of Superintendent of Public Instruction, and using 2017 WA SBAC data from Washington Office of Superintendent of Public Instruction.www.greatschools.org/washington/kirkland/902-Rose-Hill-Elementary-School/#Race_ethnicity*Test_scores*Overview

SAP Rate ¹	King County Rate	Rationale
54% ¹	50% ²	Anything above 50% is considered cost burdened. The more money that goes to Housing & Transportation, the less that is available for healthy food & health care.
\$2,804 ³	\$1,834 ⁴	High housing costs can be a barrier to fostering socioeconomic diversity in a community.
RHES: White (42% of Students): 72% Asian (26%): 79% Hispanic (21%): 50% ⁵ LWHS White (68%): 97% Asian (11%): 94% Hispanic (11%):85% 2+ races (8%): 100% ⁶	State Avg, Elementary: White: 65% Asian: 75% Hispanic: 44% ⁷ State Avg, H.S.: White: 70% Asian: 80% Hispanic: 51% 2+ races: 71%	An achievement gap means that some groups of students achieve at a significantly higher level than other groups, especially on standardized tests. Racial disparities are not uncommon, and may be a result of institutional marginalization or lack of access. Because standardized tests can serve as gatekeepers to a child's opportunity, and education significantly shapes employment, closing these gaps facilitates equity.
92% ⁸	93% ⁹	Most living-wage jobs require a min. high school diploma or equivalent. High school completion prepares students to go on to college, into the job market or to apprenticeship training programs. ¹⁰
LWHS: 21:1 RHES: 14:1 ¹¹	19:1 ¹²	Researchers have found that gains in achievement generally occur when class size is < 20 students.
Residents: 6% ¹³ Employees: 48% ¹⁴	Residents: 45% Employees: 46% ¹⁵	The living wage is defined as the minimum income necessary to purchase basic necessities and save 10% of earnings without assistance from public programs. Tracking the living wage is a means to understand gaps between the minimum wage and self-sufficiency. The living wage provides insight into self-sufficiency in a way that the Federal Poverty Threshold does not.
5821 people/ sq mile ¹⁶	912.9 people/ sq mile	Population density during a typical weekday. Anything over 1,600 persons/ sq mi is considered “Urban”

6 Percent Proficient on yearly Administered Science Tests. Accessed 3/23/2020 from https://www.greatschools.org/washington/kirkland/894-Lake-Washington-High-School/#Race_ethnicity*Test_scores

7 This shows results across different races/ethnicities on Science test given to students once a year. Uses 2017 MSP data from Washington Office of Superintendent of Public Instruction. Accessed on3/23/20 from https://www.greatschools.org/washington/kirkland/902-Rose-Hill-Elementary-School/#Race_ethnicity*Test_scores*Overview

8 Lake Washington High School rates. Source: NCES, 2018 Accessed 3/20/2020 from <https://www.greatschools.org/washington/kirkland/894-Lake-Washington-High-School/>

9 2018 American Community Survey

10 King County Determinants of Equity Baseline Project. https://www.kingcounty.gov/elected/executive/~/_media/4FF27039534048F9BC15B2A0FFDDE881.ashx?la=en

11 The average number of students per full-time teacher at this school; please note that this is not a reflection of average class size. Source: Civil Rights Data Collection, 2016.

12 <https://www.publicschoolreview.com/washington/king-county>

13 Based on 2018 American Community Survey Estimates for households making below \$34,999 annually

14 Longitudinal Employer-Household Dynamics, 2017 <https://lehd.ces.census.gov/>

15 Longitudinal Employer-Household Dynamics, 2017 <https://lehd.ces.census.gov/>

16 2018 American Community Survey Estimates. Accessed 03/23/2020 from <https://www.arcgis.com/home/webmap/viewer.html?webmap=88f17b4580e846609f92c9f75a9d9eee>

	Employee Demographics
Health and Human Services	% Uninsured
	% Seniors
	Obesity
	CDC Social Vulnerability Index
	Life expectancy
Food Systems	Percent of Students with Free or Reduced Lunch
Parks and Natural Resources	Park Accessibility Percent of Residents who live within a ten minute walk of a Park
Healthy Built and Natural Environment	Air Pollution: Levels of PM 2.5 compared to National Rates. EPA Standard of is µg/m3 daily max.
	Noise levels

17 All Primary Jobs within 1/2 mile of the I-405/85th St. BRT Station. Source: Longitudinal Employer-Household Dynamics, 2017. Accessed 3/11/2020 from lehd.ces.census.gov/
18 All Primary Jobs within King County. Source: Longitudinal Employer-Household Dynamics, 2017. Accessed 3/20/2020 from lehd.ces.census.gov/
19 ACS 2018 Estimates
20 ACS 2017 Estimates
21 2016 Data from the Washington State Department of Health. https://www.kingcounty.gov/depts/health/data/~/_/media/depts/health/data/documents/city-health-profiles/City-Health-Profile-Kirkland-2016.ashx
22 2015 Data Collected by the Robert Woods Foundation.

White: 80% Black: 4% Am. Indian: 1% Asian: 11% Pac. Islander: 0% 2+ Races: 4% ¹⁷	White: 74% Black: 6% Am. Indian: 1% Asian: 15% Pac. Islander: 1% 2+ Races: 4% ¹⁸	Employees will be some of the most frequent visitors, and their opinions are often not included in planning efforts. An equitable assessment of stakeholders influenced by the 85th SAP requires a consideration of the needs of employees and marginalized groups therein.
1.7%	5.3% ¹⁹	
12%	11% ²⁰	
22% (Kirkland) ²¹	22.2% ²²	Leads to higher morbidity & reduced quality of life due to cardiovascular disease, type-2 diabetes, cancers & psychological disturbance. <i>Dixon J. 2010.</i>
0.13 (low) ²³	0.09 (low) ²⁴	Possible scores range from 0 (lowest vulnerability) to 1 (highest). Incorporates Income and Education metrics.
84.26	81.37 ²⁵	
16% ²⁶	35% ²⁷	Access to healthy food choices is directly correlated to obesity and diabetes rates, which occur in higher rates among people living in low-income communities with worse food environments. <i>California Center for Public Health Advocacy. 2008.</i>
69%	92% (Kirkland) ²⁸	Parks and natural open space areas promote physical activity and social interaction. Areas with natural vegetation also have direct effects on physical and mental health. <i>Vries S, de Verheij RA, Groenewegen PP, Spreeuwenberg P. 2003.</i>
6.16 µg/m3 8th %ile Nationwide	6.2 µg/m 9th %tile Nationwide ²⁹	Increased exposure to PM 2.5 is associated with detrimental cardiovascular outcomes, including higher blood pressure and heart disease. Traffic related noise and air pollution is associated with cardiovascular and respiratory diseases, including asthma. <i>Lourens PF, Vissers JA, Jessurun M. 1999.</i>
35 dB - 65 dB ³⁰		Environmental noise damages human health, particularly at night when it can interrupt sleep. The WHO suggests reducing average noise levels of road traffic below 53 dB. At night, 45 dB of road traffic noise was recommended. ³¹

Accessed 3/20/2020 from https://www.opendatanetwork.com/entity/05000000US53033/King_County_WA/health.health_behaviors.adult_obesity_value?year=2015
23 <https://svi.cdc.gov/prepared-county-maps.html>
24 2018 CDC Social Vulnerability Index
25 Life Expectancy at Birth, Both Sexes, 2014. Accessed on 3/23/2020 from <https://vizhub.healthdata.org/subnational/usa/wa/king-county>
26 Average of Lake Washington High School and Rose Hill Elementary School rates for free and reduced lunch students. Source: NCES, 2018 Accessed 3/20/2020 from <https://www.greatschools.org/washington/kirkland>
27 The 2017 County Health Rankings used data from 2014-2015 for this measure.
Accessed 3/20/2020 from <https://www.countyhealthrankings.org/app/washington/2017/measure/factors/65/data>
28 The Trust For Public Land. 2018 Park Serve Report. <https://parkserve.tpl.org/mapping/index.html?CityID=5335940>
29 Source: <https://ejscreen.epa.gov/mapper/>
30 National Transportation Noise Map. <http://maps.bts.dot.gov/arcgis/apps/webappviewer/index.html>
31 World Health Organization. Environmental Noise Guidelines for The European Region. http://www.euro.who.int/_data/assets/pdf_file/0008/383921/noise-guidelines-eng.pdf?ua=1

Transportation	Walk Score
	Bike Score
	Commute via Transit
	Peds. involved in fatal car accidents per 100k '17-'12
Community Economic Development	% Rent versus Own
Neighborhoods	Median Years Since Householder Moved in to unit
Community and Public Safety	Crime Incident Rate per 100,000 people

32 Walk Score Rates for Kirkland. Accessed on 3/23/2020 from <https://www.walkscore.com/WA/Kirkland>

33 Walk Score Rates for Kirkland. Accessed on 3/23/2020 from <https://www.walkscore.com/WA/Kirkland>

34 2018 American Community Survey

35 <http://www.city-data.com/accidents/acc-Kirkland-Washington.html>

36 Road Services Division 2017 Collision Data Report. Accessed 3/24/2020 from <https://www.kingcounty.gov/~media/depts/transportation/roads/traffic/2017KingCountyCollisionDataReport.ashx?la=en>

37 2018 American Community Survey

38 2018 American Community Survey

39 2018 American Community Survey

40 2018 Data from the FBI Uniform Crime Reporting Program, Accessed on 3/23/2020 from <https://www.macrotrends.net/cities/us/wa/kirkland/crime-rate-statistics>

41 2014 Data from the FBI Uniform Crime Reporting Program, Accessed on 3/23/2020 from https://www.opendatanetwork.com/entity/05000000US53033/King_County_WA/crime.fbi_ucr.rate?crime_type=All%20Crimes&year=2018

Norkirk - 55 Everest - 50 North Rose Hill - 43 Highlands - 30	48 ³² (Kirkland)	Walk rates vary from 77 along 85th Ave in Downtown Kirkland and Rose Hill to 30 in Highlands. The lack of pedestrian and bike infrastructure disproportionately affects low income communities who are more likely to depend on walking and biking for transportation and exercise.
Norkirk - 48 Everest - 50 North Rose Hill - 51 Highlands - 30	50 ³³ (Kirkland)	Enhancing active transportation infrastructure can lead to an increase in regular physical activity, which in the long term can lead to a decrease in childhood obesity, hypertension and diabetes .
7.6%	13.4% ³⁴	
1 ³⁵ (Kirkland)	4.37 ³⁶	
Rent: 28% Own: 72% ³⁷	Rent: 39% Own: 61% ³⁸	Purchasing a home is often the largest financial investment a household will make. Home ownership is a measure of personal and area wealth. Home ownership is the best indicator of accumulated wealth.
Total 9.4 Own 13.4 Rent 1.7	Total 5 Own 11 Rent 1 ³⁹	Neighborhoods that have higher rates of turnover may experience decreased social cohesion and trust among neighbors. Residential instability may also indicate displacement, which can occur for a variety of reasons including cost of living and Job relocation.
112.47 ⁴⁰ (Kirkland)	361 ⁴¹	

Priority Equity Issues

Based on the assessment, several priority equity issues were identified for consideration in the SAP. The baseline equity assessment includes a scan of indicators across determinant categories. Many are not factors that can be significantly influenced by the SAP project in the short or mid-term, however, an expansive scan is important to identify key areas of disparity or concern when compared to the surrounding community.

Research shows that between 50-70% of what determines each person's length and quality of life relate to the physical, social, and economic environment and behaviors.

The priority issues are intended to focus around equity and health determinants in the built environment and areas that the SAP can influence, that have been proven to increase equity and health opportunities.

Priority health equity issues for the SAP include Community Resilience, Jobs & Housing Equity, Park Accessibility and Mobility, Air Quality and Noise. These issues should be prioritized during preliminary concept and alternatives development, especially with priority marginalized populations in mind.

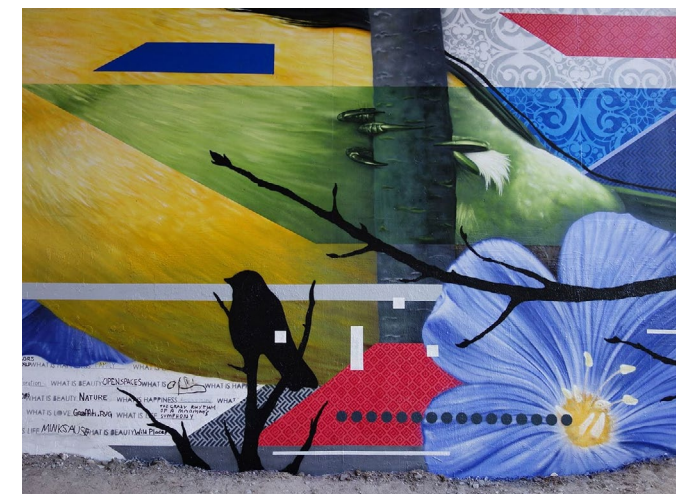
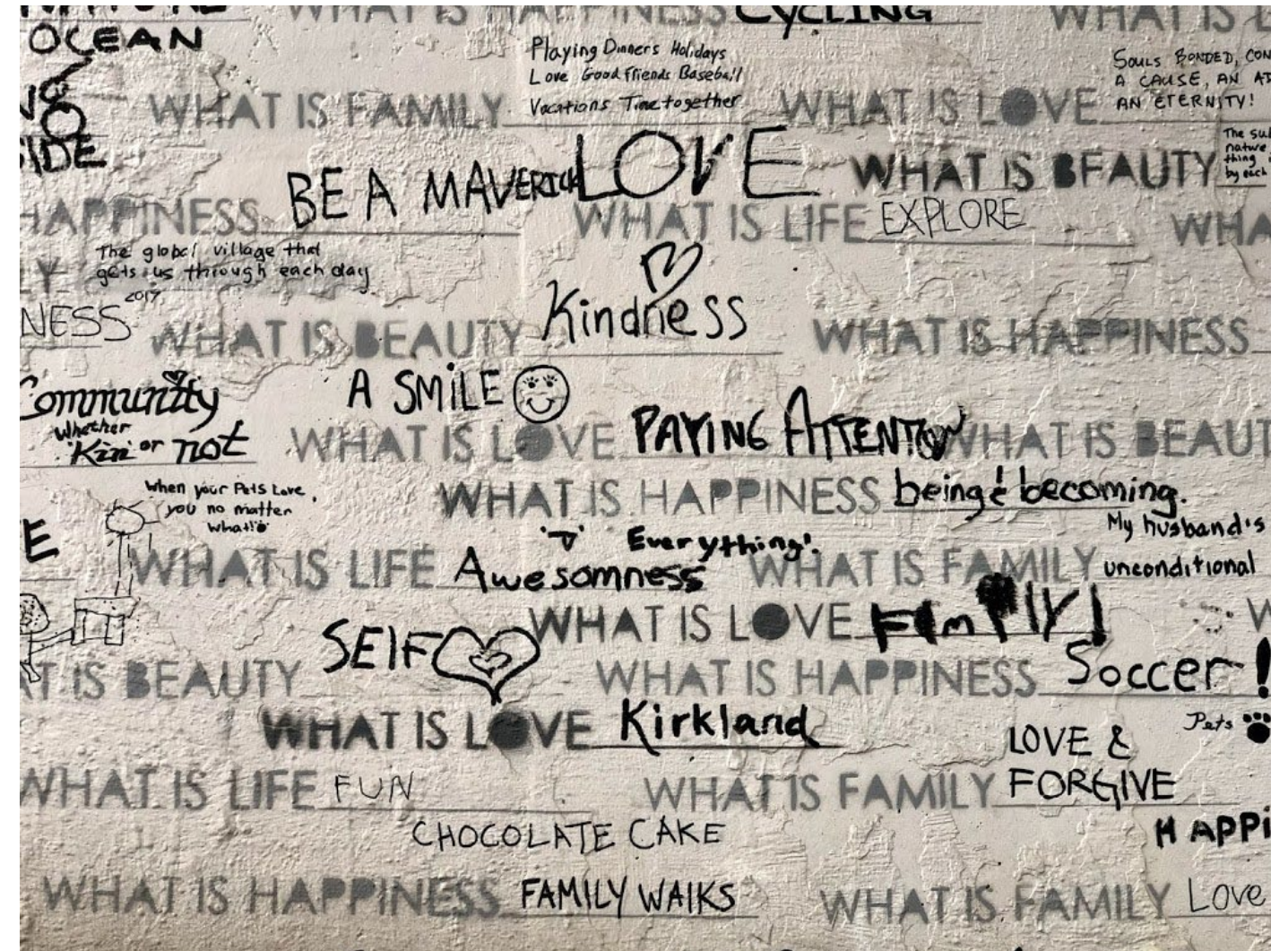
As strategies develop around the priority equity issues, a corresponding set of action indicators will be developed to set goals and track progress through evaluation.

COMMUNITY RESILIENCE

JOBS & HOUSING EQUITY

PARKS & MOBILITY

AIR QUALITY & NOISE



Cross Kirkland Corridor Art Installations



11.5

**Appendix — Market
Study (2020)**

City of Kirkland
Draft May 21, 2020

Kirkland 85th Street Station Area Market Analysis Report

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Key Takeaways

[Note: This report was prepared in February- March 2020 using market and economic data that had not captured the ongoing impacts of the Covid-19 coronavirus pandemic facing local and regional economies across the country.]

The Study Area shows potential for increased investment and integration with the walkable center in downtown Kirkland.

Market indicators reflect consistent, positive performance across office and retail sectors in the Study Area, as well as strong, increasing values for residential property. However, most commercial property in this area dates to the 1980s. Stronger transit networks and bike/pedestrian connections to downtown Kirkland create opportunities to refresh this market, modernize its character, and connect to a nearby tech hub and mixed-use district.

- There is growing regional demand for office space on the Eastside. Regional demand for office space is strong, and rents on the Eastside have been high with low ongoing vacancy rates. In addition to Bellevue and Kirkland Downtown overall, where rents are already high, smaller Eastside submarkets are likely to see demand.
- The Greater Downtown Kirkland office market is strong. High rents per square foot, low vacancy rates, and recent investments in this area make the Study Area a promising destination for worksites that enjoy access to the amenities and character of Kirkland's downtown.
- The office market of the Study Area offers a lower-cost investment opportunity to build on existing momentum for a growing tech center in Greater Downtown Kirkland.
- The Retail market in the Study Area offers a variety of services and is auto oriented in character. Adjacent to the I-405 exit, the retail market caters to auto traffic with tenants such

COVID-19 IMPACTS

With an ongoing pandemic and anticipated economic recession, there is much uncertainty about changing market conditions in communities across the globe. Cities will continue to respond and adapt as new information and public health guidance is provided.

While long-term impacts cannot be perfectly forecasted, investments in the public realm remain an important priority for promoting long-term growth, economic vitality and community health. Walkability, transit access, diverse housing options, and zoning flexibility will continue to serve those who live, work, and visit in Kirkland.

as service stations and coffee shops. Retail buildings in this zone are 1-3 star¹ and primarily built in the 1980s, mimicking trends in the office sector.

- The Study Area has maintained vacancy rates under 5% for a decade and trends show a consistent lower vacancy rates for retail when compared to a decade earlier.
- Low vacancy rates and slowly rising rents may suggest that demand for new retail spaces may increase in the future, especially as population growth continues. In addition, increased housing can drive retail demand in the Study Area – especially for types of retail that meet the day-to-day resident needs for such as groceries, pharmacies, restaurants and so on.

Office space can also create additional retail demand. National research indicates that the typical downtown worker will spend as much as \$130 per week in downtown. Top retail categories for office worker spending include grocery stores, discount stores, and warehouse clubs (ex: Costco).²

- Integrating retail spaces into new development may be a way of managing these demands through infill to build more complete neighborhoods. Given the changing landscape of brick-and-mortar retail, retail development is now increasingly integrated with housing, and public uses, such as libraries. These new strategies may also be relevant in addressing retail demand in the Study Area.
- Home values (for single family and townhomes) in the Study Area more than doubled in the 2010-2019 period. Values per square foot tend to hover about 20% lower than the Greater Downtown Kirkland market, but demonstrate a similar upward trajectory. In 2016 the average sale price in the Study Area crossed the

COVID-19 IMPACTS ON RETAIL

While it is too early to determine the full impacts of the Covid-19 Corona virus pandemic on future retail, some early trends are beginning to take shape. These include:

- The pace of adoption of online retail, especially groceries, has increased.
- Grocery and food retailers, both online and brick-and-mortar, are seeing an especially high level of demand.
- The increase of demand for food retail, coupled with a shift to online options, will change the nature of physical retail and the composition of the retail workforce.
- Brick-and-mortar retailers, and businesses such as restaurants, will need to reinvent themselves to offer customers a value proposition that's unique and differentiated from online options. This is likely to increase the importance of placemaking and integration with other uses for many retailers in the Study Area.
- Given the service-oriented jobs that were suspended during COVID-19, and the prevalence of smaller service uses in the Study Area, strategies for the future recovery and health of small businesses will be a key economic development question.

¹ Buildings are rated on a 1-5 star scale, with 5-star being the highest score. Newer construction or renovation, high quality finishes, sustainability features, and building amenities are some of the features associated with higher star ratings.

² [International Council of Shopping Centers, 2012](#)

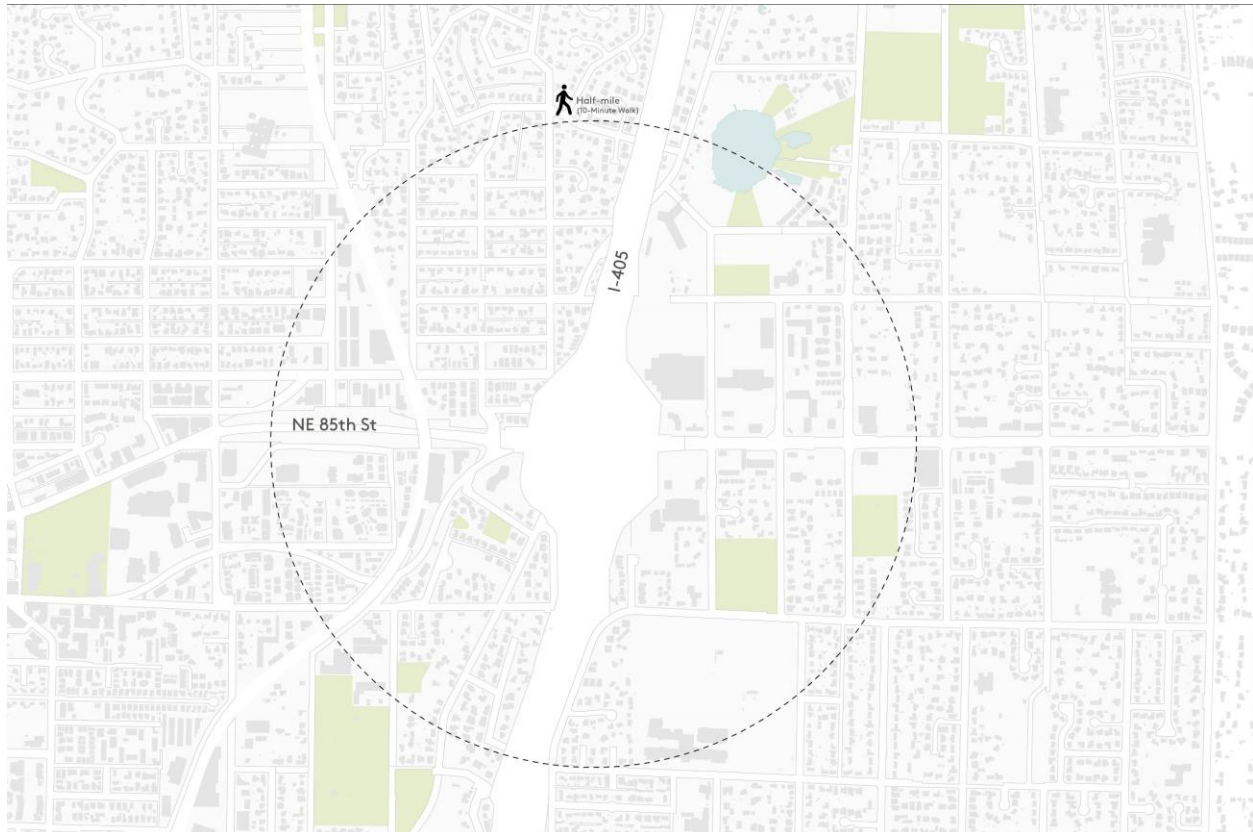
million-dollar threshold and in 2019 the median sales value was \$1,475,000. This strong market performance supports the argument for increased residential activity in the Study Area.

- Greater Downtown Kirkland area performs well for multi-family housing with comparatively high rental rates and sales prices. Recent developments are 4-star quality (1-5 star scale), 4-6 stories, and often incorporate ground floor retail and shared amenity spaces.
- While Downtown Kirkland performs well for multi-family development, part of this market strength is likely due to its amenities and walkable character. Downtown Kirkland earns a walk score³ of 89-90 while walk scores in the Study Area range from 50 to 60.
- Currently, 60% of Study Area land use is attributed to low and medium density residential development (See Exhibit 4). These restrictions limit the residential capacity of the zone and impact the proportion of Kirkland's population within walkable access of Bus Rapid Transit. Increasing residential density with the introduction of new multifamily properties will enhance the station area's capacity to leverage mobility investments.
- Investments in transit, pedestrian, and cyclist infrastructure can influence market perception and conditions and support the development of a more livable multi-family environment.
- Regional case studies and national research offer evidence that Bus Rapid Transit investments lead to increased development activity, particularly when paired with complementary policy initiatives.

³ Walk scores are assigned to communities on a 1-100 scale, relating to neighborhood walkability for residents. A score 90-100 is described as a "Walker's Paradise" where daily errands do not require a car. Walkscore.com is a private organization assigning ratings to communities across the United States

In this report, the Study Area represents the half-mile buffer surrounding the 85th Street Station, as shown in Exhibit 1. Comparison geographies include Greater Downtown Kirkland (the proposed Urban Growth Center which incorporates much of the Study Area) and defined Urban Growth Centers at Totem Lake, Overlake, and Downtown Bellevue.

Exhibit 1. Study Area.



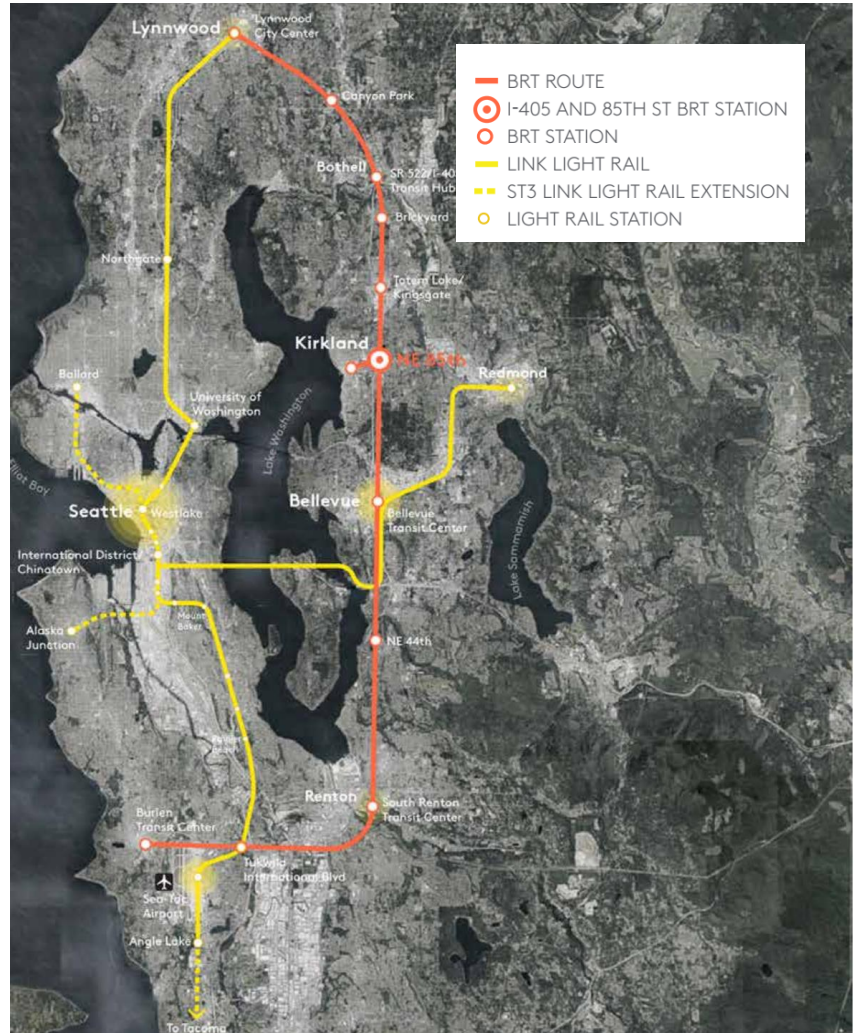
Source: Mithun, 2020.

Introduction

Project Background

ST3 is bringing a once-in-a-generation transit investment to Kirkland with a new interchange at 85th and I-405 by 2024, which includes a new BRT station which should be operational by 2025. The BRT station, developed by Sound Transit, has been designed to connect Kirkland to the Link Light Rail at Bellevue and the Lynnwood Transit Center. The City of Kirkland's Station Area Plan (SAP) considers changes to zoning and other policies and regulations to encourage transit-oriented development near the station and leverage this regional investment to create the most value and quality of life for Kirkland.

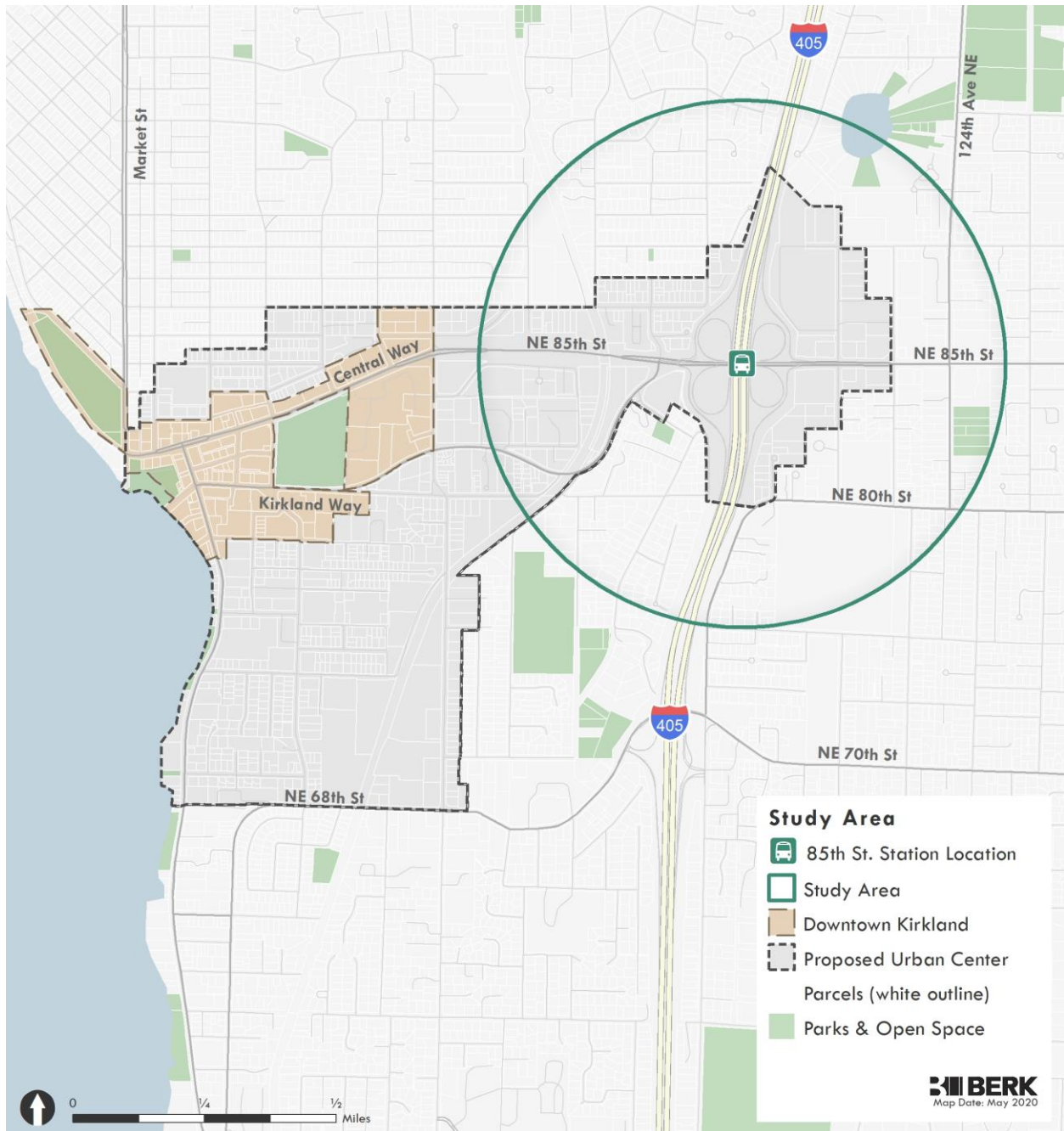
The SAP should shape an equitable and sustainable Transit Oriented Community as part of the continued growth expected in Downtown Kirkland and the 85th Corridor. The project evaluates the feasibility of various types of development within approximately ½ mile of the station and consider changes to zoning and other regulations. The project studies opportunities to maximize the public benefit from future development, including affordable housing, open space, desired employment and job types. Using the City's Vision and Goals and the 2035 Comprehensive Plan as a foundation, the SAP is an important opportunity to advance concepts in the greater Downtown Kirkland Urban Center and to support citywide sustainability and housing goals. This market analysis report is intended to help inform the opportunities and constraints analysis of the SAP. It evaluates the economic and market context of the area within ½ mile of the station, and existing zoning and development regulations that influence market



Source: Mithun, 2020.

activity and perception. It is also useful as background information for the development of alternatives that would be evaluated in the SAP and environmental impact statement (EIS).

Exhibit 2: Study Area in Context of Kirkland Downtown



Report Overview

This report includes the following sections:

- A **Methods and Approach** section, defining the sources of data and interviews conducted.
- **Existing Conditions analyses** with major development considerations, as well as current and potential land entitlements that will impact future development scenarios. This includes a focus on the economic and market context, with a broad description of the Kirkland metro area market, including major economic drivers for the area, key sociodemographic information, descriptions of major growth trends, and the expected impacts on the city and regional economy.
- **Case Studies** outlines categories of development which provide examples of similar opportunities and challenges.

Methods and Approach

For this market study, the following data sources and approaches were used:

- **Population and household data.** Historical counts of population and households were obtained from Puget Sound Regional Council (PSRC) estimates. Citywide population counts were obtained from the Washington State Office of Financial Management (OFM), with city population projections obtained from the PSRC and the City of Kirkland Comprehensive Plan.
- **Employment data.** Information on employment for the Study Area and the City of Kirkland were obtained from the PSRC. Aggregations of sector-based employment counts were conducted where data suppression permitted.
- **Real estate market data.** Real estate market data, including information on rents, vacancies, age, locations, and development trends were obtained from CoStar.
- **Peer geographies.** Information from other growth centers and Kirkland's Greater Downtown will provide context for the Study Area's market and economic data.
- **Property data.** Information on current development, land use, and assessed property values was derived from King County Assessor data, downloaded in March 2020. This information was used in conjunction with CoStar data on multifamily properties to develop housing unit counts for the Study Area.
- **GIS data.** GIS data sets for parcel boundaries, building footprints, and other base data were obtained from King County GIS. Additional data on zoning, land capacity, and other base features were obtained from the City of Kirkland.
- **Additional literature sources.** Several sections include research from sources in the available literature, as well as from current plans and policies, and project and program websites. These sources are referenced with footnotes in the text as applicable.

Existing Conditions

Land Use

Use Patterns

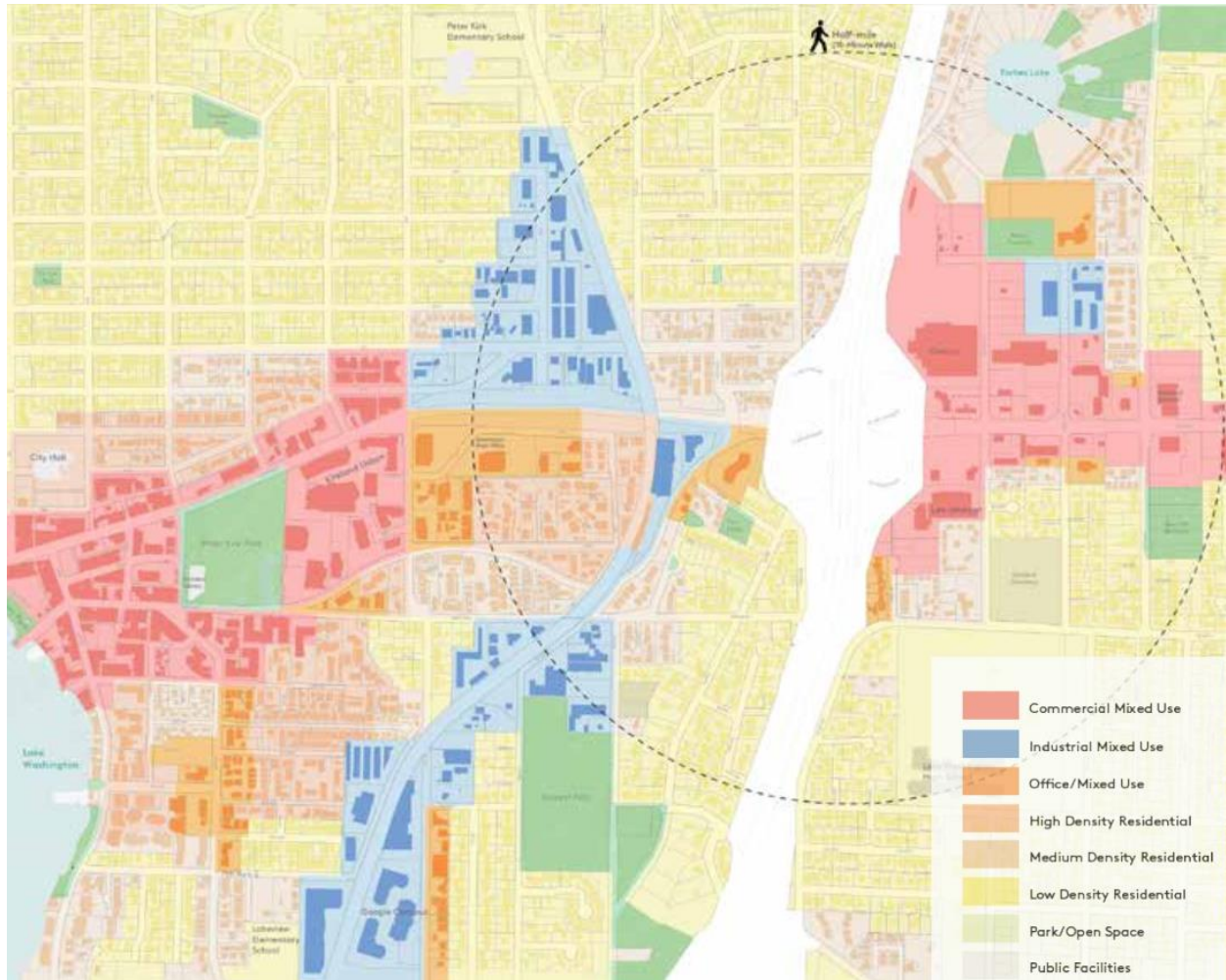
As shown in Exhibit 3 and Exhibit 4, single family residential uses comprise the largest single use of land in the Study Area, occupying 43% of land acreage. Residential uses in the northwestern portion of the Study Area include a mix of townhouses and other medium density residential, and small apartment complexes. The southwestern part of the Study Area includes office buildings, light industrial developments, and multi-family complexes in an auto-oriented pattern, occupying nearly 12% of the overall acreage in the Study Area.

The northeastern and southeastern portions of the Study Area are dominated by large parcels of strip retail occupying close to 15% of land within the Study Area. This development is marked by large surface parking lots, auto-oriented sites with frequent driveways and curb cuts, and weak relationship to street frontages.

With over 13% of the Study Area, the WSDOT right of way and associated road infrastructure plays an influential role in the character in the Study Area. These parts of the Study Area are prone to significant noise, unused open space, and uneven maintenance and vegetation.

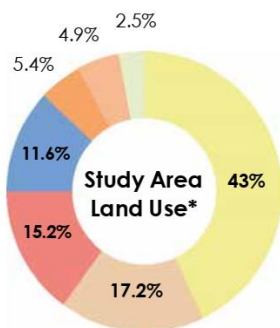
There are a few parks within the Study Area, indicated by green in Exhibit 3, but overall the area has low access to parks relative to the rest of the city. It also has a poor environment for walking and biking with significant physical barriers, and both residents and employees have very limited opportunities for safe physical activity or easy access to amenities.

Exhibit 3. Current Land Use, Study Area.



Source: Mithun, 2020.

Exhibit 4. Land Uses in the Study Area, by Acreage.

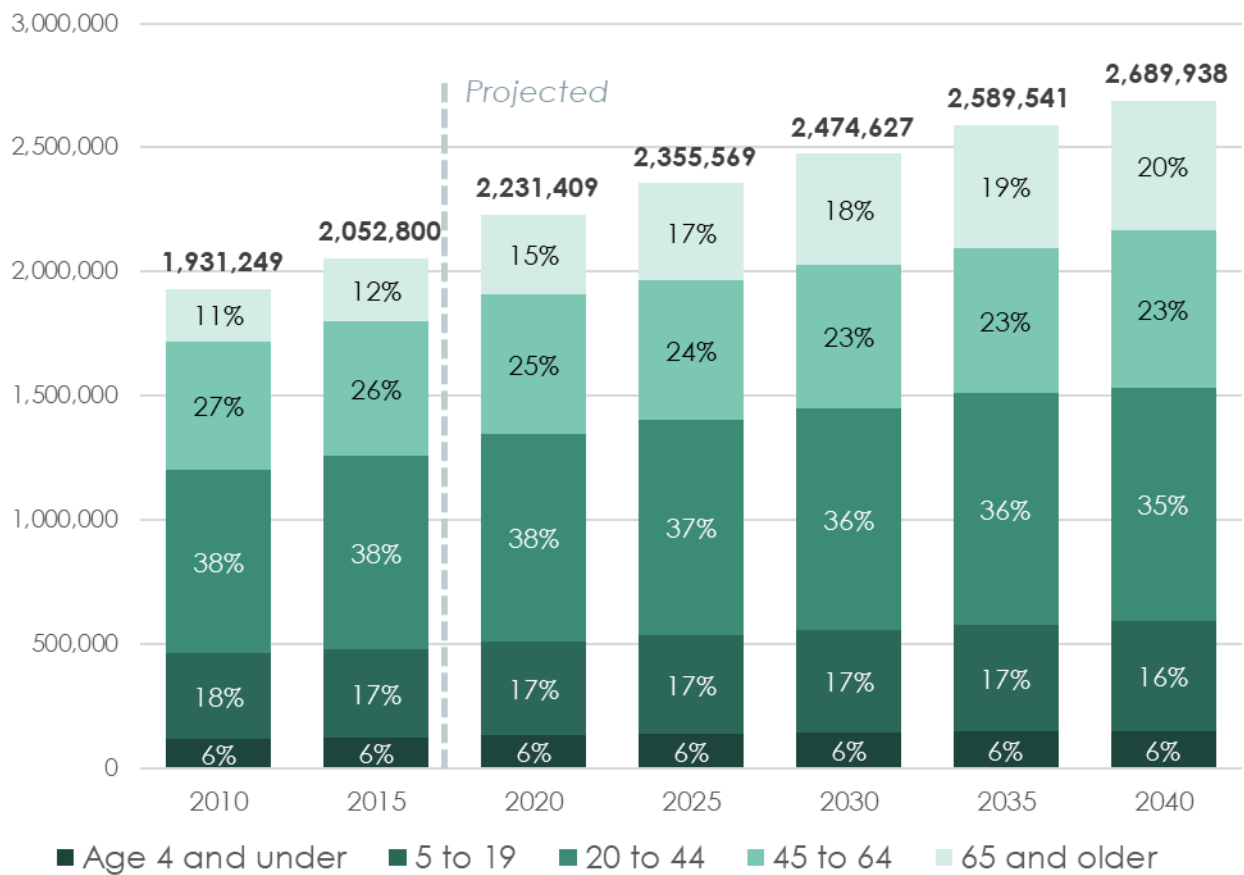


Source: Mithun, 2020.

Population and Employment

King County's population has grown since 2010 and is expected to continue to grow. King County's population grew 1.6% from 2018-19 but growth across the county has not been even. Seattle, Redmond, Bellevue and Kirkland grew faster than the county overall, with Kirkland's population growing by 1.9% from 2018 -19. See Exhibit 5.

Exhibit 5. Population by Age Cohort, King County, 2000–2040 (projected).

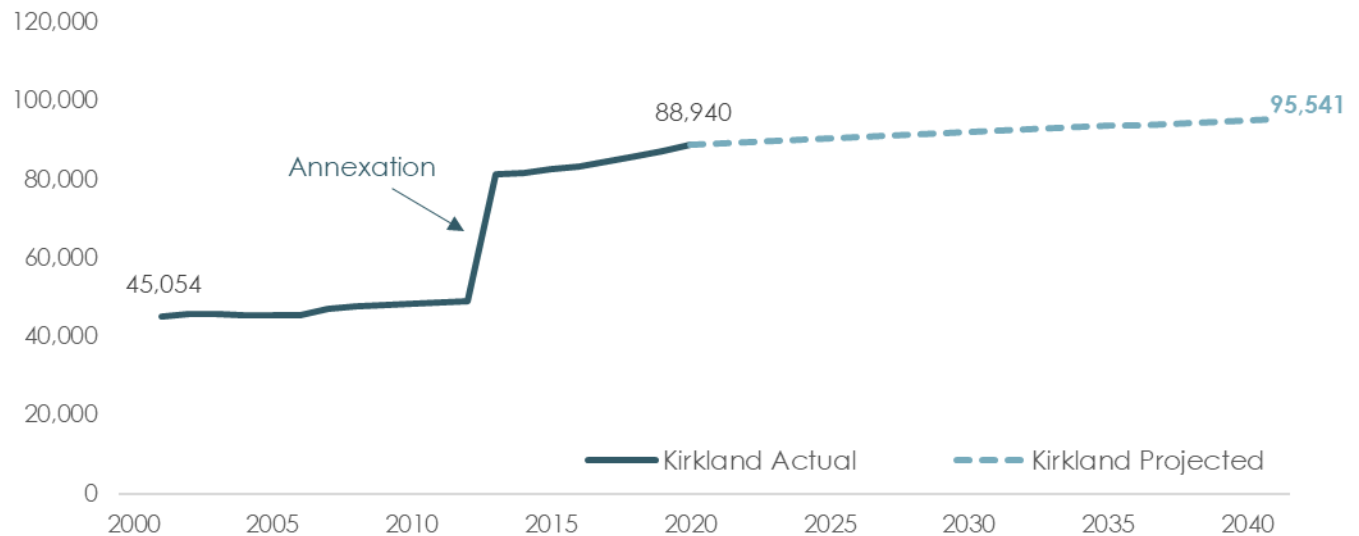


Source: WA OFM, 2020; BERK, 2020.

Kirkland's population has grown steadily, largely due to annexations, and it is now home to 88,940 people. The city is expected to continue to grow. In the next 20 years, Kirkland's

population is forecasted to increase by roughly 6,600 new residents, bringing its total population to 95,540 people. See Exhibit 6.

Exhibit 6. Population, City of Kirkland, 1990–2040 (projected).



Source: WA OFM, 2019; PSRC, 2017; City of Kirkland 2016; BERK, 2020

Local Employment and Economy

According to PSRC's 2018 estimates, there are 48,572 jobs in the City of Kirkland. The services sector is the source for more than half of these jobs, likely reflecting Kirkland's evolution as a technology hub and employment growth at fast-growing technology firms. The proposed Greater Downtown Area, which includes the Study Area, is home to over 6,700 residents and more than 17,000 jobs. Exhibit 7 details employment within the Study Area and City by sector.

Based on PSRC estimates of covered employment in 2018, the Study Area (the half-mile buffer around the proposed station) currently includes an estimated 3,616 jobs⁴. Key characteristics of local employment in the Study Area include the following:

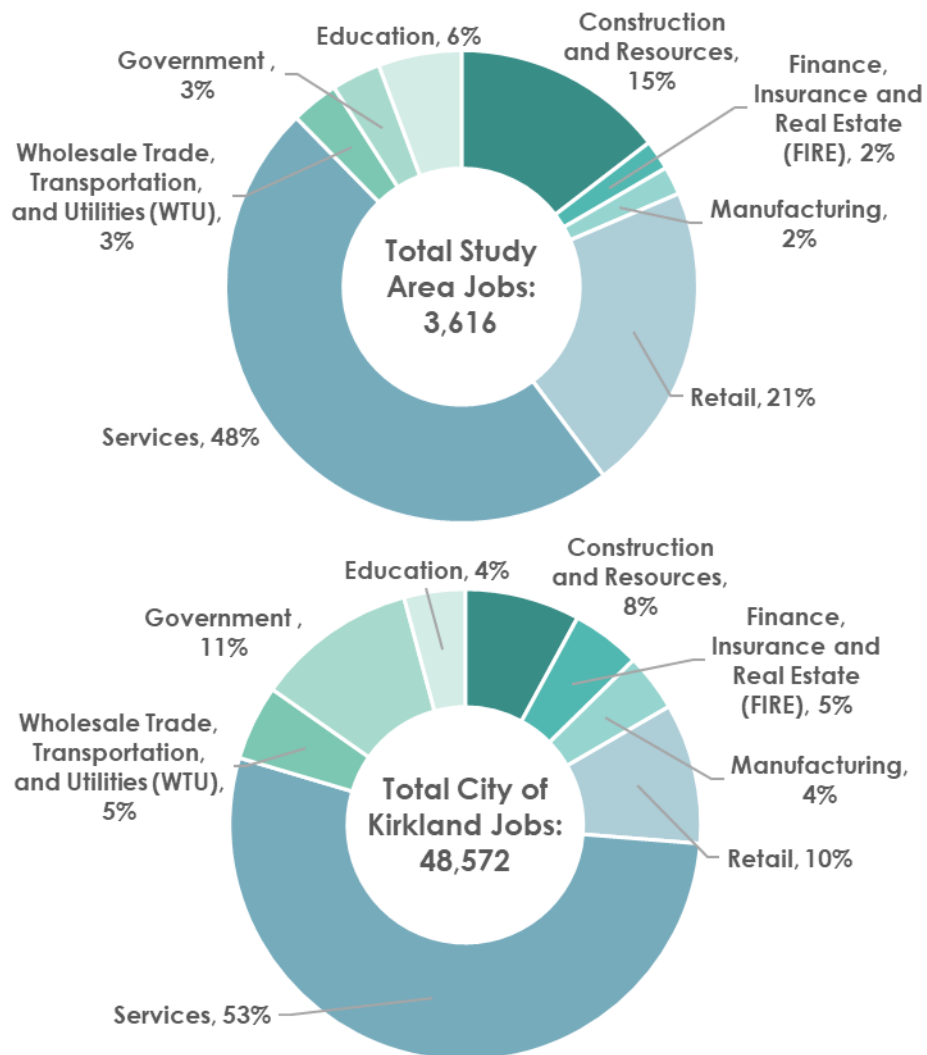
- Reflecting citywide trends, close to half of these jobs are in the services sector, which includes jobs in Professional and Business Services (scientific, technical, corporate offices, and administrative services) as well as Health Services, Food Services, and Information

⁴ The Kirkland NE 85th St. Station Area Plan Opportunities and Analysis Report, April 15th, 2020, estimated 3,097 Jobs based on Total Primary Jobs: LEHD, 2017 <https://lehd.ces.census.gov/>. Thus the PSRC estimates are for a newer year and a different source.

Services. In addition to maintaining the existing workforce, the availability of amenities and services is important to draw additional knowledge workers. This highly mobile workforce typically prefers to be physically close to other knowledge workers, and services and amenities match their lifestyle preferences. Recognizing these preferences developing supportive amenities and retail services can help to promote economic health the Study Area.

- The retail sector accounts for close to 21% of jobs, compared to 10% for the City overall. Many of these jobs are in businesses such as the Costco store, auto-repair and sales, and smaller salons and goods. An evolution toward higher quality retailing spaces could potentially displace some small-scale businesses, since many rely on the lower rents available in older shopping centers.
- Smaller proportions of jobs are in the Construction/Resources and Education sectors.

Exhibit 7. Covered Employment by Sector, Study Area (top) and City of Kirkland (bottom), 2018.



Source: PSRC, 2019; ESD, 2020; BERK 2020.

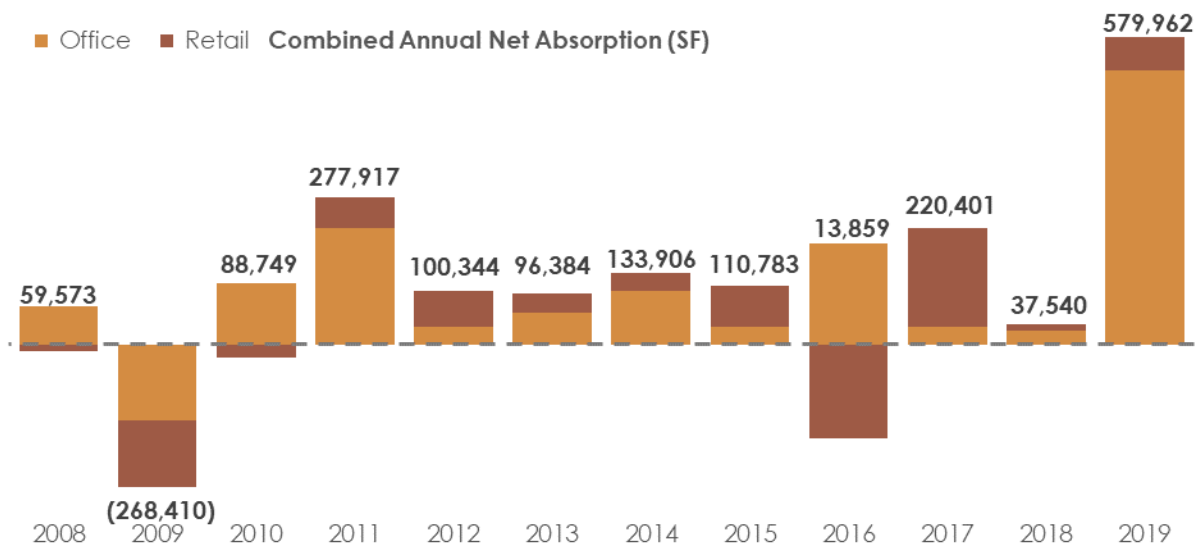
Real Estate Market and Trends

Kirkland's regional real estate market provides insights about the available supply of properties that can accommodate future residential and employment growth. For the Station Area, three distinct types of real estate products have been considered for future development:

- Office commercial.
- Retail commercial.
- Multifamily residential.

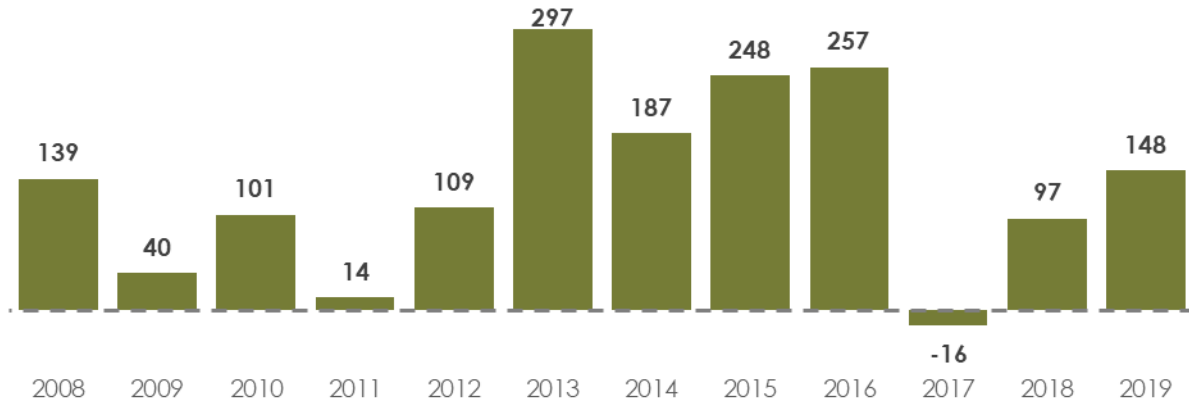
Exhibit 8 and Exhibit 9 summarize absorption trends for these uses in Kirkland 2008-2019. Across this timeframe, average annual net absorption is 104,601 SF for office properties, 16,316 SF for retail properties, and 135 units of multifamily residential. Office square footage for 2019 is particularly high, due to the Kirkland Urban development, described in further detail on the next page.

Exhibit 8: Annual Net Absorption (SF), Office and Retail Property in Kirkland, 2008-2019.



Sources: Costar, 2020; BERK, 2020.

Exhibit 9: Total Annual Absorption (Units), Multifamily Residential in Kirkland, 2008-2019.



Sources: Costar, 2020; BERK, 2020.

Mixed-use/flex use developments are another building format which may work well within the Study Area. Market data classifies buildings by their primary use and does not distinguish mixed use as a unique real estate category (ex: a multifamily building incorporating ground level retail is simply classified as multifamily). This makes comparing data for these specific buildings more of a challenge. However, mixed use properties tend to thrive in vibrant communities near transit.⁵

Establishing market feasibility for multiple use types and likelihood of high visitor traffic suggests that combining multiple uses within one development is market supported. Multifamily buildings with ground floor retail and commercial spaces can be observed in Downtown Kirkland with properties such as Voda Apartments, built in 2018 with 127 residential units and ground level tenants including bank branches and restaurants, or Capri Apartments with 73 residential units and ground floor tenants offering services such as medical care and exercise classes.

An exceptional example of a mixed-use development in adjacent Downtown Kirkland is the Parkplace site now called Kirkland Urban. While this is not a typical site, it demonstrates the capacity of Kirkland's market to support large, mixed-use developments across sectors. The City has approved a master plan for the 11.5-acre site. Phase I Construction began in 2016, which included:⁶

- Office: 374,416 SF
- Retail: 151,533 SF
- Residential Units/SF: 185/182,661 SF

⁵ <https://www.psrc.org/mixed-use-development>

⁶ <https://blue.kingcounty.com/Assessor/eRealProperty/Detail.aspx?ParcelNbr=3900160000>

The maximum development levels approved as of January 2019 including Phase I and Phase II are as follows:⁷

- Office: 744,655 SF
- Retail/fitness/entertainment: 218,345 SF
- Residential Units/SF: 367 units / 352,000 SF

Within the Study Area, retail space forms the bulk of the commercial property, with only 39% of space in office use. This ratio contrasts from the levels of employment by sector but reflects the general market trend that retail businesses have higher ratios of square feet per employee than service industries found in office properties.⁸ See Exhibit 10.

Exhibit 10: Commercial Property in the Study Area by Type, 2020.

	Total Rentable SF
Office Properties	261,875 (39%)
Retail Properties	414,813 (61%)

Sources: Costar, 2020; BERK, 2020.

In terms of the distribution of commercial use, the bulk of commercial properties are found in the eastern portion of the Study Area, likely reflecting the Rose Hill business district. Retail development here is auto oriented in character with large surface parking lots, on sites with frequent driveways and curb cuts, and weak relationship to street frontages. Smaller pockets of commercial use are found west of the freeway likely reflecting smaller office buildings, and accessory office spaces within light industrial developments. See Exhibit 11.

INSTITUTIONAL USES

An additional real estate category that could be considered in the Study Area is institutional use. This includes schools, colleges and universities, hospital campuses, and civic or public buildings. These uses support a stable workforce, a mix of demographics, and amenities. These unique properties often play a big role in shaping the character of their surrounding neighborhood environment but operate outside typical market forces. They tend to have specific needs for consideration when making site location decisions. Some common factors include:

- Need for large parcel(s)
- Transportation access
- Amenity-rich environments

One regional example of institutional location trends can be found in Seattle's technology employment hub, South Lake Union (SLU). SLU now also attracts academic institutions interested in collocating degree programs with employers who hire graduates with associated skillsets.

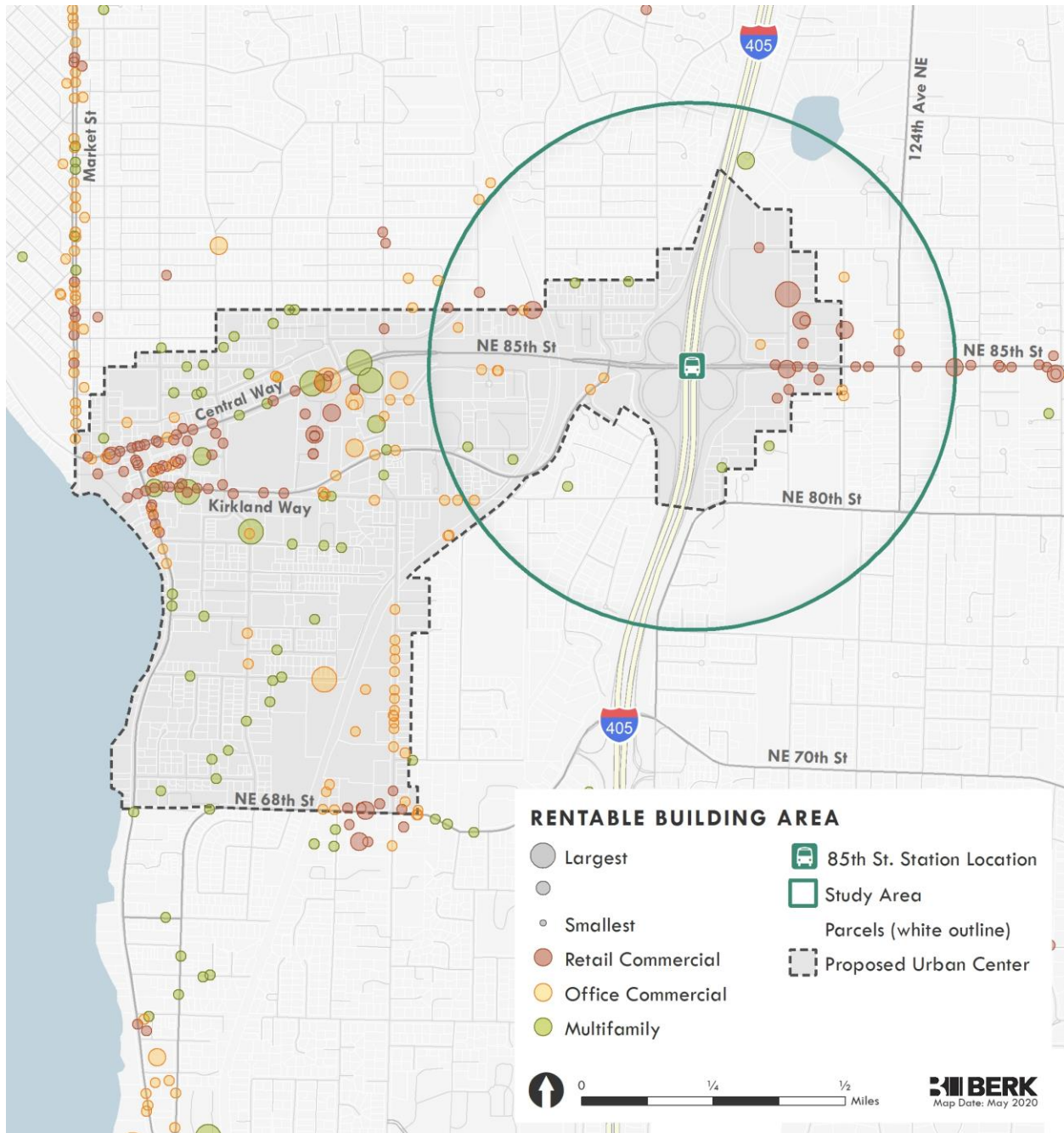
Attracting public or private institutions could be one development strategy to consider for the Study Area.

-Sources: [National Association of Realtors](#), 2018; [Health Facilities Management Magazine](#), 2017; [Puget Sound Business Journal](#), 2012.

⁷ https://www.kirklandwa.gov/depart/planning/Development_Info/projects/Parkplace.htm

⁸ <https://snohomishcountywa.gov/DocumentCenter/View/7660/Employment-Density-Study?bidId=>

Exhibit 11: Distribution of Commercial Properties, Study Area and Greater Downtown Kirkland



Sources: Costar, 2020; PSRC, 2020; BERK, 2020

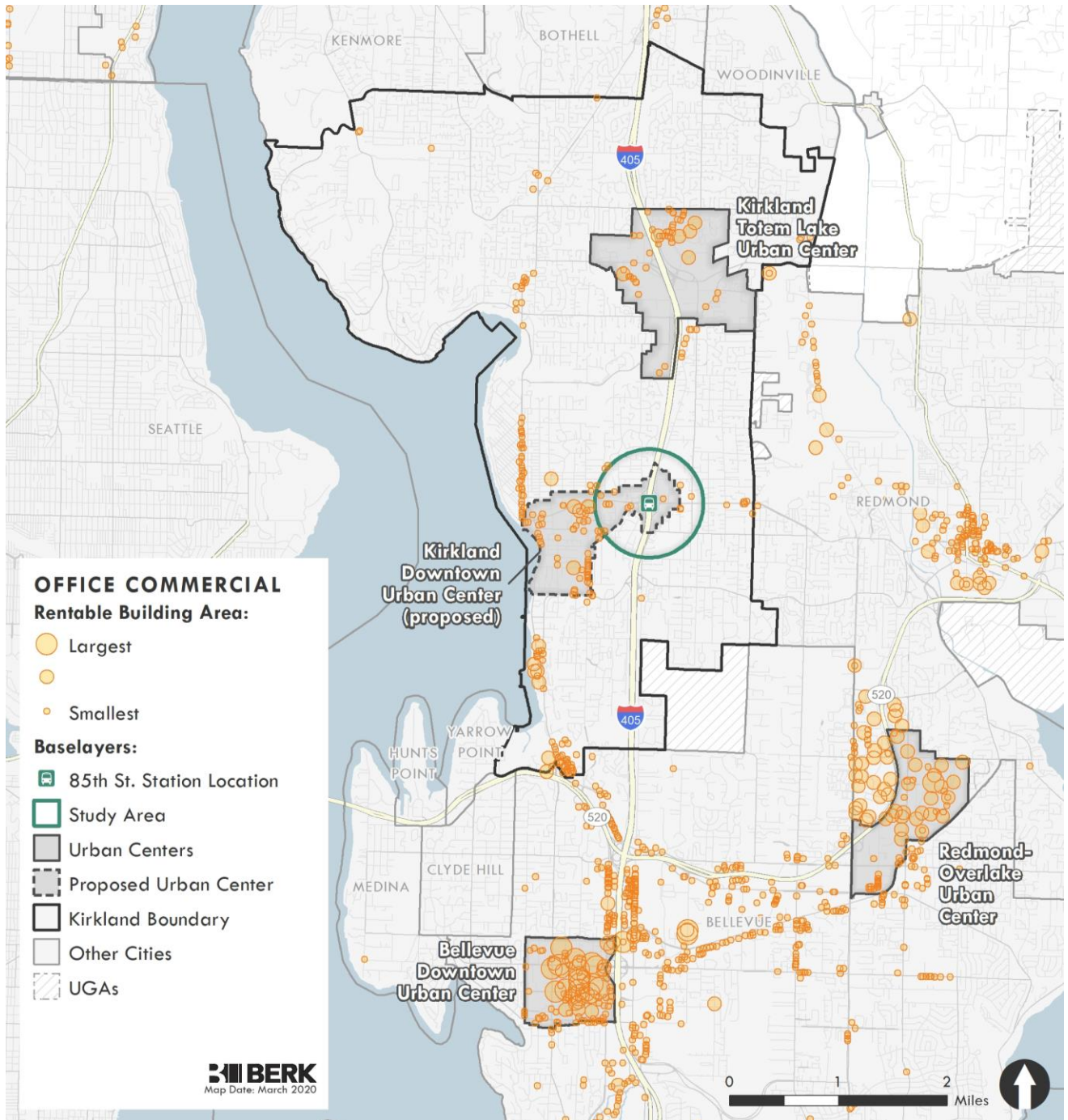
Office Commercial

As shown in Exhibit 12 office properties in the region are clustered in existing and proposed urban centers. The Study Area's location within a proposed urban center, existing concentrations of commercial space, and highways, is a key asset with positive implications for future development. See Exhibit 12

Kirkland 85th Street Station Area Market Analysis Report

Existing Conditions

Exhibit 12. Distribution of Office Commercial Real Estate, Study Area and Peer Geographies.



Source: CoStar, 2020; PSRC, 2020; BERK, 2020.

Key Findings

Key findings about the office market in the Study Area include the following:

- **There is growing regional demand for office space on the Eastside.** Regional demand for office space is strong, and rents on the Eastside (includes cities of Bellevue, Kirkland, Redmond, Sammamish, Issaquah, Newcastle, and Mercer Island east of Lake Washington) have been high with low ongoing vacancy rates. According to local real estate databases, more than 1.2 million SF is scheduled to be delivered on the Eastside in 2020, only 313,000 SF of which is available for lease.⁹ A significant proportion of this new development will be in Bellevue. Demand from technology companies expanding out of the Seattle market is likely to drive continued demand for 4- and 5-star office space. In addition to Bellevue and Kirkland Downtown overall, where rents are already high, smaller Eastside submarkets are likely to see demand.
- **The Greater Downtown Kirkland office market is strong.** High rents per square foot, low vacancy rates, and recent investments in this area make the Study Area a promising destination for worksites that enjoy access to the amenities and character of Kirkland's downtown. Google expanded its Kirkland presence with the purchase of over 400,000 SF in downtown office space and leasing an additional 180,000 SF at Sixth Street South for a total Kirkland presence over 1 million square feet.¹⁰ As an anchor tenant, Google is likely to spark additional office investment in Greater Downtown Kirkland.
- **The Office market in the Study Area presents an opportunity for reinvestment.** Existing buildings in the Study Area are rated at 1-3 stars out of 5, primarily built in the 1980s. Developers may begin to purchase lower-rent office buildings in the area and make improvements to the properties to respond to high demand and attract different tenant types. The area's strategic location adjacent to major interstates and a bustling downtown, coupled with planned mobility investments, especially for transit, pedestrians and bicycles, makes the Study Area desirable for increased office activity.

OFFICE BUILDING CLASSES

Costar rates [office building quality](#) on a 1-5 star scale.

- **5-Star:** State-of-the-art structure that represents the latest trends and quality in design and construction.
- **4-Star:** High quality building with strong initial construction and continual, above average maintenance and desirability.
- **3-Star:** Building with modest features: some amenities, average aesthetics, and minimal ceiling heights.
- **2-Star:** Aging building with minimal or no amenities, functional aesthetics and systems, and potentially low levels of natural light.
- **1-Star:** Uncompetitive with respect to the needs of typical office tenants and may need significant renovation.

⁹ Colliers Q4 2019 Puget Sound Office Market Report

¹⁰ [Puget Sound Business Journal, Jan 2020](#)

- **There is a potential for redevelopment in future market cycles.** Current vacancy rates are higher than other regional centers and there have been no property sales in the past year. Developers can find lower prices per square foot in this market, making redevelopment a more attractive option. Market anticipation of future transit investment may be a reason for this stalled activity, but increased activity to take advantage of Study Area capacity is anticipated in coming years.¹¹
- **The addition of supportive amenities could attract additional office investment.** Workers desire walkable retail amenities that provide convenient access to meals and personal errands. The Study Area may become more attractive for offices with the integration of these businesses.

Conditions and Trends

The Study Area has among the most affordable office rents in the Eastside market, with only Overlake in Redmond with lower rent per square foot. While office space in Totem Lake can be attained at similar rates to the Study Area, even for 4- and 5-star properties, this is likely related to the larger square footage and lower height buildings typical in a more suburban, office-park setting. However, the current suburban office development outlook is not promising, with most new office development taking place in amenity-rich, walkable settings. The Study Area is located directly adjacent to downtown which offers amenities, proximity to major tech employers, and diverse uses in a more walkable environment. This contrast defines a unique commercial base, particularly with mobility investments to better connect pedestrians and cyclists from the Study Area to the downtown core. See Exhibit 13 and Exhibit 14.

ECONOMIC DEVELOPMENT FOR SOCIAL MOBILITY

Community investment in economic development should benefit all residents. Great public spaces, affordable home ownership and rental opportunities, and an economy with opportunities for adults of various backgrounds cultivates livability for a wide range of family types.

Certain industries and jobs provide greater promise for economic opportunity for non-college educated adults. Research by the Brookings Institute identifies "opportunity industries" as those which provide more longevity and professional growth for non-college educated adults.

This research defines good jobs as those which are stable, pay a middle-class wage, and provide benefits. Promising jobs do not provide the same level of pay or benefits but offer pathways toward attaining good jobs within 10 years.

The Brookings' report indicates that the below sectors have higher rates of good and promising jobs:

- Maintenance, Construction, Media Production, and Transportation
- Management, Business, Computer, Engineering, and Health Care

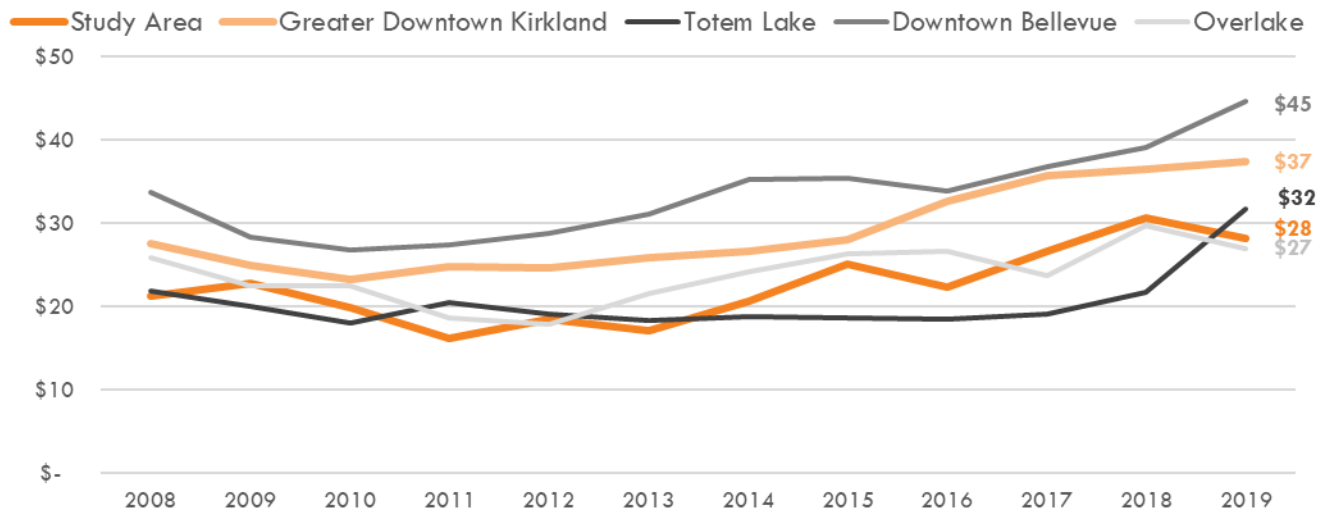
Source: [Brookings Institute, 2018](#)

¹¹ CBRE Economic Study of Downtown Kirkland, Attachment O

Kirkland 85th Street Station Area Market Analysis Report

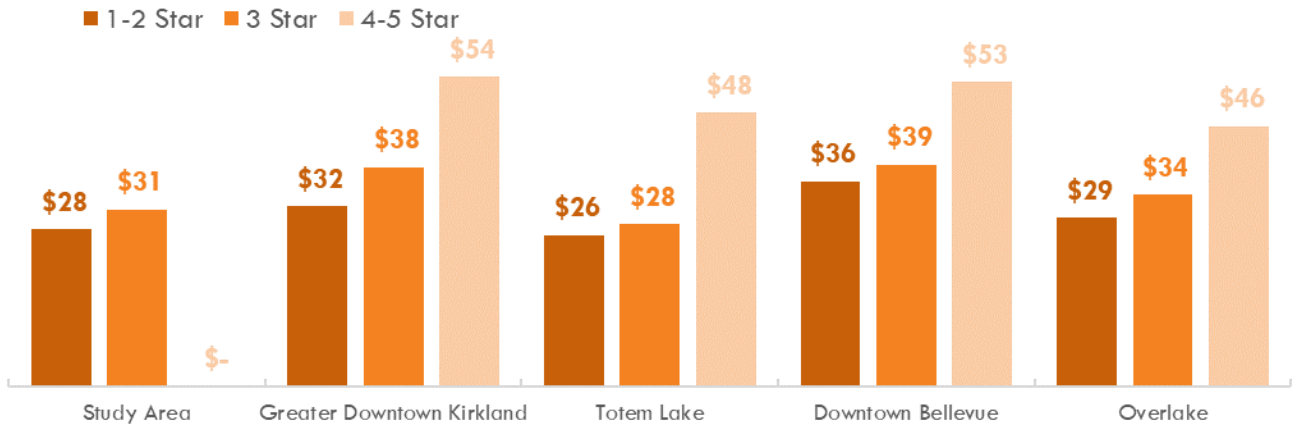
Existing Conditions

Exhibit 13. Base Rent per Square Foot, Office Commercial, Study Area and Peer Geographies 2008–2019.



Source: CoStar, 2020; BERK, 2020.

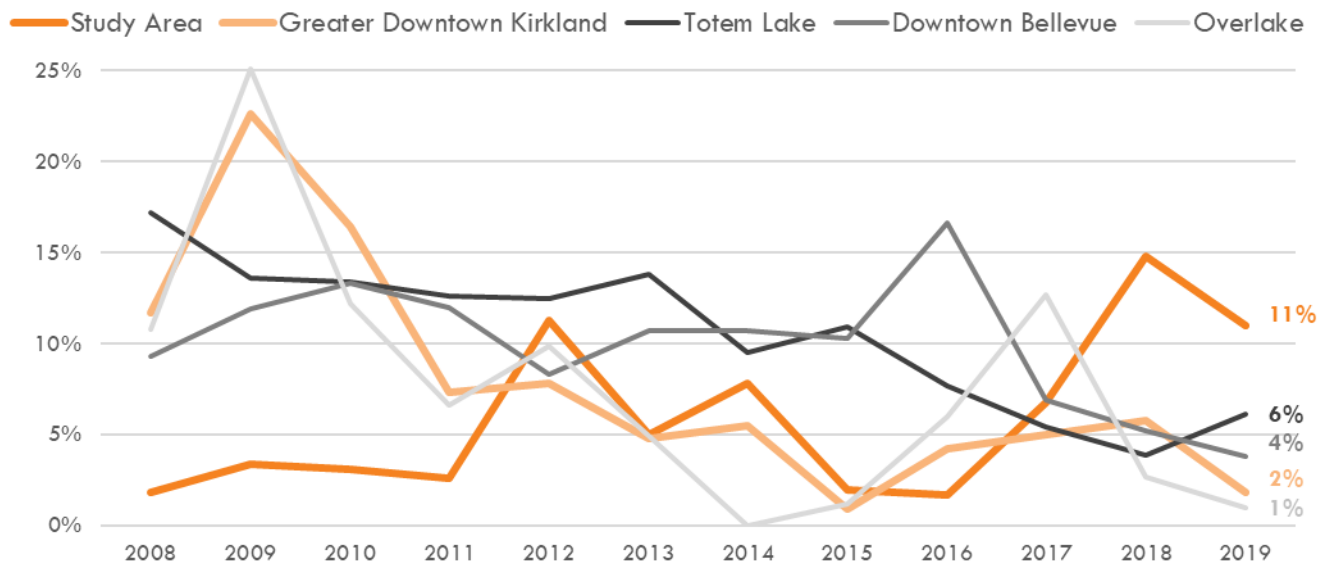
Exhibit 14. Rent per Square Foot by Construction Class, Office Commercial, Study Area and Peer Geographies 2019.



Source: CoStar, 2020; BERK, 2020.

Vacancy rates are a good indicator of tightness in a market. Lower vacancy rates indicate higher demand for space, and potentially higher rental rates as a result. Higher vacancy rates are associated with lower levels of demand and decreased rental rates. Single year spikes in smaller geographies like these concentrated growth centers may reflect a major employer leaving a building or a new, large building coming to market and needing some time to lease up. Retail and office vacancy rates trend higher than vacancy in the housing market, with the national average over the past 10 years hovering between 10-12% for office space.¹² After experiencing higher vacancy in the wake of the 2008 recession, the Greater Downtown Kirkland market has consistently maintained sub-10% vacancy in its office market, signaling a constrained market with high demand (See Exhibit 15). While the Study Area experienced some recent volatility with a peak in vacancy rate in 2018, it has since decreased. Reflecting Downtown Kirkland, the Study Area also has consistently maintained vacancy rates at or below 10% vacancy since 2008. See Exhibit 15.

Exhibit 15. Vacancy, Office Commercial, Study Area and Peer Geographies 2008–2019



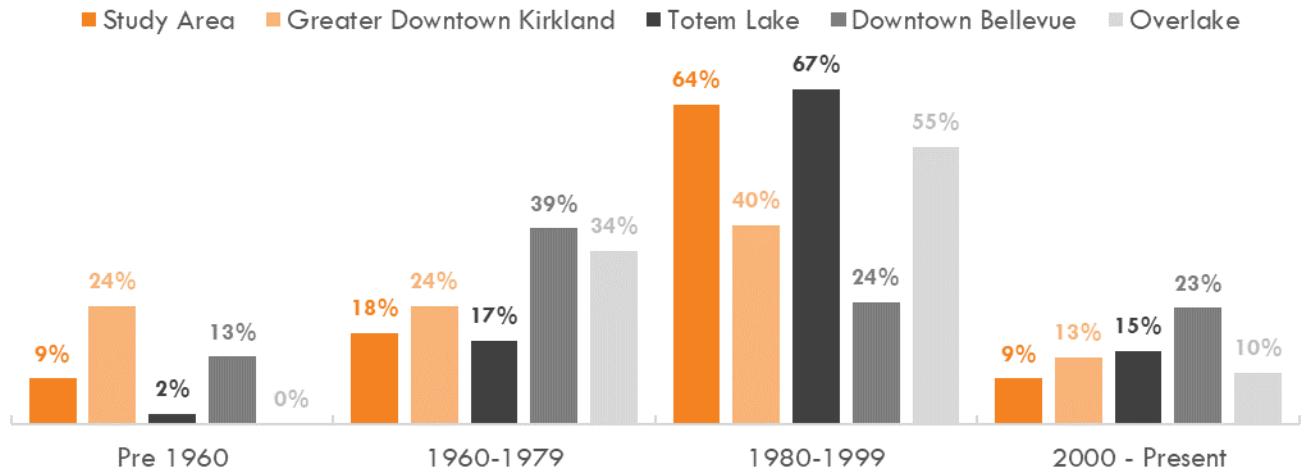
Source: CoStar, 2020; BERK, 2020.

Building age speaks to the character and levels of investment in each focus area. Overall Eastside trends show that significant growth in commercial office development occurred in the 1980s and 1990s (See Exhibit 16). This is particularly true in the Study Area, Totem Lake, and

¹² [Transwestern Market Report, Q4 2019](#)

Overlake. Downtown Bellevue has the highest percentage of newer buildings while Downtown Kirkland features a higher percentage of older buildings, contributing to its unique character.

Exhibit 16. Age of Buildings, Office Commercial, Study Area and Peer Geographies.



Source: CoStar, 2020; BERK, 2020.

Recent building sales demonstrate the potential value of property in each focus area. Property valuations are based on a variety of factors, including the estimated future revenue potential of an area. Given similarities in building age and rental rates, it is likely that Overlake and Totem Lake sales prices are more closely aligned with what might be expected in the Study Area. In recent sales, Downtown Kirkland and Bellevue achieve higher values per square foot.

Exhibit 17: Kirkland Urban Office Buildings



Image Source: [Geekwire](#), 2019

As noted previously, the Kirkland Urban development is a 11.5-acre mixed use project in Downtown Kirkland.¹³ This includes two large office buildings sold to Google in 2019. This project creates activity and contributes to a walkable business district less than one mile from the proposed 85th Street Station. Mobility investments connecting the station to downtown for pedestrians and bikes will enhance the desirability of the station area for future investment.

¹³ [Kirkland Reporter, March 2019](#)

Exhibit 18. Sales Comps, Office Commercial, Study Area and Peer Geographies.

	Study Area	Greater Downtown Kirkland	Totem Lake	Downtown Bellevue	Overlake
Location	n/a	469 Central Way	11521 NE 128th St	333 108th Ave NE	2121 152 nd Ave
Sale Price per SF	n/a	\$787	\$627	\$922	\$426
Star Rating	n/a	4	3	5	3
Stories	n/a	7	2	20	1
Year of Sale	n/a	2019	2019	2020	2019
Year Built	n/a	New	2003	2008	1979

n/a = no sales within the past year
Source: CoStar, 2020; BERK, 2020.

Retail Commercial

Key Findings

- **The Retail market in the Study Area offers a variety of services and is auto oriented in character.** Adjacent to the I-405 exit, the retail market caters to auto traffic with tenants such as service stations and coffee shops. Retail buildings in this zone are 1-3 star and primarily built in the 1980s, mimicking trends in the office sector.
- **The Study Area has maintained vacancy rates under 5% for a decade.** In all centers studied, recent trends show lower vacancy rates for retail when compared to a decade earlier, with the Study Area and Overlake being the least volatile during this time period.
- **There may be a potential for retail as part of new development.** Low vacancy rates and slowly rising rents may suggest that demand for new retail spaces may increase in the future, especially as population growth continues. In addition, increased housing can drive retail demand in the Study Area – especially for types of retail that meet the day-to-day resident needs for such as groceries, pharmacies, restaurants and similar.
- **Office space can also create additional retail demand.** National research indicates that the typical downtown worker will spend as much as \$130 per week in downtown. Top retail categories for office worker spending include grocery stores, discount stores, and warehouse clubs (ex: Costco).¹⁴ The Seattle region, in particular, is noted for its high levels of spending on groceries. Using BLS 2018 Consumer Expenditure Surveys, Business Insider reports the Seattle area as the top of 22 US metropolitan areas for spending on groceries, estimating \$951/month per household on total food expenses.¹⁵
- **Integrating retail spaces into new development** may be a way of managing these demands through infill to build more complete neighborhoods. The Google-purchased offices in

RETAIL BUILDING CLASSES

Costar rates [retail building quality](#) on a 1-5 star scale.

- **5-Star:** Located in a prime retail district with national or high-end local retailers. New or very well maintained structure.
- **4-Star:** High concentration of retail tenants, including recognized national brands. New or well-maintained structure.
- **3-Star:** Average concentration of retailers, with a mix of national, regional, or local brands. Building may be older.
- **2-Star:** Low concentration of local or regional retailers. Older property.
- **1-Star:** Suitable only for very unique retailers. Building may require significant renovation.

¹⁴ [International Council of Shopping Centers, 2012](#)

¹⁵ [Business Insider, 2020](#)

Kirkland are a good example of this, integrating retail businesses such as Top Golf into what is primarily an office property.¹⁶

- **Changing nature of retail.** Given the changing landscape of brick-and-mortar retail, retail development is now increasingly integrated with experiences, housing or other complementary uses. These new strategies may also be relevant in addressing retail demand in the Study Area. The Village at Totem Lake development, discussed in greater detail on page 30, is an example of retail's integration with a wider variety of uses to create lifestyle centers that promote livability through walkable amenities.

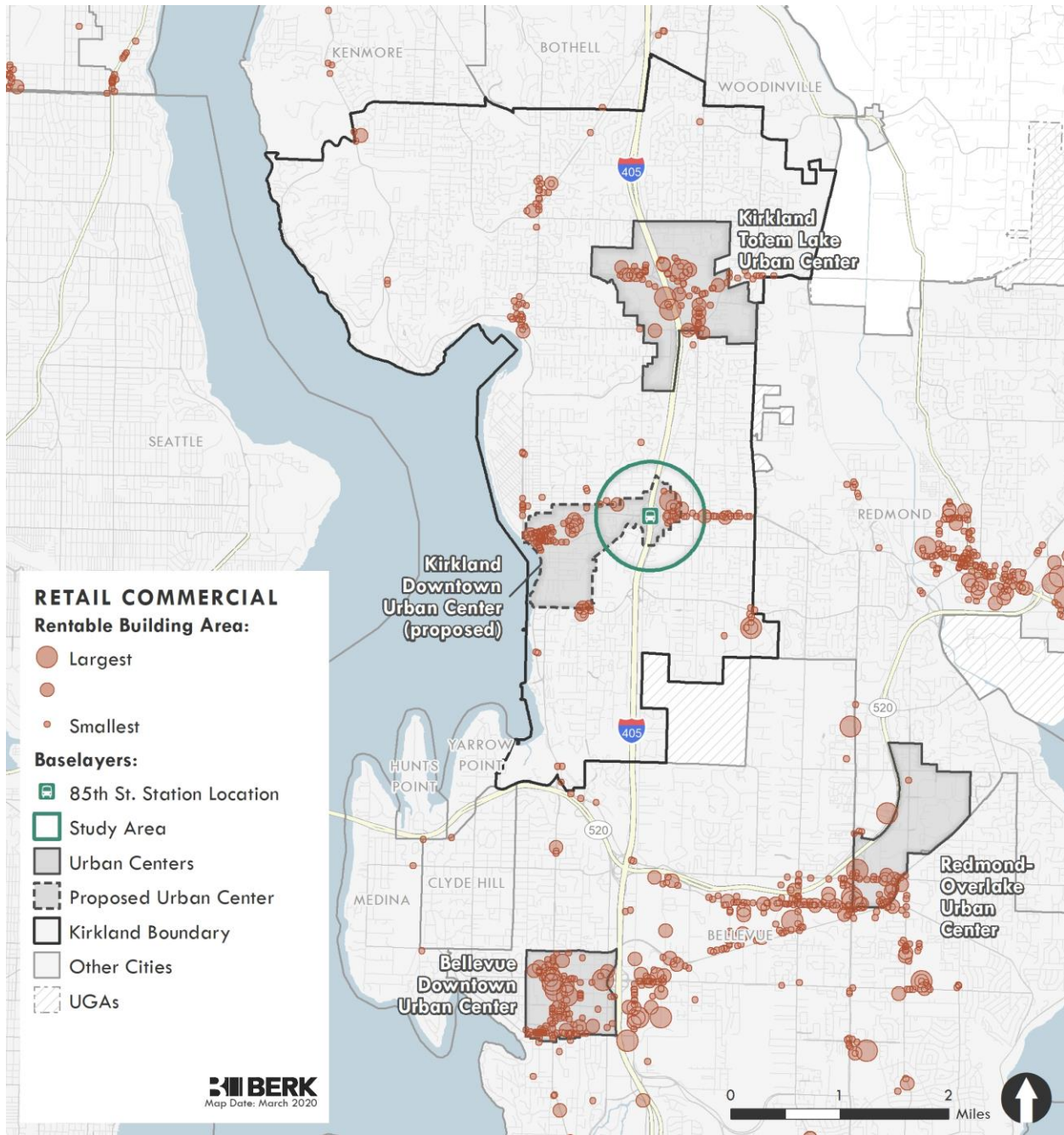
Conditions and Trends

Retail space on the Eastside clusters in downtowns, along arterials, and around major road intersections. Few stand-alone retail developments have been built within the past 20 years, as newer construction favors integration of retail space within office or multifamily properties over dedicated shopping centers. Research into BRT impacts on the retail sector are still being explored, without conclusive evidence of direct ties to growth in this sector.¹⁷

¹⁶ <https://topgolf.com/lounge/>

¹⁷ Nelson and Ganning, 2015 "[National Study of BRT Development Outcomes](#)"

Exhibit 19. Distribution of Retail Commercial Real Estate, Study Area and Peer Geographies



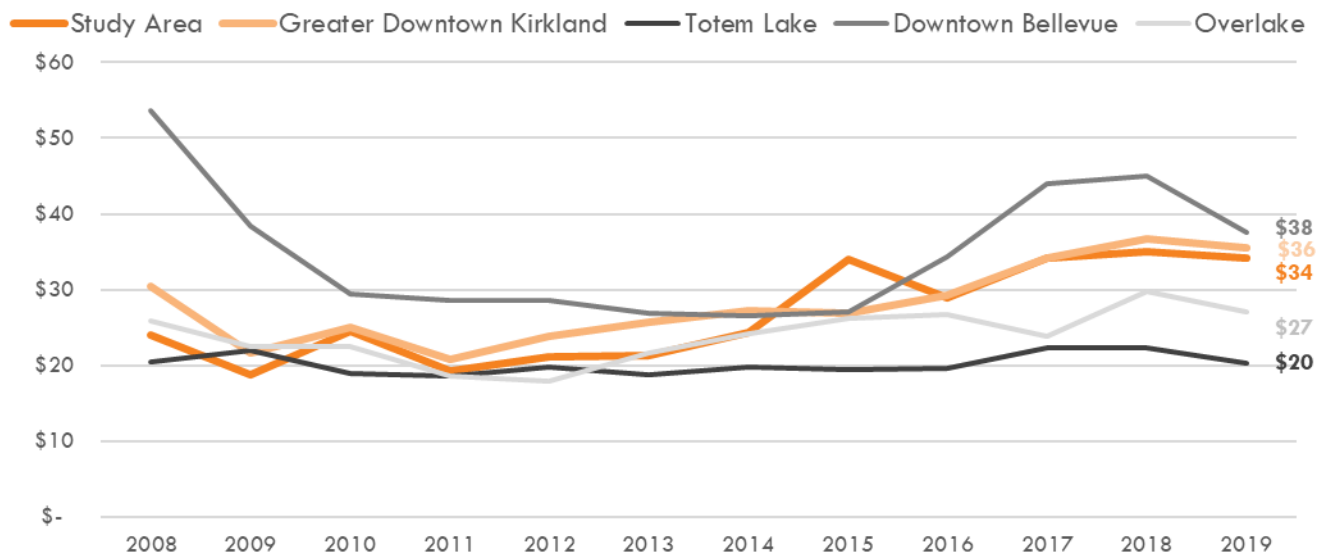
Source: CoStar, 2020; PSRC, 2020; BERK, 2020.

Kirkland 85th Street Station Area Market Analysis Report

Existing Conditions

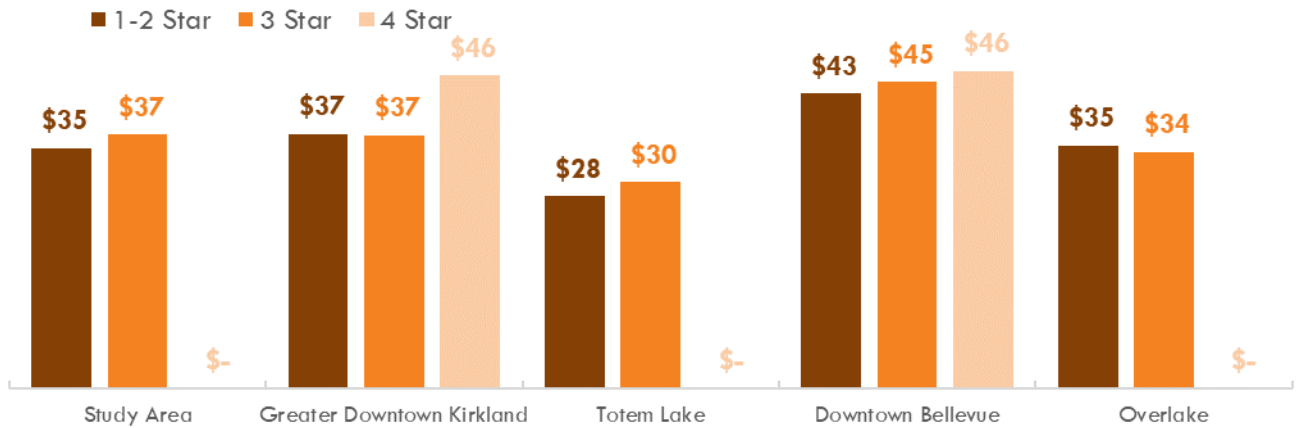
Rental rates for retail space in the focus areas are highest in Downtown Bellevue and Greater Downtown Kirkland. Within these zones, the highest rents per square foot are achieved along main downtown streets such as Bellevue Way and Main Street in Kirkland. Totem Lake and Overlake show lower price points for retail space, with neither area offering 4-star spaces. The Study Area reports strong rents despite its lack of 4-star properties, however only two of 21 properties report rental rates and may not reflect the full picture of the retail market. See Exhibit 20 and Exhibit 21.

Exhibit 20. Rent per Square Foot, Retail Commercial, Study Area and Peer Geographies, 2008–2019.



Source: CoStar, 2020; BERK, 2020.

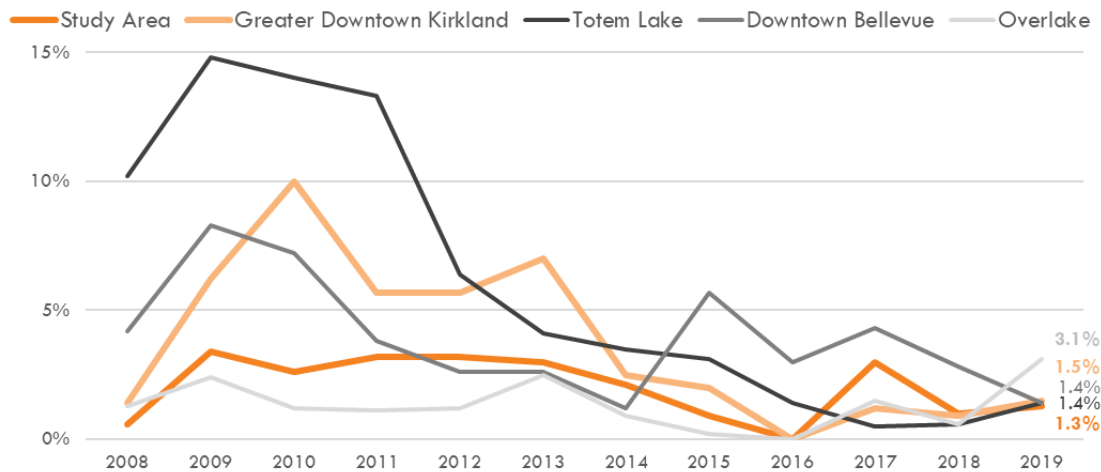
Exhibit 21. Rent per Square Foot by Construction Class, Retail Commercial, Study Area and Peer Geographies 2008–2019.



Source: CoStar, 2020; BERK, 2020.

Despite national trends hovering around 10% for retail vacancy, Eastside markets have maintained rates at 5% or less for the past 5 years.¹⁸ Totem Lake experienced the most volatility during the 2008-2012 recession period but has since recovered to rates on par with the other areas. Exhibit 22.

Exhibit 22. Vacancy, Retail Commercial, Study Area and Peer Geographies, 2008–2019.



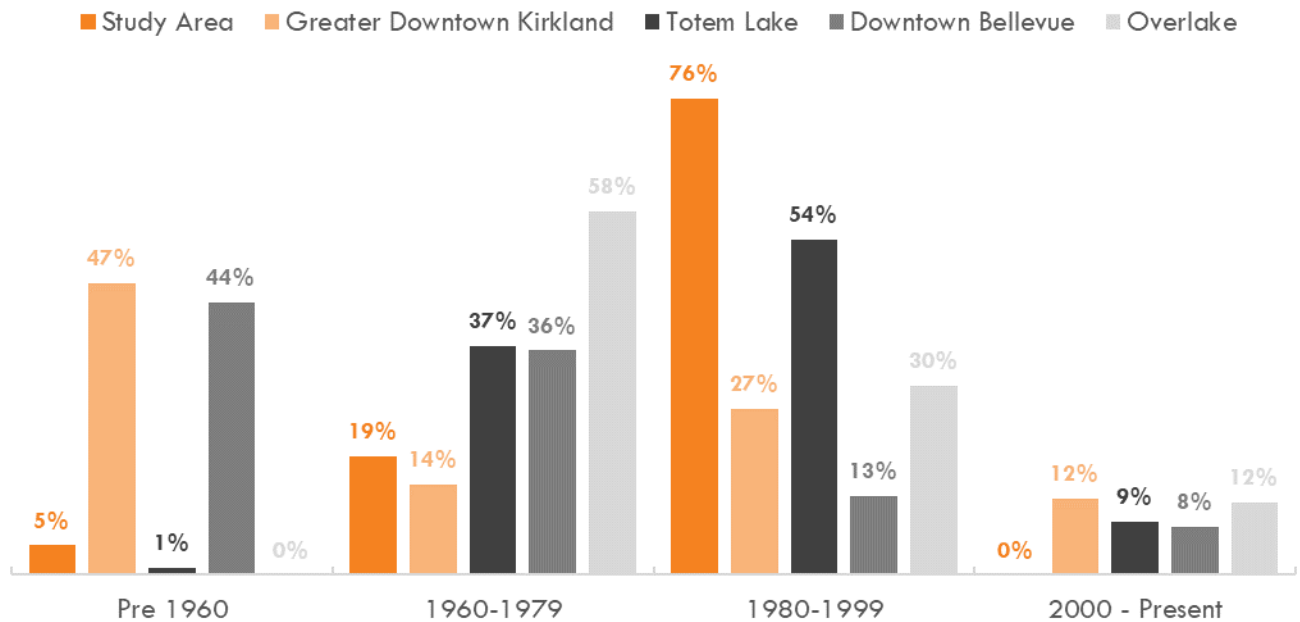
Source: CoStar, 2020; BERK, 2020.

¹⁸ [Reis, Real Estate Solutions by Moody Analytics, Q2 2019](#)

Retail properties in the Study Area were overwhelmingly developed in the 1980s, with the newest building developed in 1997. Development from this era includes large areas of surface parking, auto-oriented sites with frequent driveways and curb cuts, and a weak relationship to street frontages.

Retail properties in downtown Kirkland area are older, many dating to the 1920s and 1940s. These construction eras favored more compact development styles, which transition well to a modern, walkable downtown center. This fits well with modern development trends, where ground floor retail space is integrated into multifamily and office buildings. While the bulk of Totem Lake's retail properties were developed between 1960-2000 as free-standing single use retail buildings and an auto-oriented focus, recent redevelopment features a mix of uses. Newer redevelopment includes the 10-building mixed use Village at Totem Lake development. This integrates a public park with retail shopping, a cinema, and residential units. This "lifestyle center" concept reiterates the more recent trend of retail property as incorporated into mixed use developments rather than free-standing buildings. Downtown Bellevue's retail scene features a large, regional mall along with a mix of building types and ages. See Exhibit 23.

Exhibit 23. Building Age, Retail Commercial, Study Area and Peer Geographies.



Source: CoStar, 2020; BERK, 2020.

Note: Buildings in Village at Totem Lake project are shown with older built dates, despite recent re-development.

Retail property sales in the comparison areas show a wide range of achieved value per square foot. Downtown Bellevue is the highest valued, with 3-star properties selling at almost \$1,900 per square foot. The Study Area, in contrast, sold a 3-star property of similar age for less than 1/3 the value at \$587 per square foot. This demonstrates the room for growth in the Study Area and its potential desirability for an investor looking for sales at a lower price point. See Exhibit 20.

Exhibit 24. Sales Comps, Retail Commercial, Study Area and Peer Geographies.

	Study Area	Greater Downtown Kirkland	Totem Lake	Downtown Bellevue	Overlake
Address	12004-12006 NE 85 th St (Strip Mall)	134-140 Central Way (Ground floor of condo building)	11932 124 th Ave NE (Auto Dealership)	10350 Bellevue Way (Bank)	2150 148 th Ave NE (Fast Food Restaurant)
Sale Price per SF	\$587	\$536	\$1,304	\$1,894	\$643
Star Rating	3	2	3	3	3
Stories	1	1	1	1	1
Year of Sale	2019	2019	2019	2019	2019
Year Built	1982	1996	1997	1986	1986

Source: CoStar, 2020; BERK, 2020.

Multifamily Residential

Residential use in the Study Area is dominated by single-family housing. Multifamily development is limited, as shown in Exhibit 25.

Exhibit 25: Residential Property in the Study Area by Type, 2020.

	Total SF
Multifamily Units	164,696 (3%)
Single Family Lots	5,834,339 (97%)

Sources: Costar, 2020; BERK, 2020.

Key Findings

- **Multifamily buildings in the Study Area are low-rise and 30 units or less.** One newer senior housing development features 100+ units catering to moderate income levels. In general, single-family and townhome developments are more prevalent for residential property in this market. Higher intensity zones do exist within the Study Area, which allow for denser housing styles and leave room for development potential to increase capacity for capturing benefits of mobility investments.
- **Home values within the Study Area are strong and have grown significantly since 2010.** Average sale price per square foot more than doubled 2010-2019 for residential homes within the Study Area.
- **Currently, 60% of Study Area land is zoned for low and medium density residential development.** These restrictions limit the residential capacity of the zone and impact the proportion of Kirkland's population within walkable access of Bus Rapid Transit.
- **Greater Downtown Kirkland area performs well with comparatively high rental rates and sales prices.** Recent developments are 4-star quality, 4-6 stories, and often incorporate ground floor retail and shared amenity spaces. Beautiful views over the

MULTIFAMILY BUILDING CLASSES

Costar rates [multifamily building quality](#) on a 1-5 star scale.

- **5-Star:** Luxury, defined by finishes, amenities, and overall design.
- **4-Star:** Higher end finishes and specifications, desirable amenities, and designed to modern standards.
- **3-Star:** Average aesthetics and finish quality, likely a smaller or older structure with a few amenities.
- **2-Star:** Aging building with average aesthetics, few or no amenities.
- **1-Star:** Uncompetitive for typical investors and may require significant renovation.

downtown lakefront and nearby shopping amenities create an attractive environment for residents.

- **Newer multifamily developments incorporate a mix of uses, such as ground floor retail and commercial space.** This variety adds to neighborhood walkability and often provides amenities that benefit office workers and residents alike.
- **Affordable housing incentives should be considered to foster a mixed-income community.** Transit-rich environments are beneficial to lower income households who rely on public transit to meet their daily needs. Home values and rental rates have dramatically increased in the Study Area over the past decade (See Exhibit 28 and Exhibit 30), and it cannot be assumed that the housing market will respond appropriately (in the number, price or type of housing) to meet the needs of those who stand to benefit most from improved access to opportunity.

Conditions and Trends

Multifamily development on the Eastside clusters in Urban Centers and near shorelines. Unlike office or retail properties, residential development tends to prefer a block or two of distance from major arterial roads or highways to maintain a safer street environment and quieter neighborhood character. Multifamily development in the Study Area is limited. Walk scores in the Study Area range from 50 to 60 and reflect the needed investments in transit, pedestrian, and cyclist infrastructure to strengthen connections with downtown Kirkland. The area's walkability ratings will improve after mobility improvements are complete. See Exhibit 27.

Exhibit 26: WalkScore Range for Focus Areas

Focus Area	WalkScore Range (Approximate)
Study Area	50 – 60
Downtown Kirkland (outside Study Area)	75 – 95
Totem Lake	50 – 70
Downtown Bellevue	85 – 95
Overlake	30 - 60

Walk Scores

[Walkscore.com](https://www.walkscore.com) rates neighborhoods across the country for walkability. Scores are based on access to amenities without using a car.

90-100 Walker's Paradise:

Daily errands do not require a car

70-89 Very Walkable: Most errands can be accomplished on foot

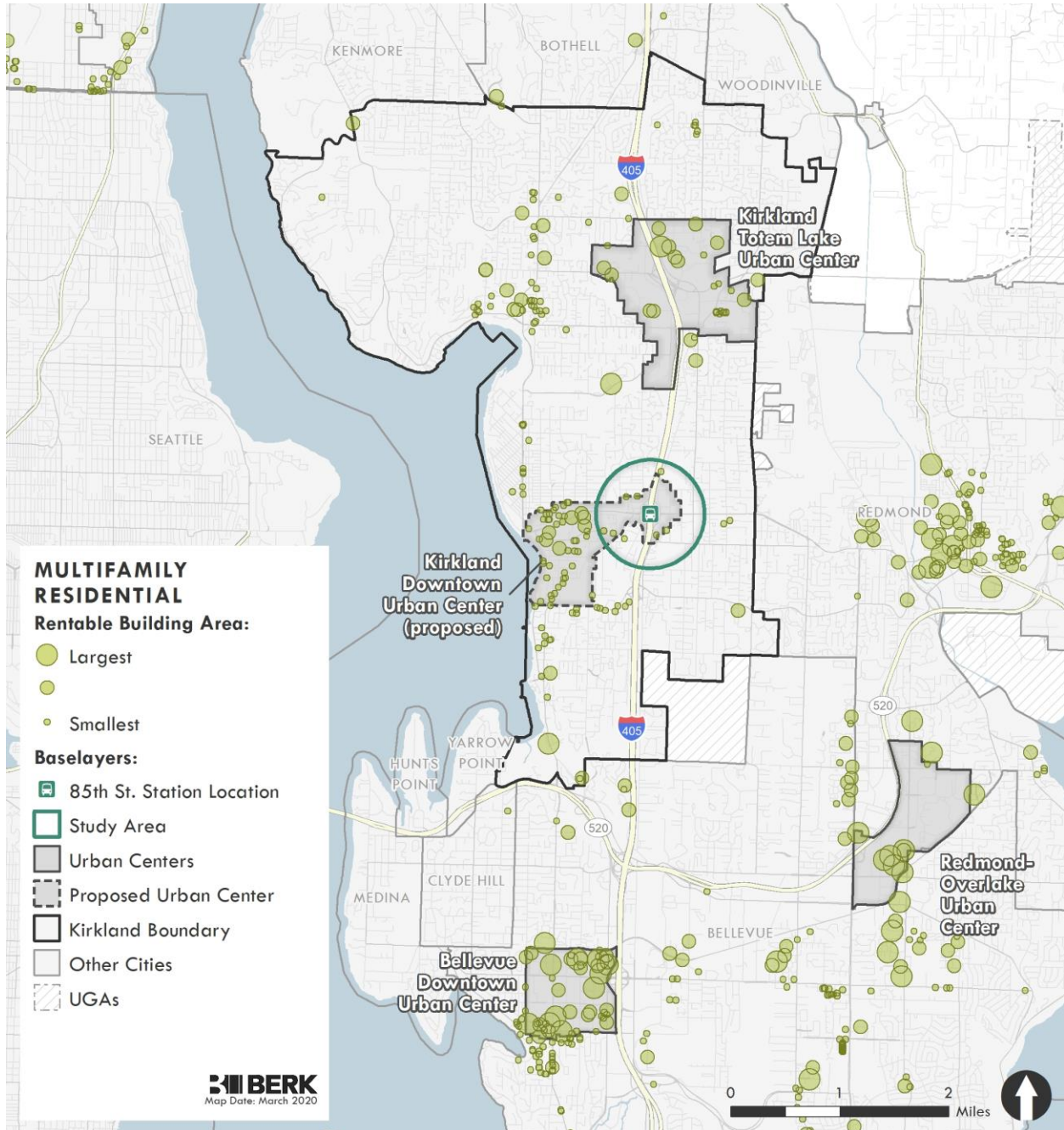
50-69 Somewhat Walkable:

Some errands can be accomplished on foot

25-49 Car-Dependent: Most errands require a car

0-24 Car-Dependent: Almost all errands require a car

Exhibit 27. Distribution of Multifamily Residential Real Estate, Study Area and Peer Geographies



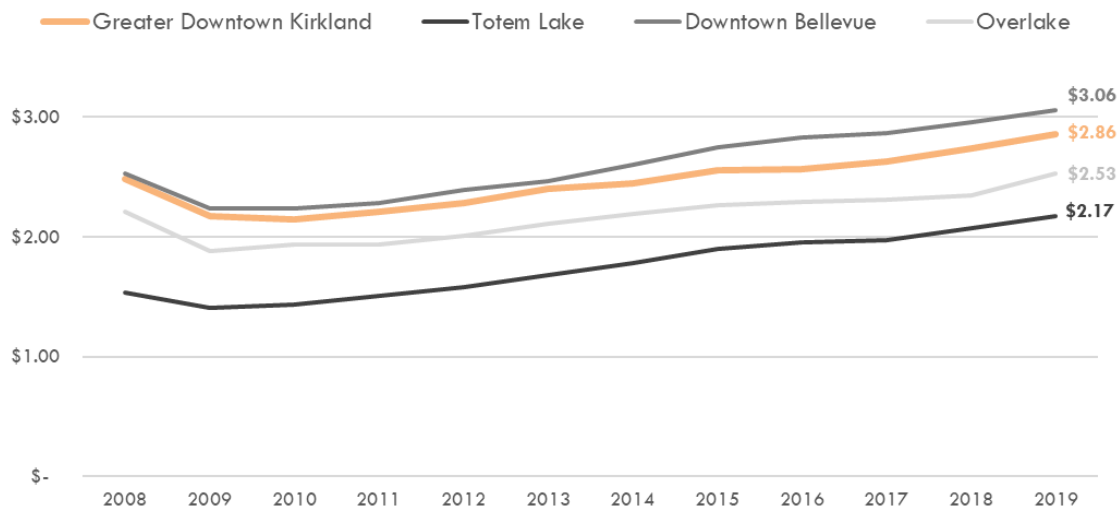
Source: CoStar, 2020; PSRC, 2020; BERK, 2020.

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Existing Conditions

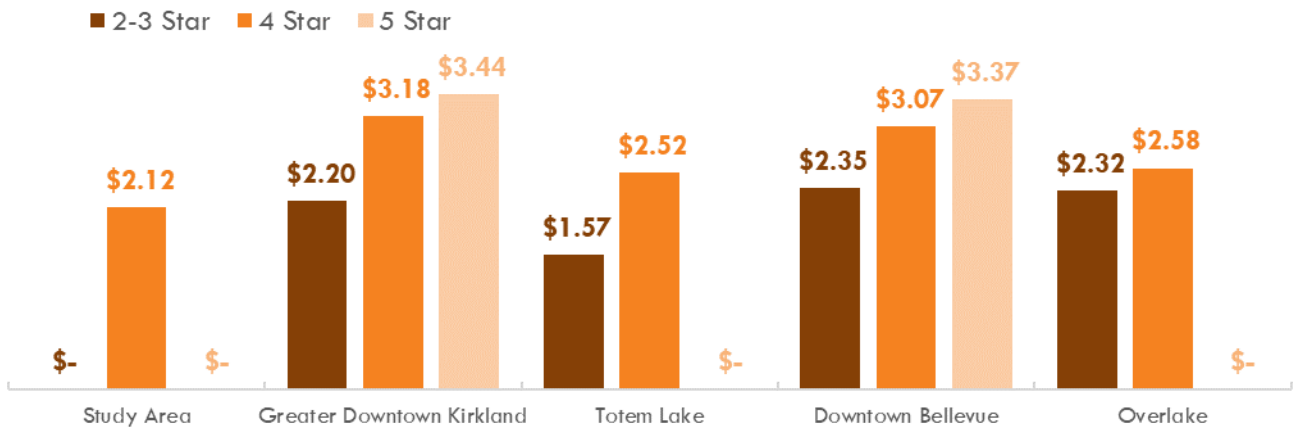
Multifamily residential living is more popular in the downtown areas than in the more suburban-styled development typologies of the Study Area, Totem Lake, or Overlake. This is consistent with the pedestrian-oriented, livable character of these districts, which earn walk scores of 89 in Kirkland and 95 in Bellevue. They are also the only two markets which feature 5-star buildings. Average rental rates in Downtown Bellevue and Greater Downtown Kirkland are 15-40% higher than those found in Overlake or Totem Lake (rental rates not reported for Study Area properties). See Exhibit 28. Totem Lake and Overlake multifamily properties earn walk scores 50 to 70 and 30 to 60, respectively.

Exhibit 28. Rent per Square Foot, Multifamily Residential, Peer Geographies, 2008–2019.



Source: CoStar, 2020; BERK, 2020.

Exhibit 29. Rent per Square Foot by Construction Class, Multifamily Residential, Peer Geographies, 2019.



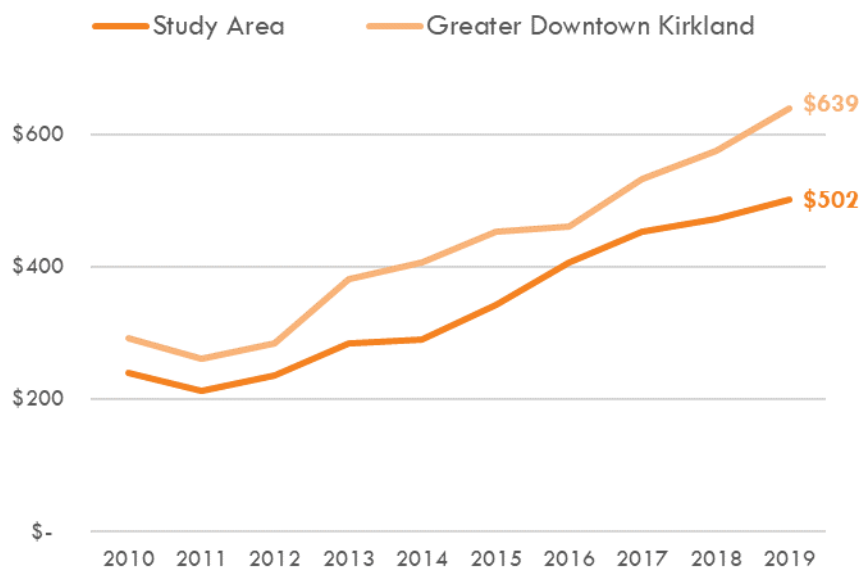
Kirkland 85th Street Station Area Market Analysis Report

Existing Conditions

Source: CoStar, 2020; BERK, 2020

The Study Area and Greater Downtown Kirkland are the only two zones with active sales for single family residential properties. Home values in the Study Area more than doubled in the 2010-2019 period. Values per square foot tend to hover about 20% lower than the Greater Downtown Kirkland market, but demonstrate a similar upward trajectory. In 2016 the average sale price in the Study Area crossed the million-dollar threshold and in 2019 the median sales value was \$1,475,000. This strong market performance supports the argument for increased residential activity in the Study Area. See Exhibit 30. Increased population through multifamily developed should be coupled with school district analysis to ensure adequate capacity and educational resources from area schools. Nearby public schools include: Lake Washington High School, Kirkland Middle School, Rose Hill Middle School, Rose Hill Elementary School, Mark Twain Elementary School, Lakeview Elementary School, and Peter Kirk Elementary School.

Exhibit 30. Median sales price per SF for Single Family and Townhome Development, Study Area and Greater Downtown Kirkland, 2010–2019.



Source: King County Assessor, 2020; BERK, 2020.

WHO IS ATTRACTED TO TRANSIT-RICH COMMUNITIES?

Reliable transit service is beneficial to many family types and has shown to be particularly attractive to certain households such as:

The transit dependent. This includes those who cannot afford a car, have visual impairments preventing their ability to drive, and older residents who no longer prefer to drive.

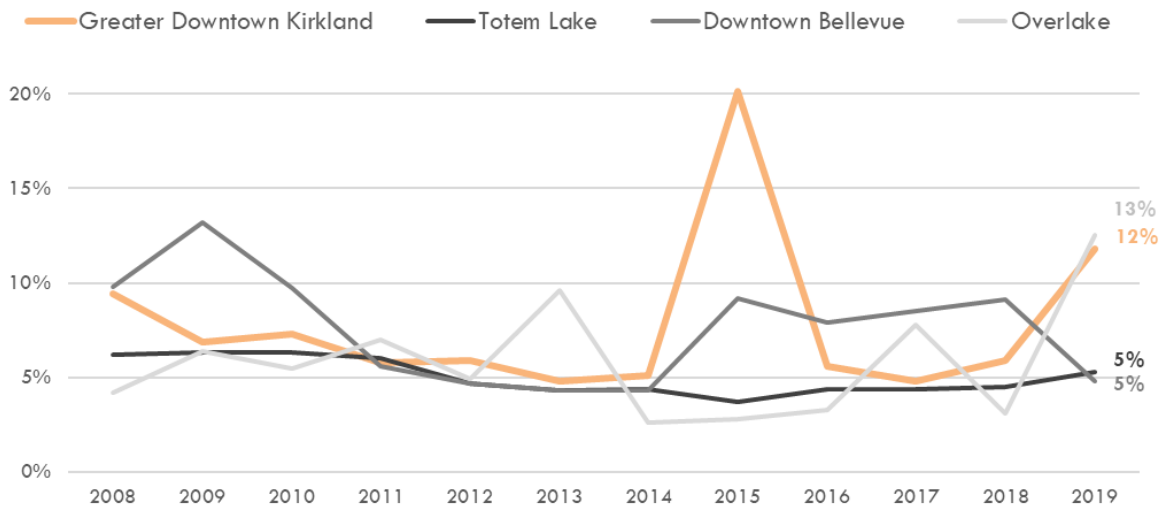
Young urbanites. These residents may be single or married and potentially are parents to young children. They enjoy urban neighborhoods with access to restaurants and value multiple mobility options, such as walking, biking, or riding transit.

As transit access improves, the Study Area should anticipate increased residential interest from these groups. These groups are also likely to demonstrate preference for multifamily housing.

Source: "[Families and Transit-Oriented Development](#)", 2014.

Healthy market vacancy rates vary across community types and geographic regions. The Lincoln Institute of Land Policy reviewed nation-wide rental vacancy rates over 50 years and determined rates under 4% to be considered low, 4-7.9% reasonable, and 8-12% as moderately high.¹⁹ Overall the studied geographies have remained within the low and reasonable range across the past 10 years, with a few exceptions. Single year jumps likely represent years where large projects came to market (ex: 2015 in Downtown Kirkland with the 290-unit apartment development, Arete). Downtown Bellevue perhaps experienced an oversupply of units to market 2015-2018, reflected in its higher vacancy rates over that time period. Overall, vacancy rates in the studied multifamily markets are strong. With continued expectations for population growth and good transit access in each location, market expectations remain positive for continued occupancy demand. See Exhibit 31.

Exhibit 31. Vacancy, Multifamily Residential, Peer Geographies, 2008–2019.

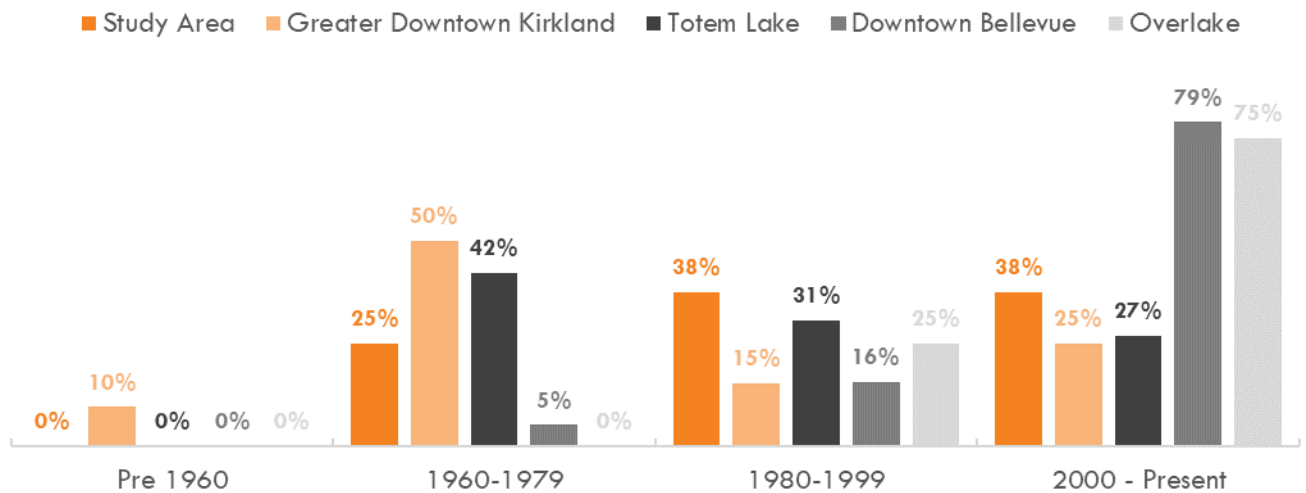


Source: CoStar, 2020; BERK, 2020.

The multifamily commercial market has seen higher levels of investment in the past 20 years. Downtown Bellevue and Overlake's rental markets are 79% and 75% buildings completed since 2000. Downtown Kirkland and Totem Lake multifamily buildings are more evenly aged between decades, although the largest developments by unit count are the most recently developed. The eight properties within the Study Area were built between 1978 – 2015, with about 2 buildings coming to market per decade over this period. See Exhibit 32.

¹⁹ [Lincoln Institute of Land Policy, 2018](#)

Exhibit 32. Building Age, Multifamily Residential, Study Area and Peer Geographies.



Source: CoStar, 2020; BERK, 2020.

The Study Area and Overlake's recent multifamily sales reflect a low value per square foot in contrast with comparison areas, although it is notable that the Study Area sale was for an income-restricted senior living center. Downtown Bellevue and Greater Downtown Kirkland show the highest sales value per square foot figures, pointing to their proximity to neighborhood amenities and tech job centers. See Exhibit 33.

Exhibit 33. Sales Comps, Multifamily Residential, Study Area and Peer Geographies.

	Study Area	Greater Downtown Kirkland	Totem Lake	Downtown Bellevue	Overlake
Property Description	Income-restricted senior living	Low-rise apartment building	Low-rise apartment complex	Mid-rise luxury apartment building	Mid-rise modern apartment building
Sale Price per SF	\$220	\$613	\$402	\$740	\$320
Unit Count	110	6	207	68	240
Star Rating	4	3	3	5	4
Year of Sale	2019	2019	2019	2020	2019
Year Built	2004	1987	1983	2010	2019

Source: CoStar, 2020; BERK, 2020.

Regulatory Environment

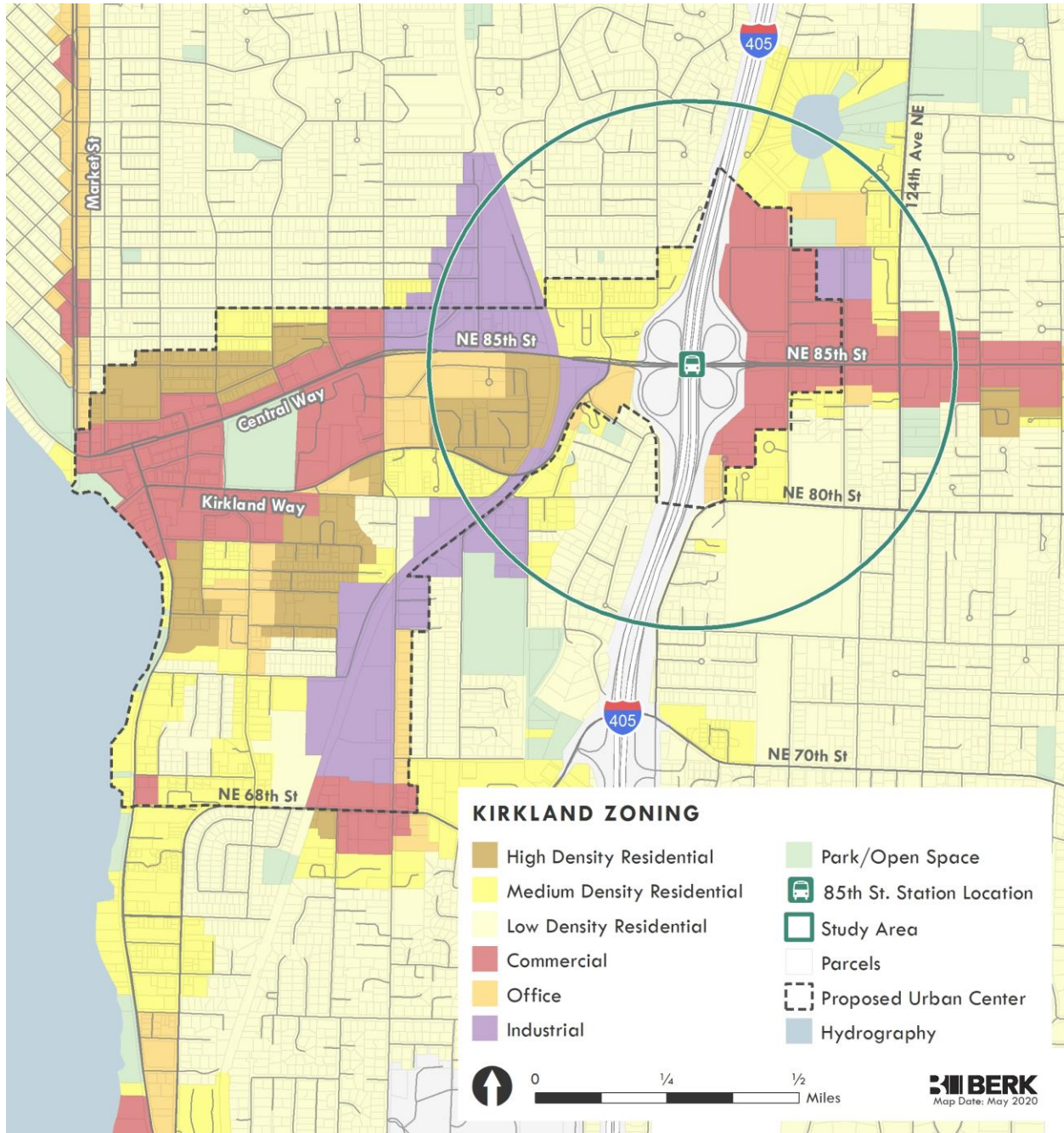
Land Use and Zoning

Study area zoning is shown in Exhibit 35. There is a predominance of Commercial/Mixed Use zoning east of the freeway (Rose Hill Commercial) and Medium and Low Density Residential to the west. There are additional areas of Central Business District and Industrial zoning too. There are numerous zones in the Study Area. See Exhibit 34 and Exhibit 35.

Exhibit 34. Zoning, Study Area.

Zone Category	Individual Zones in Study Area
Commercial	RH 5C
	RH 5B
	RH 3
	RH 1A
	RH 1B
	RH 2A; RH 2B; RH 2C
	CBD 5A
	CBD 5
	CBD 6
Low Density Residential	RS 5.0; RS 7.2; RS 8.5; RS 12.5; RSX 5.0; RSX 7.2;
Medium Density Residential	RM 3.6; RM 5.0; PLA 17
High Density Residential	RM 1.8; RM 2.4; PLA 5A; PLA 5D; PLA 5E
Industrial	LIT
Office	PLA 17A; PR 3.6; PLA 5B; PO; PLA 5C
Office	RH 4
Park/Open Space	P

Exhibit 35. Zoning Map, Study Area.



Source: City of Kirkland, 2020; BERK, 2020.

Allowed land uses are summarized into major categories by zone in Exhibit 36. The allowed uses are noted with required review processes:

- Process I: Review and decision by the Planning Director
- Process IIA: Public hearing and decision by the Hearing Examiner
- Process IIB: Public hearing, Hearing Examiner recommendation, and decision by City Council
- DR = Design Review, Chapter 142 KZC

Exhibit 36. Study Area Use Summary, Current Regulations

		Required Review Process			
Zoning Districts	Permitted Uses	None	I	IIA, IIB	DR
Rose Hill Business District Zones					
RH 1A	Vehicle fuel and services				X
	Restaurant/tavern				X
	General retail				X
	Office				X
	Hotel/motel				X
	Entertainment facility				X
	Attached housing				X
	Assisted living facility				X
RH 1B	Vehicle fuel and services				X
	Business park				X
	General retail				X
	Office				X
	Assisted living facility				X
RH2A, 2B, 2C	Vehicle fuel and services				X
	Restaurant/tavern				X
	Entertainment facility				X
	General retail				X
	Office				X
	College or university				X
	Attached housing				X
	Assisted living				X
	Hotel/motel				X
RH 3	Mixed use retail, service, financial service, restaurant, tavern uses				X
	Vehicle fuel and services				X
	Restaurant/tavern				X
	General retail				X
	Hotel/motel				X
	Entertainment facility				X
	Office				X
	Stacked dwelling units				X

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Existing Conditions

Zoning Districts	Permitted Uses	Required Review Process			
		None	I	IIA, IIB	DR
	Assisted living facility				X
RH 4	Detached/attached housing	X			X
	Assisted living facility				X
	Office				X
	Mixed use attached housing and office uses				X
	Funeral home/mortuary				X
RH 5B	Vehicle fuel and services				X
	Entertainment facility				X
	Restaurant/tavern				X
	General retail				X
	Office				X
	Hotel/motel				X
	Detached/attached housing				X
	Assisted living facility				X
RH 5C	Accessory parking for commercial use located in RH 5A fronting on NE 85 th Street	X			
Central Business District Zones					
CBD 5A	Mixed use development containing office, retail and restaurant uses	X			
CBD 5	Restaurant/tavern				X
	Entertainment facility				X
	Hotel/motel				X
	General retail				X
	Office				X
	Assisted living facility				X
CBD 6	Restaurant/tavern				X
	General retail				X
	Hotel/motel				X
	Entertainment facility				X
	Office				X
	Attached housing				X
	Assisted living facility				X
Low Density Residential Zones					
RS 5.0, 7.2, 8.5, 12.5	Detached housing	X			
RSX 5.0, 7.2	Golf course			X	
Medium Density Residential Zones					
RM 3.6 and 5.0	Assisted living facility, nursing home, convalescent center	X		X	
	Detached, attached housing	X			
	limited local retail ²⁰			X	

²⁰ Grocery store; drug store, laundromat, dry cleaners, barber shop, beauty shop, shoe repair shop

Kirkland 85th Street Station Area Market Analysis Report
Existing Conditions

Zoning Districts	Permitted Uses	Required Review Process			
		None	I	IIA, IIB	DR
PLA 17	Assisted living facility			X	
	Detached, attached housing	X		X	
	Golf course			X	
High Density Residential Zones					
RM 1.8, RM 2.4	Assisted living facility	X		X	
	Detached, attached housing	X			
	Limited local retail ¹			X	
PLA 5A	Assisted living facility	X	X		
	Detached, attached housing	X			
PLA 5D	Assisted living facility	X	X		
	Detached, attached housing	X			
PLA 5E	Assisted living facility	X		X	
	Detached, attached housing				
Office Zones					
PLA 5B	Assisted living facility	X	X		
	community facility		X		
	Attached housing	X			
	Office	X			
	Mixed use housing and office	X			
PLA 5C	Assisted living facility				X
	detached/attached housing;	X			X
	mixed use attached housing and office uses;				X
	office				X
PLA 17A	Convalescent center, nursing home				X
	Attached/stacked housing				X
	Detached housing	X			
	Office				X
PO	Funeral home	X			
	Convalescent center, nursing home		X		
	Hospital			X	
	Office	X			
	Restaurant/tavern	X			
	Limited local retail ¹	X			
	Banking/financial services	X			
PR 3.6	Assisted living facility	X	X		X
	Detached, attached housing	X			X
	Mixed use attached housing and office	X			
	Funeral home		X		
	Office	X			
	Restaurant/tavern		X		
	Retail		X		

Kirkland 85th Street Station Area Market Analysis Report
Existing Conditions

		Required Review Process			
Zoning Districts	Permitted Uses	None	I	IIA, IIB	DR
Industrial Zone					
LIT ²¹	Breweries/wineries/distilleries;	X			
	Hazardous waste treatment/storage	X			
	High technology	X			
	Industrial laundry	X			
	Office	X			
	Packaging	X			
	Recycling center	X			
	Restaurant	X			
	Retail banking/financial services	X			
	Rental and storage services	X			
	Marijuana sales	X			
	Vehicle/boat service, and storage	X			
Wholesale services and trade	X				

Source: Kirkland Zoning Code, 2020; BERK, 2020.

Notes:

- Assisted living facilities includes assisted living, convalescent centers and nursing homes, unless otherwise noted.
- Entertainment facility includes entertainment, cultural, recreational facilities and private clubs/lodges
- Several uses are commonly included in most zones and are not listed here. These include church, school, day-care center, public utility, government facility, community facility, public park.
- The Study Area contains a Public Park (P) zone which contains community facility, government facility, public park, and public utility permitted uses. This zone is not included in the table.
- Review processes
 - Process I: Review and decision by the Planning Director
 - Process IIA: Public hearing and decision by the Hearing Examiner
 - Process IIB: Public hearing, Hearing Examiner recommendation, and decision by City Council
 - DR = Design Review, Chapter 142 KZC
- Where more than one review process is shown for a permitted use, the different requirements are usually based on geographic location or specific features of the use.

Exhibit 37 summarizes the development standards for zones within the Study Area. This includes minimum lot sizes, setback requirements, lot coverage maximums, and height restrictions. Some zones also incorporate intensity controls such as floor area ratio (FAR) maximums or minimum lot area per dwelling unit standards.

²¹ Development review required for uses in the Rose Hill Business District

Kirkland 85th Street Station Area Market Analysis Report
Existing Conditions

Exhibit 37: Study Area Zones, Development Regulations

Development Standards ²²					
Zoning Districts	Lot Size (sq ft)	Required Yards	Lot Coverage	Structure Height ²³	Other Intensity Controls (FAR, Max Density, etc)
Rose Hill Business District Zones					
RH 1A	None	Front: 10' Side: 0' Rear: 0'	80%	67'	
RH 1B	None	Front: 10' ²⁴ Side: 0' Rear: 0'	80%	35'	
RH 2A, 2B, 2C	None	Front: 20' ²⁵ Side: 0' Rear: 0'	RH 2C: 70% RH 2A, 2B: 80%	RH 2C: 35' RH 2B: 55' RH 2A: 67'	RH 2C: Min. lot area per dwelling unit is 3,600 SF.
RH 3 ²⁶	6 acres	Established through design review process	100%	45'-75'	Individual retail uses limited to max. gross floor area of 65,000 SF.
RH 4	3,600	Front: 20' Side: 5' Rear: 10'	70%	30'	Min. lot area per dwelling unit is 3,600 SF.
RH 5A, 5B	None	Front: 20' ²⁵ Side: 0' Rear: 15'	80%	35'	Individual retail uses limited to max. gross floor area of 65,000 SF.
RH 5C ²⁷	7,200	Front: 20'	50-70%	30'	

²² Standards shown are for the majority/primary permitted uses in each district; development standards for a specific use may differ.

²³ Measured as the vertical distance measured from the average building elevation to the highest point of any element of feature of a structure.

²⁴ 20' adjoining a residential zone

²⁵ 10' adjacent to NE 85th St.

²⁶ Development standards listed for highest/best use of mixed-use development with Conceptual Master Plan. Standards for other uses listed in KZC 53.34.

²⁷ Development standards for accessory parking use (associated with auto sales fronting NE 85th) listed in KZC 53.59.

Kirkland 85th Street Station Area Market Analysis Report
Existing Conditions

Development Standards ²²					
Zoning Districts	Lot Size (sq ft)	Required Yards	Lot Coverage	Structure Height ²³	Other Intensity Controls (FAR, Max Density, etc)
		Side: 5'-20' Rear: 10'-20'			
Central Business District Zones					
CBD 5A	None	Variable ²⁸	100%	Variable ²⁹	
CBD 5	None	Front: 20' Side: 0' Rear: 0'	80%	67'	
CBD 6	None	Front: 20' Side: 10' Rear: 10'	80%	54'	
Low Density Residential Zones					
RS 5.0, 7.2, 8.5, 12.5 RSX 5.0, 7.2	RS/RSX 5.0: 5,000 RS/RSX 7.2: 7,200 RS 8.5: 8,500 RS 12.5: 12,500	Front: 20' Side: 5' Rear: 10'	50%	RS Zones: 25' RSX Zones: 30'	RS and RSX zones have maximum FAR of 50%.
Medium Density Residential Zones					
RM 3.6 and 5.0	3,600 (Residential uses); 7,200 (Commercial Uses)	Front: 20' Side: 5' Rear: 10'	60%-80%	30'	Min. lot area per dwelling unit is 3,600 SF (RM 3.6) or 5,000 SF (RM 5.0).
PLA 17	7,200	Front: 20' Side: 5' Rear: 10'	60%-80%	30'	For multi-family development, min. lot size is 2 acres. Allowed density is minimum 3,600 SF per unit.
High Density Residential Zones					

²⁸ See Plate 5, KZC 180.

²⁹ See Plates 6 and 7, KZC 180.

Kirkland 85th Street Station Area Market Analysis Report
Existing Conditions

	Development Standards²²				
Zoning Districts	Lot Size (sq ft)	Required Yards	Lot Coverage	Structure Height²³	Other Intensity Controls (FAR, Max Density, etc)
RM 1.8, RM 2.4	3,600	Front: 20' Side: 5' Rear: 10'	60%-80%	30'	Min. lot area per dwelling unit is 1,800 SF (RM 1.8) or 2,400 SF (RM 2.4).
PLA 5A	3,600	Front: 20' Side: 5' Rear: 10'	60%-80%	30'	Min. lot area per dwelling unit is 1,800 SF.
PLA 5D	3,600	Front: 20' Side: 5' Rear: 10'	60%-80%	The lower of 4 stories or 40' above ABE. ³⁰	Min. lot area per dwelling unit is 1,800 SF.
PLA 5E	3,600	Front: 20' Side: 5' Rear: 10'	60%-80%	30'	Min. lot area per dwelling unit is 1,800 SF.
Office Zones					
PLA 5B	3,600	Front: 20' Side: 5' Rear: 10'	70%	30'	Min. lot area per dwelling unit is 1,800 SF.
PLA 5C	3,600	Front: 20' Side: 5' Rear: 10'	70%	30'	
PLA 17A	5,000	Front: 20' Side: 5' Rear: 10'	70%-80%	30'	Min. lot area per dwelling unit is 5,000 SF.
PO	None	Front: 20' Side: 10' Rear: 20'	70%	30'	

³⁰ 30' above ABE for structures containing multi-family units only.

Kirkland 85th Street Station Area Market Analysis Report
Existing Conditions

	Development Standards²²				
Zoning Districts	Lot Size (sq ft)	Required Yards	Lot Coverage	Structure Height²³	Other Intensity Controls (FAR, Max Density, etc)
PR 3.6	3,600	Front: 20' Side: 5' Rear: 10'	70%	30'	Min. lot area per dwelling unit is 3,600 SF.
Industrial Zone					
LIT	None	Front: 20' Side: 0' Rear: 0'	80%-90%	35'	

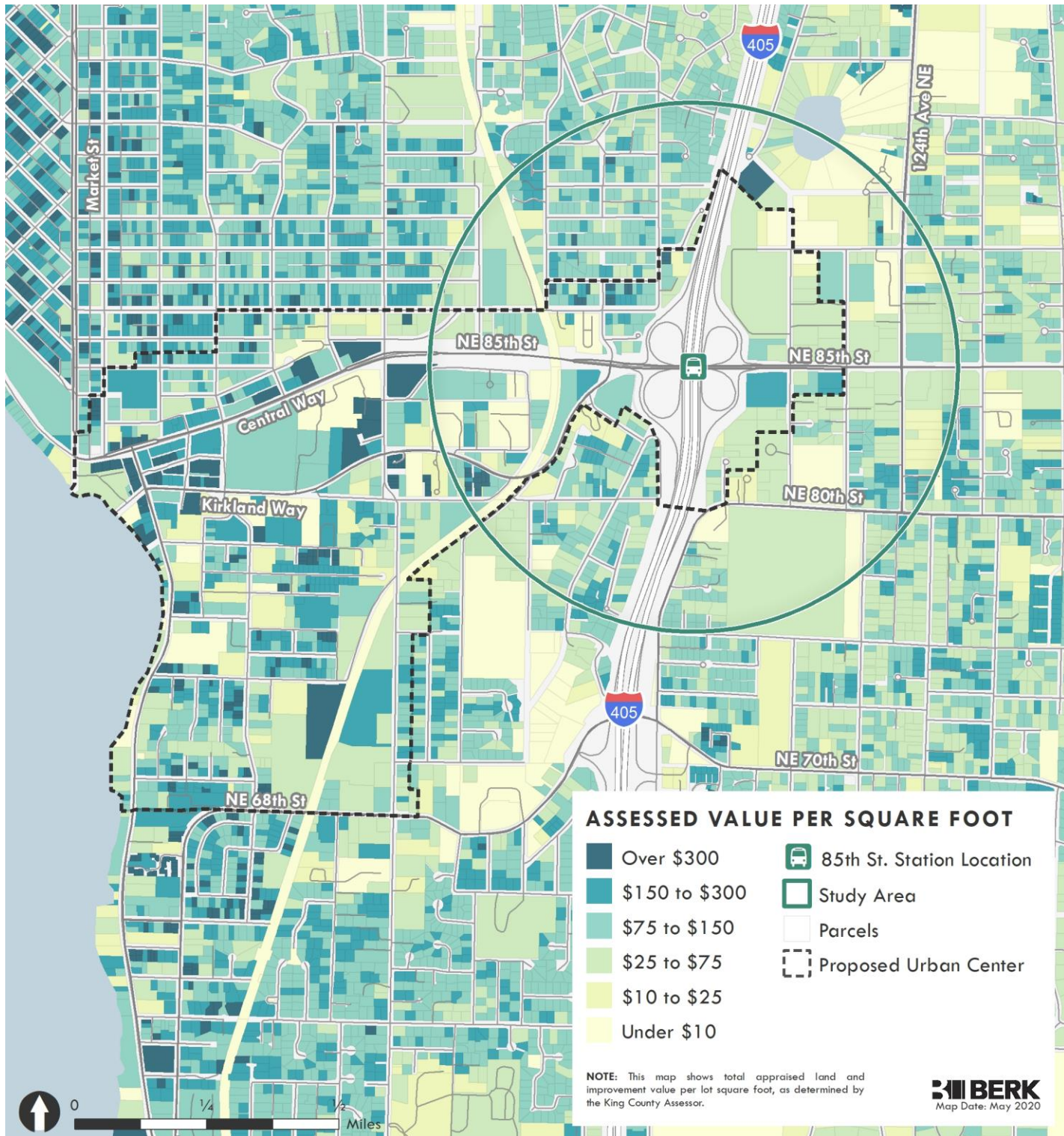
Exhibit 38 shows the range of total assessed values per square foot across the Study Area. The range of assessed value per square foot highlights that several sites in the Study Area, especially in the eastern and western edges, have lower assessed values (below \$25 per SF and between \$25 and \$75 per SF). The city's land capacity model evaluates development capacity based on the ratio of the value of land to improvements which shows development capacity on lands with lower ratios. See appendix B for a map reflecting development capacity by parcel data as of about 2015. Changes in land use and development may or may not occur on these properties and other properties not shown may actually change. As well, redevelopment could take the form of adding uses or space with existing uses remaining in place or could mean new uses. However, any changes would be based on property owner desires, market forces, and local regulations.

These sites likely include older and potentially obsolete buildings, and their lower valuation, along with existing development capacity, suggests that they could be potential locations for new, more intensive uses. However, lower valuation alone is not enough for redevelopment to occur. Factors such as property owner preferences, desired return on investments, and competition from other sites, can all affect which sites redevelop to their full development capacity.

Kirkland 85th Street Station Area Market Analysis Report

Existing Conditions

Exhibit 38. Total Assessed Value Per Square Foot, Study Area.



Source: King County Assessor, 2020; BERK, 2020.

Parking Requirements

Exhibit 39 summarizes parking requirements by zone and use.

Exhibit 39: Parking Standards by Zone

Zoning Districts	Permitted Uses	Parking Standards ³¹
Rose Hill Business District Zones		
RH 1A	Vehicle fuel and services	Case-by-case ³²
	Restaurant/tavern	1 space/100 gsf
	General retail	1 space/300 gsf
	Office	1 space/300 gsf ³³
	Hotel/motel	1 space/room
	Entertainment facility	Case-by-case ³⁴
	Attached housing	1.2 – 1.8 spaces/unit, depending on # of bedrooms ³⁵
	Assisted living facility	Assisted living: 1.7/unit Nursing home: 1.0/bed
RH 1B	Vehicle fuel and services	Case-by-case ²
	Business park	Case-by-case ⁴
	General retail	1 space/300 gsf
	Office	1 space/300 gsf ³
	Assisted living facility	Assisted living: 1.7/unit Nursing home: 1.0/bed
RH 2A, 2B, 2C	Vehicle fuel and services	Case-by-case ²
	Restaurant/tavern	1 space/100 gsf
	Entertainment facility	Case-by-case ⁴
	General retail	1 space/300 gsf
	Office	1 space/300 gsf ³
	College or university	Case-by-case ⁴

³¹ Number of spaces per gross square feet of floor area (shown as gsf) unless otherwise noted.

³² KZC 105.25; auto service center 1 space 250/gross sf. See also KZC 53.06 Special Regulation #1,

³³ 1 space/200 gsf for medical, dental, veterinary office uses.

³⁴ KZC 105.25.

³⁵ KZC 105.20 for visitor parking requirements.

Kirkland 85th Street Station Area Market Analysis Report
Existing Conditions

Zoning Districts	Permitted Uses	Parking Standards ³¹
	Attached housing	1.2 – 1.8 spaces/unit, depending on # of bedrooms ⁵
	Assisted living	Assisted living: 1.7/unit Nursing home: 1.0/bed
	Hotel/motel	1 space/room
RH 3	Mixed use containing retail, service, financial service, restaurant, tavern uses	As established in a Conceptual Master Plan.
	Vehicle fuel and services	Case-by-case ³⁴
	Restaurant/tavern	1 space/100 gsf
	General retail	1 space/300 gsf
	Hotel/motel	1 space/room ³⁶
	Entertainment facility	Case-by-case ³⁴
	Office	1 space/300 gsf ³
	Stacked dwelling units	1.2 – 1.8 spaces/unit, depending on # of bedrooms ³⁵
	Assisted living facility	Assisted living: 1.7/unit Nursing home: 1.0/bed
RH 4	Detached dwelling unit (Single-family)	2 spaces/unit
	Detached/attached housing (Multi-family)	1.2 – 1.8 spaces/unit, depending on # of bedrooms ⁵
	Assisted living facility	Assisted living: 1.7/unit (independent); 1/unit (assisted) Nursing home: 1.0/bed
	Office	1 space/300 gsf ³
	Mixed use attached housing and office uses	Residential: 1.2 – 1.8 spaces/unit, depending on # of bedrooms ⁵ . Office: Case-by-case ⁴
	Funeral home/mortuary	1 space/300 gsf
RH 5B	Vehicle fuel and services	Case-by-case ⁴
	Entertainment facility	Case-by-case ⁴
	Restaurant/tavern	1 space/100 gsf
	General retail	1 space/300 gsf
	Office	1 space/300 gsf ³
	Hotel/motel	1 space/room ⁶

³⁶ Does not include parking for ancillary meeting facilities. Parking for such facilities determined case-by-case.

Kirkland 85th Street Station Area Market Analysis Report
Existing Conditions

Zoning Districts	Permitted Uses	Parking Standards ³¹
	Detached/attached housing	Residential: 1.2 – 1.8 spaces/unit, depending on # of bedrooms ^{5 37} .
	Assisted living facility	Assisted living: 1.7/unit (independent); 1/unit (assisted) Nursing home: 1.0/bed
RH 5C	Accessory parking for commercial use located in RH 5A fronting on NE 85 th Street	Case-by-case⁴
Central Business District Zones		
CBD 5A	Mixed use development containing office, retail and restaurant uses	KZC Section 50.38.010, Special Regulation 7
CBD 5	Restaurant/tavern	1 space/125 gsf
	Entertainment facility	Case-by-case ⁴
	Hotel/motel	1 space/room
	General retail	1 space/350 gsf
	Office	1 space/350 gsf
	Assisted living facility	1.0 – 1.7 spaces/unit
CBD 6	Restaurant/tavern	1 space/125 gsf
	General retail	1 space/350 gsf
	Hotel/motel	1 space/room
	Entertainment facility	Case-by-case ⁴
	Office	1 space/350 gsf
	Attached housing	1.2 – 1.8 spaces/unit, depending on # of bedrooms ⁵
	Assisted living facility	1.0 – 1.7 spaces/unit
Low Density Residential Zones		
RS 5.0, 7.2, 8.5, 12.5 RSX 5.0, 7.2	Detached housing	2 spaces/unit
	Golf course	Case-by-case ⁴
Medium Density Residential Zones		
RM 3.6 and 5.0	Assisted living facility, nursing home, convalescent center	Assisted living: 1.7/unit (independent); 1/unit (assisted) Nursing home: 1.0/bed

³⁷ If one detached dwelling unit, 2 spaces required on-site.

Kirkland 85th Street Station Area Market Analysis Report
Existing Conditions

Zoning Districts	Permitted Uses	Parking Standards ³¹
	Detached, attached housing	Residential: 1.2 – 1.8 spaces/unit, depending on # of bedrooms ^{5 38.}
	limited local retail	1 space/300 gsf
PLA 17	Assisted living facility	Assisted living: 1.7/unit (independent); 1/unit (assisted) Nursing home: 1.0/bed
	Detached, attached housing	Residential: 1.2 – 1.8 spaces/unit, depending on # of bedrooms ^{5 7.}
	Golf course	Case-by-case ⁴
High Density Residential Zones		
RM 1.8, RM 2.4	Assisted living facility	Assisted living: 1.7/unit (independent); 1/unit (assisted) Nursing home: 1.0/bed
	Detached, attached housing	Residential: 1.2 – 1.8 spaces/unit, depending on # of bedrooms ^{5 7.}
	Limited local retail	1 space/300 gsf
PLA 5A	Assisted living facility	Assisted living: 1.7/unit (independent); 1/unit (assisted) Nursing home: 1.0/bed
	Detached, attached housing	Residential: 1.2 – 1.8 spaces/unit, depending on # of bedrooms ^{5 7.}
PLA 5D	Assisted living facility	Assisted living: 1.7/unit (independent); 1/unit (assisted) Nursing home: 1.0/bed
	Detached, attached housing	Residential: 1.2 – 1.8 spaces/unit, depending on # of bedrooms ^{5 7.}
PLA 5E	Assisted living facility	Assisted living: 1.7/unit (independent); 1/unit (assisted) Nursing home: 1.0/bed
	Detached, attached housing	Residential: 1.2 – 1.8 spaces/unit, depending on # of bedrooms ^{5 7.}
Office Zones		
PLA 5B	Assisted living facility	Assisted living: 1.7/unit (independent); 1/unit (assisted) Nursing home: 1.0/bed
	community facility	Case-by-case ⁴

Kirkland 85th Street Station Area Market Analysis Report
Existing Conditions

Zoning Districts	Permitted Uses	Parking Standards ³¹
	Attached housing	Residential: 1.2 – 1.8 spaces/unit, depending on # of bedrooms ⁵ .
	Office	1 space/300 gsf ³
	Mixed use housing and office	Residential: 1.2 – 1.8 spaces/unit, depending on # of bedrooms ⁵ . Office: Case-by-case ⁴
PLA 5C	Assisted living facility	Assisted living: 1.7/unit (independent); 1/unit (assisted) Nursing home: 1.0/bed
	Detached/attached housing;	Residential: 1.2 – 1.8 spaces/unit, depending on # of bedrooms ^{5 7} .
	Mixed use attached housing and office uses;	Residential: 1.2 – 1.8 spaces/unit, depending on # of bedrooms ⁵ . Office: Case-by-case ⁴
	Office	1 space/300 gsf ³
PLA 17A	Convalescent center, nursing home	Assisted living: 1.7/unit (independent); 1/unit (assisted) Nursing home: 1.0/bed
	Attached/stacked housing	Residential: 1.2 – 1.8 spaces/unit, depending on # of bedrooms ^{5 7} .
	Detached housing	2 spaces/unit
	Office	1 space/300 gsf ³
PO	Funeral home	1 space/300 gsf
	Convalescent center, nursing home	Assisted living: 1.7/unit (independent); 1/unit (assisted) Nursing home: 1.0/bed
	Hospital	Case-by-case ⁴
	Office	1 space/300 gsf ³
	Restaurant/tavern	1 space/100 gsf
	Limited local retail ¹	1 space/300 gsf
	Banking/financial services	1 space/300 gsf
PR 3.6	Assisted living facility	Assisted living: 1.7/unit (independent); 1/unit (assisted) Nursing home: 1.0/bed
	Detached, attached housing	Residential: 1.2 – 1.8 spaces/unit, depending on # of bedrooms ^{5 7} .
	Mixed use attached housing and office	Residential: 1.2 – 1.8 spaces/unit, depending on # of bedrooms ⁵ .

Kirkland 85th Street Station Area Market Analysis Report
Existing Conditions

Zoning Districts	Permitted Uses	Parking Standards³¹
		Office: Case-by-case ⁴
	Funeral home	1 space/300 SF floor area
	Office	1 space/300 gsf ³
	Restaurant/tavern	1 space/100 SF floor area
	Retail	1 space/300 SF floor area
Industrial Zone		
LIT ³⁹	Breweries/wineries/distilleries;	1 space/1,000 gsf. Tasting rooms: 1 space/100 gsf
	Hazardous waste treatment/storage	1 space/1,000 gsf
	High technology	Manufacturing: 1 space/1,000 gsf. Office: 1 space/300 gsf
	Industrial laundry	1 space/1,000 gsf
	Office	1 space/300 gsf³
	Packaging	1 space/1,000 gsf
	Recycling center	Case-by-case⁴
	Restaurant	1 space/100 gsf
	Retail banking/financial services	1 space/300 gsf
	Rental and storage services	Case-by-case⁴
	Marijuana sales	1 space/300 gsf
	Vehicle/boat service, and storage	Case-by-case⁴
	Wholesale services and trade	1 space/1,000 gsf

Exhibit 40: Parking Spaces Provided by Building Type for Study Area and Comparison Geographies.

Parking Spaces/Unit (average)	Office (Spaces/1,000 SF)	Retail (Spaces/1,000 SF)	Multifamily (Spaces/Unit)
Study Area	3.8	4.8	2.7
Greater Downtown Kirkland	3.3	3.4	1.5
Totem Lake	4.1	4.2	1.6
Downtown Bellevue	3.1	4.4	1.1
Overlake	4.2	4.6	1.5

Sources: CoStar, 2020; BERK, 2020.

Case Studies

In 2015, the National Institute for Transportation and Communities in Portland, Oregon released a national survey of BRT systems which attempts to quantify their impacts on development. **Key findings from this study indicate an increase in development along BRT corridors, both for multifamily and office construction.** The report emphasizes that results are strongest for corridors connecting to employment centers, where opportunities for redevelopment exist, and when paired with economic development incentives.⁴⁰ The following case studies profile transit investments across the region as examples of development change which may be anticipated for the 85th Street Station. In each example, policy initiatives are coupled with increased and improved transit service to achieve overall development outcomes.

⁴⁰ Nelson and Ganning, 2015 "[National Study of BRT Development Outcomes](#)"

Case Study One: Springfield, Oregon

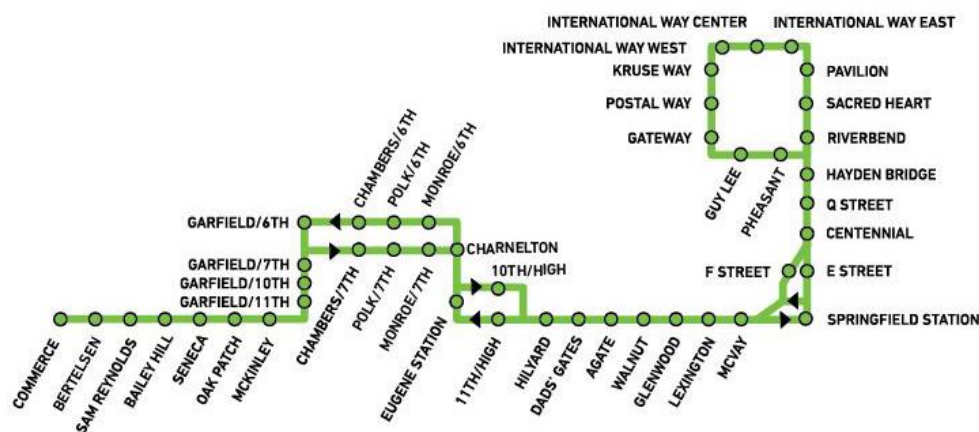


Photo credit: <https://blogs.uoregon.edu/~chicks3su16gateway/>

Springfield, Oregon lies directly east of Eugene. Eugene introduced Bus Rapid Transit service in 2007 and has since added two extensions to the route in response to its strong performance.⁴¹ Ridership along the corridor dramatically increased and studies show positive impacts to home values near its stations.⁴² **An employment study of this BRT corridor finds that despite job loss experienced in the metro area during the 2004 – 2010 timeframe, jobs actually grew by about 10% within a 0.25 mile radius of BRT stations in Eugene and Springfield.**⁴³ This study notes that providing incentives such

as expedited permitting and upzones are effective tools for incentivizing development alongside BRT investments. Authors suspect that developers perceive BRT service as more permanent than standard bus service, and this confidence eases financial concern for investment protection.

Exhibit 41: West Emerald Express (EmX) BRT route.



Source: [Oregon Business, 2017](#).

⁴¹ [Institute for Transportation & Development Policy, 2013](#)

⁴² Perk et al., 2017 "[Impacts of BRT on Surrounding Residential Property Values](#)"

⁴³ Nelson et al., 2013 "[Bus Rapid Transit and Economic Development](#)"

Case Study Two: Vancouver, Washington

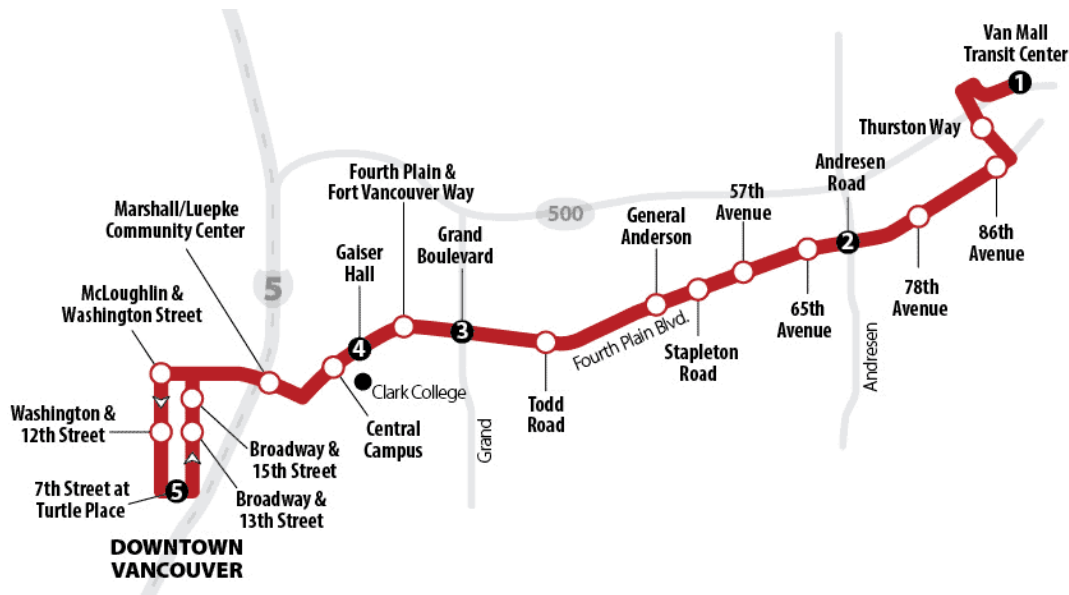
Vancouver, Washington is located adjacent to the metro hub of Portland, Oregon. Similar to Kirkland, Vancouver both feeds into the nearby economy of Portland and maintains a downtown and economic base of its own. BRT service, coined “The Vine”, was introduced to the community in 2017. The service runs with 17 stations from the downtown core to the Transit Center at Vancouver Mall. **This introduction was coupled with a Multifamily Tax Exemption (MFTE) buffer zone surrounding the corridor to promote denser housing development near transit amenities. This combination of policy change and mobility investment sparked commercial development throughout the corridor. Over 1,000 multifamily units came to market between 2016-2019 along the six-mile corridor, with locations clustering near bus stations.** The combination of policy change in concert with improved public services was a key component of this successful boost to development.

Exhibit 42: Multifamily Development Along Vancouver Vine Corridor, Existing and Planned.

Project Phase	Multifamily Units
Developed	1,023
Under Construction	254
Land Use Review	559

Source: City of Vancouver, 2019.

Exhibit 43: The Vine Route Map; Vancouver, Washington.



Source: [C-Tran](#), 2020.

Case Study Three: Portland, Oregon

The 60th Avenue light rail station in Portland, Oregon offers an example of station development which sparked new investment in an area with auto-centric development patterns around a highway connecting to major urban centers in the region. **Portland's regional government strengthens the impact of its light rail investments with TOD policies which provide funding for public-private development partnerships. These initiatives yield projects which reflect desired growth patterns incorporating a mix of uses and denser residential styles near transit.**⁴⁴ One such example is the Center Commons project, a brownfield site redeveloped in 2000 as a mixed-income community with 4 apartment buildings, 26 townhomes, and on-site daycare.⁴⁵ Residents of this project live within a five-minute walk of the light rail station.

Exhibit 44: Development patterns surrounding 60th Street Station in Portland.



Image Source: Google Maps, 2020.

⁴⁴ Cervero, Robert, 2004; "Transit-oriented Development in the United States: Experiences, Challenges, and Prospects" p. 363

⁴⁵ https://www.oregonmetro.gov/sites/default/files/2016/08/25/centercommons_final.pdf

Appendix A – Real Estate Data

Real estate market data used in this report comes from Costar. Sample sizes vary by area and type of property, summarized in the below tables. Proposed and demolished projects were excluded from this dataset, while existing and under construction projects were included. While most properties report building class, size, and age, a smaller proportion report rental rate. This ratio is included in these tables as well, for reference.

Office Properties

Focus Area	Number of Properties	Properties Reporting Rental Rates
Study Area	14	3
Greater Downtown Kirkland	73	73
Totem Lake	46	10
Downtown Bellevue	87	87
Overlake	59	59

Retail Properties

Focus Area	Number of Properties	Properties Reporting Rental Rates
Study Area	21	21
Greater Downtown Kirkland	87	86
Totem Lake	85	6
Downtown Bellevue	122	122
Overlake	41	41

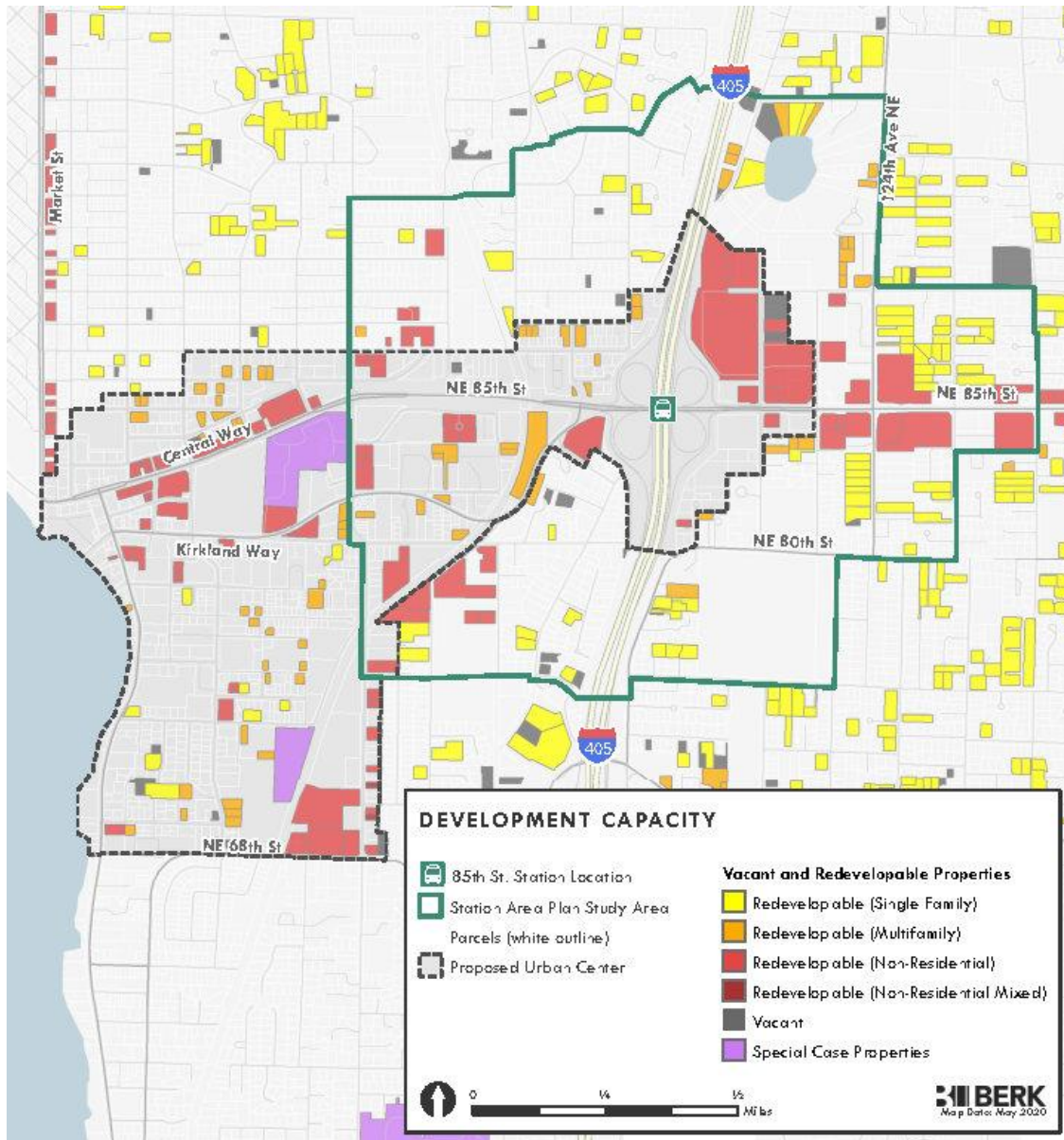
Multifamily Properties

Focus Area	Number of Properties	Properties Reporting Rental Rates
Study Area*	8	1
Greater Downtown Kirkland	53	24
Totem Lake	27	14
Downtown Bellevue	42	39
Overlake	8	7

**Not included in reported statistics for rental rates, due to a lack of data points.*

Appendix B – City Development Capacity Model

Development Capacity, Study Area.



Source: City of Kirkland, 2015; BERK, 2020.

In the city's development capacity model each parcel is classified into one of the following three categories:

- Vacant – parcels that have no existing development and that are anticipated to develop to the maximum allowed by existing zoning.
- Redevelopable - parcels that are partially developed but have the capacity for additional development. Parcels are considered to be redevelopable as follows:
 - In single family residential zones: parcels which have the potential to be subdivided into additional lots. Parcels that are large enough to be divided into only two lots, are considered to be redevelopable only when the assessed improvement value is less than 50% of the assessed land value.
 - In multi-family zones: parcels that are developed with apartments (not condominiums) and the existing number of dwelling units is less than 60% of the maximum number of dwelling units allowed by the zoning.
 - In commercial, office and industrial zones other than the Totem lake Business District zones, parcels with an assessed value of improvements which is < 50% of the assessed land value.
- Developed – parcels that contain development but are not determined to be redevelopable. These parcels are eliminated from the analysis.
- For parcels with existing development, the determination of whether the parcel is classified as Redevelopable or Developed is based on the calculation of additional development potential.

11.6

Appendix — Forbes Lake Technical Memo

TECHNICAL MEMORANDUM

Date: December 10, 2021

To: Brad Barnett, Erin Christensen Ishizaki, and Becca Book; Mithun

From: Brianna Blaud, Tina Mirabile, PWS, and Chris Webb, PE; Herrera Environmental Consultants, Inc.

Subject: City of Kirkland Forbes Lake Park Open Space Strategy Permitting

This technical memorandum provides an overview of preliminary planning to expand public open space and neighborhood connectivity near the City of Kirkland's Forbes Lake Park as part of the new Bus Rapid Transit (BRT) station at 85th Street NE and I-405. Existing protected critical areas, including Forbes Lake and associated wetlands and tributary drainages to Forbes Creek, including some piped conveyances, appear to restrict options for developing open space, however the attraction of these natural features provide opportunities for passive and active recreational public use and environmental education. The attached Figure 1 was developed by Mithun based in part on discussions conducted during a November 22, 2021, meeting with Herrera staff.

Based on the City's mapping of critical areas, the proposed open space options have been selected to avoid and or minimize potential environmental impacts, as required for regulatory compliance and permitting by federal, state, and local agencies, as applicable. Where environmental impacts are proposed, compensating mitigation measures, and permitting feasibility with environmental regulatory agencies were considered.

To accurately measure environmental impacts, field investigations to ground-truth mapping and or update critical area boundaries according to jurisdictional requirements for permitting review will be required for project design. Wetland identification and delineation needs to be conducted in accordance with approved federal and Ecology methodologies described in WAC 173-220035 and Kirkland Zoning Code (KZC) 90.110.

Table 1 outlines the estimated permitting review requirements of federal, state, and local jurisdictional environmental regulatory agencies, as applicable, for each open space option. All proposed options will minimally require City review for critical areas compliance (Chapter 90 KZC), fill and grading, stormwater management, building permits, right-of-way uses and encroachments. Construction of public park facilities associated with Forbes Lake is being reviewed through a Park [Master Plan](#) process, pursuant to KZC [90.40\(6\)](#) (KZC 90.90).

Only those actions that require in-water work within Forbes Lake, wetlands and or streams will require federal permitting by the US Army Corps of Engineers (USACE) for compliance with Section 404 of the Clean Water Act (CWA) and 401 Water Quality Certification (administered by



Washington Department of Ecology [Ecology]) Federal funding and permitting also requires National Environmental Policy Act (NEPA) compliance and Section 7 of the Endangered Species Act (ESA) and Section 106 of the National Historic and Preservation Act (NHPA) reviews.

Washington Department of Fish and Wildlife (WDFW) also has jurisdiction for work occurring in and over the water, including lakes and stream and daylighting of piped conveyances as outlined by the State's Hydraulic Code Chapters 75.20 RCW and 220-110 WAC).

Table 1. Anticipated Environmental Regulatory Reviews By Each Open Space Option.

Proposed Open Space Opportunity	Proposed Environment Impacts	Environmental Regulatory Agency Authorization		
		USACE Section 404, Section 7 ESA, EFH, Section 106 NHPA	WDFW HPA	City of Kirkland Zoning Code Chapter 24.02 (SEPA) and Chapter 90 (Critical Areas)
1 – New park fronting 120th Ave and 90th Street	Potential wetland fill and mitigation	X		X
	Potential daylighting of stream – may result in mitigation credit	X	X	
2 – New Park NW corner 120th Ave @ 90th Street	Potential wetland fill and mitigation	X		X
3 – NW corner of 120th Ave @ 90th Street	Frequently flooded area, stormwater management			X
4 – New park opportunities along 120th blue/green Corridors	Riparian buffer enhancement			X
5, 7, and 8 – New raised boardwalks	In- and over-water, mitigation	X	X	X
6 – New trailheads	Wetland buffer impacts			X
9 – Enhance existing parks				X

As the table indicates, the proposed open space options requiring in-water work (1, 2, 5, 7 and 8) will require more resource time and reporting preparation than options occurring in upland areas only. A summary of project-associated potentially applicable federal, state and City of Kirkland environmental regulations is attached as Appendix A.

As site specific options are developed pre-application meetings should be coordinated with the various agencies, including USACE, WDFW, and the City of Kirkland's planning and public works departments, as well as the Muckleshoot Tribe; to obtain verification of required permits, submittal requirements, and timelines to authorize the various project components.

MITIGATION CONSIDERATIONS

Environmental agency requirements to compensate or mitigate for wetland impacts are based on achieving “no net loss of functions” through best available science. Mitigation ratios assigned to compensate for environmental impacts typically require more square footage/acreage than the impacted area and a greater restoration uplift than the impacted existing environmental conditions. The City’s mitigation ratios required for wetland, stream and buffer impacts are presented in Table 2 (Chapter 90.150 KZC). Wetland categorizations are consistent with Ecology’s Washington State Rating System for Western Washington, as updated (Hruby, 2014).

Table 2. City of Kirkland Mitigation Ratios for Wetlands and Buffers.					
Category of Wetland Impacted	Creation	Re-establishment/ Rehabilitation Only	Creation and Rehabilitation	Creation and Enhancement	Enhancement Only
Category I: Forested	6:1	12:1	1:1 C 10:1 RH	1:1 C 20:1 E	24:1
Category I: Based on Total Function	4:1	8:1	1:1 C 6:1 RH	1:1 C 12:1 E	16:1
Category I: Bog	Not possible	6:1 RH of a bog 8:1	Not possible	Not possible	Case-by-case
Category II	3:1	6:1	1:1 C 4:1 RH	1:1 C 8:1 E	12:1
Category III	2:1	4:1	1:1 C 2:1 RH	1:1 C 4:1 E	8:1
Category IV	1.5:1	3:1	1:1 C 1:1 RH	1:1 C 2:1 E	6:1
Buffer ^a	Minimum 1:1	Minimum 1:1	Minimum 1:1	Minimum 1:1	Minimum 1:1

^a Additional requirements shown in Kirkland Municipal Code (KZC) 90.150(2)(c).

C = Creation RH = Rehabilitation E = Enhancement

Designated wetland buffers to protect wetlands are established based on the wetland category and or its associated habitat, as documented on Ecology’s wetland rating forms. The City’s standard wetland buffers are displayed in Table 3.

Table 3. City of Kirkland Standard Buffer Widths Based on Habitat Points.			
Wetland Category	3-5 Habitat Points	6-7 Habitat Points	8-9 Habitat Points
Category I: Bogs and Wetlands of High Conservation Value	190 feet	190 feet	225 feet
Category I: Others	75 feet	110 feet	225 feet
Category II	75 feet	110 feet	225 feet
Category III	75 feet	110 feet	225 feet
Category IV	40 feet		
See KZC 90.130 for buffer vegetation requirements			

Allowances for alternative wetland buffer widths and or buffer width averaging are described in 90.55 and 90.114 KZC.

The City's standard buffers to protect streams, as designated in Table 4, are based on their water type classification in accordance with WAC [222-16-030](#), as amended (90.65 KZC).

Table 4. City of Kirkland Stream Types and Standard Buffer Width.	
Stream Type	Buffer Width
F (Fish bearing)	100 feet
Np (Perennial, non-fish bearing)	50 feet
Ns (Seasonal, non-fish bearing)	50 feet
See KZC 90.130 for buffer vegetation requirements	

Allowances for alternative stream buffer widths and or buffer width averaging are described in 90.65 and 90.114 KZC.

The City encourages daylighting a [stream](#) that is located in a [culvert](#) to restore it to a more natural and open condition (90.75 KZC). The purpose is to improve the values and functions of the [stream](#), including maintaining water quality, reducing storm and flooding water flow, and providing wildlife habitat. Chapter 90.80 KZC describes allowances for buffer reductions for the meandering or daylighting of streams. A stream daylighting plan is required for submittal to the City for project review. It should be noted that the conversion of wetland habitat to a stream is not applicable for review by the USACE for a nationwide permit based on habitat enhancement. The USACE would review such a conversion according to an Individual Permit and Individual 401 Water Quality Certification.

There are additional City standards regarding tree preservation and native buffer vegetation requirements which can be addressed in the preparation of a critical areas report for specific project review. The City's codes however appear to be flexible in allowing modifications to critical areas that will benefit public use and habitat functions.

STORMWATER

Stormwater within the City of Kirkland is regulated under the Kirkland Municipal Code Section 15.52. Any work that results in five hundred square feet or more of new impervious surface, replaced impervious surface or new plus replaced impervious surface; or is located with a sensitive area will need to be reviewed for compliance with the 2016 King County Surface Water Design Manual (KCSWDM). The KCSWDM requires water quality treatment for pollution generating impervious surfaces (i.e., roadways and parking lots) if more than 5,000 sf of new plus replaced impervious surfaces are created and stormwater flow control if more than 10,000 sf of new plus replaced impervious surfaces are created.

Within natural areas stormwater dispersion can be a simple and cost-effective flow control practice without the impacts of a pond or vault. However, when constructing more than 10,000 sf of new impervious surface for trails that are near wetlands boundaries or open water this strategy is often not feasible. Where it is not feasible to disperse stormwater, or soils are saturated and stormwater cannot be infiltrated, topography does not allow stormwater to be routed to different threshold discharge areas¹, and stormwater cannot be collected and routed to another flow control facility it may be necessary to use an elevated boardwalk with open grate decking. Therefore, projects need to be strategic in how trails are routed (to facilitate dispersion) or what materials are used (i.e., boardwalks with open grate decking) to avoid exceeding the 10,000 sf maximum within any single threshold discharge area.

Because Forbes Lake is sensitive to phosphorus, any water quality treatment for any pollution generating impervious surfaces will need to be selected from the Sensitive Lake Protection menu in the KCSWDM. Proprietary stormwater filters with a General Use Level Designation for phosphorus treatment and the new non-proprietary High Performance Bioretention Soil Mixture would need to be used. More information on this new soil mixture can be found here: <<https://apps.ecology.wa.gov/publications/documents/2110023.pdf>>.

¹ A threshold discharge area means an onsite area draining to a single natural discharge location, or multiple natural discharge locations that combine within one-quarter-mile downstream.

Note:

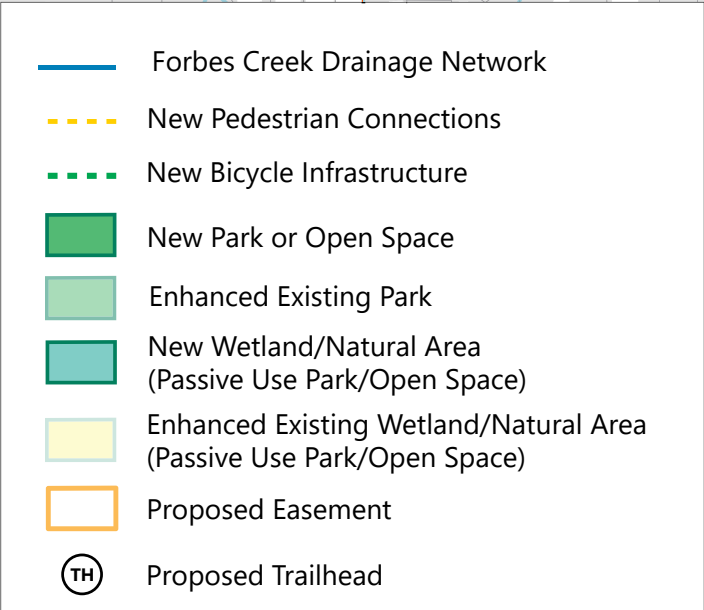
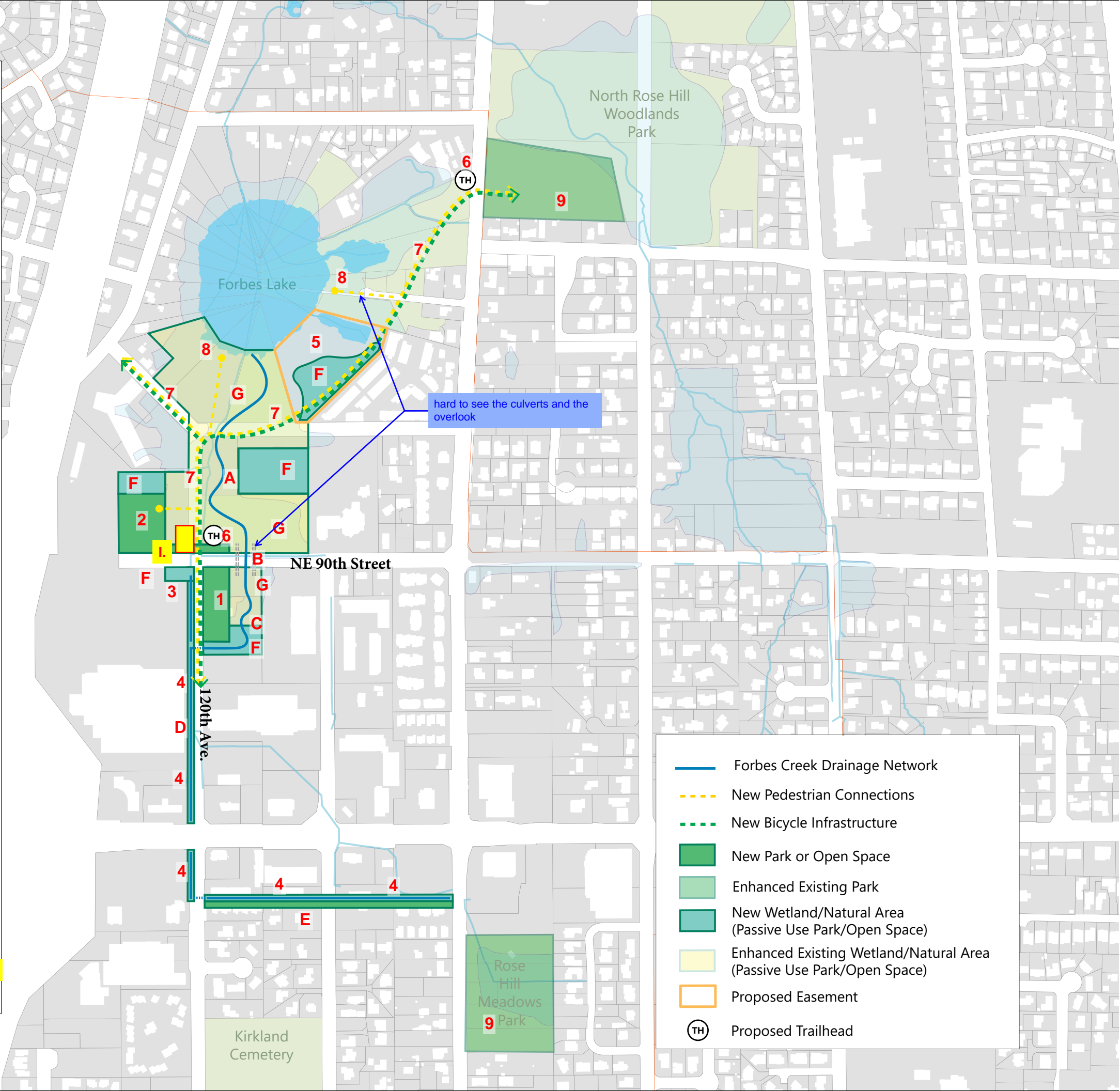
Some pages in this document have been purposely skipped or blank pages inserted so that this document will print correctly when duplexed.

Open Space Opportunities

- 1. New park space fronting 120th Ave & 90th St. This park can have an urban frontage on 120th with the eastern portion acting as a stormwater park or with focus on the restored/daylighted Forbes Creek. The park space along 120thAve will require mitigation as a portion of it is currently designated wetland.
- 2. New park space at the northwest corner of 120th Ave and 90th St. A portion of this area is upland and not designated wetland. This can be used for active and passive recreation and could be connected to the park at the southeast corner of this intersection through an enhanced frontage along 90th St. This frontage improvement would need mitigation as it is currently wetland.
- 3. Potential open space/park at the southwest corner of 120th Ave and 90th st. This corner of the parking lot experiences frequent flooding and can used for stormwater treatment or to open space as a floodable park.
- 4. New Pocket parks or a linear park along the 120th Blue/Green Corridor or along the east/west portion of the Forbes Creek Drainage course
- 5. Obtain an easement between Forbes Lake and the Lochshire Condominiums to allow for a raised boardwalk and wetland mitigation in that area
- 6. New trailheads at 120th Ave & 90th St. and the connection to North Rose Hill Woodlands Park at 124th
- 7. New boardwalks to connect pedestrians and cyclists from 120th Ave & 90th St. to North Rose Hill Woodlands Park at 124th.
- 8. New boardwalk connections to Forbes Lake
- 9. Enhance existing park space at North Rose Hill Woodlands Park and/or Rose Hill Meadows Park to support more functional active and passive park uses

Habitat Creation/Restoration/Mitigation Opportunities

- A. Create a new, sinuous Forbes Creek channel between Forbes Lake and 90th St with enhanced wetland/riparian habitat.
- B. Improve hydrological connections between the wetlands on either side of 90th St. This can be achieved through daylighting Forbes Creek in a large box culvert or by adding a number of smaller culverts to connect the wetlands.
- C. Daylight a portion of Forbes Creek South of 90th St.
- D. Create an open stormwater channel for Forbes Creek along the Blue/Green corridor and potentially in the east/west direction connecting all the way to Rose Hill Meadows Park
- E. Create a treed/riparian corridor along the open channel.
- F. Create new wetlands adjacent to existing wetlands near Forbes Lake
- G. Enhance existing wetlands near Forbes Lake to remove invasives and revegetate with native plants
- H. Private homeowner program within the basin to improve phosphorus issues in Forbes Lake
- I. Potential site for regional stormwater facility integrated with park functions.



APPENDIX A

Permit Matrix

Appendix A. Permit Applications, Supporting Documentation, and Estimated Timelines for Authorizations.					
Permit/Approval	Lead Agency	Jurisdiction/Trigger	Permit/Approval Regulatory Code and Pertinent Information	Dependencies/Predecessors	Estimated Processing Time
FEDERAL					
NEPA Environmental Assessment (EA) and Finding of No Significant Impacts (FONSI)	Funding Agency or USACE	Federally funded or permitted projects with potential but unknown significant adverse impacts. Could evolve to an EIS if significant impacts are discovered	National Environmental Policy Act (1969) < https://www.environment.fhwa.dot.gov/nepa/classes_of_action.aspx#ea > NEPA requires compliance with Section 7 ESA and Section 106 NHPA	<ul style="list-style-type: none"> Identified project alternatives Discipline Reports/Studies: discussing the affected environment; impacts to (non-exclusive list) air, water, wetlands, streams, historic and cultural resources, 4(f)/6(f) resources, community (social and economic), transportation, noise, visual aesthetics, and wildlife (including threatened and endangered species); and proposed impact mitigation. 30 percent design Conceptual mitigation Property ROE (if applicable) 	180 days
Clean Water Act Section 404 Individual Permits and Nationwide Permits	USACE	Any discharge of fill in the waters of the US (includes tidal, lakes, streams, and wetlands). Includes temporary discharges such as sandbags or incidental fallback during dredging.	Clean Water Act 1972 < https://www.ecfr.gov/current/title-33/chapter-II/part-323/section-323.3 > Discharges requiring a permit 33 CFR 323.3	<ul style="list-style-type: none"> Joint Aquatic Resource Permit (JARPA) 60 percent design (USACE drawings) Project description (purpose and need) Identification and evaluation of stream and wetland impacts Conceptual Mitigation Report and Design Property ROE for surveys (if applicable) 	1–2 years
Section 106 Review	NEPA Lead Funding Agency or USACE	All ground-disturbing projects are screened for potential cultural resources, regardless of funding, which will determine if a survey is required to comply with Section 106 and the King County Historic Preservation Program requirements.	Section 106 of the National Historic Preservation Act of 1966 < https://www.gsa.gov/real-estate/historic-preservation/historic-preservation-policy-tools/legislation-policy-and-reports/section-106-national-historic-preservation-act-of-1966 >	<ul style="list-style-type: none"> 30 to 60 percent design Project description and scope of Area of Potential Effects (APE) (temporary and permanent horizontal and vertical impacts) Some impacts may require mitigation and/or preparation of a Memorandum of Agreement (MOA) that must be signed by affected parties before the process is deemed complete 	Approximately 90 days for no impacts; there is no known timeline if an MOA is needed.
Biological Assessment/ Biological Evaluation Or No Effect Letter	National Marine Fisheries Service (NMFS)	In-water work with potential impacts to Endangered Species Act (ESA) listed species or Essential Fish Habitat (EFH).	Endangered Species Act (1973), Section 7 and Section 4(d); 50 CFR, Part 402 < https://www.fisheries.noaa.gov/topic/endangered-species-conservation > Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 94-265) < https://www.fisheries.noaa.gov/resource/document/magnuson-stevens-fishery-conservation-and-management-act >	<ul style="list-style-type: none"> 30 to 60 percent design Project description and scope, including haul routes, construction techniques, and equipment Impact minimization measures Construction sequence/timing Project impacts Conceptual mitigation plan Critical areas studies, hydraulics analysis, stormwater analysis (TIR) EFH Assessment, typically included in Biological Assessment report for ESA consultation Property ROE for stream and wetland surveys 	90 – 230 days for Biological Assessment/ Biological Evaluation 28 days for No Effect letter
Migratory Bird Treaty Act (MBTA)	US Fish and Wildlife Service (USFWS)	Any clearing/grubbing and/or vegetation removal, impacts to structures, and routine maintenance of bridges between the dates of March 15–August 31.	16 U.S.C. 703–712 50 CFR 10.12–13 < https://fwsepermits.servicenowservices.com/fws >	<ul style="list-style-type: none"> Scope of work/project description Timing/construction schedule Clearing and grading limits Bird screening/survey Property ROW (if applicable) 	Must submit a Management Plan at the beginning of each year detailing upcoming proposed projects. Once USFWS has the Plan, activation of the permit, if needed, can take less than a week.

Appendix A (continued). Permit Applications, Supporting Documentation, and Estimated Timelines for Authorizations.					
Permit/Approval	Lead Agency	Jurisdiction/Trigger	Permit/Approval Regulatory Code and Pertinent Information	Dependencies/Predecessors	Estimated Processing Time
STATE					
SEPA Environmental Checklist (ECL) and Determination of Non-Significance	Washington State Department of Ecology (Ecology)	Non-exempt action that does not have significant adverse impacts.	State Environmental Policy Act (1971); RCW 43.21C; WAC 197-11 < https://ecology.wa.gov/regulations-permits/SEPA-environmental-review >	<ul style="list-style-type: none"> • 30 to 60 Percent Design Plans • Project description (purpose and need) • Project impacts and minimization measures • Conceptual mitigation plan • Discipline Reports/Studies: Critical Areas (wetland, stream, floodplain, etc.), wildlife, water quality, noise, air, transportation, etc. • Engineers Estimate (for GHG calculations) 	60 days
Hydraulic Project Approval (HPA)	Washington Department of Fish and Wildlife (WDFW)	Working within or impacting fresh waters or salt waters of the state. This also includes work that has the potential to impact waters of the state occurring landward within 200 feet of the OHWM.	Chapter 75.20 RCW Chapter 220-110 WAC < https://wdfw.wa.gov/licenses/environmental/hpa >	<ul style="list-style-type: none"> • SEPA complete or determination pending 60 percent design (JARPA drawings) • Project description (purpose and need) • Identification and evaluation of critical area impacts • Conceptual Mitigation Report and Design 	45 days
Water Quality Certification (401) (Programmatic Approval or Individual Permits)	Ecology	Applying for federal permit (i.e., USACE) to conduct any action that might result in discharge of dredge or fill materials into waters or excavation in waters of the State.	Clean Water Act, Section 401 Chapter 173-225 WAC < https://apps.leg.wa.gov/wac/default.aspx?cite=173-225 > Individual USACE permits require an individual 401 WQ Certification and separate application process. Most activities conducted under a USACE Nationwide permit have programmatic 401 WQ Certification approval and only require a concurrence letter from Ecology.	<ul style="list-style-type: none"> • If applicable to the project: <ul style="list-style-type: none"> ◦ Mitigation plans ◦ Operation and maintenance plans ◦ Stormwater site plans ◦ Restoration plans 	Programmatic Approvals 30-60 days after USACE approval Individual Permits 6 to 12 months
Construction Stormwater General Permit of the National Pollutant Discharge Elimination System (NPDES)	Ecology	Disturbance of more than 1 acre of land.	Clean Water Act (90.48 RCW; Chapter 176-226 WAC) < https://apps.leg.wa.gov/RCW/default.aspx?cite=90.48 > < https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Stormwater-general-permits/Construction-stormwater-permit >	<ul style="list-style-type: none"> • Public Notice and issue SEPA Threshold Determination • Two week notice in the newspaper, with a 30 day comment period following the final publication 	60-90 days
Order 21-02 Archeological and Cultural Resources	Department of Archaeology and Historic Preservation (DAHP)	Any project not undergoing a Section 106 review.	Archeological and Cultural Resources Executive Order 21-02 (formerly 05-05) https://dahp.wa.gov/2102	<ul style="list-style-type: none"> • EZ/Project Review Form 	30 days
LOCAL					
Pre-application Meeting	City of Kirkland	A virtual appointment to go over project design and inform on local permitting needs.	City of Kirkland Department Services Center < https://www.kirklandwa.gov/Government/Departments/Development-Services-Center >	<ul style="list-style-type: none"> • 30 to 60 percent design plans • Project description (purpose and need) 	2 weeks
Utilities, Grading, and Right of Way	City of Kirkland	Required for land surface disturbance or tree and vegetation maintenance.	City of Kirkland Department Services Center < https://www.kirklandwa.gov/Government/Departments/Development-Services-Center/Apply-for-a-Permit/Utilities-Grading-and-Right-of-Way-Permit-Process >	<ul style="list-style-type: none"> • LSM Permit Checklist 	

11.7

Appendix — Transit Travel Time Analysis

Memorandum

Date: April 20, 2022 (Updated April 26, 2022)
To: Victoria Kovacs, City of Kirkland
CC: Erin Ishizaki, Mithun
From: Jeff Pierson and Kendra Breiland, Fehr & Peers
Subject: **NE 85th St SAP – Transit Travel Time and Person Trip Analysis**

SE20-0719

This memorandum presents the results of additional analysis requested by the City of Kirkland for the Preferred Alternative for the NE 85th St Station Area Plan.

Transit Time Analysis

Transit travel times within the NE 85th St Station Area were estimated using a combination of data from Google Maps and the existing and future year intersection operations analysis results. Two different routes were evaluated to estimate how travel times for transit vehicles might change from existing conditions to 2044 conditions under the 2044 Preferred Alternative for the Station Area Plan. The two routes are:

- Along NE 85th St between 128th Ave NE and 6th St (Route 250)
- Along NE 85th St and 124th Ave NE between NE 90th St and 6th St (Route 239 and K Line)

The existing range of travel times between these origins and destinations was estimated using historical travel time data from Google Maps for a Tuesday afternoon around 5pm. **Table 1** shows the range, distance, and estimated averaged speeds for each section. These speed estimates are consistent with the data collected as part of Metro's Speed and Reliability Study for the K Line which showed speeds in this corridor ranging from less than 10mph to 20mph.



Table 1. Existing Travel Time Estimates

Transit Route	Direction	Distance	Travel Time	Average Speed
250	Westbound	1.4 miles	5 to 10 minutes	8 to 17 mph
250	Eastbound	1.4 miles	5 to 8 minutes	11 to 17 mph
239 / K Line	Westbound	1.3 miles	5 to 9 minutes	9 to 16 mph
239 / K Line	Eastbound	1.3 miles	5 to 9 minutes	9 to 16 mph

Source: Fehr & Peers.

For the 2044 Preferred Alternative, the change in travel time was calculated using the average delay per movement from the intersection Level of Service (LOS) results for the existing year and future year scenarios at the following locations:

- NE 85th St / 6th St
- NE 85th St / Kirkland Way
- NE 85th St / 120th Ave NE
- NE 85th St / 124th Ave NE
- NE 85th St / 128th Ave NE
- NE 90th St / 124th Ave NE

The additional travel time for transit vehicles through the new interchange at I-405 is assumed to be negligible since transit has dedicated right-of-way. The differences in delay for each of the movements along the transit routes were added to the existing travel time estimates in Table 1. As shown in **Table 2**, the travel times increase by approximately 1 to 2 minutes in each direction through the study area.

Table 2. 2044 Alternative B (Preferred) Travel Time Estimates

Transit Route	Direction	Distance	Travel Time	Average Speed
250	Westbound	1.4	7 to 12 minutes	7 to 12 mph
250	Eastbound	1.4	6 to 9 minutes	9 to 14 mph
239 / K Line	Westbound	1.3	7 to 11 minutes	7 to 11 mph
239 / K Line	Eastbound	1.3	6 to 10 minutes	8 to 13 mph

Source: Fehr & Peers.

These estimates assume the proposed intersection mitigations at the intersections of NE 85th St / 120th Ave NE and NE 90th St / 124th Ave NE which reduce the overall vehicular delay and also accommodate transit vehicles travelling through the study area. Beyond these mitigations, no additional changes are recommended to specially accommodate transit since right-of-way along



the corridor is limited and converting general purpose travel lanes to transit-only lanes significantly increase congestion for all vehicles, including the transit.

Mode Share

The number of person trips and modal percentages for each quadrant of the study area were estimated using information from the Bellevue-Kirkland-Redmond (BKR) travel demand model and the Puget Sound Regional Council (PSRC) regional travel demand model. The initial number of PM peak hour vehicle trip generated by the project were calculated using Fehr & Peers' MainStreet tool, which incorporates built environment variables to better reflect trip generation rates in dense urban areas compared with standard rates from the ITE Trip Generation Manual. The BKR model was used to estimate the number of transit trips and the PSRC model was used to estimate the number of walk and bike trips.

Table 3 and **Table 4** on the next page show the number of person trips and mode splits for 2044 Alternatives A and B. The modal splits between the alternatives are similar with the preferred alternative showing a 1% increase in the mode shares for transit, walk, and bike trips. Overall, the number of vehicle trips (SOV and HOV) increased by 45% while other modes increased by 55% between Alternative A and Alternative B.

Table 5 shows how the number of person trips by mode could shift due to travel demand management (TDM) policies that encourage drivers to shift to alternate modes. Based on the TDM strategies identified in Fehr & Peers' October 12th, 2021 Supplemental Transportation Analysis memo, a 13% reduction in vehicle trips was determined to be reasonable based on the policies that will be implemented as part of the subarea plan. The trips are assumed to proportionally shift from SOV and HOV trips to transit, walk, and bike trips.

Table 6 shows the percent change in person trips by quadrant assuming a 13% reduction in SOV and HOV trips between Alternative B with and without the TDM policies. This translates to a 31% increase in the number of transit, walk, and bike trips. **Table 7** shows the absolute change in modal splits with SOV and HOV trips decreasing by 7% and 2% respectively and transit and walk/bike trips increasing by 4% and 6% respectively.



Table 3. 2044 Alternative A (No Action) PM Peak Hour Person Trips

Quadrant	SOV	HOV	Transit	Walk/Bike	Total
Northwest	830	230	140	240	1,440
Northeast	3,920	1,280	700	1,350	7,250
Southwest	1,650	460	390	440	2,940
Southeast	3,380	1,120	610	1,080	6,190
Total	9,780	3,090	1,840	3,110	17,820
Quadrant	SOV	HOV	Transit	Walk/Bike	Total
Northwest	57%	16%	10%	17%	100%
Northeast	54%	18%	10%	19%	100%
Southwest	56%	16%	13%	15%	100%
Southeast	55%	18%	10%	17%	100%
Total	55%	17%	10%	17%	100%

Source: Fehr & Peers.

Table 4. 2044 Alternative B (Preferred) PM Peak Hour Person Trips

Quadrant	SOV	HOV	Transit	Walk/Bike	Total
Northwest	1,140	330	200	380	2,050
Northeast	4,350	1,300	800	1,380	7,830
Southwest	2,100	590	500	570	3,760
Southeast	6,670	2,060	1,500	2,400	12,630
Total	14,260	4,280	3,000	4,730	26,270
Quadrant	SOV	HOV	Transit	Walk/Bike	Total
Northwest	56%	16%	10%	19%	100%
Northeast	56%	17%	10%	18%	100%
Southwest	56%	16%	13%	15%	100%
Southeast	53%	16%	12%	19%	100%
Total	54%	16%	11%	18%	100%

Source: Fehr & Peers.



Table 5. 2044 Alternative B (Preferred) with TDM PM Peak Hour Person Trips

Quadrant	SOV	HOV	Transit	Walk/Bike	Total
Northwest	990	290	270	510	2,060
Northeast	3,780	1,130	1,070	1,840	7,820
Southwest	1,830	510	660	760	3,760
Southeast	5,800	1,790	1,940	3,100	12,630
Total	12,400	3,720	3,940	6,210	26,270
Quadrant	SOV	HOV	Transit	Walk/Bike	Total
Northwest	48%	14%	13%	25%	100%
Northeast	48%	14%	14%	24%	100%
Southwest	49%	14%	18%	20%	100%
Southeast	46%	14%	15%	25%	100%
Total	47%	14%	15%	24%	100%

Source: Fehr & Peers.

Table 6. 2044 Alternative B (Preferred) with TDM Percent Change in Person Trips

Quadrant	SOV	HOV	Transit	Walk/Bike	Total
Northwest	-13%	-12%	35%	34%	0%
Northeast	-13%	-13%	34%	33%	0%
Southwest	-13%	-14%	32%	33%	0%
Southeast	-13%	-13%	29%	29%	0%
Total	-13%	-13%	31%	31%	0%

Source: Fehr & Peers.

Table 7. 2044 Alternative B (Preferred) with TDM Change in Mode Split

Quadrant	SOV	HOV	Transit	Walk/Bike	Total
Northwest	-8%	-2%	3%	6%	0%
Northeast	-7%	-2%	3%	6%	0%
Southwest	-7%	-2%	4%	5%	0%
Southeast	-7%	-2%	3%	6%	0%
Total	-7%	-2%	4%	6%	0%

Source: Fehr & Peers.

Appendix – Transit Travel Time Analysis Assumptions

Intersection volume forecasts were developed using 2035 land use projections outside of the station area and 2044 land use projections within the station area. The following intersections were used to estimate changes in travel time between existing conditions and the preferred alternative. The proposed mitigations at two of the intersections are described.

- **NE 85th St / 6th St** – no mitigations proposed.
- **NE 85th St / Kirkland Way** – no mitigations proposed/not a study intersection.
- **NE 85th St / 120th Ave NE** – identified mitigation for this intersection includes widening the northbound approach to include a dual left turn lane and a shared through/right turn lane; an additional eastbound through lane was assumed consistent with the planned improvements for the I-405/NE 85th St Interchange project.
- **NE 85th St / 122nd Ave NE** – no mitigations proposed/not a study intersection.
- **NE 85th St / 124th Ave NE** – no mitigations proposed.
- **NE 85th St / 128th Ave NE** – no mitigations proposed/not a study intersection.
- **NE 90th St / 124th Ave NE** – identified mitigation for this intersection includes adding northbound and southbound through lanes and restriping the eastbound through lane to be an eastbound through/left/right lane with east/west split phasing.

In addition to the above mitigations, the LOS analysis for the preferred alternative assumed lower demand volumes due to the proposed TDM policies.

NE 85th St / Kirkland Way was not evaluated for the updated land use alternatives so the delay results from Alternative 2 in the DEIS were used instead in order to capture the benefit of the proposed roundabout configuration.

NE 85th St / 122nd Ave NE was not evaluated for the updated land use alternatives so the future delays were increased 25% from existing conditions, consistent with the change in delay at nearby intersections.

NE 85th St / 128th Ave NE was not a study intersection for the station area plan, but the City provided existing volumes and signal timings such that delays could be calculated. For the future scenario, delays were increased 25% from existing conditions, consistent with the change in delay at nearby intersections.

The tables on the following pages show the calculations for the change in travel time for each of the transit routes.

Route 250 – Westbound

Intersection	Movement	Existing Delay (s)	Future Delay (s)	Difference (s)
NE 85th St / 128th Ave NE	WBT	10.1	12.6	2.5
NE 85th St / 124th Ave NE	WBT	47.6	50.2	2.6
NE 85th St / 122nd Ave NE	WBT	1.7	2.1	0.4
NE 85th St / 120th Ave NE	WBT	9.3	107.3	98.0
NE 85th St / Kirkland Way	WBT	21.8	6.9	-14.9
NE 85th St / 6th St	WBT	48.9	46.1	-2.8
<i>Total</i>	-	<i>139.4</i>	<i>225.2</i>	<i>85.8</i>

Source: Fehr & Peers.

Route 250 – Eastbound

Intersection	Movement	Existing Delay (s)	Future Delay (s)	Difference (s)
NE 85th St / 6th St	EBT	53.8	60.6	6.8
NE 85th St / Kirkland Way	EBT	32.0	15.4	-16.6
NE 85th St / 120th Ave NE	EBT	18.9	40.4	21.5
NE 85th St / 122nd Ave NE	EBT	1.3	1.6	0.3
NE 85th St / 124th Ave NE	EBT	2.7	28.0	25.3
NE 85th St / 128th Ave NE	EBT	11.0	13.8	2.8
<i>Total</i>	-	<i>119.7</i>	<i>159.8</i>	<i>40.1</i>

Source: Fehr & Peers.

Route 239/K Line – Westbound

Intersection	Movement	Existing Delay (s)	Future Delay (s)	Difference (s)
NE 90th St / 124th Ave NE	SBT	16.1	48.6	32.5
NE 85th St / 124th Ave NE	SBR	27.3	33.7	6.4
NE 85th St / 122nd Ave NE	WBT	1.7	2.1	0.4
NE 85th St / 120th Ave NE	WBT	9.3	107.3	98.0
NE 85th St / Kirkland Way	WBT	21.8	6.9	-14.9
NE 85th St / 6th St	WBT	48.9	46.1	-2.8
<i>Total</i>	-	<i>125.1</i>	<i>244.7</i>	<i>119.6</i>

Source: Fehr & Peers.

Route 239/K Line – Eastbound

Intersection	Movement	Existing Delay (s)	Future Delay (s)	Difference (s)
NE 85th St / 6th St	EBT	53.8	60.6	6.8
NE 85th St / Kirkland Way	EBT	32.0	15.4	-16.6
NE 85th St / 120th Ave NE	EBT	18.9	40.4	21.5
NE 85th St / 122nd Ave NE	EBT	1.3	1.6	0.3
NE 85th St / 124th Ave NE	EBL	69.4	58.8	-10.6
NE 90th St / 124th Ave NE	NBT	18.7	48.6	29.9
<i>Total</i>	-	<i>194.1</i>	<i>225.4</i>	<i>31.3</i>

Source: Fehr & Peers.

We did not perform a quantitative analysis of converting a general-purpose travel lane into a transit-only lane along NE 85th St since the PM peak hour demand for through travel along the corridor is between 1,200 to 1,500 vehicles per hour in each direction. The assumed capacity of a single travel lane at a signalized intersection is between 600 to 800 vehicles per hour. The delay experienced by all vehicles would be substantial with this conversion.

There would be limited benefit from installing an eastbound transit queue jump or transit signal priority in the dedicated right-turn lane at the intersection of NE 85th St / 122nd Ave NE due to the low future delay estimate (less than two seconds on average).

The highest delay for transit at the evaluated intersections is for westbound routes at NE 85th St / 120th Ave NE. The proposed design at this location:

- Provides an enhanced landscape buffer and dedicated pedestrian/bike facilities along NE 85th Street to increase comfort for those walking and biking;
- Installs a bumpout on the northwest corner, which reduces the north-south crosswalk length and tightens the radius for southbound right-turning vehicles.

With these design elements, there is not sufficient right-of-way to include dedicated transit lanes. Overall, the increase in travel times along the entire segments are between 1-2 minutes

11.8

Appendix — Engagement Comment Summaries

DSEIS Comment Summary

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Overview

This summary provides an overview of public comments received throughout the Draft Supplemental Environmental Impact Statement (DSEIS) outreach and engagement period. Outreach was conducted consistent with the overall engagement objectives set forth in the [Station Area Plan Public Engagement Plan](#), and as part of the City's commitment to an inclusive and robust community engagement process. The comment period was held January 5, 2021 through February 19, 2021.

This is a preliminary summary of comments. Comments will be considered in the preparation of the Final Supplemental Environmental Impact Statement (FSEIS), which may include analysis of the topics in the DSEIS or referencing other planning or environmental documents or current development regulations that address the concerns. For a description of SEIS topics and a checklist, please see the project website at www.kirklandwa.gov/stationareaplan.

Outreach

The project team conducted outreach through several channels to inform public and stakeholders of the project and opportunities to engage. Channels included:

- **Legal publication** in the Seattle Times.
 - **Notice of availability** sent to agencies according to the City's standard procedure.
 - **Press releases.**
 - **Posters** mailed to essential locations within and nearby the study area.
 - › 20 multifamily housing buildings within the study area.
 - › 5 senior housing facilities within the study area.
 - › 16 ethnic groceries and businesses within the study area and neighboring communities.
 - **Email and phone notification and coordination** with 51 community contacts, including:
 - › Businesses and employers, including large employers.
 - › Service- and faith-based organizations.
 - › Transit-, pedestrian-, and bike-based organizations.
 - › Unions.
 - › Community organizations.
 - › Lake Washington School District and Lake Washington High School
- Many of these organizations distributed messages about the engagement

period to their membership via emails, social media postings, and announcements at events.

- **Project Listserv emails** sent at three points leading up to, and during, the DSEIS comment period to 170 subscribers (subscribers as of February 2021).
- **Social media posts** on City of Kirkland Facebook and Twitter accounts at least once per week throughout the comment period.
- Weekly **articles** in This Week in Kirkland, the City's e-newsletter, throughout the comment period. The e-newsletter listserv reaches approximately 4,000 recipients (subscribers as of February 2021).
- A City-produced [DSEIS Introduction video](#) with information about what a DSEIS is, and how community members could participate in the project posted to the City's YouTube channel and linked in social media posts.
- Project **materials in Chinese**, distributed through the Chinese Information Service Center to over 500 recipients. The materials included instructions for how to request a Chinese-language community meeting with the City.
- City Staff presentations at 10 virtual community organization meetings.

Engagement

The project team conducted several engagement activities to provide the public and stakeholders with a range of methods of providing input.

Real-time Online Open House

At 6 PM on January 7, 2021, the City hosted a live online open house. The meeting included a large presentation to share out information and small group activities to collect input. Approximately 140 people participated in the open house. After the open house was completed, a [video of the event](#) was made available for viewing on the City's website.

Online Survey

An online survey offered an opportunity for stakeholders and the public to learn about and provide input on the three alternatives in the DSEIS. The survey was made available to participants at the conclusion of the open house on January 7, 2021 and remained open throughout the comment period. The survey received 408 responses.

Written Comment

Stakeholders and members of the public submitted written comments. The City received 114 written comments from individuals, corporations, small businesses, and organizations, one regional transportation district, and one State agency.

Service Provider Work Group

Representatives from four human service providers with clients in the Station Area joined a virtual roundtable discussion to learn about the SAP and provide input about how the plan can support client needs. The first portion of the meeting included a brief presentation about the Plan and the planning process, including an overview of the three alternatives. Following this presentation, participants engaged in a roundtable discussion about how their clients use the Station Area and their top concerns and hopes about the outcomes of the SAP.

Meetings-in-a-Box

Staff from The Sophia Way, a service provider located in the Station Area, hosted two in-person meetings-in-a-box and a few one-on-one discussions to gather input from 26 clients on the DSEIS. The meetings occurred during the weeks of January 18, 2021 and February 5, 2021. All participants were women experiencing homelessness. About one-third were full-time employed and about two-thirds have received disability or have a disability claim filed. Participants' ages ranged from approximately 30-70 years, with a large proportion aged 55 and older.

Student engagement at Lake Washington High School

Students from two economics classes at Lake Washington High School engaged in a monthlong project to learn about the SAP and to provide input during the comment period. The project culminated with student presentations to City staff and members of the Kirkland City Council. Members of the project team joined eight class sessions (four per class) in December 2020 and January 2021 to teach and support students in the project.

City Staff Presentations at Virtual Community Organization Meetings

In the weeks leading up to, and during, the DSEIS public comment period City staff accepted several invitations to present information about the Station Area Plan to various community organizations. Community organization meetings were all held virtually. Staff presentations generally included a NE 85th St Station Area Plan project introduction, a summary of the three DSEIS alternatives,

information about how to provide DSEIS comments or otherwise engage with the project, and responses to questions from the respective membership.

Comment Themes

Comments from the various sources illustrated a range of support or concern about:

- Need for affordable and diverse housing opportunities.
- Integrating greenspace and public parks, adding/retaining trees.
- Traffic congestion and costs.
- Enhancing pedestrian and bicycle connections.
- Balancing jobs and housing.
- Providing jobs for employees from a range of backgrounds and experience levels.
- Density and transitions of heights and activity to protect residential character and views.
- Considering growth impacts on schools and solutions.
- Preferences for growth or heights at lower levels in particular locations or overall but with affordable housing and amenities, as well as preferences for greater growth near transit and to provide more housing and jobs as well as amenities.

Summaries of Engagement Activities

A Real-time Online Open House

Exhibit 2: Online Open House Participants



Source: Mithun, 2021.

Overview and Executive Summary

The City of Kirkland held a live, online public open house on January 7, 2021. Given the technical nature of the DSEIS document, the City held the meeting early in the comment period to introduce the concepts and alternatives studied to improve understanding of the choices being considered.

There was robust participation in the meeting, estimated at about 140 participants. Outreach to notify the community about the engagement period and the public meeting began in December 2020. The meeting was conducted over zoom, and there were 122 zoom accounts that participated in the meeting.¹ However the number of participants was higher, as several accounts included multiple participants. Participation was greater than a summer 2020 workshop, which had about 80 participants, and typical pre-COVID in-person open house of about 30-45 participants.

Presentations included an overview of the DSEIS process and commenting, a summary of the three Alternatives studied, their alignment with project objectives and evaluation, and next steps toward a Preferred Alternative which will likely be

¹ City of Kirkland representatives and members of the consulting team were not included in this number.

a combination of features from multiple alternatives. Small group discussions followed the presentation.

Common themes and priorities from these discussions included desire for open space, bike, and pedestrian connections; strong support for better transit and mobility connections with the new bus rapid transit (BRT) and potential Houghton P&R connections; importance of more affordable housing opportunities; desire to focus density around transit and concerns about transitions between higher density areas and adjacent neighborhoods; questions around the balance of jobs/housing as well as balance of new development and required infrastructure and services; and concerns and questions about traffic impacts.

After group discussion, Q&A lasted for about 15 minutes, which primarily revolved around questions related to process and participation. The meeting ended with a summary on how and where to comment, ask questions, how to participate in the survey, and a reminder to submit comments by February 5th at 5 p.m. by postal or electronic mail.²

A recording of the open house and the presentation slide deck was made available on the City's website for people who were unable to attend. This allows anyone interested in the plan access to this information and benefit from the summary and explanatory information.

Detailed Agenda

The meeting began with a presentation by City staff and the project team. Adam Weinstein, Director of Planning, gave an overview of the project and its purpose. Becca Book of Mithun introduced participants to meeting protocols, including tips on effectively using the zoom platform and meeting ground rules and the overall planning process. Lisa Grueter of BERK Consulting explained the overall process for the DSEIS and how to submit comments. Brad Barnett of Mithun summarized the three alternatives that were studied, highlighting areas of similarity and contrast. Erin Ishizaki of Mithun presented an evaluation of the alternatives and their consistency with overall project and community goals.

At the conclusion of the presentation, participants joined small group discussions for about 30-40 minutes in virtual breakout rooms. Facilitators, which included City staff and consultant team members, supported these discussions, and took live notes using the Miro platform. The Miro platform was set up to provide visuals and other support materials, as would be available to participants in a traditional open-house setting. Facilitators took notes on participant comments using virtual

² The comment period deadline was later extended to February 19, 2021.

"sticky-notes." A sample tableau of the materials available in each virtual breakout room is shown in Exhibit 1

Exhibit 1. Sample Tableau of Materials Available in Each Virtual Breakout Room.

Discussion Group Questions

1. Introduce yourself, what makes your community special? What would you like to preserve for future generations?
2. How do you envision this neighborhood in 20 years? Which elements of the alternatives shared today align with this vision?
3. Which elements from the alternatives measures best achieve the project goal of creating an equitable, livable, and sustainable Kirkland? Which do not?
4. Out of these Future Community Characteristics, which are your top 3?
5. Which, if any, of the mitigation measures described would you like to see incorporated in the preferred alternative?

SIGN IN SHEET:

1. Allison Zike, City of Kirkland
2. Gerick
3. Cory
4. Mark
5. Ryan
6. John
7. Michelle
8. Scott

Misc. Questions/Comments
Allison, 16 hours ago

Community Characteristics:

1. Creating and preserving public open space
2. Ease and safety of travel by walking, biking, and transit
3. Ease of travel in private vehicles
4. Limited building heights and densities
5. More affordable homes
6. More jobs in Kirkland
7. More green buildings and features
8. Preservation of neighborhood character
9. Support for local businesses, existing and new
10. The ability for people from all walks of life to live in Kirkland

Example Mitigation Measures

Element	Proposed Measure Highlights
Housing/Land Use / Aesthetics	<ol style="list-style-type: none"> 1. Require more affordable housing units beyond 10% existing inclusionary housing regulations 2. Provide new incentives to developers to develop more affordable housing 3. Allow developers to pay an in-lieu fee if lower affordable units are constructed than planned 4. Participate in regional efforts to leverage funding 5. Design standards for compatible development and transitions to existing neighborhood 6. Focus the highest buildings near the interchange, with lower height buildings to transition into the surrounding neighborhoods
Environment	<ol style="list-style-type: none"> 1. Create vegetated buffers between heavily trafficked areas and residential development to help improve air quality, preserve or replace mature tree cover 2. Offer incentives or requirements for green building to improve air quality and cooler
Transportation	<ol style="list-style-type: none"> 1. Add capital improvements to roads to accommodate cars (e.g. add travel lanes, turn lanes, signals) 2. Improve lighting and pedestrian networks 3. Incentivize carpool and ride sharing 4. Alter parking standards such as shared parking ratios, managed on-street parking 5. Change the land use mix to better use existing and planned infrastructure 6. Alter policies to balance available infrastructure capacity, funding, and availability of other modes of travel

Alternatives Summary

	Alternative 1: No Action	Alternative 2: Guiding Transit Oriented Growth	Alternative 3: Transit Oriented Hub
Development Typologies	Reflects existing zoning and current plans. It makes no planning changes to accommodate projected growth.	Allows moderate growth around transit, primarily focused on existing commercial areas such as Rose Hill.	Allows most growth to support transit-oriented development, primarily focused on existing commercial areas such as Rose Hill.
Development Typology Map			
Maximum Allowable Building Heights			
Mobility			

Source: Mithun, 2021.

After participants introduced themselves in their small groups, facilitators led discussion of five questions:

- What makes your community special? What would you like to preserve for future generations?
- How do you envision this neighborhood in 20 years? Which elements of the alternatives shared today align with this vision?
- Which elements from the alternatives measures best achieve the project goal of creating an equitable, livable, and sustainable Kirkland? Which do not?
- Out of the Future Community Characteristics, which are your top 3?
- Which, if any, of the mitigation measures described would you like to see incorporated in the preferred alternative?

At the conclusion of the discussion groups, participants were asked to submit their three top ideas for the NE 85th Street Station Area plan. This generated the word

cloud in Exhibit 2.

Exhibit 2. Participants' Three Top Ideas for the SAP



Source: Mithun, 2021.

While the word cloud activity was happening, a handful of participants jumped in and provided overall comments on the plan, process, and public engagement. The meeting ended with a reprise of information on how to comment, where to get more information or ask questions, tips for effective comments, and a reminder to submit comments by February 5th at 5 p.m. by postal or electronic mail.³ A survey was also available on the project website.

Summary of Input

What Makes Kirkland Special? Unique Qualities to Preserve

- Charming, small town feel.
- Nonprofit and arts organizations.
- Welcoming place to live.
- Sense of community and neighborliness.
- Parks, open spaces, trails.
- Views of lakes, mountains.
- Can walk to grocery store and shopping.
- Community diversity.
- Trees.
- Several participants noted that “preserving” qualities is not inclusive and

³ The comment period deadline was later extended to February 19, 2021.

welcoming and suggested modifying this question to Unique Qualities to see for Future Generations.

Overall growth

- Desire to keep growth and density focused near new BRT station, growth will help maximize transit.
- High growth in Kirkland is not in line with the community's history.
- The project is biased toward big growth.
- Kirkland does not need another urban center.
- People who moved to Kirkland for a suburban experience do not want urban style growth.
- Growth should go to other parts of the region.
- Concerns that growth in this area will add noise and traffic similar to recent trends.
- Socio-economic diversity is important – people who work here should be able to live here.
- Lower growth seems appropriate for the west side of the interchange and higher growth seems appropriate for the east side of the interchange.
- Desire to balance growth with mobility, infrastructure, and service needs. Moderate growth is a compromise.
- Form of growth and density should provide quality of life with open spaces and views.
- Strong desire to keep housing away from I-405 due to noise and air quality.

Land Use and Zoning

- It's worthwhile to plan for better utilization of this area.
- New development and improvements are not spread equally across the full station area.
- Center density around the transportation hub. Good TOD [transit-oriented development] will reduce traffic impacts.
- What makes this area a destination? Ensure it is a destination for the region.
- Support single-family neighborhoods.
- Create child-friendly neighborhoods where housing has play areas and parks that are easy to walk to.
- Ensure views are preserved.

- High rises support more population vertically and prevent sprawl.
- Integrate density with transit opportunities to get rid of auto-dependence.
- Add mixed use to existing commercial areas.
- Use townhouses to achieve medium densities.
- Could the light industrial areas near the Cross-Kirkland-Corridor be changed to residential?
- Ensure that there are amenities and parks to make densities and smaller living spaces livable – integrate green spaces with new development.
- Form based zoning is a good approach.
- Require sustainable development, LEED.
- This area needs to be optimized for people.
- Do not place housing near the highway.
- Zone to leverage investment in transit.
- Ensure the integration of public art.
- Create a unified design theme and public gateways.
- Focus on infill housing instead of large complexes.

Housing

- Importance of preserving affordability in the community- both market rate and subsidized.
- Increase the diversity of housing in this area: missing middle, mixed use, etc.
- What are the effects of bringing low income housing into this area on existing homes?
- Will new housing displace existing residents by raising taxes?
- 10% provision does not create enough affordable housing. Hold developers to more.
- Housing needs daycares and other amenities like play areas, open spaces, and access to parks.

Transportation and Parking

- Traffic is already a concern in the 85th street corridor and adding new growth will make it worse.
- Consider diverting traffic to 87th and put the crossing with 114th there.
- Making biking feasible. Is there adequate ROW space to support safe biking? Particularly in neighborhoods?

- Making walking feasible. Add greenspaces for safety and widen sidewalks. More midblock pedestrian connections.
- Connect to the Cross Kirkland Corridor.
- Google expansion will affect residential streets.
- Green street should be at: 120th, near the high school, near the women and children's center.
- More people and less parking will not work in this area.
- How will construction impacts to 85th be mitigated during development?
- Address the dead-end streets near Costco.
- Connect Houghton P&R to this area via bus connections and walking / biking trails.
- Is 80th street wide enough?
- Need to move people up/down hill on 85th to connect downtown to the station.
- Buses get stuck in traffic too – need dedicated transit lanes.
- BRT is not as impactful on transportation habits as light rail.
- Address pass through and cut through traffic.

Environment and Open Space

- Preserving wetlands and the ecosystem is a priority.
- More open spaces are needed in these alternatives – and more access to nature.
- Restore native plants to this area.
- Address the increase in noise.
- Preserve and add tree canopy.
- Address climate change.
- Desire for open space, bike, and pedestrian connections
- Ensure that there are amenities and parks to make densities and smaller living spaces livable – integrate green spaces with new development.
- Create child-friendly neighborhoods where housing has play areas and parks that are easy to walk to.

Economic Development and Employment

- A full range of employment is needed. Are the jobs anticipated to be service jobs? Office jobs?

- Does this area need 30,000 jobs?
- It's important to plan for new jobs from Google and other major employers in this area.
- Is the jobs-housing balance right? Are there enough jobs to support the proposed housing?
- Reduce commercial development in this area in favor of greening the area.
- Costco doesn't fit with the plans for this area.

Neighborhoods

- Highland neighborhood should not be connected to 405 in the future.
- Neighborhoods should not be pressured to change.

Services and Infrastructure

- Question about City's anticipated revenues versus expenses for providing services for new developments.
- What are impacts on schools?
- What will be the impact on crime?

Overall process concerns and questions

- The process should include significant outreach efforts and follow the established outreach plan.
- Questions regarding what outreach was conducted especially postcards and mailers.
- Project team should update public on progress toward outreach plan.
- Questions about when public can comment and how that relates to decision making.
- New City website format is not user friendly and previous plans and EIS documents need to be added back.
- Better coordination with Sound Transit.

B Online Survey

Below is a summary of the 408 responses to the online survey. The first several subsections summarize responses to multiple choice and ranking questions. Free-response comment themes are summarized in the last subsection.

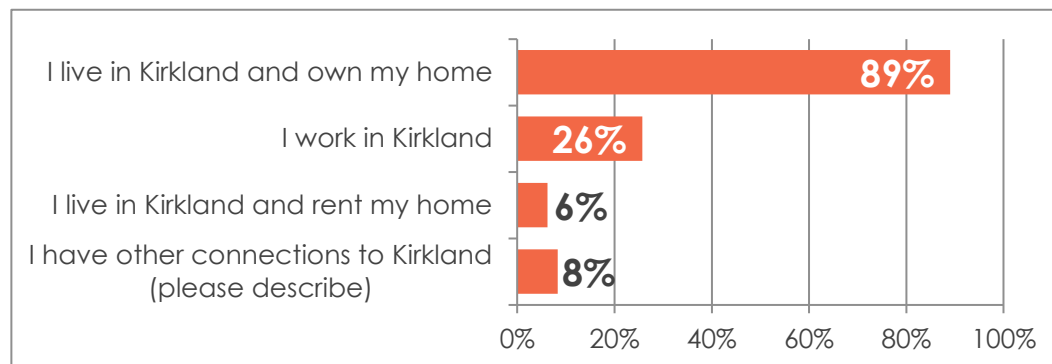
Survey responses are disaggregated by age when trends differ meaningfully by age. Responses do not differ meaningfully by other demographics. Unless otherwise noted, demographic information of participants is compared to demographics of Station Area and Kirkland residents based on the [Opportunities and Challenges Report](#), 2020 or citywide statistics consistent with Census or other noted data.

Respondent Characteristics and Demographics

Exhibit 3 shows some of the key characteristics of respondents. Response to demographic questions was an optional section of the survey.

- 89% of survey respondents live in Kirkland and own their home, and just 6% live in Kirkland and rent their homes. This is a significantly higher rate of homeownership than residents of the Station Area, of whom 36% are renters.
- 26% of survey respondents work in Kirkland. This is a higher rate of Kirkland employment than Kirkland residents, of whom 11% work in Kirkland.

Exhibit 3. Respondent Characteristics (338 responses)

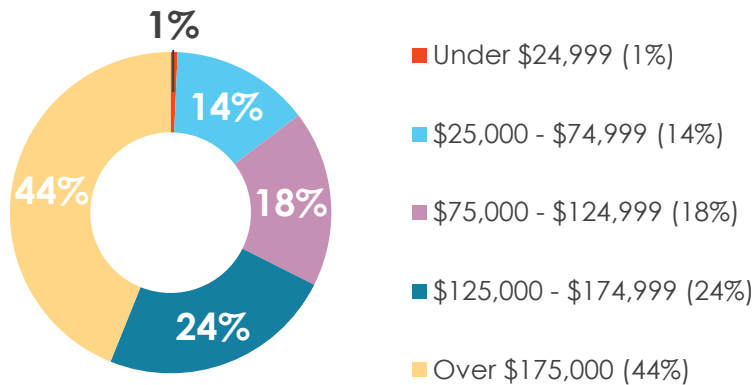


Note: Percentages do not sum to 100% because respondents could select multiple options.
Source: BERK, 2021.

Exhibit 4 shows the household incomes of survey respondents.

- Survey respondents have relatively high incomes, as over two-thirds of respondents have annual household incomes of \$125,000 or more. The median household income for the city as a whole per the American Community Survey 2015-2019 was \$117,190.
- 15% of survey respondents have household incomes below \$75,000 per year, compared to 31% of Kirkland households with household incomes below \$75,000. ⁴ 6% of Station Area residents have household incomes below \$40,000 per year, and 48% of Station Area Employees make under \$40,000 per year.

Exhibit 4. Respondent Household Incomes (287 responses)

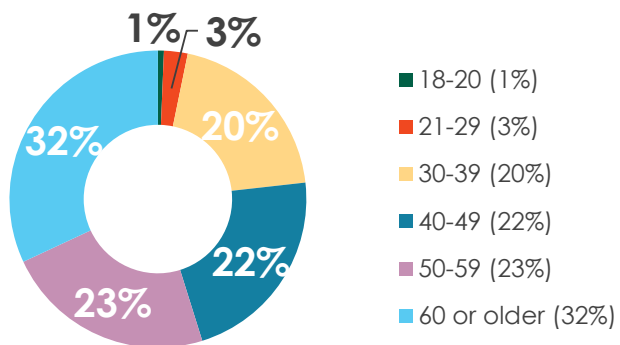


Source: BERK, 2021.

Exhibit 5 shows the ages of survey respondents.

- Survey respondents are more likely to be older adults than Station Area residents. One-third of survey respondents are aged 60 or older, compared to 12% of Station Area residents who are aged 65 or older.
- Station Area residents are 26% under the age of 18, 10% between 18-24, 20% between 35-44, 32% 45-64, and 12% 65 or older.

⁴ American Community Survey 5-year estimates 2015-2019 S1901.

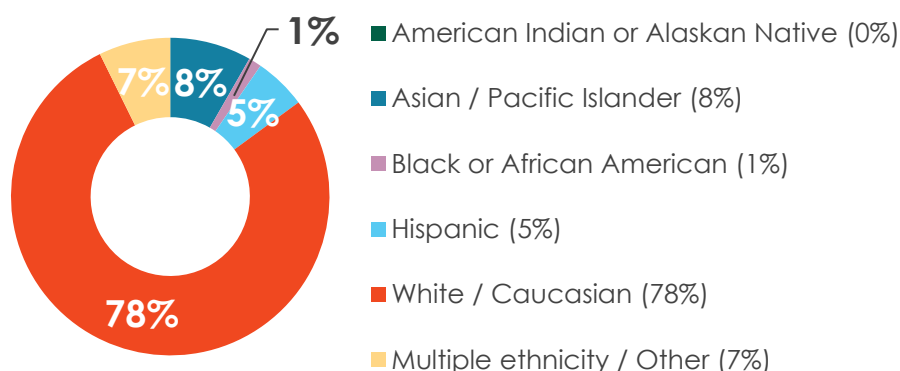
Exhibit 5. Respondent Ages (310 responses)

Source: BERK, 2021.

Exhibit 6 shows the race and ethnicity of survey respondents, and Exhibit 7 disaggregates race and ethnicity by the age of survey respondents.

- The race and ethnicity of survey respondents closely matches the demographics of Station Area Residents. 82% of Station Area residents are White, 10% are Asian, and 7% identify with two or more races.
- Younger survey respondents are less likely to be White than older survey respondents.

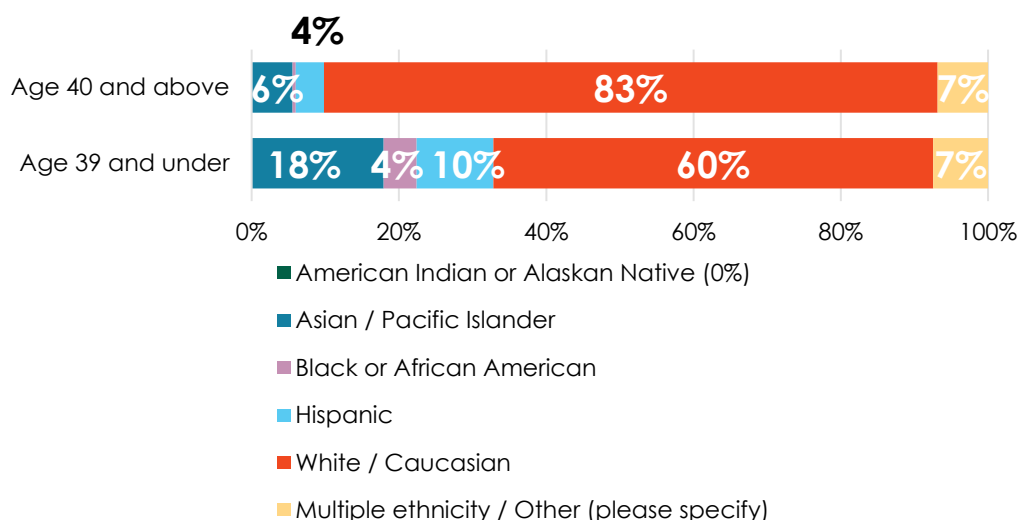
Exhibit 6. Respondent Race or Ethnicity (302 responses)



Note: Respondents were asked to select a single option that best described them.
Source: BERK, 2021.

Exhibit 7. Respondent Race or Ethnicity, Disaggregated by Age (301 respondents)

- 234 Responses from Participants Ages 40 and above
- 67 Responses from Participants Ages 39 and under



Note: Respondents were asked to select a single option that best described them.
Source: BERK, 2021.

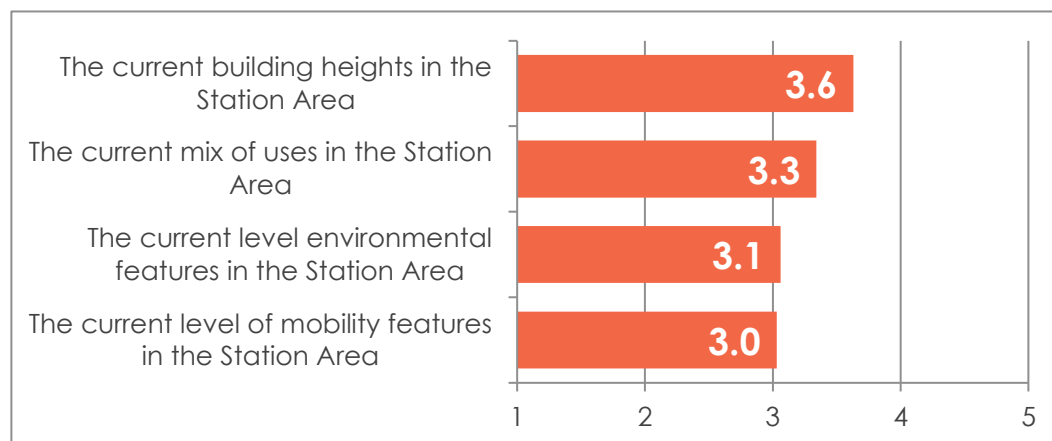
Respondent Opinions on Existing Conditions

Exhibit 8 shows survey respondents' level of support for existing station area features.

- On average, survey respondents are neutral about or support all listed features.
- Survey respondents are most supportive of the current building heights in the Station Area.
- Survey respondents feel neutral or slightly supportive of the current level of environmental features and mobility features in the Station Area.

Exhibit 8. Respondents' Level of Support* for Existing Station Area Features (401 responses)

Survey Question: "The no action alternative assumes no planning adjustments to accommodate the growth which the Eastside is experiencing. Indicate your level of support on a scale of 1 (strongly dislike) to 5 (strongly support) for:"

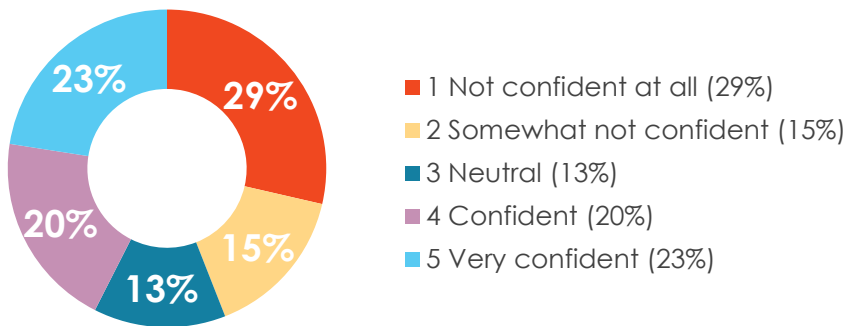


*Weighted averages. Response options included: 1 (Strongly Dislike), 2 (Dislike), 3 (Neutral), 4 (Support), and 5 (Strongly Support). Source: BERK, 2021.

Exhibit 9 shows survey respondents' levels of confidence that the existing zoning and mix of uses will accommodate Kirkland's continued growth in an equitable, livable, and sustainable fashion.

- Survey respondents are split equally between confidence and lack of confidence in the current zoning and mix of uses, with 43% confident or very confident, and 44% somewhat not confident or not confident at all.

Exhibit 9. Survey Respondents' Confidence that the Existing Zoning and Mix of Uses will Accommodate Kirkland's Continued Growth in an Equitable, Livable and Sustainable Fashion (395 responses)



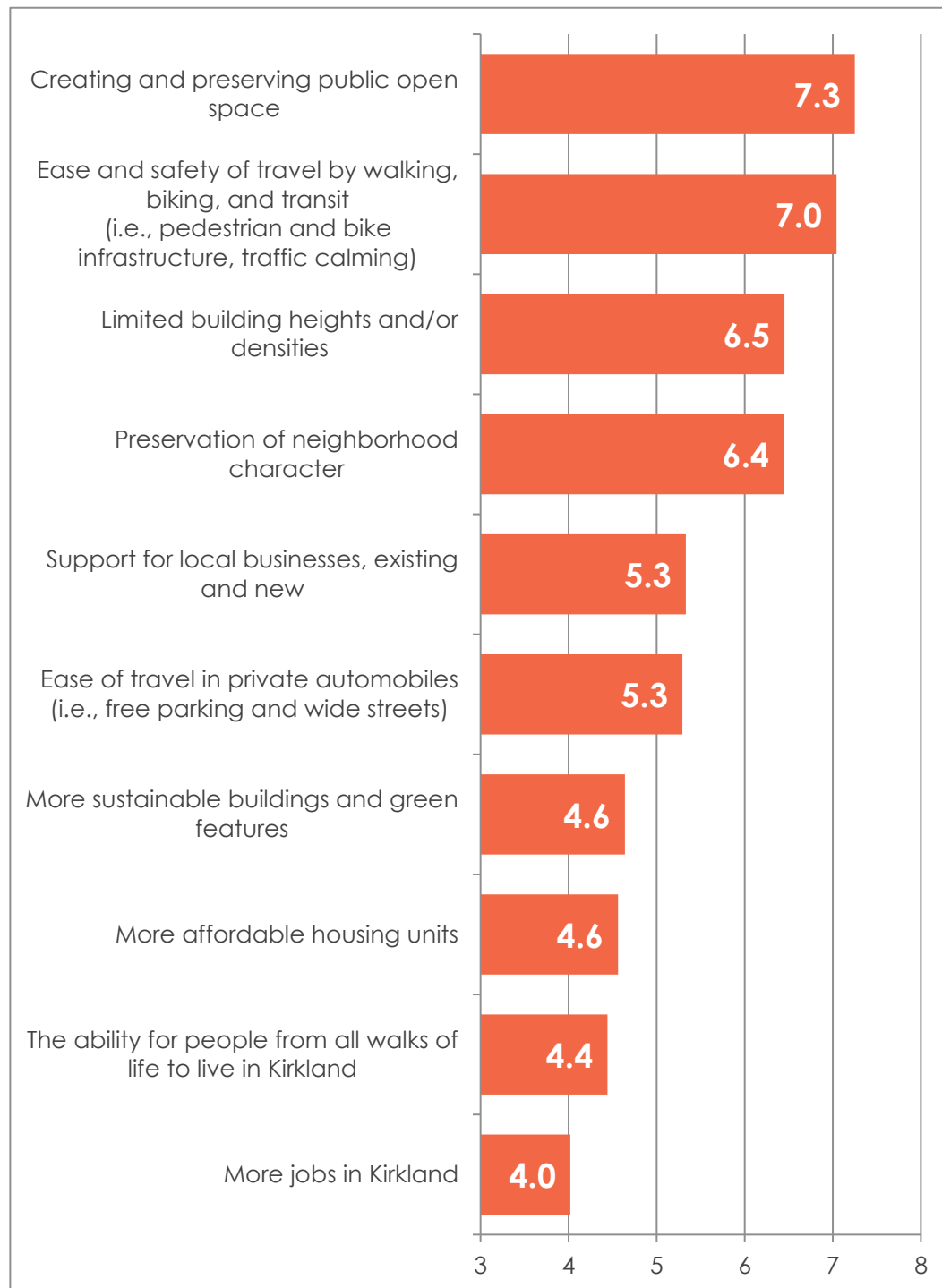
Source: BERK, 2021.

On the next page, Exhibit 10 shows survey respondents' ranking of community characteristics.

- **Top priorities:** Respondents most highly prioritize creating and preserving public open space and ease of transportation by bike, walking, and public transit. Respondents also value limited building heights and densities and preservation of neighborhood character.
- **Lowest priorities:** Respondents least prioritize the addition of jobs in Kirkland. Respondents also are less likely to prioritize sustainable buildings, affordable housing, and the ability for people from all walks of life to live in Kirkland.

Exhibit 10. Survey Respondents' Ranking* of Community Characteristics (362 responses)

Survey Question: "Please rank the following community characteristics from most important to least important to help us understand where the City should invest."



*Average ranking. Respondents ranked all characteristics from least important (1) to most important (10).
Source: BERK, 2021.

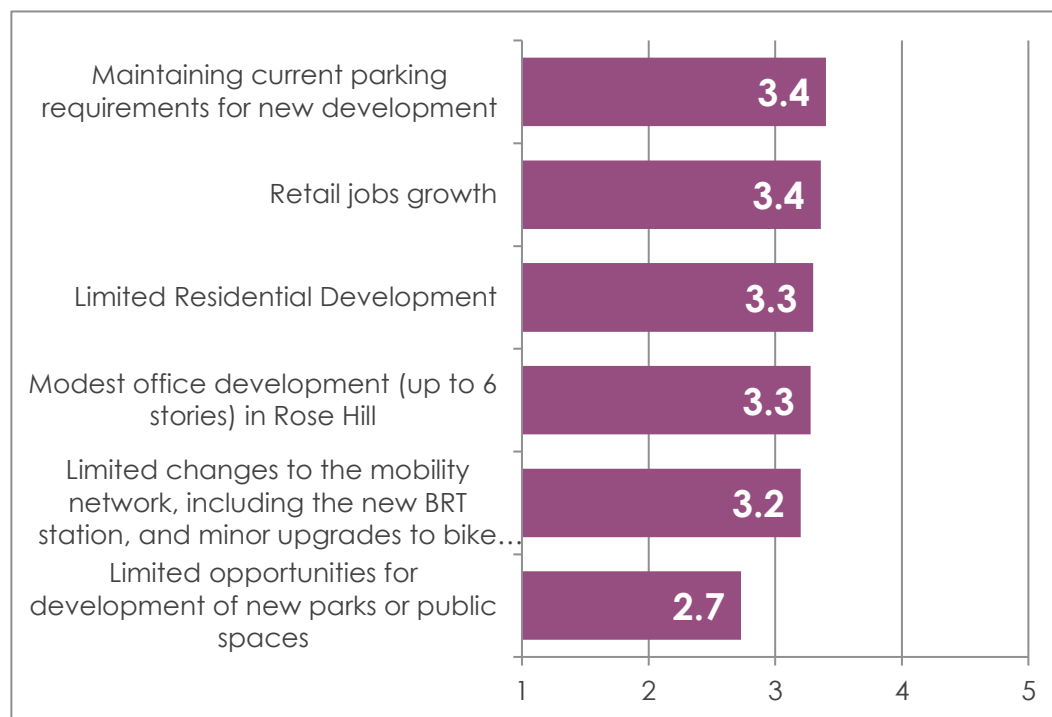
Respondent Opinions on the Alternatives

Exhibit 11 shows survey respondents' level of support for aspects of Alternative 1.

- On average, survey respondents equally value and feel some support for all features of the alternative, with one exception: respondents slightly dislike the alternative's limited opportunities for development of new parks or public space.

Exhibit 11. Survey Respondents' Level of Support* for Aspects of Alternative 1 – No Action (397 responses)

Survey Question: "Indicate your level of support on a scale of 1 (strongly dislike) to 5 (strongly support) for the following aspects of the Alt 1 - No Action plan. Note - these are likely outcomes based on what existing policies and regulations already allow in the Station Area."



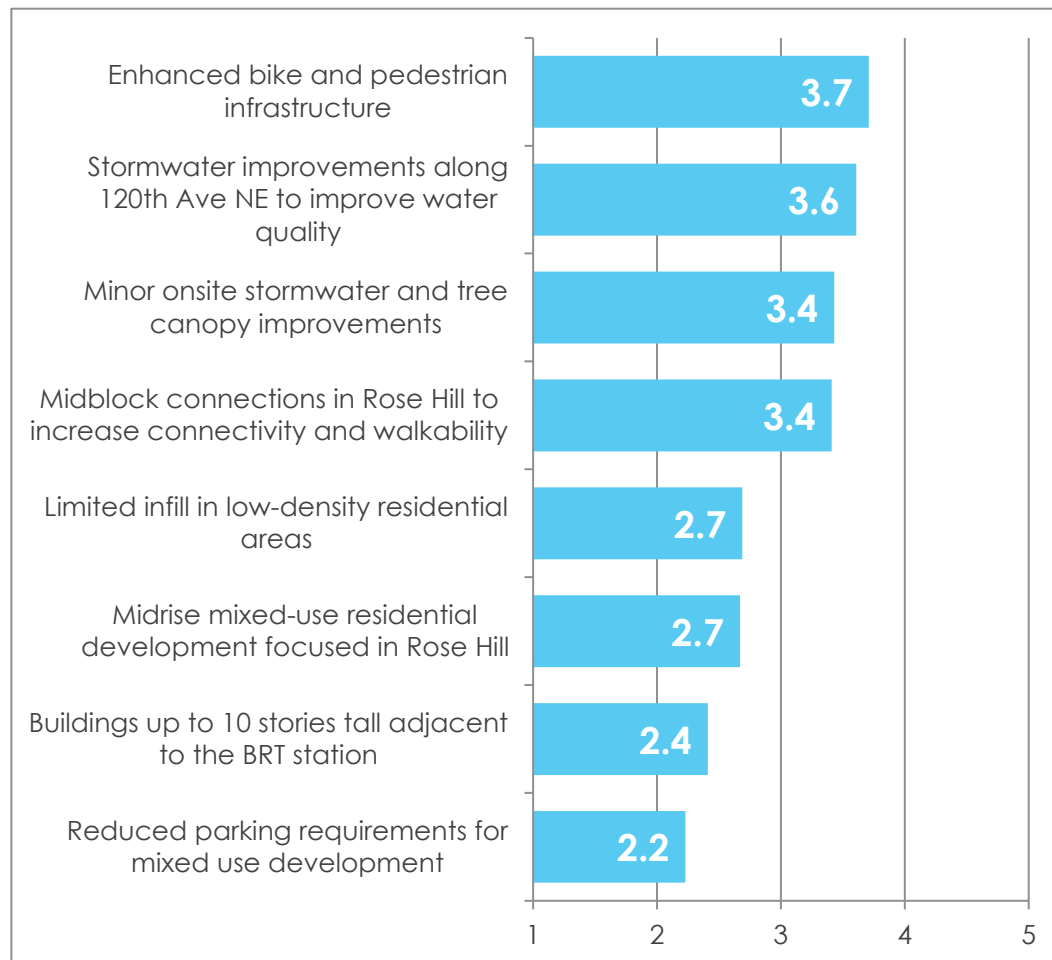
*Weighted averages. Response options included: 1 (Strongly Dislike), 2 (Dislike), 3 (Neutral), 4 (Support), and 5 (Strongly Support). Source: BERK, 2021.

Exhibit 12 shows survey respondents' level of support for aspects of Alternative 2.

- On average, survey respondents support the aspects of this alternative surrounding increased bike and pedestrian connectivity and improved stormwater management.
- Survey respondents dislike the reduced parking aspects of Alternative 2 most strongly. Respondents are also less supportive of the alternative's building heights, mixed use development, and limited residential infill.

Exhibit 12. Survey Respondents' Level of Support* for Aspects of Alternative 2 (378 responses)

Survey Question: "Indicate your level of support on a scale of 1 (strongly dislike) to 5 (strongly support) for the following aspects of the Alt 2- Guiding Transit-Oriented Growth plan:"



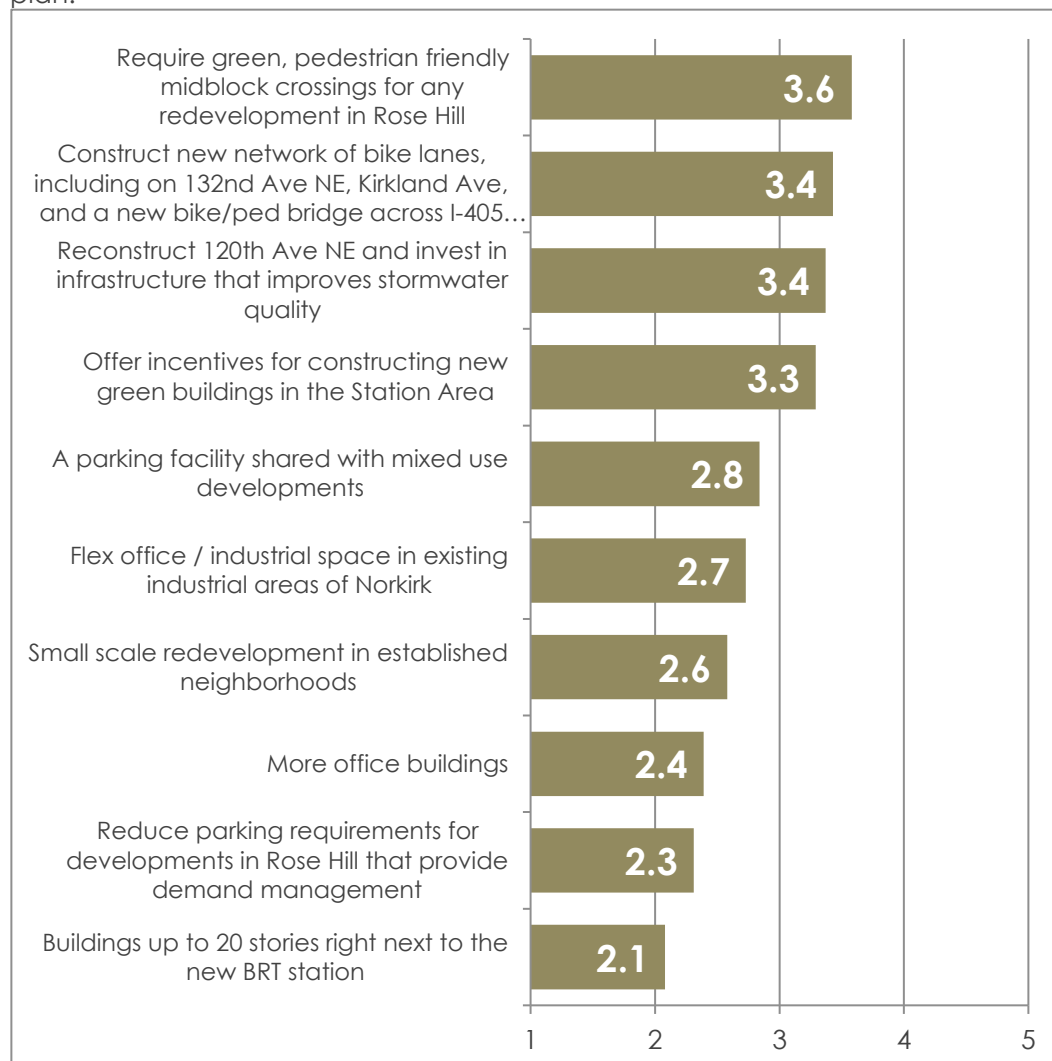
*Weighted averages. Response options included: 1 (Strongly Dislike), 2 (Dislike), 3 (Neutral), 4 (Support), and 5 (Strongly Support).
Source: BERK, 2021.

Exhibit 13 shows survey respondents' level of support for aspects of Alternative 3.

- On average, survey respondents support the aspects of this alternative surrounding increased bike and pedestrian connectivity, green buildings, and improved stormwater management.
- Survey respondents dislike reduced parking and increased office development aspects of Alternative 3. Of all features of this alternative, respondents most dislike the possibility of buildings up to 20 stories in height right next to the BRT station.

Exhibit 13. Survey Respondents' Level of Support* for Aspects of Alternative 3 (373 responses)

Survey Question: "Indicate your level of support on a scale of 1 (strongly dislike) to 5 (strongly support) for the following aspects of the Alt 3 Transit-Oriented Hub plan:"



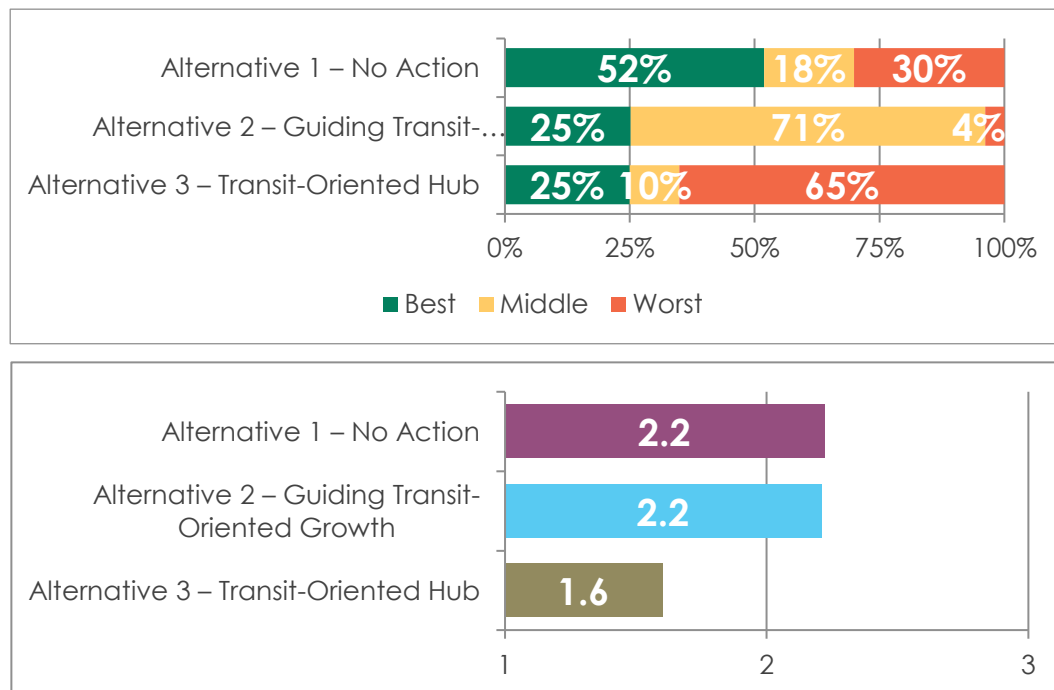
*Weighted averages. Response options included: 1 (Strongly Dislike), 2 (Dislike), 3 (Neutral), 4 (Support), and 5 (Strongly Support).
Source: BERK, 2021.

Exhibit 14 shows how survey respondents rank the three alternatives by how well each will promote the project vision of livability, sustainability, and equity.

- Over half of respondents rank Alternative 1 as the best alternative. The remaining respondents are equally likely to select either alternatives 2 or 3 as the best alternative.
- Two-thirds of respondents rank Alternative 3 as the worst alternative. Nearly one-third of respondents rank Alternative 1 as the worst alternative. Few respondents – 4% -- rank Alternative 2 as the worst.
- Respondents feel most neutral about alternative 2, with 71% of respondents ranking this as the middle alternative in terms of promoting the project vision.
- As shown in the lower chart in Exhibit 14, on average, respondents are equally supportive of alternatives 1 and 2. Even though more respondents select Alternative 1 as the best alternative (52% rank Alternative 1 as best compared to 25% for Alternative 2), more respondents also rank Alternative 1 as the worst alternative (30% rank Alternative 1 as the worst compared to 4% for Alternative 2).

Exhibit 14. Survey Respondents' Ranking* of How Well Each Alternative Will Promote the Project Vision of Livability, Sustainability, and Equity (326 responses)

Survey Question: "Rank the alternatives based on how well they promote the project vision of Livability, Sustainability and Equity from best to worst."



*Top chart shows distribution of rankings. Bottom chart shows weighted averages, with 3 points given for "Best," 2 points given for "Middle," and 1 point given for "Worst."

Source: BERK, 2021.

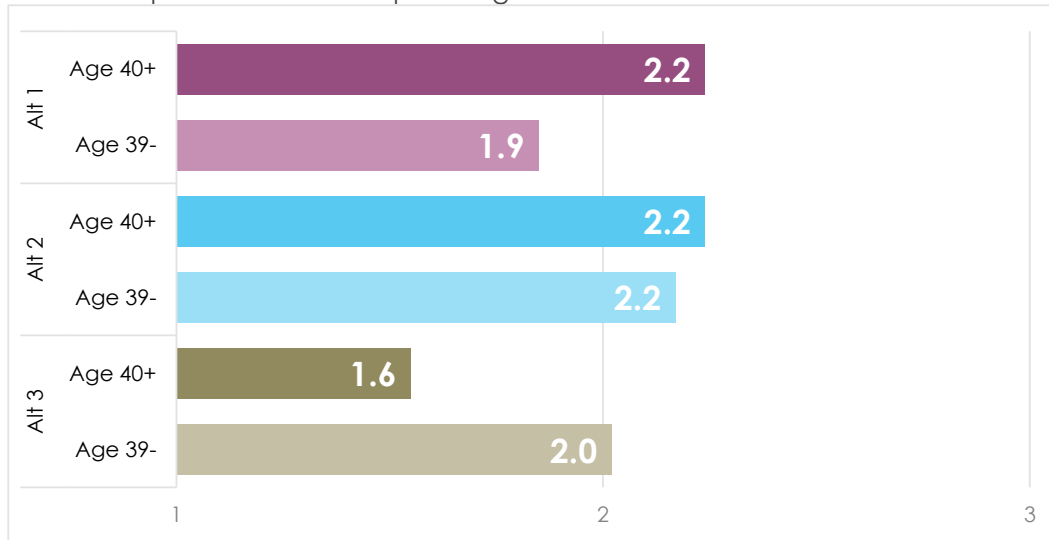
On the next page, Exhibit 15 disaggregates respondents' rankings of the alternatives by age.

- Across all ages, survey respondents give Alternative 2 an average ranking of 2.2 points, on a scale from 1 (worst) to 3 (best).
- Respondents **below the age of 40** prefer Alternative 3 to Alternative 1.
 - › Sample comment in **support of Alternative 3**: “Alternative 3 maximizes the development opportunities around the future BRT station. As a bonus, the tall building heights would be the most useful in blocking out freeway noises from surrounding neighborhoods. Most importantly it allows for the most affordable housing, best green spaces, and best walking/biking infrastructure. As a long time resident (born and raised) I still feel like we could do more to densify. However, Alt 3 does a great job and would be a welcome change/addition to Kirkland”
 - › Sample comment in **opposition to Alternative 1**: “No action isn't sustainable. People keep moving to Kirkland and to WA, and growth is unavoidable. Pretending that everything can stay the same will be a huge source of long-term problems and drive people out of the area.”
- Respondents **above the age of 40** prefer Alternative 1 to Alternative 3.
 - › Sample comment in **support of Alternative 1**: “Please stop trying to make Kirkland another Bellevue. Families who moved here 15 years ago because it was a nice community are being forced out because it is too expensive.”
 - › Sample comment (lightly edited for typos) in **opposition to Alternative 3**: “Way out of scale for existing neighborhoods, will ruin quality of life for current residents. This kind of development is appropriate for the existing light industrial area near Totem Lake and north. Traffic already a nightmare on 85th, this will result in non-stop traffic jams. Also doubt this will result in any significant increase in affordable housing. Developers will not stop building market rate housing.”

Exhibit 15. Survey Respondents' Ranking* of How Well Each Alternative Will Promote the Project Vision of Livability, Sustainability, and Equity, Disaggregated by Age (274 responses)

Survey Question: "Rank the alternatives based on how well they promote the project vision of Livability, Sustainability and Equity from best to worst."

- 66 Responses from Participants Ages 39 and below
- 208 Responses from Participants Ages 40 and above



*Weighted averages, with 3 points given for "Best," 2 points given for "Middle," and 1 point given for "Worst."
Source: BERK, 2021.

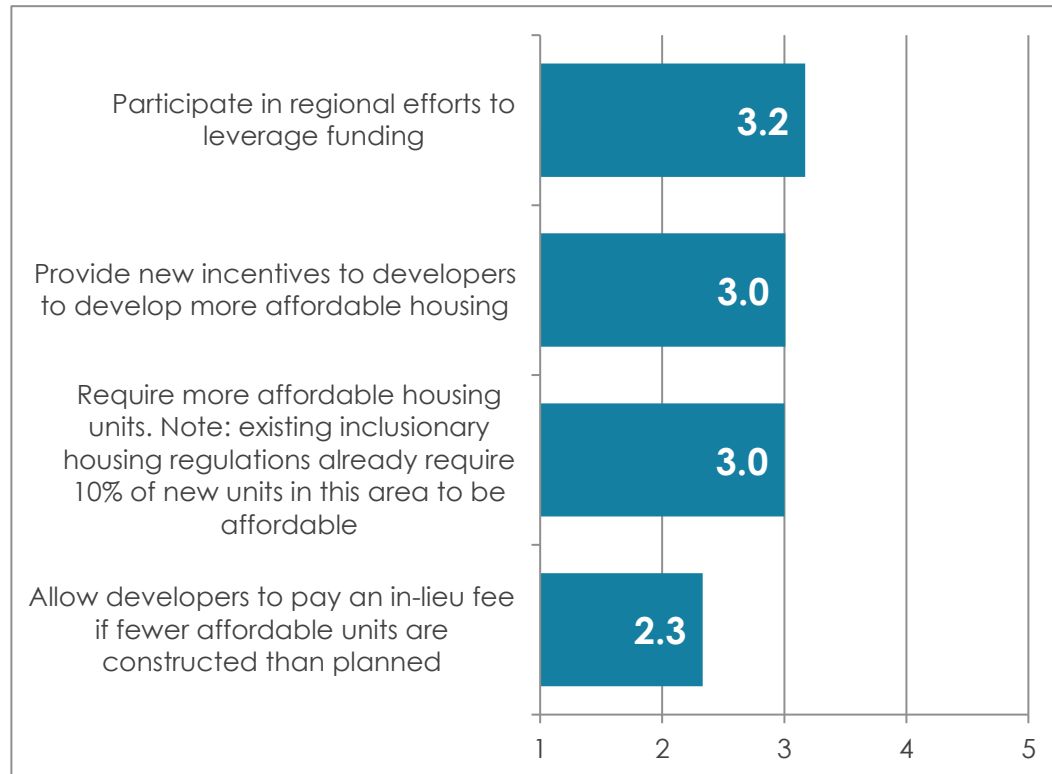
Respondent Opinions on Mitigation Measures

Exhibit 16 shows survey respondents' opinion on proposed housing and land use mitigation measures.

- Survey respondents feel neutral or slightly supportive about all mitigation measures except one: respondents dislike the option to allow developers to pay an in-lieu fee if fewer affordable units are constructed than planned.

Exhibit 16. Survey Respondents' Support* for Proposed Housing and Land Use Mitigation Measures (346 responses)

Survey Question: "Indicate your level of support on a scale of 1 (strongly dislike) to 5 (strongly support) for the following proposed Mitigation Measures:"



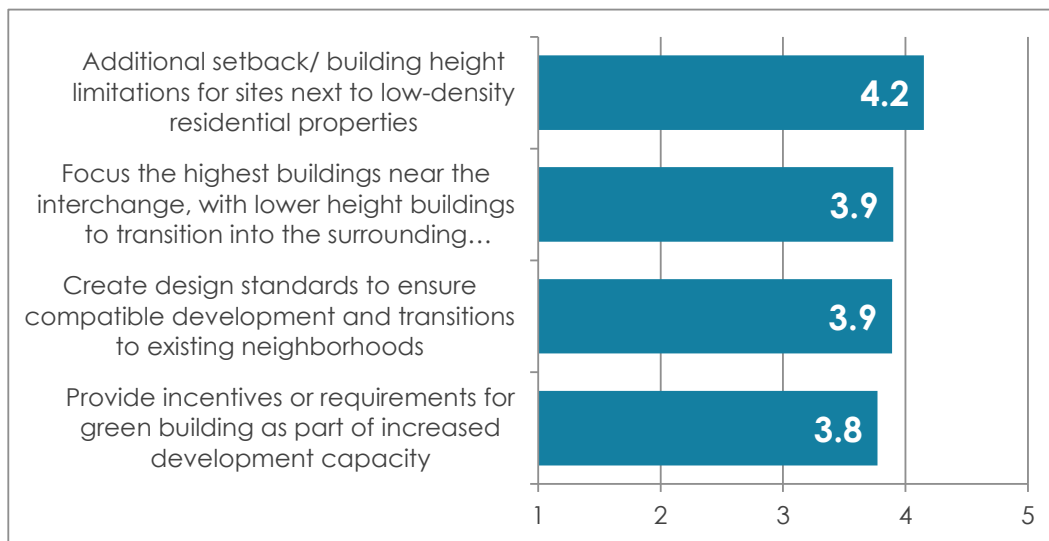
*Weighted averages. Response options included: 1 (Strongly Dislike), 2 (Dislike), 3 (Neutral), 4 (Support), and 5 (Strongly Support). Source: BERK, 2021.

Exhibit 17 shows survey respondents' opinion on proposed aesthetics mitigation measures.

- Survey respondents support all proposed measures about equally. Of the Aesthetics Mitigation Measures listed, respondents like setback and height limitations to transition to low-density residential properties the most.

Exhibit 17. Survey Respondents' Support* for Proposed Aesthetics Mitigation Measures (346 responses)

Survey Question: "Indicate your level of support on a scale of 1 (strongly dislike) to 5 (strongly support) for the following proposed Mitigation Measures:"



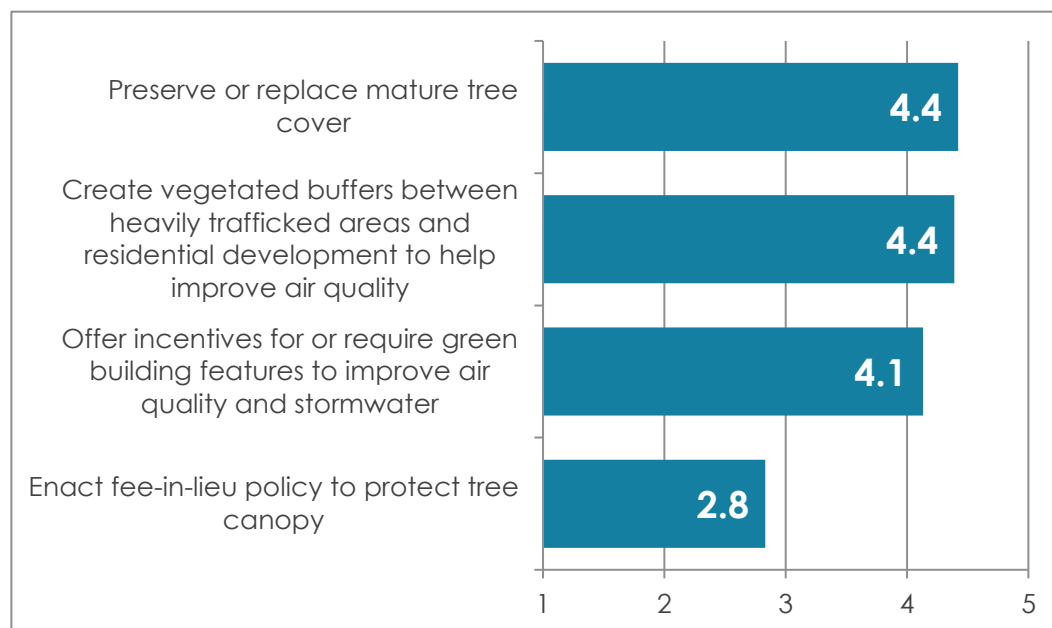
*Weighted averages. Response options included: 1 (Strongly Dislike), 2 (Dislike), 3 (Neutral), 4 (Support), and 5 (Strongly Support). Source: BERK, 2021.

Exhibit 18 shows survey respondents' opinion on proposed environmental mitigation measures.

- Respondents support or strongly support the presented Environmental Mitigation Measures, except the option of allowing developers to pay an in-lieu fee to remove tree canopy. The most highly supported mitigation measures were preserving or replacing mature trees and adding vegetated buffers, as well as incentives for green building features.

Exhibit 18. Survey Respondents' Support* for Proposed Environmental Mitigation Measures (342 responses)

Survey Question: "Indicate your level of support on a scale of 1 (strongly dislike) to 5 (strongly support) for the following proposed Mitigation Measures:"



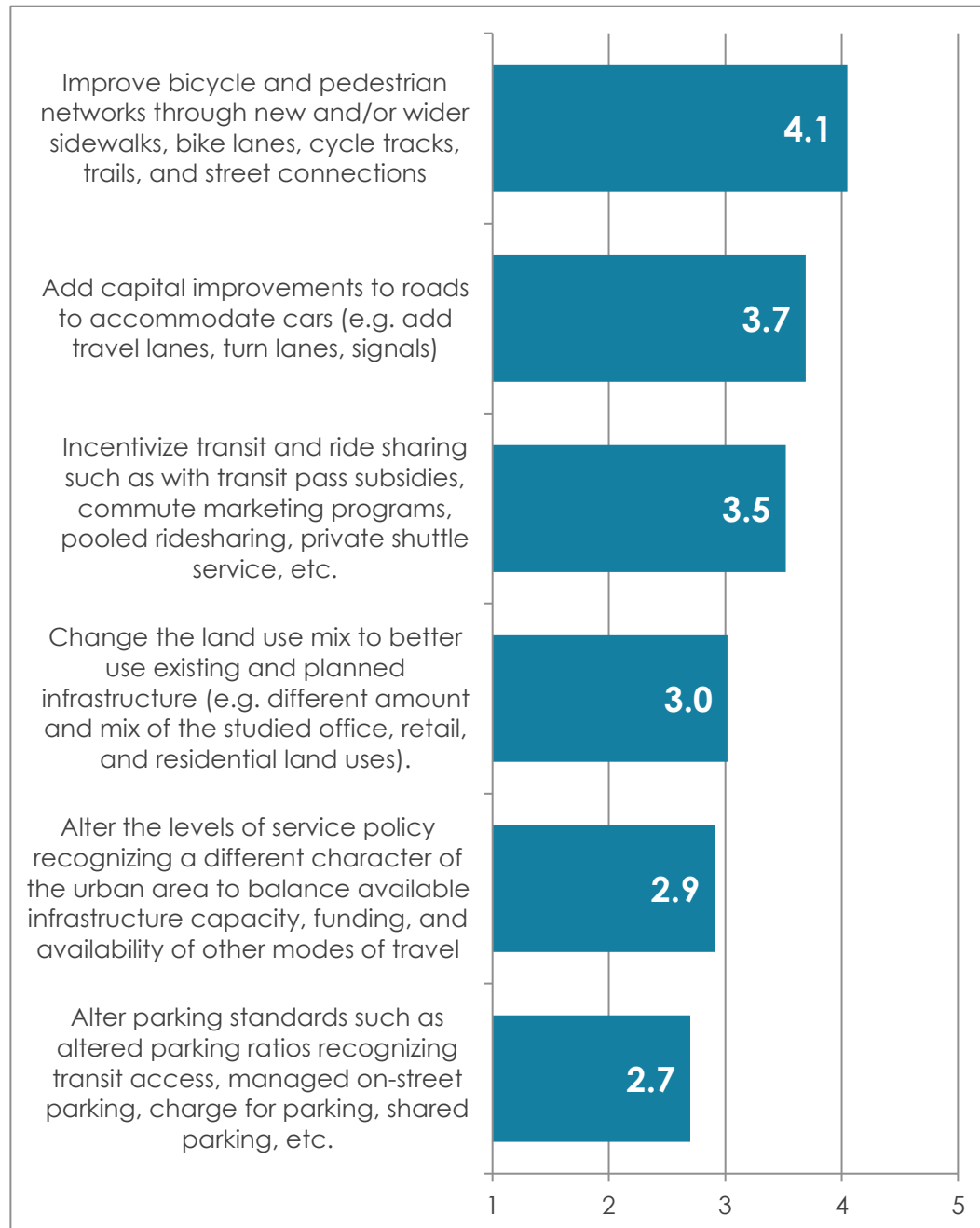
*Weighted averages. Response options included: 1 (Strongly Dislike), 2 (Dislike), 3 (Neutral), 4 (Support), and 5 (Strongly Support). Source: BERK, 2021.

On the next page, Exhibit 19 shows survey respondents' opinion on proposed transportation mitigation measures.

- Survey respondents most support the proposed mitigation measure to improve bicycle and pedestrian networks.
- Respondents also support capital improvements to better accommodate cars and incentives for transit and ride sharing.
- Respondents feel neutral or nearly neutral about changes to the land use mix and level of service policies.
- Respondents slightly dislike altered parking standards.

Exhibit 19. Survey Respondents' Support* for Proposed Transportation Mitigation Measures (345 responses)

Survey Question: "Indicate your level of support on a scale of 1 (strongly dislike) to 5 (strongly support) for the following proposed Mitigation Measures:"



*Weighted averages. Response options included: 1 (Strongly Dislike), 2 (Dislike), 3 (Neutral), 4 (Support), and 5 (Strongly Support). Source: BERK, 2021.

Summary of Themes from Free Response Comments

The following qualitative summary presents the range of topics raised throughout the free-response comment sections of the online survey. The summary does not reflect the frequency with which commenters raised topics and themes.

What Makes Kirkland Special? Unique Qualities to Preserve

- A small-town perspective and sense of community. People-friendly character and neighborhoods with a feeling of "togetherness". Quiet and quiet surroundings with charm and character.
- Amenities for growing families and seniors.
- Urban forests, vibrant parks, outstanding air- and water quality.
- Walkable streets for transportation and leisure. A sense of safety at all hours of the day and night.
- Lack of high-rise buildings allows for views of mountains and sunsets.
- Small, unique, locally owned, and minority-owned businesses.
- Concern about Kirkland becoming too similar to Bellevue, Redmond, or Seattle. Kirkland is less congested and less densely populated than surrounding communities, but nonetheless has amenities, infrastructure, and moderate-sized office and retail.

Overall growth

- Concerns about impacts of growth on the community.
 - › Some opposition to accommodating growth beyond that in the Comprehensive Plan, doubt that growth will occur, or concern that Kirkland already has unused office and residential developments.
 - › Some interest in developing proactive solutions to accommodate growth, ensure adequate infrastructure, and minimize sprawl.
- Questions about projected growth following COVID-19 pandemic.
- West side of the station area can better accommodate growth as the East side has a steep incline that makes it less pedestrian- and bike-friendly.
- Interest in aligning growth with Redmond's and Bellevue's plans.

Land Use and Zoning

- Varied perspectives on land use and zoning. Some support for height restrictions and building setbacks to minimize shadow. Some interest in maintaining existing zoning, and some interest in increasing housing or jobs in the area. Some interest in infilling and densifying the project area.
- Desire for homes to have yards and green space to support stormwater management.

- Question about geological stability has been considered/studied regarding the large building plans uphill. Concern about increased load on the hillside.

Housing

– Affordable housing

- › Desire for higher proportion of affordable housing. Concern that the plan will not create enough affordable housing. Permit priority to projects that include affordable and Section 8 housing.
- › Questions around the definition of affordability.
- › Market has too many luxury apartments.
- › Concern that the 50% AMI level is too low for smaller sites or high-cost land, and that the City should leverage larger sites with over 200 units.
- › Concern that more affordable housing will be located in less desirable areas like near arterial roads and highways.
- › Balance affordable housing requirements with need to promote development of new units by keeping costs low for developers.
- › Tie affordability requirements to the height of buildings
- › If in-lieu fee is used, locate alternate housing units near transit and commercial hubs elsewhere in the city.

– Housing supply

- › Support for mixed-income housing.
- › Need for missing middle duplexes, triplexes, and groups of cottages.
- › Streamline permit process for accessory dwelling units (ADUs) and cottage houses.
- › Varied perspectives about developer incentives and perks. Support for city incentives for missing middle or workforce housing. Concern that City favors developers over residents.
- › Support for the City to facilitate improvements to existing housing stock, including easing remodel permits.
- › A few comments wanting less housing in favor of more jobs or parking.

– Housing costs and workforce housing

- › Concern over rising property taxes and displacement of existing residents.
- › Coordinate additional retail job growth with additional housing that is affordable for these employees.

– Housing quality and amenities

- › Ensure building management can maintain and renovate buildings over time to maintain quality of living spaces as families grow and move out.
- › Livability for families and seniors beyond large-scale multifamily housing.

Consider townhouses.

- › Child-friendly housing, including play areas and green space.
- › Houses with yards and gardens.

Transportation and Parking

– Public transit

- › Concern about low ridership projections.
- › Maximize ADA accessibility beyond minimum compliance.
- › Incorporate additional east-west transit. Not everyone can afford or wants a car.
- › Amenities for commuters, such as covered bus stops and shelter to protect from wind and rain and charging stations for phones/laptops.
- › Clear wayfinding signage.

– Traffic

- › Concerns about traffic congestion and impact to commuters. Should consider traffic impact and relieve existing traffic.
- › Impact of traffic on emergency response times.
- › Impacts of potential sprawl on traffic.

– Car infrastructure and parking

- › Concern that the plan will not change people's preferred method of transportation from cars to public transit, especially for seniors.
- › Support for maintaining parking via a park & ride, parking lots, or parking garages. Concern that lack of available parking will drive away prospective patrons of local businesses and decrease tax revenues.
- › Some support for wider roads. Some concern that wider streets outside the Station Area would into high-traffic thoroughfares for pass-through residents of surrounding communities.
- › Incorporate electric vehicle charging stations.

– Pedestrian and bike infrastructure

- › Safe bike and pedestrian infrastructure, separated from traffic, including safe crossings, extra-wide sidewalks, and secure bike parking. Some concern that putting more bicycles on busy streets is dangerous for both cars and bicycles.
- › Improve existing bike trails and minimize bike use on sidewalks.
- › Design for a walking/bike scale to support seniors and alternative transportation.
- › Develop consistent and continuous curb, gutter, sidewalk in right-of-way throughout the station area.

– **Neighborhood connections**

- › More connections from downtown Kirkland to the BRT station and to neighboring communities. Suggestions include:
 - Shuttle service, possibly electric buses.
 - Rail or streetcar access.
 - Links to the Cross Kirkland Corridor.
 - Gondola or funicular.
 - Pedestrian and bike bridges over I-405.
- › Improve dedicated alternative transport (bike/walk/e-scooter) through dedicated bridge/overpasses.

Environment and Open Space

- Green development
 - › Development should be electric-only to phase out fossil fuels and minimize GHG emissions.
 - › Support or require net zero development or provide credit for onsite power generation (solar).
 - › Incentivize rainwater capture, onsite greywater reuse to reduce grid stress and minimize runoff, impervious surface, stormwater issues associated with increased density.
- Parks and open space
 - › Create shared public park space around the new developments to encourage community interaction. Include green community areas such as walkways, parks, pea patches, pocket parks, wetland interaction.
 - › Provide lighting, benches, and covered outdoor areas. Consider amenities like natural gas fireplaces.
 - › Incorporate recreation such as a play area for children or a dog park.
 - › Incorporate more tree cover. Maintain old-growth trees and established urban forests.
 - › Pave the Cross Kirkland Corridor.
 - › Add a lid over I-405
 - › Roof-top public spaces on buildings over 150 ft
 - › Urban design elements that provide identification and wayfinding.
- Noise pollution due to traffic.

Economic Development and Employment

- Importance of jobs in the station area, including for workers with middle incomes. Wages should allow Kirkland workers to live in Kirkland.

- Mixed-use space should be accessible to service businesses, not just retail that only high-cost vendors can afford. Concern about displacement of small local businesses. Provide support for downtown parking during construction to support local businesses.
- Support for maintaining Costco in its current location.
- Impacts of long-term work from home as economy changes post COVID-19. Will office buildings still be needed?
- Provide incentives like deferred taxes or permits for black owned businesses and other minority owned businesses to come into the area.
- Support unique shops, experiences, gathering spaces, and restaurants near the BRT that would draw customers from outside Kirkland. Make parking free to support retail business customers.
- Sidewalk storefronts create interest on a walkable scale. Business may not want storefront at 85th Hillside.
- Hold Google to a higher responsibility in the community.

Aesthetics

- Strong interest in public art that represents Kirkland and creates an inclusive and welcoming space, including art by black, Indigenous and people of color (BIPOC) artists.
- Design standards. Contemporary look that is distinctive.
- Create a stronger Kirkland identity by adding a welcome at the entrance to Kirkland. Add wayfinding signage.
- Plantings for year-round visual interest
- Support for maintaining public north-south sweeping views of nature and the Olympic Mountains. Concern that development would create permanent loss of views.

Neighborhoods

- Neighborhood preservation. Some comments expressed disinterest in preserving the existing neighborhood.
- Concerns about how parking will impact neighborhoods.

Services and Infrastructure

- **Amenities:** Restrooms, garbage cans, and compost bins for pedestrians and transit riders. Variety of cuisines and cultural offerings.
- **City staffing:** Hire more BIPOC City personnel and police.
- **Emergency services:** Concern that emergency services like the fire department will need to accommodate growth.

- **Facilities:** Interest in a subsidized space for child and elderly care services within new developments. Community center with athletic and flexible spaces to support health, wellness, gathering, education. Communal meeting rooms open to public use. A community bulletin board
- **Funding:** Concerns about taxes and bonds. Desire for developers to pay for increased services needed to accommodate growth.
- **Homelessness:** Dedicated spaces for addressing homelessness
- **Schools:** Need for additional schools and school funding to support increased density. Include daycares in office buildings to support workers' use of public transit.

Overall process concerns and questions

- Concern about project budget.
- Questions about how the plan will address long-term COVID-19 impacts. Need for a flexible plan to adapt to unanticipated future needs.
- Questions around how the SAP would integrate with Redmond's or Bellevue's plans.
- Questions about the definitions of the project objectives, affordability, and inclusivity.
- Concern about perceived biased survey wording. Confusion around survey design and questions, especially with language in the transportation mitigation section (e.g., "midblock connections"). Desire for additional outreach to share survey with more people.
- Requests for charts to be reformatted for accessibility by people with vision impairments or color blindness.

C Written Comment

Stakeholders and members of the public submitted written comments during the Draft Supplemental Environmental Impact Statement (DSEIS) comment period. The City received 114 written comments from individuals, corporations, small businesses, and organizations, one regional transportation district, and one State agency. Exhibit 20 shows a full list of commenters.

Full copies of these comments will be posted on the City's project webpage. Detailed responses to comments will be provided in the Final SEIS.

Exhibit 20. Individuals and entities that submitted written comments

Commenter	Commenter Affiliation
Jason Bendickson	Salt House Church
Marc Boettcher	MainStreet Property Group LLC
Brian Buck	Lake Washington School District
Colleen Clement	People for Climate Change - Kirkland
Paul Cornish	Sound Transit
Lisa Hodgson and Dylan Counts	Washington State Department of Transportation
John McCullough	Lee Johnson
Mark Rowe	Google
Mike Anderson	Individual
Anne Anderson	Individual
Yasminah Andrienas	Individual
David Aubry	Individual
Anna Aubry	Individual
JoAnne Baldwin	Individual
Preetesh & Heena Banthia	Individual
Christy Bear	Individual
Brad Beckmann	Individual
Brandon Bemis	Individual
Mari Bercaw	Individual
Christy Bibler	Individual
Seth Bibler	Individual
Jennifer Bosworth	Individual

Commenter	Commenter Affiliation
Margaret Bouniol Kaifer	Individual
Peder Brakke	Individual
Curtis Brown	Individual
Margaret Bull	Individual
Carl Burch	Individual
Susan Busch	Individual
Peggy Bush	Individual
Sylvia Chen	Individual
Lisa Chiappinelli	Individual
Sharon Cox	Individual
Susan Davis	Individual
Christine Deleon	Individual
Robbi Denman	Individual
Ken & Jill DeRoche	Individual
Jivko Dobrev	Individual
Bari Dorward	Individual
Keith Dunbar	Individual
Paul Elrif	Individual
Lana Fava	Individual
Alice Fleck	Individual
Syd & Margaret France	Individual
Kathy Frank	Individual
Jill Gough	Individual
Betty Graham	Individual
Brian Granowitz	Individual
Gayle Gray	Individual
Matt Gregory	Individual
Boaz Gurdin	Individual
Kathryn Hammer	Individual
Kirsten Hansen	Individual
Brian Harper	Individual
Jess Harris	Individual

Commenter	Commenter Affiliation
Christine Hassett	Individual
Brad Haverstein	Individual
Mark Heggenes	Individual
Matt Holle	Individual
Jeffrey Hoyt	Individual
Stephanie Hurst	Individual
Kathy Iverson	Individual
John Janssen	Individual
Jill Keeney	Individual
Erika Klimecky	Individual
Teri Lane	Individual
Leah Lang	Individual
Paula Lavin	Individual
Jim & Sandy Lazenby	Individual
Patty Leverett	Individual
Andy Liu	Individual
Peter & Janice Lyon	Individual
David Macias	Individual
Ken MacKenzie	Individual
Angela Maeda	Individual
David Malcolm	Individual
Beverly Marcus	Individual
Cheryl Marshall	Individual
Ingrid Martin	Individual
Carolyn McConnell	Individual
Bob McConnell	Individual
Dave Messner	Individual
Doug Murray	Individual
Erik Oruoja	Individual
Louise Pathe	Individual
Kara Peitila	Individual
Bruce & Heidi Pelton	Individual

Commenter	Commenter Affiliation
Robert Pope	Individual
Scott Powell	Individual
Cindy Randazzo	Individual
Matthew Sachs	Individual
Kim Saunders	Individual
Rachel Seelig	Individual
Susan Shelton	Individual
Taylor Spangler	Individual
Katie Stern	Individual
Karen Story	Individual
Kent Sullivan	Individual
Jeanne Tate	Individual
Paula Templin	Individual
Susan Tonkin de Vries	Individual
Elizabeth Tupper	Individual
Al Vaskas	Individual
Don & Jane Volta	Individual
Susan Vossler	Individual
Dan & Cass Walker	Individual
Vivian & Robert Weber	Individual
Brad Weed	Individual
Steve Wilhelm	Individual
Bob Willar	Individual
Oksana Willeke	Individual
Scott Willeke	Individual
Macy Zwanzig	Individual
Syd [No last name given]	Individual
Tony [No last name given]	Individual

Source: BERK, 2021.

Across activities, comment themes include but are not limited to:

- Preferences for or opposition to Alternatives 1, 2, or 3, or elements of them (e.g. level of growth and height)
- Increasing affordable housing
- Requiring energy efficiency
- Incorporating public green spaces
- Addressing school capacity and needs
- Mitigating traffic through managing growth, operational improvements, or capital improvements
- Appropriate building heights and transitions to other residential areas
 - › Some requests in particular areas wished to retain lower heights in NW and SW quadrants
 - › Concern about maximum heights east of I-405 as well as support for heights east on I-405
- Requests for more information on traffic, parks, schools, power

Exhibit 21. Key Words DSEIS Comments



D Service Provider Work Group

Representatives from four service providers with clients in the Station Area joined a virtual roundtable discussion on February 2, 2021 to learn about the Station Area Plan and provide input about how the plan can support client needs. Attendees are noted below. Allison Zike from the City of Kirkland delivered a brief presentation about the Station Area Plan and the planning process, including an overview of the three alternatives presented in the DSEIS. Following this presentation, participants engaged in a roundtable discussion about how their clients use the Station Area and their top concerns and hopes about the outcomes of the Station Area Plan. For details, see the full agenda at the end of this document.

The two meeting objectives were to:

1. Gather input on three draft alternatives from service providers who represent clients who use the Station Area and are experiencing housing insecurity, food insecurity, or low incomes.
2. Build project awareness among service providers.

Attendees included the following service providers and Project Team members:

– Service Providers

- › **Hopelink Kirkland:** *Cindy Donohue, Center Manager.* Clients mostly use the SA through interchanging on buses to Kirkland or Redmond centers.
- › **New Bethlehem Day Center and Catholic Community Services:** *Amber North, Program Manager.* Amber will be project manager for new shelter for families and women. Clients use the service area near the shelter to do most of their shopping, errands, and connect to other places for services.
- › **Sophia Way:** *Eric Ballentine, Vehicle Outreach & Lead Housing Case Manager.* Clients use the SA to connect to Helen's Place shelter in Bellevue. Transportation and transit are a main focus.
- › **Salt House Church:** *Pastor Ryan March and David Trice, Church councilmember.* Church neighbors LWHS and Kirkland Place. COVID-19 pandemic and resulting remote worship has created a much wider community, but focus is on service and advocacy.

– Project Team

- › Allison Zike, City of Kirkland
- › Erin Ishizaki, Mithun
- › Julia Tesch, BERK Consulting

Summary of Input

Each service provider identified their most important theme(s) about the Station Area Plan:

- *Sophia Way*: **Affordability.**
- *Hopelink*: **Affordability and access to services.**
- *Amber*: **Affordability, access, and “small town” feel that includes open spaces.**
- *Salt House*: **Equity and affordability.**

Transit is also a main priority for clients:

- “Right now, about 20% of the women [who Helen’s Place serves] have cars. Increasing transit will be a great thing.”
- “The Day Center use can sometimes be more car-dominant – often people who are unsheltered and in Kirkland stay in their cars in safe parking place.... Even if people have cars, they’re not always working cars. They need to be able to park that car and also access the transit.”
- “Many clients who use public transportation have to walk up to 2 miles to get to City Center, and up to half of that has no sidewalk. They’re walking past big trucks, it’s pretty scary, and they may have groceries. Used to have a bus system that came to the center, but that’s been eliminated. Since then, it’s been a nightmare.”

Amber North recommended three projects that could provide additional insight:

- [Lake Washington United Methodist Church Safe Parking program](#). Has a long-term connection to Kirkland and familiarity with the program’s long-term overflow problem, requiring people to park on the street.
- An [affordable housing project](#) being developed in conjunction with commercial development and the Redmond Together Center.
- Homeless Youth Services at [Friends of Youth](#) could provide information about the development of the youth shelter.

Questions from Attendees

- What are the drivers of the city planning piece in terms of what the City envisions?
 - › **Answer:** Main driver is that we expect the Puget Sound region will continue to grow and a lot of that growth is coming to Kirkland. The biggest driver of the SAP process is that we have a great opportunity to

locate anticipated growth with access to transit with the introduction of the BRT station. If growth will happen, how can we guide it to make sure it fits the community's vision?

- Can you explain where affordable housing fits within the scope of these plans?
 - › **Answer:** We've issued an EIS, which looks at a lot of different elements like housing, land use, transportation, several environmental factors. Then it tests the impacts of each of these elements at different levels of growth. E.g., if we introduce X new housing units, how much affordable housing can we expect? Kirkland currently has inclusionary affordable housing in most zones, which requires a certain number of affordable housing units in new development. In this EIS, we could be more aggressive with that. We have some proposals for different options that could be integrated into the final plan, like including commercial linkage fees or requiring inclusion of more than 10% affordable housing. Want to know: what level of interest do we have in the options we've put out there to get more affordable housing in the community? Do we have support? Do we have other ideas? Where do other people want to see affordable housing?
- 120th Ave NE, where Salt House is located, gets super congested, especially when school lets out. You mentioned a blue and green road. What does that mean?
 - › **Answer:** A blue and green street looks at how to handle stormwater. One concept might be a bioswale integrated into the street that can carry stormwater, create more separation between vehicles and pedestrians, and create more visual interest for pedestrians. We need to look for more creative ways to handle additional stormwater runoff.
 - › **Answer 2:** A regular street except there's more space in the planting/landscape area to handle more stormwater. A nicer experience for walking, biking. A street with a nicer streetscape.
- Can you speak to the addition of larger buildings, parking, and congestion?
 - › **Answer:** This is one of the impacts we're looking for in the EIS. If we have buildings up to 20 stories, there will be more people and potentially more cars. First and foremost: How can we make this the best transit-oriented district by setting up a framework to make it easy for people to get around that doesn't rely on cars? Any new development will need to include mitigation.
- **Follow-up question:** Will street parking go away? Street parking is important for Salt House because it has a small parking lot. Parking needs to be developed. Already tight. If the school didn't allow for parking in their lot,

would be tough.

- › **Answer 1:** In the planning stages of the new shelter, the parking capacity of the people using it includes the street. That was a part of the parking permit plan for the shelter.
- › **Answer 1:** Alternative 3 includes the analysis of a new parking facility as a potential mitigation measure.
- What are mid-block pathways?
 - › **Answer:** Especially north of 85th – where Petco site is, blocks are large. As those areas develop, would look at creating more pedestrian connections to make it easier for people to get around on a more micro level.
- What is happening with Google?
 - › **Answer:** Lee Johnson site is under contract (but nothing yet bought or sold). We would imagine potential for some office. Planning process is looking at total number of office and residents as calculations. Looking at total numbers of people, cars, and traffic that can relate to how many employees might be in an area. The plan for the City doesn't hinge on one company owning it over another.
- What's going into atmosphere, beauty, public art, aesthetic – the feel of the place?
 - › **Answer:** Some Zoning will get to better design of buildings and how they relate to the street and pedestrians. There's been interest in how to incorporate art and inclusive art into the place. Not yet sure how it'll play out – open to ideas.

E Meetings-in-a-Box

Eric Ballentine, Vehicle Outreach and Lead Housing Case Manager at The Sophia Way, hosted two in-person group sessions and a few one-on-one discussions to gather input from his clients on the NE 85th St Station Area Plan (SAP) Draft Supplemental Environmental Impact Statement. These meetings-in-a-box took place during the weeks of January 18, 2021 and February 5, 2021.

In total, 26 participants joined either session or a one-on-one discussion. All participants were women experiencing homelessness. About one-third were full-time employed and about two-thirds have received disability or have a disability claim filed. Participants' ages ranged from approximately 30-70 years, with a large proportion ages 55 and older.

Summary of Input

How could the Station Area be safer?

- **Lighting:** both at the station and along pathways/roads to access the station.
- **Accessibility:** Kirkland has a lot of hills. Not as accessible – especially for older women – for people to use public transportation. Often a deterrent. Some people have disabilities but aren't qualified for [King County Metro] Access. People with walkers could use more ramps and support to access sidewalks (e.g., mid-block crosswalks). Transit station curbs are typically especially difficult because they are raised to accommodate the bus.
- **Blue emergency call box:** at the station, as a lot of Sophia Way clients don't have cell phones.
- **Spaces to spend time outside the station:** If there will be high-traffic pedestrian zones nearby, include an area for people to wait that's near the station, if they don't feel safe at the station itself. Ideally, a high area of walkability to hang out while waiting for the bus.

What are the key transportation features that should be included in this area?

- **Pedestrian connections** with lighting.
- **Ramps** for people with walkers.
- **Benches with lighting** – take a break while walking.
- **Restrooms** – many neighboring businesses won't let people use the restroom without buying something. For older women, this can be a major issue.

What are the key housing features that should be included?

- **Senior community living that's affordable.** A strong sense of community is especially important. Many of Sophia Way's older women clients get along with one another and would like to have affordable living together for seniors.
- **Parking.** Some people work in Seattle. Want a potential park & ride option. With the bus station, will there be more bus routes therefore making housing in Kirkland more accessible? Sophia way gives bus tickets.

What employment supports should be included in this area?

- **More jobs in the area.** Entry-level positions, but not necessarily low-paying service jobs.
 - › New Bethlehem is right below Sophia Way. A broad range of people experiencing homelessness – not just older women. There is a need for professional development/growth opportunities.
 - › Walkability to work, access to healthcare needs.
- **Affordable living with a decent wage** to live in the area that you work. Especially important.
- **Jobs to supplement incomes of people with fixed incomes/disability.** Most people on fixed income/disability receive around \$850, more broadly between \$700-\$1100. Need a decent job to supplement income, whether part-time or full-time, combined with affordable housing.

What are the most important needs for youth in this area?

- No specific conversation around this, though it can be challenging for youth experiencing homelessness.

Anything else?

- **Primary takeaway: Public space.** It's hard to experience homelessness and to be stuck in a shelter all day. People really enjoy having really nice public space areas, whether it's a park, water fountain, or a dog park. Loitering can be an issue sometimes, but don't think this is as big of an issue in Kirkland.

F Lake Washington High School Student Presentations

Students from two economics classes taught by Ms. Bethany Shoda at Lake Washington High School engaged in a monthlong project to learn about the SAP and to provide input during the comment period. Members of the project team joined eight class sessions (four per class) in December 2020 and January 2021 to teach and support students in the project. During the project, students reviewed project materials, participated in public meetings, interviewed community members, hosted meetings-in-a-box, analyzed the three DSEIS alternatives, and developed their own preferred alternatives.

The project culminated with student presentations of their preferred alternatives to members of the Kirkland City Council and of the Project Team. Councilmembers and Project Team members in attendance at each final presentation are noted in Exhibit 22.

Exhibit 22. Councilmember and Project Team Attendance at Student Final Presentations

Class Session 1: Thursday, January 21	Class Session 2: Friday, January 22
City of Kirkland Deputy Mayor Jay Arnold	City of Kirkland Councilmember Toby Nixon
City of Kirkland Councilmember Jon Pascal	City of Kirkland Councilmember Neal Black
City of Kirkland Councilmember Kelli Curtis	City of Kirkland Councilmember Amy Falcone
Adam Weinstein, Planning and Building Director, City of Kirkland	Jeremy McMahan, Deputy Planning Director, City of Kirkland
Julia Tesch, Associate, BERK Consulting	Allison Zike, Senior Planner, City of Kirkland
	Julia Tesch, Associate, BERK Consulting

Source: BERK, 2021.

Summary of Input

Students' presentations demonstrated that they had engaged deeply with project materials. Councilmembers asked students challenging and thoughtful questions, which offered students the opportunity to clarify their ideas and provide additional detail. Students' opinions varied, reflecting the diversity of opinion community members shared at the open house.

Overall, many students supported moderate change, with Alternative 2 receiving the most support. However, all three alternatives received support from different student groups, and yet other groups created custom preferred alternatives that drew from existing alternatives or incorporated original elements.

Student Presentations

Student Group 1

- Key takeaways:
 - › Preferred alternative includes mobility and environmental elements from Alternatives 2 and 3, and infrastructure and development elements from Alternative 1.
 - › Emphasis on more bike and walking infrastructure, including for youth and ADA accessibility.
 - › Addition of parks, including dog parks.
 - › Infrastructure should focus on green development and smaller buildings.
- Questions:
 - › Can you describe your concerns about the growth in Alternatives 2 and 3?
 - Answer: Concerns about increase in height of buildings.
 - › When you graduate college, what is your future in the City of Kirkland?
 - Answer: Youth see Kirkland as a stepping-off place to launch their adult lives, potentially outside Kirkland.
 - › Where in the Station Area would be a good location to add parks?
 - Answer: Should be close to houses and communities. People typically visit parks within walking distance of their homes.

Student Group 2

- Key Takeaways:
 - › Interest in increasing housing diversity.
 - › Need to balance growth with maintaining a small-town feel.
 - › Want to avoid City of Kirkland being a “pass-through” town for other larger destinations like Bellevue and Seattle.
 - › Preferred alternative is Alternative 2.
- Questions:
 - › What (if anything) is good about tall buildings?
 - Answer: More retail space and residential units. Group’s opinion is based in personal preference and experience.
 - › Are you interested in auto infrastructure, or do you prefer alternative

modes of transportation?

- Answer: Don't value driving as much as earlier generations. Priority is to simply reach the destination, rather than caring about the mode of transportation. If there's enough time to reach a destination by foot or bike, would choose that mode.
- › Have you had discussions about the importance of having jobs in Kirkland?
 - Answer: Especially now during the COVID-19 pandemic, many people are out of work. It will take time to establish a new sense of normal. More jobs in Kirkland will lead to more residents and more diversity. It will bring a desirable amount of change.
- › What amenities are missing in Kirkland that you'd like to see here?
 - Answer: A "go-to" place that's the clear space to spend time.
 - Follow-up question: How do we build that kind of place?
 - Answer: Takes some growth and experimenting. Getting more ideas from residents – what do they value in the city? What do people from out-of-town want to see? Could be a tourist attraction where people go to take pictures. Instagram is popular, so consider a park with statues and art for people to spend time and listen to music. An outdoor activity that combines music and photography could gain people's interest.

Student Group 3

- Key takeaways:
 - › Interviewed a business employee who lives in the Station Area.
 - › Environmental protections and mitigation are important.
 - › Equity is one of the primary goals of the plan.
 - › Alternative 1 does not meet project objectives. Alternatives 2 and 3 do.
 - › A con of Alternative 1 is that it creates housing scarcity [Note – this is an amendment from a misspoken remark during the presentation.]
 - › Preferred alternative: Alternative 2 with addition of environmental protections of Alternative 3
 - › Want to allow for growth near transit without disturbing surrounding areas, increase transit connections, environmental sustainability, and diversity of housing and communities.
- Questions:

- › How did you draw connections between new housing and gentrification?
 - Answer: Personal experience. Have lived in Kirkland for 10 years and seen people leave their homes because new apartment buildings with higher rent have increased housing costs.
- › What are you thinking along the lines of additional environmental regulations?
 - Answer: Liked the ideas of Alternative 2, but also liked the environmental points from Alternative 3. Preferred alternative uses the points from Alternative 2 but incorporates environmental points from Alternative 3 that benefit the area. Specifically, liked the stormwater infrastructure, green building design, intensive green streets.
- › People will need to take the bus to make this work. What can we add to the plan to draw people to the bus station, especially from a student perspective?
 - Teacher answer: Live up north of Kirkland because can't afford to live in Kirkland. Would live in Kirkland if could afford and would take transit if it were available. When commuted into the building before COVID-19, would drive 1 hour into school and 1.5 hour home. Transit stations up north have amenities like coffee shops and waiting places – this is a great amenity as a commuter.
- › Did your group discuss the potential impacts to schools and education as new residents arrive? Currently seeing that in LWSD – have crowding in schools, lack of space.
 - Answer: LWHS has built a new wing, new gym, Rose Hill Elementary has a new wing. Schools are growing capacity, but this will only address growth to date. Lakeview Elementary will probably have more students, which are currently supported by portables.

Student Group 4

- Key takeaways:
 - › Alt 1: pros include residential housing and office development, but cons include limited street improvement and no low-income/affordable housing.
 - › Alt 2: pros include affordable housing, bike infrastructure and sidewalks, stormwater improvements, and green infrastructure. Cons include a failure to reduce all parking requirements for mixed-use zoning and no residential housing construction.

- › Most people interviewed favored alternative 2.
- › Alternative 3: No one favored.
- › Preferred alternative: Limited version of Alternative 2. Mixed-use structures up to 8 stories that include affordable housing. Infrastructure improvements to sidewalks and bike lanes, trees, green infrastructure.
 - Pros: Accommodates predicted growth, creates affordable housing, implements green infrastructure, and improves sidewalks and bike paths.
 - Cons: Could lead to scarcity in housing or waste money if changes don't adequately address growth.
- › Don't want high rises but do want to accommodate growth.
- Questions:
 - › We often hear "we don't want Kirkland to be another Bellevue." What is it about Bellevue that is bad?
 - Answer: It's a matter of urbanization. Bellevue isn't bad in and of itself, but Kirkland and Bellevue are different places in terms of their size as a city. Kirkland is more of a suburban area and Bellevue is more of a city, at least in the downtown area. People want Kirkland to remain like a suburban area.
 - › Did you come across the internal conflict of wanting to encourage types of growth – like more affordable housing, that allows workers to live near where they work – and not wanting to see growth? Is there a conflict between avoiding growth but achieving the economic incentive for more affordable housing?
 - Answer: Yes. There's a challenge between balancing keeping an area suburban and accommodating for growth. There will likely be an influx of people into the city, and we need to accommodate them at least to some extent.

Student Group 5

- Key takeaways:
 - › Alt 1: Pros are limited construction work and keeping things like they are. Cons are that it doesn't account for future development, limited bike lanes and walkways, and no stormwater improvement. This alternative does not meet project objectives.
 - › Alt 2: Pros are that it enhances existing bike lanes and walking, improves stormwater, and predicts some growth. Cons include no major

improvement and not enough bike lanes. This alternative meets project objectives.

- A comfortable transformation, with a livable atmosphere. But not too extreme.
- › Alt 3: Pros include addressing predicted growth, inclusion of green buildings, new retail near the transit center, major stormwater improvements. Cons include obscured skyline and lots of construction. This alternative meets project objectives but makes other goals harder to maintain. Kirkland would become more connected but would require high maintenance to keep the City clean.
- › Preferred alternative: Alternative 2. Offers enough development to support Kirkland's future population. Community engagement with others indicates strong support for Alternative 2.
- Questions:
 - › What does an inclusive district mean to you?
 - Answer: An area where everything comes together and everything is all together as one. Different types of people are all included. A mix of everything. Mixed-use buildings, stores, apartments, different types of buildings that meet everyone's needs.
 - › What would be a worthwhile public benefit that developers could provide in exchange for higher buildings?
 - Answer: Affordable housing, allowing people to be closer to their jobs (creates less pollution from commuting, less traffic), mixed-use buildings to create retail, restaurant, market space. That way, a person can live in an area and be completely sustainable without having to drive 30 minutes away to a grocery store.
 - › Does Kirkland have enough places for people your age to spend time?
 - Answer: Kirkland has a good amount of areas. Lots of parks on Lake Washington Avenue, parks in the Juanita area, new complex downtown (don't recall area). Station Area could provide a new desirable area along the lines of the downtown Redmond shopping area.

Student Group 6

- Key takeaways:
 - › Alternative 2 is the best option for Kirkland.
 - › Pros:

- Supports affordable housing and quality of life for current and upcoming residents. Job and population growth while still preserving the suburban feel.
- Moderate development with office buildings up to 10 stories.
- Additional bike routes and sidewalks on key streets to create additional transportation. Provides easier transit to areas near Seattle. Increased transit opportunities can also be fairer for young individuals or people with low incomes. Can make it easier for people to afford housing if they don't need a car – can build additional affordable housing. Incentives for green infrastructure.
- Reduced parking requirements for certain areas.
- Stormwater improvements. More trees, stormwater infrastructure for better water quality.
- › Cons: Increased property values, causing a lot of people to have to move out of the area because they won't be able to afford their apartment. A long transition period – a lot of work to be done. In moderate growth, it will take multiple years. People won't want to deal with construction and the traffic issues that go along with constructing bike paths and sidewalks over multiple years.
- › Better than other alternatives because it encourages better transit for all to encourage more people to move there. Provides youth and people with lower incomes with access.
- › Alternative 3 would make Kirkland residents very unhappy. Many people moved here because they want to raise families and enjoy a suburban feel. They choose Kirkland over Seattle and Bellevue for this reason. It's important to allow for growth but maintain this feel.
- Questions:
 - › What does the distinction between urban and suburban mean to you?
 - Answer: Types of shops – e.g., big retail chain stores versus local small businesses. Important to stick to local businesses.
 - › Where should growth occur, given that growth is happening?
 - Answer: All around Kirkland – e.g., Redmond, Seattle, Bellevue – there's options for significant growth. Kirkland is already so congested. Don't have a lot of roads, and they're often under construction. Is any growth attainable for Kirkland without making it so overpopulated that it becomes unenjoyable to live there?

Student Group 7

- Key takeaways:
 - › Alt 1: Pros is that it's inexpensive. Cons include little to no development and that it won't fulfill the project requirements.
 - › Alt 2: Pros include that it maximizes some goals of the project. Gives Kirkland the unique identity it wants. Area can have an increased amount of productivity. Cons: Doesn't meet all the goals of the project and might cause more traffic in the area.
 - › Alt 3: Meets all project goals, as it expands job and housing opportunities. Gives opportunity to not use cars to reduce pollution and increase quality of life. Increased use of transit will provide additional revenues for the city. Sustainable option that uses land effectively. Most desirable option for people to move into the area. Cons include the cost, potential traffic, and limited parking space.
 - › Interview: POC who is a transit rider. Preferred alternative is no action. Does not see buses as a good option for traffic and feels the area is already adequately developed. Buses get stuck in traffic and take time. Need transit that is faster and better for the environment – like rail or subway. Especially true because transit station is not expected to be ready for 10-15 years.⁵
 - › Community engagement discussion with 6 residents: unanimous consensus for alternative 3. Biggest concerns around traffic, parking, and potential tax increases. A growing population in the area needs more space for students to be in schools. Overall, enthusiastic about the changes and growth with alternative 3.
 - › Preferred alternative: Alternative 3. Meets all the project requirements and has greatest development in the City. Need to focus on reducing traffic and not to impact the streets.
- Questions:
 - › What would you think about schools in urban settings, such as a high-rise, as opposed to portables?
 - Answer: I don't think an urban schooling system would be ideal. This would be farthest from what people want and a lot of change. Better to create more schools in the district or to expand existing schools.

⁵ The BRT will be complete in 2025.

- › Did your group discuss the addition of more families and students in the area?
 - Answer: All the schools in LWSD are always needing to expand. Students are having to go to school on campuses that are under construction. Disruptive to the school environment. Might be easier to add another school outside the Station Area.

Student Group 8

- Key takeaways:
 - › Preferred Alternative: Alternative 1. Don't want to see Kirkland turn into another Bellevue.
 - Pros include: Modest office development, minor traffic/parking impacts, minor street work, and includes housing/job growth.
 - Cons include: limited landscaping, not enough construction to assist growing population, no stormwater improvements, no additional affordable housing, a limited amount of eco-friendly buildings, and no additional bike/pedestrian routes.
 - › Group discussion: Talked with three youth.
 - Cons from Alternative 2 and 3: Didn't like the ideas of big buildings being constructed. Would change the characteristics of Kirkland – transition from the small community into a big city. But also didn't love that there wouldn't be any development.
 - Liked that Alternative 1 would allow some development, but not too much.
 - Pros of Alternative 2 and 3 include environmental awareness – green buildings, conservation of resources. Loved the ideas of new biking/walking paths because many don't have cars or driver's licenses and some can't afford to take buses.
 - › Interviews: Interviewed two stakeholders.
 - A business owner who preferred Alternative 3 as it creates more jobs and opportunities for people in Kirkland.
 - A renter who preferred Alternative 1 as it creates minimal disruption, minimizes commercialization, and limits construction.
 - Both interviewees agreed that the project is meeting project goals. Both were concerned about the length of the project.
- Questions:

- › Are there specific reasons that people are concerned about big buildings? Is there a certain type of building that people called out?
 - Answer: No mention of a specific building, but many people felt that communities like Bellevue have their own aesthetic and character, and Kirkland has its own too. Concern was about taking in the characteristics of big buildings because it changes how the city works, how we get around, and what kind of shops and businesses come into the area.
- › One difference between Bellevue and Kirkland is that Bellevue can explore an aquatic center (something Kirkland wants too) in part because it has more resources due to taxation. New jobs and new housing and commercial development in the Station Area could contribute to the resources that Kirkland has, bringing it more in line with Bellevue. What does this group think about these kinds of public benefits?
 - Answer: Those public benefits would be nice, but people choose to live in Kirkland because of what Kirkland has. People like that it's smaller, it has more of a homey feel. Would live in Bellevue if wanted those resources. Losing the soul of Kirkland isn't a fair price to pay.

Student Group 9

- Key takeaways:
 - › Five major community concerns include:
 1. Where will funding come from? What is the necessity of major spending?
 2. Tall buildings blocking views of Lake Washington.
 3. Negative environmental impacts.
 4. Traffic.
 5. Overcrowding in parking in neighborhoods.
 - › Alternative 1:
 - Pros: environmentally friendly, cheap, low building heights.
 - Cons: Rapidly run out of housing, housing prices will increase, traffic will only get worse, lack of improvement to bike lanes and sidewalks.
 - › Alternative 2:
 - Pros: Moderate residential and office development, less parking requirements, additional path and walkways, sidewalks, bike lanes.

- Cons: less parking, less environmentally friendly, and expensive. Concerns around uncertainty about eventual cost.
- › Alternative 3:
 - Pros: Allows the most growth to support TOD, including significant housing production, bike facilities, sidewalks, parking facility, and new environmental standards.
 - Cons: Most expensive, doesn't address traffic, height of buildings, and significant housing production without affordability will attract more outside buyers. This isn't what the current residents of Kirkland wants or needs.
- › Preferred alternative: A mix of Alts and 2. Additions not in either include:
 - Build underground parking garages.
 - Add electric scooters to be more environmentally friendly.
 - Pros: environmentally friendly, little change to development policies, some housing development, some bike lane/sidewalk development. Cons are expensive and more traffic, but costs are inevitable.
 - Helps meet initial goals of development and equity access. Doesn't infringe on traffic and parking access.
- Questions:
 - › What do you think will be the role of cars in Kirkland 20 years from now?
 - Answer: Cars will still be the main option for transportation. It's unrealistic to expect a lot of people to take transit. Cars are so much easier and so much more effective. There are a lot of areas to get to in Kirkland that transit can't access. Most people who use BRT will be the same people who use affordable housing and are limited to the transportation that's available. People who currently have opportunities to use cars will continue to use cars.
 - › What have been your conversation around active transportation? E.g., people who choose to bike or walk instead of using cars.
 - Answer: A lot of the conversations were structured around a theoretical approach around the importance of additional sidewalks and bike lanes. But when you break it down in a practical sense, most people will still choose to travel by car. They might prefer sidewalks when considering other members of the community, but they have more questions around traffic and parking for their own lives.

G City Staff Presentations at Virtual Community Organization Meetings

In the weeks leading up to, and during, the DSEIS public comment period City staff accepted several invitations to present information about the Station Area Plan to various community organizations. Community organization meetings were all held virtually and attended by Senior Planner Allison Zike and/or Planning & Building Deputy Director Jeremy McMahan. Staff presentations generally included a NE 85th St Station Area Plan project introduction, a summary of the three DSEIS alternatives, information about how to provide DSEIS comments or otherwise engage with the project, and responses to questions from the respective membership. Below is a list of community organization meeting presentations and dates that were associated with the DSEIS phase of the project.

- September 21, 2020: North Rose Hill Neighborhood Association
- October 14, 2020: Kirkland Alliance of Neighborhoods
- November 9, 2020: Moss Bay Neighborhood Association
- November 18, 2020: Highlands Neighborhood Association
- December 1, 2020: Everest Neighborhood Association
- December 16, 2020: Highlands Neighborhood Association (with Washington State Dept. of Transportation and Sound Transit staff)
- January 13, 2021: Kirkland Alliance of Neighborhoods
- January 18, 2021: North Rose Hill Neighborhood Association
- January 25, 2021: Kirkland Chamber of Commerce
- February 3, 2021: Norkirk Neighborhood Association

11.9

Appendix — High performance Buildings and Sustainability Protocols

Kirkland Station Area Plan: High-Performance Buildings & Sustainability Protocols

Revised: April 19, 2022

SUBMITTED BY:

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Goals of Study

Establish a protocol comparison utilizing two sample projects based on typical development in the Puget Sound region in an urban, transit-oriented area.

One project represents a housing complex and the second represents a commercial office space featuring ground-floor retail. The sample buildings will be evaluated using multiple sustainability protocols for high-performance buildings.

The comparison between sustainability protocols supports the City of Kirkland's investigation of High-Performance Building Standards Zoning Code Amendments¹, and the adoption of new standards that may align future development with the City's Sustainability Master Plan (SMP).

This is a comparative analysis of sustainability protocols to a baseline of a code-compliant building in Kirkland. The deliverable from this activity is:

1. Documentation of side-by-side paths for sustainability protocol compliance
2. Evaluation of comparable levels of certification, e.g. LEED Platinum, Built Green 4 Star, etc.
3. A guide to determine where Kirkland might fall within the regional benchmarking.

This deliverable will provide the City of Kirkland with information about the implementation of the SMP goals for Net Zero Energy building certification and help calibrate the Green Innovation Development Standards baseline requirement and incentive program recommendations.

Using the sample project, compare the protocols using the following metrics:

- Strategies for prescriptive Green Building Protocol Compliance, tracked via Scorecards²:
 - Living Building Challenge v4 for both New Construction as well as Multifamily typologies
 - LEED New Construction v4, targeting the Platinum level: **80 points** total and a 4-point buffer
 - LEED for Homes Multifamily v4, targeting the Platinum level: **80 points** total and a 4-point buffer
 - Built Green 4-Star v2021, targeting the 4-Star level: minimum **400 points (60 points** from Sections 2-5 and a 7-point buffer in each Section)
 - Passive House v2021 for both New Construction as well as Multifamily typologies
 - Salmon Safe for both New Construction as well as Multifamily typologies³
- Evaluation of Comparable Levels of Certification
- Soft Costs ROM (Rough Order of Magnitude)
- Hard Costs ROM (Rough Order of Magnitude)
- Design & Construction Impacts

¹ City of Kirkland, "High Performance Buildings Standards Zoning Code Amendments, File No. CAM22-00046." February 17, 2022.

² See **Appendix** for fully completed Scorecards per Protocol

³ Information regarding Salmon Safe is seen in the Commercial typology due to formatting.

Code Compliance Assumptions

The following code and building development assumptions set a baseline for features of a building that are evaluated across multiple protocols.

Category	Residential Multifamily	Commercial Office
Parking	<ul style="list-style-type: none"> For proposed Station Area zoning, assume: <ul style="list-style-type: none"> Residential: 1 stall per unit Retail: 3 stalls per 1,000 GSF (first 2,000GSF exempt) 	<ul style="list-style-type: none"> For proposed Station Area zoning, assume: <ul style="list-style-type: none"> Office: 2 stalls per 1,000 GSF Industrial: 0.5 stalls per 1,000 GSF Retail: 3 stalls per 1,000 GSF (first 2,000GSF exempt) Restaurant: 5 stalls per 1,000 GSF (first 2,000GSF exempt)
Bike Parking	City of Kirkland Construction Code, Bicycle Parking ⁴ <ul style="list-style-type: none"> 1:12 bike-to-vehicle parking stall ratio Located within 50 ft of an entrance and under a covering 	City of Kirkland Construction Code, Bicycle Parking <ul style="list-style-type: none"> 1:12 bike-to-vehicle parking stall ratio Located within 50 ft of an entrance and under a covering
Green / Alternative Fuel Vehicles	Kirkland High-Performance Building Code <ul style="list-style-type: none"> 10% of parking stalls feature EV charging 20% of parking stalls are EV-ready 100% of bike parking stalls feature electrical outlets 	Kirkland High-Performance Building Code <ul style="list-style-type: none"> 10% of parking stalls feature EV charging 20% of parking stalls are EV-ready 100% of bike parking stalls feature electrical outlets
Indoor water use	Washington Administrative Code – Plumbing fixtures and fixture fittings ⁵ <ul style="list-style-type: none"> Water closets (toilets): 1.28 GPF (gallons per flush) Showerheads: 1.8 GPM (gallons per minute) Private lavatory faucets: 1.2 GPM Kitchen lavatory faucets: 1.8 GPM 	Washington Administrative Code – Plumbing fixtures and fixture fittings <ul style="list-style-type: none"> Water closets (toilets): 1.28 GPF (gallons per flush) Showerheads: 1.8 GPM (gallons per minute) Private lavatory faucets: 1.2 GPM Kitchen lavatory faucets: 1.8 GPM
Outdoor Water Use	2019 Stormwater Management Manual for Western WA	2019 Stormwater Management Manual for Western WA
Energy code	2018 WA State Energy Code	2018 WA State Energy Code
Indoor Environmental Quality	2018 WA State Building Code – Chapter 12 Interior Environment	2018 WA State Building Code – Chapter 12 Interior Environment

⁴ City of Kirkland Construction Code, [KZC Chapter 105 – PARKING AREAS, VEHICLE AND PEDESTRIAN ACCESS, AND RELATED IMPROVEMENTS \(codepublishing.com\)](#)

⁵ Washington Administrative Code, [WAC 51-56-0400](#):

Sample Project Data

From the baseline assumptions above, two sample projects are demonstrated below. The most cost-efficient path was utilized to meet code compliance.

Sample Building	Residential Multifamily	Commercial Office
Basic Information	<ul style="list-style-type: none"> • Applicable Codes: 2018 WSEC/WSBC/WSMC • Stories: 7 (+2 levels below-grade parking) • Number of Units and Occupants: 385 units, 1105 occupants • Square footage: 492,330 • Residential Parking Stalls Required: 383 • Residential Parking Stalls Provided: 557 stalls • Commercial Parking Stalls Required: 35 • Commercial Parking Stalls Provided: 53 • Bike Parking: 110 racks • EV Charging: 61 stalls are EV-ready (10% of total) 	<ul style="list-style-type: none"> • Applicable Codes: 2018 WSEC/WSBC/WSMC • Stories: 9 (+3 levels below-grade parking and roof-top deck) • Occupant Count: 700 occupants • Square footage: 244,000 sqft of office • Parking stalls: 207 • Bike Parking: 119 • EV Charging: 11
Systems	<ul style="list-style-type: none"> • Units and Home Size Adjuster (HSA): 5.5 <ul style="list-style-type: none"> • 10 Studios, 105 1-Beds, 205 2-beds, 65 3-beds. • Electric heat • No Cooling • Gas Domestic Hot Water • C406: Dedicated Outdoor Air System (DOAS), required; 20% Lighting Reduction 	<ul style="list-style-type: none"> • HVAC: Air-Source Variable Refrigerant Flow (VRF) • Ventilation: Rooftop DOAS, DX Cooling + Gas Furnace Heat • Domestic hot water: Electric Resistance water heaters • C406: 20% Lighting Reduction, Reduced Infiltration, 1 Point PV
Fixtures & Appliances	<ul style="list-style-type: none"> • Water closets (toilets): 1.28 GPF (gallons per flush) • Showerheads: 1.8 GPM (gallons per minute) • Private lavatory faucets: 1.2 GPM • Kitchen lavatory faucets: 1.8 GPM • Refrigerators / Dishwashers / Clothes Washers: ENERGY STAR 	<ul style="list-style-type: none"> • Water closets (toilets): 1.28 GPF (gallons per flush) • Urinal: 0.125 GPF • Showerheads: 1.8 GPM (gallons per minute) • Public lavatory faucets: 0.5 GPM • Kitchen lavatory faucets: 1.8 GPM

Analysis Assumptions

- **Location:** Project is in the City of Kirkland located near a transit station. Density reflects the sample projects (i.e., projects which do not have density, access to transit, and community resources nearby would need to be evaluated differently).
- **Unit Size:** All residential units are below 1200 square feet.
- **Combustion Uses:** Gas fireplace is EPA Certified and installed with doors. Gas hot water heaters are designed and installed with closed combustion.
- This study has been conducted by selecting credits in each rating system that are the most cost-effective.

Parking and Electric Vehicle Charging

Transportation is one of the largest drivers of CO₂ emissions in the City of Kirkland. Transit-oriented developments address CO₂ emissions through strategies that reduce parking demand and transition behavior towards mass and active transportation modes. Several of the protocols outlined in the comparative analysis require and/or elevate strategies that reduce emissions from transportation through different methods. The table below demonstrates the following:

- The protocol's requirement to reduce parking stalls and provide for electric vehicles.
- The requirement of the proposed Station Area code on the sample project.
- The sample project's targeted design.
- The target that the sample project would need to design to achieve the protocol's credit.

Sustainability Protocol Parking and Electric Vehicle (EV) Charging Requirements

Parking Stall Reduction	Living Building Challenge v4 (LBC)		LEED Multifamily v4 Platinum	Built Green v2021 4 Star	LEED New Construction v4 Platinum
	Multifamily	Commercial			
	<p>Reduce Single Occupancy Vehicle trips by 30%</p> <p>Employ at least four transportation demand management alternatives approved by the Living Building Challenge.</p> <p>Multifamily Example There is not a direct parking footprint impact as a result of LBC requirements for below-grade garages. However, LBC features multiple prescriptive measures for surface-parking lots.</p>	<p>Reduce Single Occupancy Vehicle trips by 30%</p> <p>Employ at least four transportation demand management alternatives approved by the Living Building Challenge.</p> <p>Commercial Example There is not a direct parking footprint impact as a result of LBC requirements for below-grade garages.</p>	<p>LEED for Homes does not provide credit for parking reductions.</p>	<p>Providing zero parking stalls achieves 10 points, which is a heavyweight in the Built Green scoring scheme.</p> <p>Multifamily Example</p> <ul style="list-style-type: none"> • Station Area: Requires a minimum of 383 stalls for residents. • Example: Provides 557 stalls for residents. • Built Green: 4-star is achievable without reducing parking footprint. 	<p>LEED states: Buildings should not exceed local minimum code requirements</p> <ul style="list-style-type: none"> • Projects in dense, transit-oriented areas must achieve 40% below the base ratio provided by the Institute of Transportation Engineers. ITE base ratio recommends 589 stalls for the sample multi-family building. <p>Commercial Example</p> <ul style="list-style-type: none"> • Station Area: Requires a minimum of 357 stalls. • Example: Provides 207 stalls for occupants. • LEED NC: Requires max of 235 to achieve credit.

Sustainability Protocol Parking and Electric Vehicle (EV) Charging Requirements, continued.

Electric Vehicle (EV) Charging	Living Building Challenge v4 (LBC)		LEED Multifamily v4 Platinum	Built Green v2021 4 Star	LEED New Construction v4 Platinum
	Multifamily	Commercial			
	<p>All projects must be “zero ready” such that EV stalls must be pre-wired for solar power supply.</p> <p>1 EV charging stall per 30 spaces.</p> <p>Electric bike charging does not fulfill a requirement.</p> <p>Multifamily Example</p> <ul style="list-style-type: none"> • Station Area: Requires a minimum of 34 stalls with EV chargers, and 78 stalls are EV-ready. • Example: Provides 58 EV-ready stalls for residents. <p>LBC: Requires 19 EV chargers for residents.</p>	<p>All projects must be “zero ready” such that EV stalls must be pre-wired for solar power supply.</p> <p>1 EV charging stall per 30 spaces.</p> <p>Electric bike charging does not fulfill a requirement.</p> <p>Commercial Example</p> <ul style="list-style-type: none"> • Station Area: Requires 21 stalls that have EV chargers, and 42 are EV-ready. • Example: Meets Station Area code. <p>LBC: Requires 7 EV chargers.</p>	<p>LEED Multifamily Innovation Design Credit requires 2% of stalls to feature EV charging.</p> <p>Electric bike charging does not fulfill a credit.</p> <p>Electric bike charging does not receive points.</p> <p>Multifamily Example</p> <ul style="list-style-type: none"> • Station Area: Requires a minimum of 34 stalls with EV chargers, and 78 stalls are EV-ready. • Example: Provides 58 EV-ready stalls for residents. • LEED Multifamily: requires 12 stalls with EV charging. 	<p>Built Green requires 6 stalls feature EV charging infrastructure to achieve 20 points, which is the maximum points available for that credit.</p> <p>Electric bike charging does not receive points.</p> <p>Multifamily Example</p> <ul style="list-style-type: none"> • Station Area: Requires a minimum of 34 stalls with EV chargers, and 78 stalls are EV-ready. • Example: Provides 56 chargers for residents <p>Built Green: 6 stalls may be counted towards the point threshold, achieving a maximum of 20 points.</p>	<p>LEED NC requires EV infrastructure for 5% and EV-ready options for 10%.</p> <p>Electric bike charging does not fulfill a credit.</p> <p>Commercial Example</p> <ul style="list-style-type: none"> • Station Area: Requires 21 stalls that have EV chargers, and 42 are EV-ready. • Example: Meets Station Area code. <p>LEED NC: Requires 11 stalls with EV charging and 21 stalls are EV-ready.</p>

Multifamily Protocol Comparison: Benefits

The following matrix provides a high-level, comparative summary of benefits for each Multifamily protocol and how they compare to standard code requirements. Where applicable, the High-Performance Building Code for the Station Area has been indicated as the code baseline.

One Star (★) if the protocol does not go beyond code requirements. Maximum five stars (★★★★★) awarded if protocol provides an opportunity to greatly exceed code or typical practices. *Note: The sample building used in this study may not take advantage of all opportunities to incorporate these comprehensive environmental benefits, based on credits selected to achieve the certification threshold.*

Benefit	Code Compliance	Living Building Challenge v4	LEED Multifamily Platinum v4	Built Green 4-Star v2021	Passive House v2021
Land Management (Preservation of land)	★	★★★★★ Required financial contribution to conserve land of equal area to project site.	★	★★ Option to set aside conservation easement equal to project size.	★
Energy (CO ₂ emissions reduction)	★	★★★★★ 100% CO ₂ emissions reduced / year (Net Positive Energy)	★★ 21% CO ₂ emissions reduced / year	★★ 21% CO ₂ emissions reduced / year	★★★ 39% CO ₂ emissions reduced / year
Water (Potable water reduction)	★	★★★★★ 3.13 million gallons reduced / year	★★★ 0.74 million gallons reduced / year	★★ 0.57 million gallons reduced / year	★
Transportation Reduce Vehicle Miles Travelled	★ 1 stall per unit	★★★★ Reduce SOV travel by 30%. Employ transportation demand management programs	★★★ Within ½ mile of high-frequency transit infrastructure; Adjacency to bike infrastructure, i.e. parking, protected lanes.	★★★ Option for parking stall reductions; multiple transportation demand management alternatives available.	★
Transportation EV Charging	★★★★★ 10% features EV Charging. 20% is EV-ready.	★★★★ 1 EV stall per 30 regular stalls		★★ Point system caps points earned at 20 points (6 stalls)	
Habitat (Developing sites that support ecosystems)	★	★★★ Native planting and tree preservation.	★★★ Native planting and tree preservation.	★★★ Optional strategies to preserve landscape and vegetation.	
Building Materials (Improve indoor air quality & reduce exposure to toxins)	★	★★★★★ Required limitations on use of VOCs. Required exclusion of “red list” products.	★★★★★ Option to limit VOCs and apply design strategies to improve IAQ. Avoid gas combustion.	★★★ Option to limit VOCs and apply design strategies to improve IAQ. Avoid gas combustion.	★★

Multifamily Protocol Comparison: Benefits, continued

Benefit	Code Compliance	Living Building Challenge v4	LEED Multifamily Platinum v4	Built Green 4-Star v2021	Passive House v2021
Equity & Inclusion (Ensure all are welcome & have a voice)	★	★★★★★ Project team must meet threshold for Just Label certification.	★	★★★ Required Equity and Social Justice (ESJ) plan	
Food Access (Access to healthy food)		★★★★★ Urban agriculture and food production requirements			
Education and Stewardship (Occupants and Public)	★	★★★★ Requirements for occupant outreach; signage; and public access.	★★★ Requirement for tenant education manual regarding building's green investments.	★★ Optional manual regarding building's green investments	★
Emergency & Disaster Preparation (Resilience)	★	★★★★ Requirements for disaster preparedness in Net Zero Carbon strategies.	★		★
Aesthetic (Beauty)	★	★★★★ Requirements for biophilic design.	★		★

Multifamily Protocol Comparison: Opinionated costs and strategies for compliance

The following matrix provides a high-level, comparative summary of strategies required to meet the certification level of each protocol and how they compare to standard code requirements. Where applicable, the High-Performance Building Code for the Station Area has been indicated as the code baseline. The checklists provided in the Appendices provide a deeper dive into the requirements of the protocol. Note, that the Living Building Challenge design impacts are extensive. Please see the appendix for full design impacts.

ROM Cost per Protocol: All opinionated costs reflect the experience of the consultant and represent a moment in time. Costs may vary by provider and general contractor and are subject to inflation.

1. Living Building Challenge v4: \$9.8M-\$22.9M
2. LEED Multifamily v4, Platinum: \$3.4M-\$6.3M
3. Built Green v2021, 4 Star: \$3.3M-\$6.1M
4. Passive House v2021 Core: \$7.4M-\$12.4M

Impact	Living Building Challenge v4	LEED Multifamily Platinum v4	Built Green 4-Star v2021	Passive House v2021
Soft Costs	SUB-TOTAL: See Appendix <ul style="list-style-type: none"> • Registration & Certification: \$60K-\$65K • LBC Consulting: \$400K-\$600K • LBC Commissioning: \$180K-\$450K • LBC Energy Modeling: \$65K-\$85K • Embodied Carbon Off-sets: \$10K-\$65K • Beauty Imperatives: \$26K-\$161K <ul style="list-style-type: none"> • I-19, I-20 • Equity Imperatives: <i>Design requirement, no cost add</i> <ul style="list-style-type: none"> • I-17, I-18 • Material Imperatives: \$1.2M-\$2.2M <ul style="list-style-type: none"> • I-12, I-13, I-14, I-15, I-16 • Place Imperatives: \$59K-\$405K <ul style="list-style-type: none"> • I-01, I-02, I-03, I-04 • Health and Happiness Imperatives: <i>Design requirement, no cost add</i> <ul style="list-style-type: none"> • I-09, I-10, I-11 	SUB-TOTAL: \$181K-\$340K <ul style="list-style-type: none"> • Registration & Certification: \$15K-\$20K • LEED Consulting and Onsite Verification: \$60K-\$95K • IPc1 - Integrated Project Planning, Trades Training: \$4K-\$15K • IPc1 - Integrated Project Planning, Design charrette: \$4K-\$15K • SSc3 Integrated Pest Mgmt. Plan: \$0-\$5K • EAp1 - Energy Modeling: \$18K-\$20K • EAp1 - Commissioning: \$68K-\$75K • EAp3 - O&M + Homeowner Education Manual: \$0-\$25K • MRc1 - Durability Verification \$4K-\$15K • EQc3.2 - Air Flow Testing: \$4K-\$15K • EQc3.3 - Pressure Balancing: \$4K-\$15K • EQc7 Low-Emitting Products, submittal reviews: \$0-\$25K 	SUB-TOTAL: \$153K-\$285K <ul style="list-style-type: none"> • Registration & Certification: \$20K-\$45K • Built Green Consulting & Verification: \$55K-\$90K • 3.3 - Energy Modeling: \$18K-\$20K • 3.8 - Commissioning: \$55K-\$85K <p>Credits dependent on whether owner provided/discretion:</p> <ul style="list-style-type: none"> • 4.15 Low VOC adhesives, sealants, paints & coatings submittal review: \$0-\$25K • 6.9: Equity & Social Justice (ESJ) credit implementation, including developing a project-specific Equity and Social Justice (ESJ) plan: \$5K-\$20K 	SUB-TOTAL: \$365K-\$555K <ul style="list-style-type: none"> • Registration & Certification: \$20K-\$45K • Passive House Consultant: \$100K-\$120K • Commissioning: \$100K-\$120K • Passive House Modeling: \$65K-\$85K • Duct Leakage Testing: \$30K-\$60K • Additional Verification Requirements: \$50K-\$125K

Multifamily Protocol Comparison: Opinionated costs and strategies for compliance, continued

Impact	Living Building Challenge v4	LEED Multifamily Platinum v4	Built Green 4-Star v2021	Passive House v2021
Hard Costs	SUB-TOTAL: See Appendix Envelope: <ul style="list-style-type: none"> Reduced building air leakage (< 0.1 W/CFM): \$50K-\$370K 30-35% Max Glazing Area: <i>Design requirement, no cost add</i> Triple Pane or Fiberglass Glazing System: \$372K-\$558K (\$6-\$9/sqft) Mechanical/Plumbing: <ul style="list-style-type: none"> Heat Pump Heating/Cooling in all dwelling units: \$2M-\$4M (\$5K-\$10K/DU) Improved Air Barrier: \$50K-\$370K High-Performance Energy Recovery Ventilation (ERV): \$770K-\$1.6M (\$2K-\$4K/DU) Full Heat Pump Water Heating Plant, installed in garage if possible, to maximize operating efficiency: \$750K-1.2M (\$2K-\$3K/DU) I-05 Stormwater Treatment onsite, no chemicals: \$1M-5M I-06 Blackwater/Greywater system, no potable water for non-potable uses <ul style="list-style-type: none"> Greywater: \$350K-450K; OR Blackwater: \$300K-\$500K Composting system: \$100K-\$115K in maintenance, +1 FTE I-08 Net Positive Carbon (Resilience): \$50K-\$200K Electrical: <ul style="list-style-type: none"> Battery Storage System: \$155K-\$309K Maximize On-Site PV: 0.25-0.5 W/SF: \$625K-\$1M (\$5K-\$8K/kW) Off-Site PV - Net Positive – 4-7 W/SF: \$1.5M-\$2.3M (\$890-\$2,500/1000 kWh) EUI Reduction "Handprinting": \$940K-\$1.5M 	SUB-TOTAL: \$3.2M-\$5.9M Mechanical/Plumbing: <ul style="list-style-type: none"> High-Performance Energy Recovery Ventilation (ERV): \$800K-\$1.6M (\$2K-\$4K/DU) Heat Pump Heating/Cooling in all dwelling units: \$1.5M-\$3M (\$3.75K-\$7.5K/DU) Partial Heat Pump Water Heating (>75%): \$770K-\$970K (\$2K-\$2.5K/DU) SSc1.2 white roof: \$10K-\$15K MRp2 braided hoses for clothes washers, if not supplied by appliance rep: \$0-\$25K EQp7 Potential additional sealing/caulking to meet blower door test threshold: \$0-\$65K INc1.5 EVs – 12 Level 2 EV stations: \$72K-\$96K (\$6K-\$8K per EV charger) EQc7 Low-Emitting Products (third party certification, e.g. GreenGuard Gold, CARB II ULEF) – insulation, wall panels, ceiling, flooring, composite woods: \$5K-\$100K 	SUB-TOTAL: \$3.1M-\$5.8M <ul style="list-style-type: none"> Heat Pump Heating/Cooling in all dwelling units: \$1.5M-\$3M (\$3.75K-\$7.5K/DU) High-performance Energy Recovery Ventilation (ERV): \$800K-\$1.6M (\$2K-\$4K/DU) Partial Heat Pump Water Heating (>75%): \$770K-\$970K (\$2K-\$2.5K/DU) REQ'd: Design for solar readiness: <i>Design requirement, no cost add</i> 4.15 CARB II and/or NAUF composite wood products for indoor applications: \$0-\$100K 4.15 GreenGuard Gold certified insulation: \$0-\$25K 6 Level 2 EV stations: \$36K-\$48K (\$6K-\$8K per EV charger) 	SUB-TOTAL: \$7M-\$11.8M Envelope: <ul style="list-style-type: none"> Minimize Glazing Area - 25-30% Maximum: <i>Design requirement, no cost add</i> Triple Pane Glazing: \$370K-\$600K, (\$6-9/SF of façade). Improved Opaque Envelope Assemblies: \$275K-\$411K (\$/building) <ul style="list-style-type: none"> - 2x8 + 2" C.I. Walls - R-50+ Roofs/Floors - Fiberglass Ground-Floor Storefront Systems - Improved details to minimize thermal bridging Improved Air Barrier - <0.1 CFM/SF: \$50K-\$370K (\$/building) Mechanical/Plumbing: <ul style="list-style-type: none"> Heat Pump Heating/Cooling in all dwelling units: \$2M-\$4M (\$5K-\$10K/DU) High-Performance Central Energy Recovery Ventilation (minimize envelope penetrations): \$2.7M-\$3.85M (\$7K-\$10K/DU) Full Heat Pump Water Heating Plant + Sewer Heat Recovery: \$960K-\$1.5M (\$2.5K-\$3.8K/DU) Electrical: <ul style="list-style-type: none"> Maximize On-Site PV - 0.3-0.5 W/SF: \$625K-\$1M (\$5K-\$8K/kW)

Multifamily Protocol Comparison: Opinionated costs and strategies for compliance, continued

Impact	Living Building Challenge v4	LEED Multifamily Platinum v4	Built Green 4-Star v2021	Passive House v2021
TOTAL ROM COSTS	TOTAL: \$9.8M-\$22.9M	TOTAL: \$3.4M-\$6.3M	TOTAL: \$3.3M-\$6.1M	TOTAL: \$7.4M-\$12.4M
Notable Design/Construction Impacts (not all-inclusive)	<ul style="list-style-type: none"> ENERGY STAR appliances Maximum Efficiency Appliances: Heat Pump Dryers, Induction Stoves, Recirculating kitchen hoods Advanced BMS and energy metering Biophilic Design strategies Low impact development Electric vehicle charging stations No Red List materials Low flow plumbing fixtures Carbon offsets <p>See Appendix for a full list of LBC design and construction impacts.</p>	<ul style="list-style-type: none"> ENERGY STAR Portfolio Manager utility tracking – energy and water use WaterSense certified and low-flow plumbing fixtures ENERGY STAR appliances – dishwasher, clothes washer, refrigerators, exhaust fans Shower/bath: greenboard All tropical wood FSC CO sensors in all spaces adjacent to garage/ductwork outside fire-rated envelope of garage (or soffit) ENERGY STAR plus occupancy sensors, humidistat, or timer delay on all bath fans. 	<ul style="list-style-type: none"> ENERGY STAR Portfolio Manager utility tracking – energy, water use, and waste WaterSense certified and low-flow plumbing fixtures ENERGY STAR appliances – dishwasher, clothes washer, refrigerators, exhaust fans Low-VOC interior paints, primers, and finishes Low to no-VOC requirements for woodwork, plywood, and carpet All tropical wood FSC Ductwork outside fire-rated envelope of garage (or soffit) ENERGY STAR plus occupancy sensors, humidistat, or timer delay on all bath fans. No gas burning fireplace within the building 	<ul style="list-style-type: none"> ENERGY STAR appliances Maximum Efficiency Appliances: Heat Pump Dryers, Induction Stoves, Recirculating kitchen hoods DHW System optimization and testing requirements Water Managed site/foundation/walls/roofs Radon, Pest & Combustion pollutant Mitigation

Commercial Protocol Comparison: Benefits

The following matrix provides a high-level, comparative summary of benefits for each Commercial protocol and how they compare to standard code requirements. Where applicable, the High-Performance Building Code for the Station Area has been indicated as the code baseline.

One Star (★) if the protocol does not go beyond code requirements. Maximum five stars (★★★★★) awarded if protocol provides an opportunity to greatly exceed code or typical practices. Note: The sample building used in this study may not take advantage of all opportunities to incorporate these comprehensive environmental benefits, based on credits selected to achieve the certification threshold.

Benefit	Code Compliance	Living Building Challenge v4	LEED NC Platinum v4	Passive House v2021	Salmon Safe v2021
Land Management (Preservation of land)	★	★★★★★ Required financial contribution to conserve land of equal area to project site.	★★	★	
Energy (CO ₂ emissions reduction)	★	★★★★★ 100% CO ₂ emissions reduced / year (Net Positive Energy)	★★★ 22% CO ₂ emissions reduced / year	★★★ 22% CO ₂ emissions reduced / year	
Water (Potable water reduction)	★	★★★★★ 0.94 million gallons reduced / year	★★ 0.39 million gallons reduced / year	★	★★★★★ Site Dependent investment in water re-use and conservation
Transportation (Reduce Vehicle Miles Travelled)	★★ 2 stalls per 1,000 SQFT	★★★★ Reduce SOV travel by 30%. Employ transportation demand management programs.	★★★ Reduce parking from Institute of Transportation Engineers base ratio by 40%	★	★★ Reduce parking footprint
Transportation (EV Charging)	★★★★★ 10% features EV Charging. 20% is EV-ready.	★★★ 1 EV stall per 30 regular stalls	★★		
Habitat (Developing sites that support ecosystems)	★	★★★ Native planting and tree preservation.	★	★	★★★★ Stream habitat protection and restoration.

Commercial Protocol Comparison: Benefits, continued

Benefit	Code Compliance	Living Building Challenge v4	LEED NC Platinum v4	Passive House v2021	Salmon Safe v2021
Building Materials (Improve indoor air quality & reduce exposure to toxins)	★	★★★★★ Required limitations on use of VOCs. Required exclusion of “red list” products	★★★	★★	★★★ Reduction of metals and toxic materials from run-off
Building Materials (Local & recycled)	★	★★★★★ 80% construction waste recycling required	★★★★		
Equity & Inclusion (Ensure all are welcome & have a voice)	★	★★★★★ Project team must meet threshold for Just Label certification	★★	★	★★
Food Access (Access to healthy food)		★★★★★ Urban agriculture and food production requirements			
Education and Stewardship (Occupants and Public)	★	★★★★★ Requirements for occupant outreach; signage; and public access	★★	★	★★★★ Public education program
Emergency & Disaster Preparation (Resilience)	★	★★★★★ Requirements for disaster preparedness in Net Zero Carbon strategies	★	★	★★★ Site climate resiliency for habitat
Aesthetic (Beauty)	★	★★★★★ Requirements for biophilic design	★	★	★

Commercial Protocol Comparison: Opinionated costs and strategies for compliance

The following matrix provides a high-level, comparative summary of strategies required to meet the certification level of each protocol and how they compare to standard code requirements. Where applicable, the High-Performance Building Code for the Station Area has been indicated as the code baseline. The checklists provided in the Appendices provide a deeper dive into the requirements of the protocol. Note, the Living Building Challenge design impacts are extensive. Please see the appendix for full design impacts.

ROM Cost per Protocol:

1. Living Building Challenge v4: \$9.5M-\$21.9M
2. LEED New Construction v4, Platinum: \$968K- \$2.1M
3. Passive House v2021: \$1.9M-\$3.5M
4. Salmon Safe: \$20K- \$12M

Impact	Living Building Challenge v4	LEED NC Platinum v4	Passive House v2021	Salmon Safe v2021
Soft Costs	SUB-TOTAL: See Appendix <ul style="list-style-type: none"> Registration & Certification: \$35K-45K LBC Consulting: \$400K-\$600K LBC Commissioning: \$180K-\$450K LBC Energy Modeling: \$65K-\$85K Embodied Carbon Off-sets: \$10K-\$65K Beauty Imperatives: \$26K-\$160K <ul style="list-style-type: none"> I-19, I-20 Equity Imperatives: <i>Design requirement, no cost add</i> <ul style="list-style-type: none"> I- 17, I-18 Material Imperatives: \$1.2M-\$2.1M <ul style="list-style-type: none"> I-12, I-13, I-14, I-15, I-16 Place Imperatives: \$49K-\$365K <ul style="list-style-type: none"> I-01, I-02, I-03, I-04 Health and Happiness Imperatives: <i>Design requirement, no cost add</i> <ul style="list-style-type: none"> I-09, I-10, I-11 <p>See Appendix for full list of LBC design and construction impacts and costs.</p>	SUB-TOTAL: \$198K-\$625K <ul style="list-style-type: none"> Registration & Certification: \$15K-\$20K LEED Consulting: \$40K-\$95K EAp1/c1 – Fundamental & Enhanced Commissioning: \$55K-\$125K EAp1/c1 – Building Envelope Commissioning: \$50K-\$120K EAp2/c2 - Energy Modeling: \$18K-\$25K EAc7 Green Power and Carbon Offsets: \$10K-\$65K MRC1: LCA Analysis: \$0-\$75K EQc2 Low-Emitting Products, submittal reviews for the following - insulation, wall panels, ceiling, flooring: \$0-\$25K EQc4 Air quality testing and management: \$10K-\$50K INc1 O&M Starter Kit: \$0-\$25K 	SUB-TOTAL: \$330K-\$485K <ul style="list-style-type: none"> Registration & Certification: \$20K-\$45K Passive House Consultant: \$100K-\$120K Commissioning: \$100K-120K Passive House Modeling: \$65K-\$85K Duct Leakage Testing: \$15K-\$30K Additional Verification requirements: \$30K-\$85K 	SUB-TOTAL: \$20K-\$40K <ul style="list-style-type: none"> Salmon Safe Registration: \$15K-\$20K Salmon Safe Consultant: \$5K-\$20K

Commercial Protocol Comparison: Opinionated costs and strategies for compliance, continued

Impact	Living Building Challenge v4	LEED NC Platinum v4	Passive House v2021	Salmon Safe v2021
Hard Costs	SUB-TOTAL: See Appendix Envelope: <ul style="list-style-type: none"> Reduced building air leakage (< 0.1 W/CFM): \$24K-\$180K 35-40% Max Glazing Area: <i>Design requirement, no cost add</i> Upgraded glazing system or Fiberglass Glazing System: \$600K-\$1M (\$15-\$25 /SF) Low Solar Heat Gain Coefficient Glazing: <i>Design requirement, no cost add</i> Mechanical/Plumbing: <ul style="list-style-type: none"> Air-Source VRF Heating/Cooling, Ventilation in Parallel: <i>Design requirement, no cost add</i> High-Performance Energy Recovery Ventilation: \$100K-\$250K (\$/building) I-06 Blackwater/Greywater system, no potable water for non-potable uses <ul style="list-style-type: none"> Greywater: \$350K-\$450K; OR Blackwater: \$300K-\$500K Composting system: \$100K-115K in maintenance, +1 FTE I-08 Net Positive Carbon (resilience): \$50K-\$200K Electrical: <ul style="list-style-type: none"> Maximize On-Site PV: 0.25-0.5 W/SF: \$375K-\$600K (\$5K-\$8K\$/kW) Off-Site PV - Net Positive - 7-10 W/SF: \$1.4M-\$2M (\$595-892.5/1000 kWh) Advanced Plug Load Management Strategies: \$250K-300K (\$/building) Battery Energy Storage System: \$95K-\$185K (\$/building) EUI Reduction "Handprinting": \$1.5M-\$2.5M 	SUB-TOTAL: \$770K-\$1.5M Envelope: <ul style="list-style-type: none"> 35-40% Maximum Glazed Area: <i>Design requirement, no cost add</i> Low Solar Heat Gain Coefficient Glazing: <i>Design requirement, no cost add</i> SSc1.2 White Roof: \$0-\$55K Mechanical/Plumbing: <ul style="list-style-type: none"> Air-Source VRF Heating/Cooling, Ventilation in Parallel: <i>Design requirement, no cost add</i> High-Performance Energy Recovery Ventilation: \$100K-\$250K (\$/building) Electrical: <ul style="list-style-type: none"> Maximize On-Site PV - 0.3-0.5 W/SF: \$375K-600K \$5K-\$8K/kWh EAc3 Advanced Energy Metering: \$30K-\$90K EAc7 Green Power and Carbon Offsets: \$10K-\$65K Advanced Plug Load Management Strategies: \$250K-\$300K (\$/building) EQc7 Low-Emitting Products (third party certification, e.g. GreenGuard Gold, CARB II ULEF) – insulation, wall panels, ceiling, flooring, composite woods: \$5K-\$100K 	SUB-TOTAL: \$1.6M-\$3M Envelope: <ul style="list-style-type: none"> Minimize Glazing Area - 25-30% Maximum: <i>Design requirement, no cost add</i> Upgraded or Fiberglass Glazing System: \$600K-\$1M (\$15-\$25/sqft) Low Solar Heat Gain Coefficient Glazing: <i>Design requirement, no cost add</i> Improved Opaque Envelope Assemblies: \$200K-\$500K <ul style="list-style-type: none"> High-Perf Spandrel Assembly 3" inboard spandrel insulation R-50+ Roofs/Floors Improved details to minimize thermal bridging, particularly within WW or CW system Improved Air Barrier - <0.1 CFM/SF: \$25K-\$185K (\$/building) Mechanical/Plumbing: <ul style="list-style-type: none"> Air-Source VRF Heating/Cooling, Ventilation in Parallel: <i>Design requirement, no cost add</i> High-Performance Energy Recovery Ventilation: \$100K-\$250K (\$/building) Electrical: <ul style="list-style-type: none"> Maximize On-Site PV - 0.3-0.5 W/SF: \$375K-\$600K (\$5K-\$8K\$/kW) Advanced Plug Load Management Strategies: \$250K-\$300K (\$/building) Battery Energy Storage System: \$95K-\$185K (\$/building) 	SUB-TOTAL: \$0-\$11.9M <ul style="list-style-type: none"> Build green infrastructure to reduce run-off to the greatest extent operationally feasible (there are multiple low cost design items): <ul style="list-style-type: none"> Green roof with the capability to provide volumetric and water quality benefits: \$0-\$6M (20-300 \$/sqft) Water harvesting from roof runoff and greywater, used for non-potable uses: \$0-450K (\$/building) Mitigate the impact of run-off contacting galvanized materials: <i>Design requirement, no cost add</i> Reuse runoff and greywater for irrigation and toilet flushing after treatment: \$0-\$450K (\$/building) Reuse greywater and rainwater for potable uses after extensive treatment: \$0-\$5M (\$/building)

Commercial Protocol Comparison: Opinionated costs and strategies for compliance, continued

Impact	Living Building Challenge v4	LEED NC Platinum v4	Passive House v2021	Salmon Safe v2021
TOTAL ROM COSTS	TOTAL: \$9.5M-\$21.9M	TOTAL: \$968K-\$2.1M	TOTAL: \$1.9M-\$3.5M	TOTAL: \$20K-\$12M
Notable* Design / Construction Impacts (*not all inclusive)	<ul style="list-style-type: none"> ENERGY STAR Equipment: Computers, servers, appliances, etc. Advanced BMS and energy metering Biophilic Design strategies Low impact development Electric vehicle charging stations Restricted materials selection Low flow plumbing fixtures Carbon offsets <p>See Appendix for full list of LBC design and construction impacts.</p>	<ul style="list-style-type: none"> ENERGY STAR Equipment: Computers, servers, appliances, etc. Advanced Plug Load Management Strategies Advanced BMS and energy metering EPD/HPD Materials Low flow plumbing fixtures Design and materials to reduce impacts of Heat Island Effect 	<ul style="list-style-type: none"> ENERGY STAR Equipment: Computers, servers, appliances, etc. DHW System optimization and testing requirements Water Managed site/foundation/walls/roofs Radon, Pest & Combustion Pollutant Mitigation 	<ul style="list-style-type: none"> Habitat features that support local flora and fauna. Reuse 'clean' roof runoff without treatment for toilet flushing, irrigation, and wash down. Construction practices, landscaping, and plantings eliminate risk of pesticides and chemicals. Façade and materials reduce risk of harm to local fauna. Water Use Management Erosion Prevention and Sediment Control Water Quality Protection in Landscaping Enhancement of Urban Ecological Function

Appendix

- A. Glossary of Terms**
- B. Living Building Challenge v4, Multifamily & Commercial Checklist**
- C. LEED Multifamily v4, Platinum Checklist**
- D. Living Building Challenge v4 Certification Levels**
- E. Built Green v2021, 4 Star Checklist**
- F. LEED New Construction v4, Platinum Checklist**
- G. Salmon Safe Additional Information**
- H. Green Factor**

Appendix A Glossary of Terms

Comparative Analysis of Living Building Challenge, LEED, Built Green, Passive House, & Salmon Safe

Commissioning - the process of verifying, in new construction, all (or some, depending on scope) of the subsystems for mechanical (HVAC), plumbing, electrical, fire/life safety, building envelopes, interior systems, co-generation, utility plants, sustainable systems, lighting, wastewater, controls, and building security to achieve the owner's project requirements as intended by the building owner and as designed by the building architects and engineers.

Energy Recovery Ventilators - the energy recovery process of exchanging the energy contained in normally exhausted building or space air and using it to treat (precondition) the incoming outdoor ventilation air in residential and commercial HVAC systems.

Hard Costs - include expenses *directly* related to the physical construction a building, including tangible assets that you need to acquire to complete your construction project. These costs cover the materials that go into buildings, including cement, drywall, carpet, sod grass; and labor for grading, site excavation, landscaping, and carpentry.

No Added Urea Formaldehyde (NAUF) – refers to products and materials that do not include the permanent adhesive created by the resin of urea and formaldehyde.

Occupancy Sensors - an indoor motion detecting devices used to detect the presence of a person to automatically control lights or temperature or ventilation systems.

Rough Order of Magnitude (ROM) - an estimation of a project's level of effort and cost to complete. A ROM estimate takes place very early in a project's life cycle — during the project selection and approval period and prior to project initiation in most cases.

Soft Costs - include expenses *indirectly* related to construction of a building. Soft costs include architectural, engineering, financing, and legal fees, and other pre- and post-construction expenses.

Thermoplastic Polyolefin (TPO) - refers to polymer/filler blends usually consisting of some fraction of a thermoplastic, an elastomer or rubber, and usually a filler. Outdoor applications such as roofing frequently contain TPO because it does not degrade under solar UV radiation, a common problem with nylons.

Walk-off Mats - used to describe an entire category of commercial floor mats that either scrape or wipe debris from the under soles of shoes.

Appendix B Living Building Challenge, Multifamily & Commercial Checklist

Comparative Analysis of Living Building Challenge, LEED, Built Green, Passive House, & Salmon Safe

Appendix B Living Building Challenge, Multifamily & Commercial Checklist

Imperatives & Requirements			Multifamily		Commercial	
			Building Impacts	ROM Cost	Building Impacts	ROM Cost
Place Petal	I01 - Ecology of Place	Build on greyfield	None	<i>Location decision</i>	None	<i>Location decision</i>
		Document site + community conditions prior to start of work	Additional documentation	<i>Design requirement</i>	Additional documentation	<i>Design requirement</i>
		Use “reference habitat” as design guide for landscape, as appropriate for project’s Living Transect (L5)	Native planting - typical	<i>Design requirement</i>	Native planting - typical	<i>Design requirement</i>
		Develop an adaptive landscape plan including measures to assess performance, milestones, monitoring and maintenance to evaluate progress at end of 12-month period	Creation of adaptive landscape plan, with monitoring	\$10-\$20K	Creation of adaptive landscape plan, with monitoring	\$10-\$20K
		Assess cultural and social equity factors and needs in community; consider identified needs to inform design and process decisions	Coordination & community outreach	<i>Design requirement</i>	Coordination & community outreach	<i>Design requirement</i>
		Use no petrochemical fertilizers or pesticides for O+M of landscapes	Operations and landscaping team to acquire plants and management practices that protect the health of habitat.	<i>Operational & design requirement</i>	Operations and landscaping team to acquire plants and management practices that protect the health of habitat.	<i>Operational & design requirement</i>
	I02 – Urban Agriculture	5% of project area dedicated to growing food	8,800 SQFT	\$40K-\$120K	1,660 SQFT	\$30K-\$80K
		Provide weekly community access to healthy local food that addresses a community need (e.g. farmer’s market, CSA, etc)	Operations manager to provide access to a Community Supported Agriculture (CSA) connection.	<i>Operational requirement</i>	Operations manager to provide access to a Community Supported Agriculture (CSA) connection.	<i>Operational requirement</i>
		<u>Multifamily</u> : Demonstrate capacity to store at least a two-week supply of food. <u>Commercial</u> : Provide access to food for 75% of FTE occupants for a minimum of three days during an emergency.	Identify operations and storage procedures.	\$5K-\$15K	Identify operations and storage procedures.	\$5K-\$15K

Appendix B Living Building Challenge, Multifamily & Commercial Checklist

Imperatives & Requirements			Multifamily		Commercial	
			Building Impacts	ROM Cost	Building Impacts	ROM Cost
Place Petal	I03 – Habitat Exchange	Set aside land equal to the project area or (1 acre, whichever is greater) away from the project site, in perpetuity through an approved land trust organization.	Work through an accredited land trust to set aside 176,000 SQFT of land for conservation.	\$4K-\$250K	Work through an accredited land trust to set aside 33,214 SQFT of land for conservation.	\$4K-\$250K
	I04 – Human-scaled living	Build to human scale appropriate for location (openings, signage)	Typical practice	<i>Standard baseline design</i>	Typical practice	<i>Standard baseline design</i>
		Provide places to gather/connect with community	Provide courtyard, garden areas, community rooms, and/or indoor shared facilities.	<i>Standard baseline design</i>	Provide courtyard, garden areas, community rooms, and/or indoor shared facilities.	<i>Standard baseline design</i>
		Bike amenities: facilities to encourage biking, e.g. showers/lockers for all building occupants	Provide amenities for cyclists such as a mechanic station, pump, and bike washing area.	<i>Standard baseline design</i>	Provide amenities for cyclists such as lockers, showers, mechanic station, pump, and bike washing area.	<i>Standard baseline design</i>

Appendix B Living Building Challenge, Multifamily & Commercial Checklist

Water Petal	Imperatives & Requirements		Multifamily		Commercial	
	I05 - Responsible Water Use		Building Impacts	ROM Cost	Building Impacts	ROM Cost
		Non-potable Water for Irrigation. 50% less water usage than regional baseline	Target: ~26 gallons/person/day Design: ~22 gallons/person/day	<i>Result of greywater/blackwater system</i>	Target: ~5.3 gallons/person/day	<i>Result of greywater/blackwater system</i>
		Flow Rates: ▪ Private Lavs: 1.2 gpm ▪ Public Lavs: 0.5 gpm ▪ Shower/Bathtub: 1.75 gpm ▪ Kitchen Sink: 1.5 gpm Zero Potable Flow Rate & Greywater Supply: ▪ Water Closets: 0 gpf potable (1.28 gpf greywater) ▪ Urinals: 0 gpf potable (0.125 greywater)	▪ Dishwasher: 3.5 gpc (0.1 cycles per resident per day) ▪ Clothes Washers: 14 gpc (2 loads per resident per week)	<i>Design requirement & additional coordination</i>	No additions	<i>Design requirement & additional coordination</i>
		Greywater/Blackwater Treatment System: (Irrigation dependent on final landscape design.)	▪Irrigation: 600 gallons/day (peak summer demand) ▪Hose Bibbs: 50 gallons/day ▪Water Closet: 1.28 gpf ▪Urinal: 0.125 gpf	\$1M-\$5M	▪Irrigation: 100 gallons/day (peak summer demand) ▪Hose Bibbs: 50 gallons/day ▪Water Closet: 1.28 gpf ▪Urinal: 0.125 gpf	\$1M-\$5M
		Stormwater Treatment	On-site, without use of chemicals (e.g. infiltration, bioretention, etc)	<i>Result of greywater/blackwater system</i>	On-site, without use of chemicals (e.g. infiltration, bioretention, etc)	<i>Result of greywater/blackwater system</i>
		If in Combined Sewer Overflow System (CSO), then avoid sheet flow.		<i>N/A: Not in a CSO basin</i>		<i>N/A: Not in a CSO basin</i>

Appendix B Living Building Challenge, Multifamily & Commercial Checklist

Water Petal	Imperatives & Requirements		Multifamily		Commercial	
			Building Impacts	ROM Cost	Building Impacts	ROM Cost
	I06 – Net Positive Water	Greywater/Blackwater treatment system (Treated blackwater could be reused in building or could be ground infiltrated – to be determined by individual project team. Note, there are a multitude of code requirements to meet, e.g. WA State Health Department)	Non-potable water for all toilets, urinals, irrigation, hose bib, cooling towers, and water features	\$500K-\$1M	Non-potable water for all toilets, urinals, irrigation, hose bib, cooling towers, and water features	\$500K-\$1M
		Double-piping	Accommodates treated greywater/blackwater usage throughout building alongside potable water.	<i>Included in system cost</i>	Accommodates treated greywater/blackwater usage throughout building alongside potable water.	<i>Included in system cost</i>
		Hot Water Meters in Dwelling Units	Required	<i>Code requirement</i>	N/A	<i>Code requirement</i>
		Provide drinking water for up to a week for all regular building occupants through water storage on site.		\$5K-\$75K		\$5K-\$75K

Appendix B Living Building Challenge, Multifamily & Commercial Checklist

Energy Petal	Imperatives & Requirements		Multifamily		Commercial	
	I07 - Energy + Carbon Reduction		Building Impacts	ROM Cost	Building Impacts	ROM Cost
		Energy reduction target	70% reduction from Zero Tool baseline	<i>Result of systems and design</i>	70% reduction from Zero Tool baseline	<i>Result of systems and design</i>
		Combustion not allowed	Required	<i>Code requirement</i>	Required	<i>Code requirement</i>
		On-site renewables	0.3-0.5 W/SF PV On-Site *SF = full building conditioned square footage	\$625K-\$1M (\$5K-\$8K/kW)	0.3-0.5 W/SF PV On-Site *SF = full building conditioned square footage	\$375K-\$600K (\$5K-\$8K/kW)
		Embodied Carbon Reduction: Primary materials	20% reduction of primary materials (ex: concrete, steel)	<i>Regionally dependent</i>	20% reduction of primary materials (ex: concrete, steel)	<i>Regionally dependent</i>
		Embodied Carbon Reduction: Interior materials	Lower than industry average (ex: carpet tile, gypsum)	<i>Dependent on product selection</i>	Lower than industry average (ex: carpet tile, gypsum)	<i>Dependent on product selection</i>
		"Zero-Ready" Design	<ul style="list-style-type: none"> Pre-wire for EV charging and PV. On-site PV meets this requirement. Installation of PV not required. 	<i>Result of systems and design</i>	<ul style="list-style-type: none"> Pre-wire for EV charging and PV. On-site PV meets this requirement. Installation of PV not required. 	<i>Result of systems and design</i>
		Target EUI. Energy Strategies to meet EUI below.	12-16 kBtu/SF-yr EUI	<i>Result of systems and design</i>	26-32 kBtu/SF-yr EUI	<i>Result of systems and design</i>
		<i>Domestic Hot Water (DHW) Plant</i>	Air-to-water heat pumps for DHW production and recirculation reheat. Install in garage if feasible to max operating perf.	\$750K-\$1.2M (\$2K-\$3K/DU)	Air-to-water heat pumps for DHW production and recirculation reheat. Install in garage if feasible to max operating perf.	\$750K-\$1.2M
		<i>Heating/Cooling</i>	Air source VRF, or similar heat pump system for all dwelling units	\$2M-\$4M (\$5K-\$10K /DU)	Air source VRF, Ventilation in Parallel	\$2M-\$4M
		<i>Ventilation</i>	High-Efficiency Energy Recovery Ventilators (ERVs) in dwelling units; minimize corridor pressurization	\$770K-\$1.6M (\$2K-\$4K/DU)	High Efficiency Rooftop DOAS	\$100K-\$250K

Appendix B Living Building Challenge, Multifamily & Commercial Checklist

Energy Petal	Imperatives & Requirements		Multifamily		Commercial	
	I07 - Energy + Carbon Reduction		Building Impacts	ROM Cost	Building Impacts	ROM Cost
		Energy reduction target	Premium efficiency appliances – heat pump dryers, induction stoves, 100% Energy Star equipment	<i>Design requirement</i>	Energy Star computer equipment, servers, Amenity appliances. Advanced plug load control strategies.	<i>Design requirement</i>
		<i>Lighting Energy</i>	Stricter than code lighting power allowance.	<i>Design requirement</i>	Stricter than code lighting power allowance.	<i>Design requirement</i>
		<i>Reduced building air leakage</i>	< 0.1 W/CFM	\$50K-\$370K		\$24K-\$180K
		<i>Optimize glazing selection for heat loss/gain</i>	Triple pane glazing, optimized SHGC	\$372K-\$558K	Triple Pane glazing, optimized SHGC	\$600K-\$1M
		<i>Offset gap in Core Imperative EUI target – Evaluate "Handprinting" approach with ILFI</i>	1. Portfolio approach – additional PV installed on other buildings w/in purview of owner. Building improvements within market-rate projects. 2. Partnership with non-profits or affordable housing providers (e.g. building improvements, education)	\$940K-\$1.5M	1. Portfolio approach – additional PV installed on other buildings w/in purview of owner. Building improvements within market-rate projects. 2. Partnership with non-profits or affordable housing providers (e.g. building improvements, education)	\$1.5M-\$2.5M

Appendix B Living Building Challenge, Multifamily & Commercial Checklist

Imperatives & Requirements		Multifamily		Commercial		
		Building Impacts	ROM Cost	Building Impacts	ROM Cost	
Energy Petal	108 - Net Positive Carbon	105% of project’s energy needs supplied by off-site renewable energy.	The kW needed to provide this energy will vary based on off-site approach and location. The off-site estimates assume an array located in Eastern WA with 1,300 kWh/kW production. 4-7 W/SF.	\$1.5M-\$2.3M <i>(\$890-\$2.5K/1000 kWh)</i>	The kW needed to provide this energy will vary based on off-site approach and location. The off-site estimates assume an array located in Eastern WA with 1,300 kWh/kW production. 7-13 W/SF.	\$1.4M-\$2M <i>(\$595-\$893/1000 kWh)</i>
		Resilience strategy to allow building to remain habitable for 1 week <ul style="list-style-type: none">Emergency Preparedness Plan, managed by Building Management<ul style="list-style-type: none">Emergency Planning - Annual resident orientationEvacuation routes, posted on each floorFloor marshal designation and training – volunteer resident on each floorFire lookout – in event where power outage lasts longer than fire alarm functionEncouragement to have unit-specific planEmergency KitsCommunity Provisions<ul style="list-style-type: none">Emergency food supply (e.g. enough for 800 people for 3 days via high calorie food bars)Potable water, ability to filter via standalone system (e.g. Berkey filter)Shared refrigeration source and/or an ice machine for residents to keep critical materials cool (e.g. medications, breastmilk).	See list under requirements & below <ul style="list-style-type: none">Small battery packs for cell phone charging (\$30 per unit)Lighting, hand crank flashlights (\$15 per unit)First aid kits (\$10 per unit)	\$50K-\$200K	See list under requirements & Emergency Kits	\$50K-\$200K
		One-time carbon offset accounting for total embodied carbon (tCO2e) of construction materials & processes Incorporate carbon reduction strategies in design phase (e.g. type and distance of material)	Embodied carbon calculation.	\$10K-\$65K <i>(Dependent on material selection and availability)</i>	Embodied carbon calculation. <i>(Dependent on material selection and availability)</i>	\$10K-\$65K <i>(Dependent on material selection and availability)</i>

Appendix B Living Building Challenge, Multifamily & Commercial Checklist

Health and Happiness Petal	Imperatives and Requirements		Multifamily		Commercial	
	I-09 Healthy Interior Environment		Building Impacts	ROM Cost	Building Impacts	ROM Cost
		Meet Current ASHRAE 62 Standards (current at the time of the project's registration for the Living Building Challenge)	Comply with ASHRAE 62.1/62.2 2019 Note: 2016 is referenced, but not req'd by 2018 code	<i>Design requirement</i>	Comply with ASHRAE 62.1/62.2 2019 Note: 2016 is referenced, but not req'd by 2018 code	<i>Design requirement</i>
		Prohibit smoking within building and within 25' of openings and supply vents	Code Required	<i>Design requirement</i>	Code Required	<i>Design requirement</i>
		Develop a Healthy Indoor Environment Plan, Including:	<ul style="list-style-type: none"> ▪ Cleaning Protocols ▪ Prevention of particulates and toxins through entry approach ▪ Strategy to improve air quality 	<i>Standard operational requirement</i>	<ul style="list-style-type: none"> ▪ Cleaning Protocols ▪ Prevention of particulates and toxins through entry approach ▪ Strategy to improve air quality 	<i>Standard operational requirement</i>
		Views Outside & Daylight For 75% Of Occupied Spaces	Review current façade & ground floor fenestration design	<i>Design requirement</i>	Review current façade & ground floor fenestration design	<i>Design requirement</i>
		Direct exhaust for kitchens, bathrooms, & janitor closets	Code Required	<i>Design requirement</i>	Code Required	<i>Design requirement</i>

Appendix B Living Building Challenge, Multifamily & Commercial Checklist

Health and Happiness Petal	Imperatives and Requirements		Multifamily		Commercial	
	I-10 Healthy Interior Performance		Building Impacts	ROM Cost	Building Impacts	ROM Cost
Health and Happiness Petal	I-10 Healthy Interior Performance	Promote good indoor air quality: Implement a cleaning protocol that uses cleaning products that comply with the EPA Safer choice label	<ul style="list-style-type: none"> Provide results of IAQ tests within 6 months after occupancy Comply with CDHP standard method v1,1-2010 for interior building products with potential VOCs. 	<i>Standard operational requirement</i>	<ul style="list-style-type: none"> Provide results of IAQ tests within 6 months after occupancy Comply with CDHP standard method v1,1-2010 for interior building products with potential VOCs. 	<i>Standard operational requirement</i>
		All projects must provide 95% of occupants access to view and daylight and opportunities for the remaining five percent of occupants to move to compliant spaces for a portion of their day. Flexible options for working and learning (sit/stand desks or varied sensory experiences)	<ul style="list-style-type: none"> Sufficient operable windows to provide natural ventilation for at least 6 months Ability for the occupants to influence their local airflow and temperature through direct input or controls. 	<i>Design requirement</i>	<ul style="list-style-type: none"> Sufficient operable windows to provide natural ventilation for at least 6 months Ability for the occupants to influence their local airflow and temperature through direct input or controls. 	<i>Design requirement / Tenant requirement</i>
	I-11 Access to Nature	Provide occupants with direct access to nature. Occupants must complete a post-occupancy evaluation (in first 6 months of occupation) that addresses benefits of including daylight, fresh air and access to nature.	Design element to be determined by design team	<i>Design requirement</i>	Design element to be determined by design team	<i>Design requirement</i>

Appendix B Living Building Challenge, Multifamily & Commercial Checklist

Materials Petal	Imperatives & Requirements		Multifamily		Commercial	
			Building Impacts	ROM Cost	Building Impacts	ROM Cost
	I12 - Responsible Materials	Careful Material Selection	Wood: 50% FSC, salvaged, or harvested from site	\$100K-\$200K	Wood: 50% FSC, salvaged, or harvested from site	\$100K-\$200K
			Declare labels: 1 Declare product every 2,152 SQFT	Factored into I-13, Red List	Declare labels: 1 Declare product every 2,152 SQFT	Factored into I-13, Red List
			1 Living Product Challenge (LPC) certified product	Factored into I-13, Red List	1 Living Product Challenge (LPC) certified product	Factored into I-13, Red List
			20% of the materials construction budget must be manufactured within 310 miles of the construction site	Factored into I-13, Red List	20% of the materials construction budget must be manufactured within 310 miles of the construction site	Factored into I-13, Red List
			Construction Waste Diversion Rate: 80%	Factored into I-13, Red List	Construction Waste Diversion Rate: 80%	Factored into I-13, Red List
			Waste During Occupancy: infrastructure to collect recyclables & compostables.	Factored into I-13, Red List	Waste During Occupancy: infrastructure to collect recyclables & compostables.	Factored into I-13, Red List
	I13 - Red List	90% of projects' materials (by cost) cannot contain Red List chemical classes: Antimicrobials; Alkylphenols and related compounds; Asbestos compounds; Bisphenol A (BPA) and structural analogs; California-banned solvents; Chlorinated Polymers; Chlorobenzenes; Chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs); Formaldehyde (added); Monomeric, polymeric, and organophosphate halogenated flame retardants (HFRs); Organotin Compounds; Perfluorinated compounds (PFCs); Phthalates (orthophthalates); Polychlorinated biphenyls (PCBs); Polycyclic aromatic hydrocarbons (PAHs); Short-chain and medium-chain chlorinated paraffins; Toxic heavy metals; VOCs in wet-applied products; and Wood Treatments containing creosote or pentachlorophenol.	All materials vetted during design and construction.	\$750K-\$1.3M <i>Hard: \$250K-\$500K</i> <i>Soft (consultant vetting): \$500K-\$800K</i>	All materials vetted during design and construction.	\$750K-\$1.3M <i>Hard: \$250K-\$500K</i> <i>Soft (consultant vetting): \$500K-\$800K</i>

Appendix B Living Building Challenge, Multifamily & Commercial Checklist

Materials Petal	Imperatives & Requirements		Multifamily		Commercial	
			Building Impacts	ROM Cost	Building Impacts	ROM Cost
	I14 - Responsible Sourcing	Material Selection	<ul style="list-style-type: none"> ▪ Wood Formwork must be FSC or salvage ▪ Wood Lagging /Shoring, locations where permanent must be FSC or salvage 	<i>See above</i>	<ul style="list-style-type: none"> ▪ Wood Formwork must be FSC or salvage ▪ Wood Lagging /Shoring, locations where permanent must be FSC or salvage 	<i>See above</i>
			<ul style="list-style-type: none"> ▪ Use 40 Declare products ▪ Send advocacy letters to all other manufacturers not in Declare. 	<i>Procurement requirement</i>	<ul style="list-style-type: none"> ▪ Use 40 Declare products ▪ Send advocacy letters to all other manufacturers not in Declare. 	<i>Procurement requirement</i>
			3 Living Product Challenge (LPC) certified products	<i>Procurement requirement</i>	3 Living Product Challenge (LPC) certified products	<i>Procurement requirement</i>
	I-15 Living Economy	Local sourcing based on materials construction budget (excludes labor, soft costs, land):	<ul style="list-style-type: none"> ▪ 20% of construction budget manufactured within 311 miles of site ▪ 30% within 621 miles ▪ 25% within 3,107 miles ▪ 25% any location 	\$250K-\$500K <i>(dependent on General Contractor and materials market)</i>	<ul style="list-style-type: none"> ▪ 20% of construction budget manufactured within 311 miles of site ▪ 30% within 621 miles ▪ 25% within 3,107 miles ▪ 25% any location 	\$250K-\$500K <i>(dependent on General Contractor and materials market)</i>

Appendix B Living Building Challenge, Multifamily & Commercial Checklist

Materials Petal	Imperatives & Requirements		Multifamily		Commercial	
			Building Impacts	ROM Cost	Building Impacts	ROM Cost
	I16 - Net Positive Waste	Pre-Building Audit & Materials conservation management plan	Inventory available materials + assemblies for reuse or donation of existing site	\$20K-\$30K	Inventory available materials + assemblies for reuse or donation of existing site	\$20K-\$30K
		Material-specific diversion rate requirements	<ul style="list-style-type: none"> Metals 99% Paper and cardboard 99% Soil and biomass 100% Rigid foam, carpet, and insulation 95% All others, combined weighted avg 90% 	\$100K-\$150K <i>(dependent on General Contractor and materials market)</i>	<ul style="list-style-type: none"> Metals 99% Paper and cardboard 99% Soil and biomass 100% Rigid foam, carpet, and insulation 95% All others, combined weighted avg 90% 	\$60K-\$90K <i>(dependent on General Contractor and materials market)</i>
		Demolition waste diversion rate	Track & execute demolition diversion rate of 80%	<i>Dependent on waste recycling market</i>	Track & execute demolition diversion rate of 80%	<i>Dependent on waste recycling market</i>
		Salvage materials design cost	Architectural curation	\$10K-\$20K	Architectural curation	\$10K-\$20K
		Waste During Occupancy:	Infrastructure to collect recyclables & compostable materials.	<i>Standard practice</i>	Infrastructure to collect recyclables & compostable materials.	<i>Standard practice</i>

Appendix B Living Building Challenge, Multifamily & Commercial Checklist

Equity Petal	Imperatives & Requirements		Multifamily		Commercial	
			Building Impacts	ROM Cost	Building Impacts	ROM Cost
	I17 - Universal Access	All non-building infrastructure (e.g. plazas, seating or park space) must be equally accessible to all members of the public		<i>Operational requirement</i>		<i>Operational requirement</i>
		Enhance public realm	Provide furniture, art, garden, benches, etc.	<i>Design Requirement</i>	Provide furniture, art, garden, benches, etc.	<i>Design Requirement</i>
		Meet ADA, ABA, and 7 Principals of Universal Design		<i>Design Requirement</i>		<i>Design Requirement</i>
		Do not block access to (nor diminish quality of): fresh air, sunlight, natural waterways	Solar shading study/calculations	<i>Design Requirement</i>	Solar shading study/calculations	<i>Design Requirement</i>
		Operational emissions free of Red List (e.g. VOCs)				
	I18 - Inclusion	2 project team orgs with JUST labels; 5 to complete self-assessment	Select project team members with JUST label	<i>Project team requirement</i>	Select project team members with JUST label	<i>Project team requirement</i>
		Option 1: 20% of design and construction contracts and 10% of maintenance contracts w/ JUST org that meets req'd diversity category OR registered MWDBE. OR - Workforce development/ training are employed for 10% of GC contracts. Option 2: Donate 0.1% of total project cost to regional non-profit focused on equity & inclusion	Workforce development/ training are employed for 10% of GC contracts.	\$0-\$1M	Workforce development/ training are employed for 10% of GC contracts.	\$0-\$1M

Appendix B Living Building Challenge, Multifamily & Commercial Checklist

Beauty Petal	Imperatives and Requirements		Multifamily		Commercial	
	I-19 Beauty and Biophilia		Building Impacts	ROM Cost	Building Impacts	ROM Cost
				<i>Design Requirement</i>		<i>Design Requirement</i>
	I-19 Beauty and Biophilia	Meaningfully integrate public art and contain design features intended solely for human delight.				
		Biophilic Design: One (1) day biophilic design exploration (workshop)	Integrative design team effort/ time commitment	\$12K-\$22K	Integrative design team effort/ time commitment	\$12K-\$22K
		Biophilic Design: Workshop results in development of biophilic design framework and plan, track throughout design and construction	Meeting/s & documentation	\$8K-\$18K	Meeting/s & documentation	\$8K-\$18K
		Biophilic Design: implementation and construction of biophilic design strategies	Design coordination	\$5K-\$25K	Design coordination	\$5K-\$25K
	I-20 Education + Inspiration	LBC Case Study Questionnaire - for ILFI website	Facilitation of case study	\$0-\$5K	Facilitation of case study	\$0-\$5K
		Annual Open Day for the public	Owner/Property Manager to facilitate	\$0-\$5K	Owner/Property Manager to facilitate	\$0-\$5K
		O&M Manuals (building manager & resident)	Content for resident manual	\$0-25K	Content for resident manual	\$0-25K
		Brochure, describing the design & environmental features	Content for brochure	\$0-\$12K	Content for brochure	\$0-12K
		Interpretive/educational Signage	Design/operations coordination	\$1K-\$30K	Design/operations coordination	\$1K-\$30K
		Website - LBP content/storytelling	Website LBP content	\$0-\$18K	Website LBP content	\$0-\$18K
		One Living Future Accredited Professional on project team	No design impact	\$0-\$1K	No design Impact	\$0-\$1K

Appendix C LEED Multifamily v4, Platinum Checklist

Comparative Analysis of Living Building Challenge, LEED, Built Green, Passive House, & Salmon Safe

SAMPLE BUILDING



LEED for Homes v4 Preliminary Project Checklist | 04.04.2022 | Project Goal: Platinum



Yes	Likely	Unlikely	No	PROJECT TOTALS pre-certification estimates				Certification Thresholds: Certified 40 points Silver 50 points Gold 60 points Platinum 80+			
84.0	14.0	11.0	3.0								

Yes	Likely	Unlikely	No			Max. Points
2	0	0	0	Integrative Process		2
1				Credit 1.1	Integrative Project Team	1
			-	Credit 1.2	Design Charrette	1
1				Credit 1.3	Trades Training	1

Yes	Likely	Unlikely	No			Max. Points
15	0	0	0	Location and Transportation		15
Y				Prereq 1	Floodplain Avoidance	Req'd
			-	Credit 1	LEED for Neighborhood Development	15
4				Credit 2.1	Site Selection, Sensitive Land Protection	4
2				Credit 2.2	Site Selection, Infill Development	2
1				Credit 2.3	Site Selection, Open Space	1
1				Credit 2.4	Site Selection, Street Network	1
			-	Credit 2.5	Site Selection, Bicycle Network and Storage - v4.1	1
3				Credit 3	Compact Development	3
2				Credit 4	Community Resources	2
2				Credit 5	Access to Transit - v4.1	2

Yes	Likely	Unlikely	No			Max. Points
4	1	2	0	Sustainable Sites		7
Y				Prereq 1	Construction Activity Pollution Prevention	Req'd
Y				Prereq 2	No Invasive Plants	Req'd
			-	Credit 1.1	Heat Island Reduction, Shading	2
2				Credit 1.2	Heat Island Reduction, Non-absorptive Materials	2
	1	2		Credit 2.1	Rainwater Management, Low Impact Development	3
			-	Credit 2.2	Rainwater Management, NPDES	3
2				Credit 3	Non-Toxic Pest Control	2

Yes	Likely	Unlikely	No			Max. Points
10	0	0	0	Water Efficiency		12
Y				Prereq 1	Water Metering	Req'd
			-	Credit 1	Total Water Use (Performance Path)	12
6				Credit 2	Indoor Water Use (Prescriptive Path)	6
4				Credit 3	Outdoor Water Use (Prescriptive Path)	4

Yes	Likely	Unlikely	No			Max. Points
27	7	5	0	Energy and Atmosphere		37
Y				Prereq 1	Minimum Energy Performance	Req'd
Y				Prereq 2	Energy Metering	Req'd
Y				Prereq 3	Education of the Homeowner, Tenant or Building Manager	Req'd
25	5			Credit 1	Annual Energy Use (HSA 5.5 pts, 30% energy cost savings)	30
		2		Credit 2.1	Efficient Hot Water Distribution	2
		3		Credit 2.2	Efficient Hot Water Distribution, Performance Test	3
	2			Credit 2.3	Efficient Hot Water Distribution, Pipe Insulation	2
1				Credit 3.1	Advanced Utility Tracking, Electric and Water	1
1				Credit 3.2	Advanced Utility Tracking, Third Party Utility Reporting	1

Yes	Likely	Unlikely	No			Max. Points
5	2.5	1	1	Materials and Resources		9
Y				Prereq 1	Certified Tropical Wood	Req'd
Y				Prereq 2	Durability Management	Req'd
1				Credit 1	Durability Management Verification	1
1	0.5			Credit 2.1	Local Production	1.5
1	2	1		Credit 2.2	Environmentally Preferable Products	4
2			1	Credit 3	Construction Waste Management	3

Yes	Likely	Unlikely	No			Max. Points
11.0	3.5	3	2	Indoor Environmental Quality		18
Y				Prereq 1	Ventilation	Req'd
Y				Prereq 2	Combustion Venting	Req'd
Y				Prereq 3	Garage Pollutant Protection	Req'd
Y				Prereq 4	Radon-Resistant Construction	Req'd
Y				Prereq 5	Air Filtering	Req'd
Y				Prereq 6	Environmental Tobacco Smoke	Req'd
Y				Prereq 7	Compartmentalization	Req'd
1				Credit 1.1	Enhanced Local Exhaust	1
	2			Credit 1.2	Enhanced Whole-House Ventilation	2
0.5				Credit 2.1	Contaminant Control, Walk-off Mats	0.5
	0.5			Credit 2.2	Contaminant Control, Shoe Removal and Storage	0.5
0.5				Credit 2.3	Contaminant Control, Preoccupancy Flush	0.5
		1		Credit 2.4	Contaminant Control, Air Testing	1
1				Credit 3.1	Balance of Heating & Cooling, Multiple Zones	1
1				Credit 3.2	Balance of Heating & Cooling, Supply Air-Flow Testing	1
1				Credit 3.3	Balance of Heating & Cooling, Pressure Balancing	1
	1	2		Credit 4	Enhanced Compartmentalization	3
			2	Credit 5.1	No Fireplace or Wood Stove	2
1				Credit 5.2	Enhanced Combustion Venting Measures	1
1				Credit 6.1	Exhaust Fans on Controls in Garage	1
			-	Credit 6.2	Detached Garage or No Garage or Carport	1
3				Credit 7	Low-Emitting Products - v4.1	3
1				Credit 8	No Environmental Tobacco Smoke	1

Yes	Likely	Unlikely	No			Max. Points
6	0	0	0	Innovation		6
Y				Prereq 1	Preliminary Rating	Req'd
1				Credit 1.1	Exemp Perf - LTc4 Community Resources	1
1				Credit 1.2	Examp Perf - LTc5 Access to Transit	1
1				Credit 1.3	Pilot Credit - Social Equity w/in Project Team (JUST label)	1
1				Credit 1.4	Innovation Credit - Green Vehicles	1
1				Credit 1.5	Pilot Credit - Salmon Safe Certification	1
1				Credit 2	LEED AP for Homes	1

Yes	Likely	Unlikely	No			Max. Points
4	0	0	0	Regional Priority		4
		-		Credit 1	SSc2 Rainwater Management, 3 pt threshold	
1				Credit 2	SSc3 Nontoxic Pest Control, 2 pt threshold	1
			-	Credit 3	WEc1 Total Water Use, 2 pt threshold	1
1				Credit 4	WEc2 Outdoor Water Use, 4 pt threshold	1
1				Credit 5	EAc1 Annual Energy Use, 15 pt threshold	1
1				Credit 6	MRc3 Construction Waste Management, 1 pt threshold	1
		-		Credit 7	EQc1 Enhanced Ventilation, 2 pt threshold	1

Appendix D Living Building Challenge v4 Certification Levels

Sample costs

Exclusions: The highest level of certification, Living Building Certification, is excluded from the matrix. Additionally, the Water Petal is excluded from Petal Certification. All costs reflect an opinion based on consultant experience and capture a moment in time. They will vary per building design.

Zero Carbon	Zero Energy	Core	Petal Certification
Tier 1		Tier 2	Tier 3
<p><i>Systems and certification requirements impact design and construction in similar capacities.</i></p> <p>A project proponent may select either strategy depending on the design of the building and market conditions of off-site PV and carbon offsets.</p>		<p>Required Imperatives:</p> <ul style="list-style-type: none"> • C1: 01 Ecology of Place • C2: 04 Human Scaled Living • C3: 05 Responsible Water Use • C4: 07 Energy + Carbon Reduction • C5: 09 Healthy Interior Environment • C6: 12 Responsible Materials • C7: 17 Universal Access • C8: 18 Inclusion • C9: 19 Beauty and Biophilia • C10: 20 Education + Inspiration 	<ul style="list-style-type: none"> • All Imperatives from Core Certification, plus remaining imperatives (listed below) from of either Water (excluded), Energy, or Materials Petal. <p><i>Energy:</i></p> <ul style="list-style-type: none"> • 08 Net Positive Energy <p><i>Materials:</i></p> <ul style="list-style-type: none"> • 13 Red List • 14 Responsible Sourcing • 15 Living Economy Sourcing • 16 Net Positive Waste
<ul style="list-style-type: none"> • 100% building energy load off set with on- or off -site renewables • Off-set operational carbon • Embodied carbon off-set? 	<ul style="list-style-type: none"> • 100% building energy load off set with on-site renewables, driving efficiency • Pathway for premium off -site renewables for certain project types 		
<p>Commercial \$2.7M-\$4.5M</p> <p>Multifamily \$6.5M-\$11.6M</p>	<p>Commercial \$3.2M-\$5.3M</p> <p>Multifamily \$6.6M-\$11.5M</p>	<p>Commercial \$6.5M-\$16.1M</p> <p>Multifamily \$6.6M-\$16.7M</p>	<p>Commercial (Core + Petal) Material Petal: \$7.5M-\$18.2M Energy Petal: \$7.9M-\$18.3M</p> <p>Multifamily (Core + Petal) Material Petal: \$7.7M-\$18.9M Energy Petal: \$8.1M-\$19.3M</p>

Appendix E Built Green v2021, 4 Star Checklist

Comparative Analysis of Living Building Challenge, LEED, Built Green, Passive House, & Salmon Safe



Multi-Family Residential New Construction Certification Checklist

Please indicate:

- ☐ **Preliminary checklist**
(for own or verifier's use)
- ☐ **Final checklist**
(for certification review)

Company Name

Project Address

Number of Units

Last updated February 1, 2022

REQUIRED CREDITS

Credit #	Category	Credit		Comments
THREE-STAR REQUIREMENTS (300 points minimum)				
1-1		Built Green assumes building meets local code regulations	★	
1-2		Third-party verification	★	
1-3		Achieve a minimum of 50 points from sections 2-5	★	
1-4	Site & Water	Document a water efficiency score through WERS or WRI of 70 or less, or certify under WaterSense 2.0 (Credit 2-39); OR Prescriptively all plumbing fixtures and appliances are low-flow (Credits 2-50 to 2-53)	★	
1-5	Energy	Install all ENERGY STAR appliances and fans (if provided by builder)	★	
1-6	Energy	Ventilation system flow rates are tested and within 20% of design flows. Controls and settings are consistent with design	★	
1-7	Energy	Building performance modeled ERI of 58 or less OR BPF of 0.55 or less; OR achieves prescriptive credits on the 2018 WSEC R406.3 (5.5 credits) or C406.1 (11 credits) tables (Credits 3-1, 3-2, 3-3, or 3-4). See Built Green 2018 WSEC Energy Modeling Guidelines	★	
1-8	IAQ	CARB II compliant materials for cabinets and hard-surface flooring, Greenguard Gold or Formaldehyde-free insulation, and low-VOC paints and wet-applied interior finishes (Credits 4-15, 4-16, 4-21)	★	
1-9	IAQ	If gas cooktop or range is installed: provide range exhaust hood directly over cooking appliance. Exhaust hood shall vent directly to the exterior of the building. General kitchen exhaust or recirculating hoods shall not meet this requirement.	★	
1-10	Materials	Post jobsite recycling plan on site and maintain at least three bins (Credits 5-5 and 5-15)	★	
1-11	Materials	Recycle all clean wood, cardboard, new gypsum scrap, metal, asphalt paving/brick/concrete, electronics, and batteries (Credits 5-15, 5-16, 5-17)	★	
1-12	Materials	Use no endangered species or old growth wood (Credit 5-26)	★	
1-13	ESJ	Achieve at least 25 points in Equity and Social Justice Section (Section 6); not all points can come from EV charging	★	

FOUR-STAR REQUIREMENTS (400 points minimum)				
1-14		Meet 3-Star requirements	★	
1-15		Achieve a minimum of 60 points from Sections 2-5	★	
1-16	Site & Water	Amend disturbed soil with compost to a depth of min. 10 inches to restore soil environmental functions (Credit 2-16)	★	
1-17	Site & Water	Document a water efficiency score through WERS or WRI of 60 or less (Credit 2-39); OR Prescriptively all plumbing fixtures and appliances are low-flow (Credits 2-50 to 2-53) and emphasize drought-tolerant vegetation (food production excluded) (Credit 2-43)	★	
1-18	Energy	Building performance modeled ERI of 55 or less OR BPF of 0.52 or less; OR achieves prescriptive credits on the 2018 WSEC R406.3 (6 credits) or C406.1 (16 credits) tables (Credits 3-1, 3-2, 3-3, or 3-4). See Built Green 2018 WSEC Energy Modeling Guidelines	★	
1-19	Energy	Set up automatic energy and water benchmarking in EnergyStar Portfolio Manager and share data with Built Green (Credits 2-63 and 3-45)	★	
1-20	Energy	Design for solar readiness (see handbook for details)	★	
1-21	IAQ	Do not install a gas-burning fireplace inside unit or building (direct-vent fireplaces excluded) (Credit 4-63)	★	
1-22	IAQ	CARB II compliant or better for all finish woodwork, subfloors, plywood and composite wood materials, CRI Green Label Plus or better for all installed carpeting (Credits 4-15, 4-16, 4-21) (excludes structural lumber)	★	
1-23	IAQ	Provide EnergyStar or HVI certified range exhaust hood directly over cooking appliance and vent directly to the exterior of the building. General kitchen exhaust or recirculating hoods shall not meet this requirement. (Credit 4-53)	★	
1-24	IAQ	Provide track-off mats, carpets, and/or shoe grates at principal entryways to building (Credit 4-61)	★	
1-25	Materials	Use at least one material or product with an HPD or EPD (Credit 4-23 or 5-88)	★	
1-26	Materials	Achieve minimum recycling rate of 50% by weight (Credit 5-16)	★	
1-27	ESJ	Create a project-specific ESJ plan (Credit 6-9) and achieve at least 30 points in Equity and Social Justice Section; not all points can come from Universal Design or required ESJ plan	★	

FIVE-STAR REQUIREMENTS (600 points minimum)				
1-28		Meet 4-Star requirements	★	
1-29		Achieve a minimum of 90 points from Sections 2-5	★	
1-30	Site & Water	Manage at least 60% of stormwater on site (Credit 2-20)	★	
1-31	Site & Water	Document a water efficiency score through WERS or WRI of 50 or less (Credit 2-39); OR Prescriptively all plumbing fixtures and appliances are low-flow (Credits 2-50 to 2-53) and landscaping requires no potable water irrigation after establishment period (Credit 2-47)	★	
1-32	Energy	Building performance modeled ERI of 47 or less OR BPF of 0.48 or less; OR achieves prescriptive credits on the 2018 WSEC R406.3 (7 credits) or C406.1 (28 credits) tables (Credits 3-1, 3-2, 3-3, or 3-4). See Built Green 2018 WSEC Energy Modeling Guidelines	★	
1-33	Energy	Install solar PV producing 150 kWh for every 1000 sq ft (Credit 3-44)	★	
1-34	IAQ	All hard surface flooring must contain no orthophthalates (Credit 4-18)	★	
1-35	IAQ	All carpet must contain no fly ash (Credit 4-21)	★	
1-36	Materials	Achieve a minimum recycling rate of 75% of waste by weight (Credit 5-16)	★	
1-37	Materials	Calculate embodied carbon of the new building (Credit 5-90)	★	
1-38	ESJ	Achieve at least 35 points in Equity and Social Justice Section	★	

NET ZERO ENERGY LABEL (OPTIONAL)				
1-39		Meet any star-level requirements plus point minimum	★	
1-40	Energy	Demonstrate net zero energy performance over the course of a year	★	
1-41	Energy	Provide an energy performance disclosure waiver	★	

Check items included this project to qualify for a BUILT GREEN star rating. **2021 version**

QUALIFYING CREDITS				
Credit #	Possible Points	Credits	Total Points	Comments
SECTION 2: SITE & WATER				
SITE PROTECTION				
Overall				
2-1	10	Build on an infill lot to take advantage of existing infrastructure and reduce development of virgin sites	10	
2-2	10	Build in a planned Built Green development or certified Built Green Community		
2-3	20	Build on a greyfield or brownfield site		
2-4	30	Create a Low Impact Development as defined in handbook		
2-5	5-25	Meet or exceed City of Seattle's Green Factor standards (point tiers in handbook)	5	
2-6	1-5	Bonus points: Use of Green Factor where it is not part of the project's jurisdictional development requirements		
2-7	20	For each acre of development, set aside an equal amount of land as a conservation easement or transfer of development rights		
Subtotal			15	
Protect Site's Natural Features				
2-8	3	Avoid soil compaction by limiting heavy equipment use to building footprint and construction entrance	3	Typical practice
2-9	3	Preserve existing native vegetation as landscaping (min. 25% preserved)		
2-10	1-5	Retain trees on site (1 pt per 20% preserved)		
2-11	10 or 12 or 15	Restore percentage of site outside the footprint for the life of the building (10%, 20%, 30%)		
Subtotal			3	
Protect Natural Processes On-Site				
2-12	2	Install and maintain temporary erosion control devices that significantly reduce sediment discharge from the site beyond code requirements	2	Typical practice
2-13	3	Use compost to stabilize disturbed slopes during construction		
2-14	2 or 5	Retain all native topsoil in-situ, or stockpile and protect from erosion		
2-15	3	Balance cut and fill, while minimizing change to original topography		
2-16	4	Amend disturbed soil with compost to a depth of min. 10 inches to restore soil environmental functions	4	Typical practice; 4-star requirement
2-17	2	Replant or donate removed vegetation for immediate reuse		
2-18	2	Use plants salvaged from another site		
2-19	3	Grind land clearing wood and stumps for reuse on site		
2-20	10 or 20 or 30	Manage specified percentage of stormwater from roof and site on site by 60%, 80%, or 100%		
Subtotal			6	
Hardscapes				
2-21	5 or 10 or 15	Design to achieve 50%, 75%, or 90% effective pervious surface outside of building footprint; pervious hardscapes must meet minimum ASTM infiltration testing requirements to earn credit		
2-22	10 or 15 or 25	Install vegetated roof system (e.g. green roof) to reduce impervious surface on 25%, 50%, or 90%+ of total roof surface		
2-23	1	Integrate landscaping with parking area beyond code		
Subtotal			0	
Reduce Urban Heat Island Effect				
2-24	5	Install an ENERGY STAR Qualified roof	5	
2-25	5	Provide shading for 30% of hardscapes by using landscape, landscape features, or overhangs		
2-26	5	For all exterior hardscape, including surface parking, use only light-colored pavement for 90% of project area (Solar Reflective Index of .28 or better)	5	
Subtotal			10	

Eliminate Water Pollutants				
2-27	1	Wash out concrete trucks in slab or pavement subbase areas, or use washout boxes	1	
2-28	3	Establish and post clean up procedures for spills to prevent illegal discharges	3	Typical practice
2-29	1	Reduce hazardous waste through good jobsite housekeeping	1	Typical practice
2-30	2	Construct tire wash, establish and post clean up protocol for use		
2-31	2	Use slow release organic fertilizers to establish vegetation	2	
2-32	2	Use less toxic form release agent	2	
2-33	8-10	Use non-toxic (10 pts) or low-toxic (8 pts) outdoor materials for all landscaping	10	Typical practice
2-34	5	Use only "Low Hazard" pesticides and herbicides for landscape installation and in Operations & Maintenance Plan	5	
2-35	5	Do not use galvanized metal, EPDM, or PVC roofing materials		
2-36	2	Use a modified bitumen built-up or TPO membrane roof	2	
2-37	5	No clearing or grading during wet weather periods (November - April)	5	
2-38	40 or 50	On-site wastewater treatment for greywater only (40 pts) or for blackwater and greywater (50 pts), min. 50% captured		
Subtotal			31	
WATER CONSERVATION				
Occupant Water Reduction (Select either Performance or Prescriptive Pathway)				
Performance Pathway				
2-39	30 or 50 or 80 or 100	Document a Water Efficiency Rating through WERS or WRI of 70 or less (see handbook for point tiers and approved modeling methods)		
2-40	5	Bonus: achieve EPA WaterSense 2.0 certification or Water Efficiency Rating Score (WERS or WRI) certification of 70 or less		
Subtotal			0	
Prescriptive Pathway				
2-41	2	Mulch landscape beds with 4 inches of organic mulch	2	
2-42	3-12	Limit use of turf grass, or use no turf grass (3 pts per 25%)	3	
2-43	5 or 8	Landscape with plants appropriate for site topography and soil types, emphasizing use of plants with low watering requirements (drought tolerant)	5	4-star requirement
2-44	2	Install sub-surface or drip systems for irrigation with controls for each zone, including weather or soil moisture-based modulation	2	
2-45	5	Install a WaterSense irrigation system	5	
2-46	3	Irrigation system commissioned by a professional to ensure no leaks, efficient system	3	
2-47	10	Install landscaping that requires no potable water for irrigation whatsoever after initial establishment period (approximately 2 years)		
2-48	5-20	Install rainwater collection system (cistern) that reduces water consumption for irrigation (5 pts for each 25% of irrigation needs met by cistern)		
2-49	80	Provide 100% of building and landscaping water use with captured precipitation or reused water purified without the use of chemicals		
2-50	1-3	Install ALL bathroom faucets with 1.0 gpm (1 pt), 0.5 gpm or less (3 pts), must be WaterSense labelled	1	4-star requirement
2-51	3	Install ALL kitchen faucets with 1.8 gpm or less	3	Code requirement
2-52	5-7	Install ALL showerheads with 1.75 gpm (5 pts), 1.5 gpm or less (7 pts), must be WaterSense labelled	5	4-star requirement
2-53	4-12	Install WaterSense labelled toilets (1.28 gpf = 4 pts, 1.1 gpf = 8 pts, 0.8 gpf = 12 pts. All toilets must comply.)	4	Code requirement
2-54	4	Install no-cartridge waterless urinals or 1/8 gallon urinals and 1.28 gpf maximum (WaterSense if not flushometer) toilets in all common areas		Target
2-55	15	Stub-in plumbing to use greywater for toilet flushing (must test for leaks)		
2-56	30	Use greywater or rainwater for toilet flushing		
2-57	3	Provide water sub-metering for each unit	3	
2-58	3-5	Limit pipe volume between water heat source and furthest fixture. Pipe run should store no more than 0.5 gallons (3 pts) or 0.3 gallons (5 pts)		
Subtotal			16	
Eliminate Water Pollutants				
2-59	1	Do not install garbage disposal		
Subtotal			0	
DESIGN ALTERNATIVES				
2-60	10	Follow comprehensive integrated design plan for site and structure (as described in the handbook)		
2-61	2 or 10	Take advantage of parking reduction credits that are available in your jurisdiction (2pts), or no parking (10pts)		
2-62	5-10	Provide structured parking within the proposed building footprint at a 50% minimum (5pts), or 100% (10pts)		
Subtotal			0	
BENCHMARKING				
2-63	5	Commit to annual benchmarking of building water consumption using ENERGY STAR Portfolio Manager and to sharing this information with Built Green	5	
2-64	7	Install a prominent water use display in high traffic common area		
Subtotal			5	
EXTRA CREDIT/INNOVATION for Site and Water				
2-65	1-10	Extra credit for innovation in Site and Water, subject to approval by Built Green Program Manager		
Subtotal			0	
SITE & WATER TOTAL			106	

SECTION 3: ENERGY				
ENERGY IMPROVEMENT				
Multifamily permitted under Residential code (Select one)				
3-1	30 or 50 or 80	Document a building performance ERI of 58 or less, before PV Solar generation is included (see handbook for point tiers)		
3-2	30 or 50 or 80	Document building improvements beyond 2018 WSEC using a prescriptive approach by earning at least 5.5 credits on R406.3 table, less than 50% of points may come from PV solar generation (See handbook for point tiers)		
Multifamily permitted under Commercial code (select one)				
3-3	30 or 50 or 80	Document a building performance factor of 0.55 or less (see handbook for point tiers)	50	
3-4	30 or 50 or 80	Document building improvements beyond 2018 WSEC using a prescriptive approach; earning at least 11 credits on the C406.1 table, less than 50% of points may come from PV solar generation (see handbook for point tiers)		
Subtotal			50	

ADDITIONAL CERTIFICATIONS				
3-5	30 or 40	Build a net zero or net positive energy building that draws zero outside power or fuel on a net annual basis		
3-6	5 or 10	Achieve Energy Star Multifamily (5pts), DOE Zero Energy Ready, or PHIUS+ certifications (10pts)		
3-7	3	Register project with RESNET or Utility Program of equal or greater quality assurance		
Subtotal			0	
SYSTEMS COMMISSIONING				
3-8	5 or 10	Provide Fundamental Commissioning of building systems (see handbook for point tiers)	5	
Subtotal			5	
AIR SEALING				
3-9	3	Exceed air sealing target for the assumed performance model	3	.25 for code. Pass up to .4 (whole building air leakage)
3-10	10	Use airtight building method, such as SIP or ICF for all walls		
3-11	2	Use of continuous insulation		
3-12	3	Conduct unit compartmentalization test with sample rate of 1 and 10 or less, must meet shall pass 0.30 CFM per SF or less		
3-13	5	Use a blown-in wall insulation system (i.e. BIBs, cellulose)		
3-14	5 or 10 or 15	Conduct blower door test for the whole building with results better than base code requirement (see handbook for point tiers)		
Subtotal			3	
PASSIVE DESIGN FEATURES				
3-15	6 or 12	Passive solar: three of the below strategies (6 pts), or five (12 pts)		
	a	East/west orientation		
	b	Glazing is tuned to the orientation of the building		
	c	Proper overhang sizing on south and movable shades on west glazing		
	d	Natural shading on south side with trees		
	e	Limit glazing to 20-25% of wall area		
3-16	2	Operable windows that create cross ventilation in both units and common areas		
Subtotal			0	
HEATING/COOLING				
Distribution				
3-17	3	Install ENERGY STAR ceiling fans in all units that is 5 CFM/ watt or greater - minimum one per unit	3	
3-18	5 or 10	Third-party total duct leakage performance test (see handbook for point tiers)	5	Beyond typical
3-19	5	All ducts are in conditioned space	5	
3-20	3	Locate heating/cooling equipment inside the conditioned space		
Subtotal			13	
Controls				
3-21	2	Install programmable thermostats for all individual heating zones	2	
3-22	1	Provide separate switching for bathrooms fan/heat lamp and fan/light combination fixtures	1	
3-23	3	Provide electricity and/or natural gas direct metering for each unit	1	
3-24	5	Install window switch and thermostats with temperature setbacks to react to operable window use		
3-25	3	Black or smart switches in all units for turning off associated outlets		
Subtotal			4	
Heat Recovery				
3-26	5 or 10	Install a heat recovery ventilator (HRV) or an energy recovery ventilator (ERV) with fan power limited to 0.8 watts/CFM or less (not applicable if using performance pathway)	5	
3-27	2	If HRV or ERV installed in Low-rise building, commission and make sure system is balanced		
Subtotal			5	
WATER HEATING				
Overall				
3-28	5	Install drainwater heat recovery system (DHR)		
3-29	2	Install whole building "smart" variable-speed recirculation pump		
3-30	2	Install the water heater inside the heated space (electric, direct vent, or sealed venting only)		
Subtotal			0	
Distribution				
3-31	10	Insulate all hot water recirculation lines above code and include thermally broken hangers		
Subtotal			0	
EFFICIENT LIGHTING				
3-32	1-2	Install lighting dimmer, photo cells, timers, and/or motion detectors for high efficiency fixtures - common areas and in-unit lighting		
3-33	2	Install motion detectors for minimum 90% of exterior fixtures		
Subtotal			0	
APPLIANCES				
3-34	2	Install heat pump clothes dryers in all units		
3-35	3	Install heat pump clothes dryers in common laundry facilities instead of in each unit		
3-36	1	Do not use conditioned air for common laundry dryer make-up air		
3-37	2	Provide clotheslines to each tenant and "wet room" or outside space in unit or common area for hang drying clothes		
3-38	2	Install induction cooktop in all units		
3-39	2	Install ENERGY STAR exhaust fans in all units, with fan sone rating of 0.3 or less	2	
Subtotal			2	
BUILDING ENERGY FUEL TYPE				
3-40	10	100% Electric building. No combustion fuel sources used in the building.		
Subtotal			0	

ALTERNATIVE ENERGY				
3-41	7	Participate in the local utility's electricity program for renewable electricity sources (covers minimum 25% of energy used)		
3-42	4	Develop incentive program for tenants to purchase Green-e certified RECs		
3-43	1	Solar-powered or low-voltage walkway or outdoor area lighting		
3-44	5-25	Install photovoltaic system (excluding solar hot water): 5 pts for 300 W/1000 sq ft and 5 pts for each additional 150 W/1000 sq ft.	5	Beyond typical
Subtotal			5	
BENCHMARKING				
3-45	5	Provide whole building benchmarking using Energy Star Portfolio Manager and share with Built Green	5	
3-46	5	Include provisions in tenant leases releasing utility consumption and billing data to building owner and authorized agents		
3-47	10	Commit to performing a post-occupancy comparison of modeled vs. actual energy performance and to sharing with Built Green through Energy Star Portfolio Manager		
Subtotal			5	
EXTRA CREDIT/INNOVATION for Energy				
3-48	1-10	Extra credit for innovation in Energy, subject to approval by Built Green Program Manager		
Subtotal			0	
ENERGY TOTAL			92	

SECTION 4: HEALTH & INDOOR AIR QUALITY

OVERALL				
4-1	5	A WELL Accredited Professional is a member of the project design or build team	5	Beyond Typical
4-2	15	Certify the building through a third-party verified program emphasizing indoor air quality (e.g., WELL, EPA Indoor Air Plus)		
4-3	1	Building is designated non-smoking	1	
Subtotal			6	
JOBSITE OPERATIONS				
4-4	1	Use less-toxic cleaners	1	
4-5	1	Require workers to use VOC-safe masks when applying VOC containing wet products and N-95 dust masks when generating dust	1	
4-6	1-5	Take measures during construction operations to avoid moisture problems later (see handbook for examples; 1 pt per action)	5	
4-7	2-4	Take measures to avoid problems due to construction dust (see handbook for point tiers)	2	
4-8	3	Ventilate during all new wet finish applications	3	
4-9	2	No use of unvented combustion heaters during construction	2	
4-10	3	Clean duct, furnace, and filter thoroughly before occupancy	3	
4-11	3	Institute a jobsite anti-idling program for construction vehicles	3	
4-12	3-12	Use non-diesel alternative fuels in construction equipment: electricity, propane, or natural gas (3 pts per 25% of equipment using alternative fuels)		
4-13	4	Require healthy jobsite plan for workers' compliance	4	
4-14	4	Implement construction management plan to ensure healthy jobsite plan is implemented optimally and adhered to	4	
Subtotal			28	
LAYOUT AND MATERIAL SELECTION				
4-15	6	Inside the building envelope use only low-VOC, low-toxic, water-based, solvent-free sealers, grouts, mortars, caulks, adhesives, stains, pigments, and additives on all wet-applied applications	6	
4-16		Use No Added Urea Formaldehyde (NAUF), No-Added Formaldehyde (NAF) or Ultra-Low Emitting Formaldehyde (ULEF) finishes and materials (including adhesives and resins):		
	3	Insulation or Greenguard Gold certified insulation product	3	
	3	Plywood and composites of exterior grade for interior use	3	
	2	Finish work, trims and Molding (e.g. window trim, door trim, base molding, etc.)	5	
	5	Flooring material (excludes carpet)	5	
	5	Cabinets and shelving		
	5	Interior Doors		
4-17	1	Use pre-finished flooring	1	Typical
4-18	5	Use hard surface flooring without orthophthalate plasticizers		
4-19	1	Do not install insulation or carpet padding that contains brominated flame retardant (BFR)		
4-20	10	No carpet in units		
4-21		When installing carpet reduce indoor air pollutants		
	2	Limit use of carpet to one-third of unit's square footage		
	1	Specify and use CRI Green Label Plus or Greenguard certified products for carpet, pad, and adhesive	1	
	5	Specify and use carpet, pad or adhesive that does not contain fly ash filler in backing		
	1	Install by dry method		
	1	Install low pile or less allergen-attracting carpet and pad		
	2	Install untreated natural fiber carpet		
	1	Avoid installing carpet in environments where it can get wet (kitchen, bathroom, near entries)	1	
4-22	30	Select materials such that the building is free from all of the materials and chemicals listed in the handbook. Please discuss with Program Manager before claiming this point		
4-23	1-5	Use products with a Health Product Declaration (HPD)	1	Glass/glazing
Subtotal			25	
MOISTURE CONTROL				
Overall				
4-24	5	Use Building Envelope Consultant during design	5	
4-25	5	Envelope inspection at various stages of envelope installation by a qualified professional	5	
4-26	1	Grade to drain away from buildings	1	
Subtotal			11	
Roof				
4-27	6 or 10	Provide 2:12 (9.5 degree) pitch sloped roof surface -for at least 50% of roof (6 pts), or 100% (10 pts)		
Subtotal			0	
Walls - Above Grade				

4-28	3	Provide continuous air- and weather resistive barrier installed to manufacturer's requirements	3	
4-29	3	Use prefabricated, liquid applied, or self-adhering flashing at siding transitions and penetrations	3	
4-30	6	Install rainscreen siding	6	
4-31	3	In wood-framed structures, use low-toxic mold-inhibitor product		
Subtotal			12	
Below Grade				
4-32	3	For slab on grade, use 10 mil polyethylene vapor barrier or equivalent performance, directly under slab	3	
4-33	2	Perform moisture test for any slab on grade prior to installing any finish to manufacturer's specifications		
4-34	2	Install mechanical ventilation system to control moisture in crawl space		
4-35	1	Install a rigid perforated footing drain at foundation perimeter, not connected to roof drain system	1	
4-36	3	Install moisture management system for below grade walls beyond code, i.e., drainage mat	1	
Subtotal			5	
Openings				
4-37	1	Properly seal building openings and penetrations against moisture and air leaks	1	
4-38		Install additional moisture control measures:		
	5	Sill pans with back dams or slope at windows	5	
	3	Door pans with back dams at doors	3	
	5	Sill flashing extending up sides of windows	5	
	3	Threshold protection at doors	3	
	1	Metal head flashing at windows	1	
	1	Metal head flashing at doors	1	
	1	Min. 18" overhangs at entryways	1	
4-39	3	Provide hose testing or negative pressurization testing to pre-installed sample of each window type to test assembly for moisture control protection - ASTM E1105 or equal		
Subtotal			20	
AIR DISTRIBUTION AND FILTRATION				
4-40	2	No stud or joist cavities used for air conveyance	2	
4-41	2	Do not install electronic, metal mesh, horse hair, or non-pleated fiberglass filters	2	
4-42	1	Make sure air intakes are placed to avoid intake from air pollutant sources (beyond code)		
4-43	1	No parking within 40 feet of building air intakes		
4-44	2 or 5	Use effective media air filter, ensuring the HVAC system is designed for the static pressure drop of the filter: MERV 8 (2 pts) or MERV 12+ (5 pts)		
4-45	2	Install operable windows in all occupied spaces, minimum 4% of floor area		
4-46	2	Install CO ₂ detectors in community rooms	2	
4-47	2	Demand controlled ventilation in all rooms designed for high occupancy		
4-48	10	Utilize a balanced ventilation approach (supply + exhaust/return) in residential units		
Subtotal			6	
HVAC EQUIPMENT				
4-49	1	Design to ensure accessibility of all system components	1	
4-50	1	Design to prevent standing water in ducted HVAC systems	1	
4-51	3	Commission all spot ventilation fans in all units	3	
4-52	1	Use heating system controls that are free of mercury	1	
4-53	1	Range exhaust hoods shall be ENERGY STAR or HVI certified and have a maximum flow rate no less than 100 and no more than 300 cfm	1	
4-54	2	Install an automatic fan control with 20-minute delay timer, motion sensor, or humidistat for bath exhaust fans	2	
4-55	2	Install quiet bath exhaust fan with smooth ducting, minimum 4 inch, with a fan sone rating of .3 or less at or above the design CFM	2	
4-56	1	No sound insulation or other fibrous materials installed inside ducting		
4-57	3	Install sealed combustion heating and hot water equipment		
4-58	3 or 5	Compartmentalization testing of sampling of units (see handbook for point tiers)		
Subtotal			11	
HEALTH AND INDOOR AIR QUALITY				
4-59	1	Install biodegradable carbon filter at sink		
4-60	1	Install showerhead filter in all units, include information in the tenant handbook		
4-61	3	Provide track-off mats, carpets, and/or shoe grates at principal entryways to building	3	
4-62	2	Provide a shoe removal and storage area at the entrance to each unit		
4-63	10	Do not install gas-burning appliances inside unit or building (direct-vent fireplaces excluded)	10	4-star requirement
4-64	1	Install floor drain or catch basin with drain under washing machines (and condensing/heat pump dryers if applicable)		
4-65	1-2	Use radon resistant construction using EPA standards (passive) (1 pt) or test for radon and install active system after building is complete (2 pts)		
Subtotal			13	
EXTRA CREDIT / INNOVATION for Health and Indoor Air Quality				
4-66	1-10	Extra credit for innovation in Indoor Air Quality, subject to approval by Built Green Program Manager		
Subtotal			0	
HEALTH & INDOOR AIR QUALITY TOTAL			138	

SECTION 5: MATERIALS EFFICIENCY				
OVERALL				
5-1	10 or 15 or 20	Design and build for deconstruction concept - 50% (10 pts), 75% (15 pts), or 90% (20 pts)		
5-2	1-5	Eliminate materials and systems that require finishes or finish materials on a minimum of 100 square feet in common areas (1 pt per 100 sqft)		
Subtotal			0	
JOB SITE OPERATIONS				
5-3	1	Provide weather protection for stored and installed materials		
5-4	1-3	Use suppliers who offer reusable or recyclable packaging with recyclable/ biodegradable fillers or plastic and Styrofoam free packaging		
Subtotal			0	

REDUCE				
5-5	5	Implement comprehensive construction waste reduction and management plan	5	
5-6	2	Create detailed take-off and provide as cut list to framer	2	
5-7	2	Use central cutting area or cut packs	2	
5-8	5	Use prefabricated or modular construction elements		
5-9	5-20	Reduce total waste generated on site (see handbook for point tiers)		
Subtotal			9	
REUSE				
5-10	15-30	Use deconstruction to dismantle existing building and salvage materials for reuse (see handbook for point tiers)		
5-11	3	Engage a salvage professional to conduct a salvage assessment of buildings planned for removal		
5-12	1	Donate, sell, or give away reusable finish items, wood scraps, lumber and land clearing debris		
5-13	1-10	Reuse salvaged materials (1 pt per material, examples listed in handbook)		
5-14	15	Reuse existing buildings onsite or relocate buildings for reuse		
Subtotal			0	
CONSTRUCTION AND DEMOLITION MATERIALS MANAGEMENT				
5-15	5	Use a three bin waste separation system: one for landfill, one for comingle recycling, one for phase-appropriate source-separated recycling	5	
5-16	8-15	Send at least 90% of jobsite waste (by weight, excluding concrete, brick and asphalt) to a commingle recycling facility with a minimum of 50% diversion rate (see Built Green Recycling Guidelines); 50% diversion rate (8pts), 75% (12pts), 90% (15pts)	8	Meet 4-star requirement. Regionally, possible to achieve 75% (12pt target)
5-17		Bonus: Source separated recycling, 90% minimum rate for all material generated during construction		
	1	Recycle cardboard by source separation	1	3-star requirement (1-11)
	2	Recycle metal scraps by source separation	2	3-star requirement (1-11)
	5	Recycle clean scrap wood and broken pallets by source separation		
	2	Recycle plastic film, package wrap, and pallet wrap by source separation		
	3	Recycle drywall by source separation		
	2	Recycle concrete/asphalt rubble, masonry materials, or porcelain by source separation	2	3-star requirement (1-11)
	1	Recycle paint by source separation		
	4	Recycle asphalt roofing by source separation		
	4	Recycle Styrofoam by source separation		
	2	Recycle carpet and carpet padding by source separation		
	1	Recycle glass by source separation		
	3	Recycle land clearing and yard waste, food waste, soil and sod by source separation		
	3	Recycle light blubs, electronics and batteries by source separation		
5-18	1	Provide designated area in building where residents can give away reusable items for use by other residents		
Subtotal			18	
DESIGN AND MATERIAL SELECTION				
Overall				
5-19	1	Use standard dimensions in design of structure		
5-20	10	Design and install recycling stations on each floor, including a maintenance service plan	10	
5-21	8	Design and install food waste management system on each floor, including a maintenance service plan		
5-22	1-3	Install materials with longer life cycles		
5-23	1-10	Install locally/regionally produced materials (1 pt per material)	2	Wood and Concerte is feasible in region.
5-24	1-8	Use building-salvaged lumber, minimum 200 board feet		
5-25	2-6	Use rapidly renewable building materials and products made from plants harvested within a ten-year cycle or shorter (2 pts per material)		
5-26	3	Use no endangered species or old growth wood	3	
5-27	3	Use no PVC, CPVC, or ABS piping for plumbing or sprinklers within the building envelope		
5-28	1-3	Use Red List Free, DECLARE, Living Product, or Cradle-to-Cradle labelled products (1 pt per material)		
Subtotal			15	
Framing				
5-29	7-10	Use salvaged framing lumber in structural applications, 30% minimum		
5-30		Use third-party certified, sustainably harvested wood that meets Tier 1 or Tier 2 of the Built Green Wood Certification Guidelines; 50% minimum per application		
	2 or 6	Dimensional lumber Tier 1 (10pts) or Tier 2 (6pts)		
	3 or 5	Sheathing Tier 1 (7 pts) or Tier 2 (4 pts)		
	3 or 6	Beams Tier 1 (5 pts) or Tier 2 (3 pts)		
5-31	6-8	Use factory-framed wall panels (panelized wall construction), e.g. SIPs, ICFs, CLT		
5-32	4	Use ICFs with concrete using at least 20% supplementary cementitious materials (by weight)		
5-33	2	Use advanced wall framing - 24-inch OC, with double top plate		
5-34	3	Use engineered structural products and use no 2xs larger than 2x8, and no 4xs larger than 4x8		
5-35	1	Use finger-jointed framing material (e.g. studs)		
5-36	8	Use Cross Laminated Timber in place of steel or concrete beams or framing		
Subtotal			0	
Foundation				
5-37	3-6	For all foundations, retaining and structural walls, use supplementary cementitious materials for 25-50% by weight of cementitious materials for all concrete; 25% (3 pts) and 50% (6 pts) (pavement excluded)		
5-38	2	Use recycled concrete, asphalt, or glass cullet for base or fill	2	
Subtotal			2	
Sub-Floor				
5-39	1	Use recycled content sub-floor		
Subtotal			0	

Finish Floor				
5-40	2-7	Use salvaged flooring (5pts) or flooring with wear layer made from salvaged lumber, minimum 3mm wear layer (3pts)		
5-41	3	Use rapidly renewable flooring products with a ten-year harvest cycle or shorter (excluding carpet)		
5-42	3	Install natural fiber carpet (e.g. jute, sisal, wool)		
5-43	2	If using vinyl flooring, use product with recycled content		
5-44	4	No vinyl flooring		
5-45	1	Use recycled content carpet pad	1	
5-46	2	Use recycled content carpet	2	
5-47	2 or 4	Use replaceable carpet tile for 50% of carpeted area (2 pts) or 100% of carpeted area (4 pts) (minimum of 50 sqft)		
5-48	5	If using tile, use hard surface tile that is 40% recycled content		
5-49	5	Use natural linoleum		
5-50	4 or 5	Use flooring that is third-party certified, sustainably harvested wood that meets Tier 1 (5pts) or Tier 2 (4pts) of the Built Green Wood Certification Guidelines; 50% minimum		
5-51	1	Use spot repairable floor finish		
Subtotal			3	
Interior Walls				
5-52	2	Use drywall with a minimum of 95% recycled content synthetic gypsum or 30% if non-synthetic gypsum		
5-53	2	Use natural interior wall finishes, e.g. lime paint, clay, wood		
5-54	2 or 3	Use recycled or "reworked" paint and finishes on main surfaces or all surfaces		
5-55	1	If installing acoustical tiles or paneling, select a recycled content product		
Subtotal			0	
Windows				
5-56	8	Use all wood, composite, or fiberglass windows		
Subtotal			0	
Trim				
5-57	2 or 4	Use trim that is third-party certified, sustainably harvested wood that meets Tier 1 (4pts) or Tier 2 (2pts) of the Built Green Wood Certification Guidelines, 90% minimum		
5-58	3	Use finger-jointed or MDF trim with no added urea formaldehyde, 90% minimum		
5-59	2	Use wood veneers made of rapidly renewable product		
5-60	2 or 4	Use wood veneers that are third-party certified, sustainably harvested wood that meets Tier 1 (4pts) or Tier 2 (2pts) of the Built Green Wood Certification Guidelines, 90% minimum		
Subtotal			0	
Cabinetry and Counters				
		For cabinets:		
5-61	2 or 4	Use salvaged cabinets		
5-62	2	Use salvaged hardware		
5-63	2 or 4	Use wood that is third-party certified, sustainably harvested wood that meets Tier 1 (4pts) or Tier 2 (2pts) of the Built Green Wood Certification Guidelines, 90% minimum		
5-64	3	Use recycled-content cabinet casework for at least 75% of all casework		
5-65	1	Use cabinet casework and shelving made with agricultural fiber that is NAUF, NAF, or ULEF for at least 75% of all cabinetry	1	
		For Countertops:		
5-66	4 or 6	Use salvaged countertops: common areas (4pts) or in all units (6pts)		
5-67	2 or 4	Use countertops that are third-party certified, sustainably harvested wood that meets Tier 1 (4pts) or Tier 2 (2pts) of the Built Green Wood Certification Guidelines		
5-68	4	Use domestic stone or 90%+ quartz content in all units		
5-69	1 or 4	Use recycled-content material in lobby/reception areas (1 pt) or in all units (4 pts)		
Subtotal			1	
Roof				
5-70	2	Use recycled content roofing material	2	
5-71	2	Use a modified bitumen built-up roof		
5-72	5	Protect at least 90% of built-up and membrane roofing with ballast, pavers, or vegetated roof systems		
Subtotal			2	
Insulation				
5-73	4	All cavity insulation to have a minimum of 40% post-consumer recycled content		
5-74	5	Use environmentally friendly foam building products (CFC-, HFC-, HCFC-free)	5	
Subtotal			5	
Exterior Walls				
5-75	2	Use recycled content sheathing (OSB does not apply)		
5-76	3	Use exterior cladding with reclaimed or recycled material on at least 20% of solid wall surface		
5-77	4	No vinyl siding or exterior trim	4	
5-78	3	Use 50-year siding product (minimum 20% of solid wall surface)		
5-79	4	Use thermally-modified, bio-based liquid impregnated wood siding that does not require wood sealer		
5-80	3 or 5	Wood siding that is third-party certified, sustainably harvested wood that meets Tier 1 (5pts) or Tier 2 (3pts) of the Built Green Wood Certification Guidelines; at least 20% of solid wall surface		
5-81	4	Use salvaged siding		
Subtotal			4	
Other Exterior				
5-82	2 or 4	Use lumber that is third-party certified, sustainably harvested wood that meets Tier 1 (4pts) or Tier 2 (3pts) of the Built Green Wood Certification Guidelines (excluding siding)		
5-83	1	Use 95% recycled-content plastic or wood/bamboo polymer lumber for decks and porches		
5-84	5	If lumber is used, use no pressure treated lumber		
5-85	2	Use thermally-modified lumber that does not require wood sealer for decking and exterior millwork (excludes siding)		
5-86	3-6	For all concrete pavements, use supplementary cementitious materials for 25-50% by weight of cementitious materials for all concrete; 25% and 50%		
Subtotal			0	
BENCHMARKING				
5-87	5	Commit to annual tracking of building trash using ENERGY STAR Portfolio Manager and to sharing with Built Green	5	
Subtotal			5	

EMBODIED CARBON				
5-88	1-10	Use materials with Environmental Product Declaration (EPD) (1 pt per EPD)	5	
5-89	1-5	Request product-specific EPDs from vendors or manufacturers for materials that do not have one (1 pt per letter sent). See handbook for sample letter. (Builder is limited to claiming one letter per product across multiple units and checklists)		
5-90	20 or 30	Calculate the embodied carbon of the new building OR calculate an embodied carbon baseline and show at least a 10% reduction		
5-91	10	Use a minimum of 15% of project's material budget on carbon-neutral, carbon-negative, or climate-positive materials		
5-92	15	Purchase a one-time carbon offset to account for carbon footprint of materials, minimum of 50% of project footprint		
Subtotal			5	
EXTRA CREDIT / INNOVATION for Materials Efficiency				
5-93	1-10	Extra credit for innovation in Materials Efficiency, subject to approval by Built Green Program Manager		
Subtotal			0	
MATERIALS EFFICIENCY TOTAL			69	

SECTION 6: EQUITY AND SOCIAL JUSTICE

PROJECT TEAM

6-1	1-10	Use Built Green® member subcontractors, vendors, service providers, and real estate agents that are committed to equity and inclusion (see credit 6-4) (Project Builder and BG Verifier not applicable)		
6-2	5-15	Expand stakeholder involvement to create diverse teams to guide equitable development and culturally enriched spaces while expanding interest and capacity-building among priority populations, consultants and in-house staff		
6-3	5	Offer equity-focused trainings and workshops to staff, sub-contractors, and other building partners		
6-4	5	Develop a racial equity vision, mission and values statement and proximately display and share with staff, building partners, clients and general public		
6-5	5	Develop an annual racial equity workplan to focus internal and external equity efforts		
6-6	1-3	Use Just-labelled, or certified B-Corporations or SEED firms (1pt per firm)		
Subtotal			0	

OVERALL DESIGN

6-7	15	Certify the social, economic, and environmental outcomes through SEED Certification		
6-8	15-25	Project includes at least 10% affordable, work-force or attainable housing units (see handbook for point table)		
6-9	3	Develop a project-specific ESJ plan clearly indicating equity objectives and actions; identifying priority actions	3	Required for 4-Star
6-10	7-12	Implementing priority elements of project's ESJ plan (7pts); implement all elements or calculate local economic and equity impact of implemented actions (12pts)		
6-11	2	Conduct internal review of ESJ plan implementation		
6-12	15	Site, design, and construct to counter known disparities identified through engagement with community stakeholders		
6-13	1	Submit a Code Innovation case study on this project and be selected by the Building Innovations Database		
Subtotal			3	

UNIVERSAL DESIGN

Designed for Inclusivity

6-14	1-2	Stepless front entry (2pts), Stepless other entry (1pt); max threshold height of 1/2"		
6-15	1	Hard-surface stepless grade changes to allow access to essential maintenance areas (e.g., garbage cans, shared laundry)		
6-16	1	Install exterior accessible hard-surface gathering area (requires stepless grade changes to access area)		
6-17	3	Provide community common areas accessible to all building occupants		
6-18	2	Provide accessible guest bathroom near common areas for those with mobility impairments		
6-19	1-3	Install cabinets with removable or slide-away lower doors for roll-up access to kitchen sink, upper cabinets that lower to counter top height for access, etc. (1pt per feature)		
6-20	1	Install in-unit fire and CO alarms that include visual alarm features		
6-21	3	Minimum door width 2'-10" for all rooms requiring entry (small closets excepted)		
6-22	1	Install touchless or motion sensor plumbing fixtures		
6-23	1-3	Install smart technology (e.g. electronic blinds, programmed environmental controls, etc.) (1pt per installed item)		
6-24	10	Design to ensure accessibility of all building features that provide essential occupant services (requires a stepless entry)		
6-25	10-20	Minimum 10% of units are Accessible Dwelling Units (requires a stepless entry)		
Subtotal			0	

Community Connectivity

6-26	15	Create a Transit-Oriented Development		
6-27	3	Build on a lot that is within 1/2 mile of at least six essential services, (e.g., grocery store, post office, place of worship, community center, daycare center, bank, school, restaurant, medical/dental office, laundromat/dry cleaner, etc)		
6-28	4	Build within ¼ mile of a transit stop or Park and Ride (not combinable with 6-25)		
6-29	10	Create a mixed-use building	10	
6-30	6-10	Provide subsidized bus passes (25% or 50% subsidized)		
6-31	2	Provide bicycle lockers or bicycle storage beyond code	2	
6-32	2	Provide bike service station available to tenants	2	
6-33	2	Provide bus shelters		
6-34	6-12	Provide dedicated parking spots for carpool or car-share vehicles (6 pts for first stall above code, 2 pts for each additional)		
6-35	2	Provide a link to community trails		
6-36	5-20	Provide EV charging station (5 pts for one station, 3 pts for each additional)	20	
6-37	1-2	Provide community garden space for community interactions		
6-38	1-5	Design to promote and encourage pedestrian-friendly and safe neighborhoods (see handbook)		
Subtotal			34	

STAKEHOLDER ENGAGEMENT				
6-39	5	Use Integrated Design Process	5	
6-40	8	Engage with local community groups to assess community needs to inform the project-specific ESJ plan, Built Green checklist and project goals, or developer's overall equity workplan		
6-41	5	Engage community to directly contribute to design element onsite		
6-42	5	Conduct post-occupancy evaluation with community stakeholders to evaluate the process and outcomes of their involvement of the project		
		Subtotal	5	
PRO-EQUITY SOURCING				
6-43	1-10	Use suppliers, vendors, or subcontractors that are WMBE or MBE firms (1pt per firm)		
6-44	5-15	Hire temporary employees or apprentices through Weld Works or ANEW (or equivalent mission-driven employment program); minimum 25% of temporary work hours		
6-45	2	Permanently hire employees from Weld Works or ANEW (or equivalent mission-driven employment program) used during demolition or construction		
6-46	5-10	Hire workers and apprentices who reside in one of the 43 Priority Hire ZIP codes (or equivalent economically distressed Washington ZIP codes); minimum 25% of work hours		
		Subtotal	0	
ADVANCE ECONOMIC JUSTICE				
6-47	8	Offer vacant properties to Weld Seattle (or similar organization) for use as temporary housing prior to demolition		
6-48	3	Offer mentorship program to employees, interns, and apprentices		
6-49	1	Participate in recruitment or career development events in underserved communities		
6-50	1	Offer job training, job assistance, or job retention programs to underserved community members		
6-51	8	Partner with organizations and/or financial institutions to create pathways to investment and homeownership, especially for individuals and families facing the most pressing disparities		
6-52	5	Annually provide pro bono or substantially reduced rate services, resources, or trainings to nonprofit or historically marginalized community organizations		
6-53	8	Use alternative development and ownership models (e.g., land trust, co-ownership) to create additional pathways to homeownership		
		Subtotal	0	
EXTRA CREDIT				
6-54	1-10	Extra credit for innovation in Equity and Social Justice, subject to approval by Built Green Program Manager		
		Subtotal	0	
BUILT GREEN TEAM SECTION TOTALS			42	

SECTION 7: OPERATION, MAINTENANCE & TENANT EDUCATION				
7-1	7	Provide educational materials designed for the public that highlight the green building features and their performance that are included in the project	7	
7-2	5	Prepare an environmentally friendly operations and maintenance plan for common area facilities		
7-3	5	Prepare an environmentally friendly landscape operations and maintenance plan		
7-4	6	Develop and provide a building-wide food waste disposal strategy		
7-5	7	Require tenants to sign an energy consumption data release form (if separately metered)	7	
7-6	5	Require tenants to sign a water consumption data release form (if separately metered)	5	
7-7	7	Conduct training sessions for maintenance staff and/or residents		
7-8	5	Give individual feedback to all tenants about their energy consumption in comparison to others and/or building average		
		Provide tenants with materials including information on:		
7-9	1	Where to dispose of food waste (compost)		
7-10	1	Where to dispose of recyclables		
7-11	1	General practices to conserve water and energy		
7-12	1	Transportation options and resources		
7-13	3	EVs, their benefits, and where to charge them		
7-14	2	Green features and benefits of the buildings		
7-15	3	Maintenance checklists for their unit		
7-16	1-5	Extra credit for innovation in Operation, Maintenance and Tenant Education, subject to approval by Built Green		
OPERATION, MAINTENANCE & TENANT EDUCATION TOTAL			19	

SECTION 8: BUILT GREEN BRAND PROMOTION				
8-1	5	Verifier provides case study write-up highlighting project's deep green features and performance with professional project photos for use on Built Green's blog (requires minimum of 450 points to be earned, project provides affordable housing, or is innovative). Subject to approval and discretion of the Built Green Program Manager.		
8-2	1	Posted a Built Green yard sign during construction		
8-3	1	Built Green logo or hyperlink prominently listed on Builder's or project's website		
8-4	1-5	Extra credit for innovation in Built Green Brand Promotion, subject to approval by Built Green		
SECTION 7 TOTAL			0	

PROJECT SUMMARIES	
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SECTION 6: OPERATION, MAINTENANCE & TENANT EDUCATION	19
SECTION 7: BUILT GREEN BRAND PROMOTION	0
GRAND TOTAL	466

Appendix F LEED New Construction v4, Platinum Checklist

Comparative Analysis of Living Building Challenge, LEED, Built Green, Passive House, & Salmon Safe

SAMPLE BUILDING



LEED New Construction v4 Project Preliminary Checklist | 04.04.2022 | Project Goal: Platinum

RUSHING

PROJECT TOTALS pre-certification estimates				Certification Thresholds: Certified 40 points Silver 50 points Gold 60 points Platinum 80+													
Yes	Likely	Unlikely	No					Max. Points	Yes	Likely	Unlikely	No					Max. Points
84	13	15	1	Integrated Design				1	10	3	0	0	Materials and Resources				13
1	0	0	0	Credit 1	Integrative Process			1	Y				Prereq 1	Storage and Collection of Recyclables			Req'd
1				Credit 2	Sensitive Land Protection			1	Y				Prereq 2	Construction & Demo Waste Management Planning			Req'd
12	4	0	0	Credit 3	High Priority Site			2	2	3			Credit 1	Building Life-Cycle Impact Reduction			5
1				Credit 4	Surrounding Density and Diverse Uses			5	2				Credit 2	Bldg Product Disclosure & Opt, Envir Product Declaration - v4.1			2
	2			Credit 5	Access to Quality Transit			5	2				Credit 3	Bldg Product Disclosure & Opt, Sourcing of Raw Materials - v4.1			2
1	1			Credit 6	Bicycle Facilities			1	2				Credit 4	Bldg Product Disclosure & Opt, Material Ingredients - v4.1			2
1				Credit 7	Reduced Parking Footprint			1	2				Credit 5	Construction & Demo Waste Management			2
1				Credit 8	Green Vehicles			1	2								
7	1	1	1	Sustainable Sites				10	12	0	4	0	Indoor Environmental Quality				16
Y				Prereq 1	Construction Activity Pollution Prevention			Req'd	Y				Prereq 1	Minimum Indoor Air Quality Performance			Req'd
1				Credit 1	Site Assessment			1	Y				Prereq 2	Environmental Tobacco Smoke Control			Req'd
2				Credit 2	Site Development - Protect or Restore Habitat - v4.1			2	2				Credit 1	Enhanced Indoor Air Quality Strategies			2
1				Credit 3	Open Space			1	3				Credit 2	Low-Emitting Materials - v4.1			3
	1	1	1	Credit 4	Rainwater Management			3	1				Credit 3	Construction Indoor Air Quality Management Plan			1
2				Credit 5	Heat Island Reduction			2	2				Credit 4	Indoor Air Quality Assessment			2
1				Credit 6	Light Pollution Reduction			1	1				Credit 5	Thermal Comfort			1
									2				Credit 6	Interior Lighting - v4.1			2
									1		3		Credit 7	Daylight			3
									1				Credit 8	Quality Views - v4.1			1
											1		Credit 9	Acoustic Performance			1
9	1	2	0	Water Efficiency				11	6	0	0	0	Innovation				6
Y				Prereq 1	Outdoor Water Use Reduction			Req'd	1				Credit 1	Verified Construction & Demolition Recycling Rates (pilot)			1
Y				Prereq 2	Indoor Water Use			Req'd	1				Credit 1	Occupant Comfort Survey (innovation)			1
Y				Prereq 3	Building-Level Water Metering			Req'd	1				Credit 1	O&M Starter Kit (innovation + pilot)			1
2	1			Credit 1	Outdoor Water Use Reduction - v4.1			2	1				Credit 1	Green Education Plan (innovation)			1
6				Credit 2	Indoor Water Use Reduction - v4.1			6	1				Credit 1	Low Mercury Lighting (innovation)			1
		2		Credit 3	Cooling Tower Water Use			2	1				Credit 2	LEED Accredited Professional			1
1				Credit 4	Water Metering			1									
24	4	5	0	Energy and Atmosphere				33	3	0	3	0	Regional Priority				4
Y				Prereq 1	Fundamental Commissioning and Verification			Req'd			1		Credit 1	SSc4 Rainwater Management, 3 pt threshold			1
Y				Prereq 2	Minimum Energy Performance			Req'd	1				Credit 2	WEc2 Indoor Water Use, 4 pt threshold			1
Y				Prereq 3	Building-Level Energy Metering			Req'd			1		Credit 3	EAc4 Demand Response, 1 pt threshold			1
Y				Prereq 4	Fundamental Refrigerant Management			Req'd			1		Credit 4	EAc5 Renewable Energy Production, 2 pt threshold			1
6				Credit 1	Enhanced Commissioning			6	1				Credit 5	MRc2 Environmental Product Declaration, 1 pt threshold			1
14	2	2		Credit 2	Optimize Energy Performance (35% energy cost savings)			18	1				Credit 6	MRc3 Sourcing of Raw Materials, 1 pt threshold			1
1				Credit 3	Advanced Energy Metering			1									
		2		Credit 4	Demand Response			2									
1	2			Credit 5	Renewable Energy Production			3									
		1		Credit 6	Enhanced Refrigerant Management			1									
2				Credit 7	Green Power and Carbon Offsets			2									

Appendix G Salmon Safe Additional Information

Comparative Analysis of Living Building Challenge, LEED, Built Green, Passive House, & Salmon Safe

Salmon Safe

Salmon Safe certification is adaptable to the needs of a site, and several strategies that Salmon Safe may require of a project could exceed Washington Stormwater code.

- **Sub-Area Strategies:** within sub-area stormwater code, allow developers to contribute to funds that
 - **Reduce Phosphorus:** Exceed DOE's 50% reduction requirement through treatment and remediation.
 - **Support Salmon through Street Run-off Remediation:** Address 6PPD Quinine from tires through Green Infrastructure treatment methods.
 - **Comprehensive Approach to Enhanced Treatment:** Apply "enhanced treatment" methods throughout sub-area to mitigate metals, exceeding the minimum for arterial streets.
 - **Stream daylighting:** Specific to Moss Bay watershed, create opportunities for developers to daylight, or contribute to daylighting, a local stream.
- **Project-specific Strategies specific**
 - **Water Quality and Water Quantity:** Within the sub-area, create a higher set of infeasibility criteria so it is difficult to avoid strategies that improve the quality/quantity measures on a site. Specific strategies include the following:
 - Green Roof
 - Water Harvesting
 - **No potable water for non-potable uses:** A clear rule to require project teams to achieve water use reduction goals. Drives multiple strategies/investments.

Appendix H Green Factor

Landscape Elements, High and Low ROM costs, and Assumptions

Landscape Elements	Cost low	Cost High	Assumptions & Reference
Bioretention facilities and/or soil cells: <ol style="list-style-type: none"> Construction Design 	<ol style="list-style-type: none"> \$2/sqft \$1/sqft 	<ol style="list-style-type: none"> \$90/sqft \$60/sqft 	Reference: King County, WRIA 9 Stormwater Retrofit BMP Cost Assumptions
Structural soil systems	\$2/sqft	\$4/sqft	Reference: Ecological Landscape Alliance (2017)
Landscaped areas with a soil depth of less than 24"	\$2/sqft	\$130/sqft	Considerations: cost of new soil, cost to install. Soil prices are referenced from Dirt Exchange .
Landscaped areas with a soil depth of 24" or more	\$2/sqft	\$350/sqft	These will depend very much on how much new soil is brought in, how existing soil is used, and how much needs to be done to landscape structurally.
Preservation of existing trees: <ul style="list-style-type: none"> Calculated at 20 sq ft per inch dbh (Trees must have a minimum diameter of 6" at dbh.) 	\$1/sqft	\$100/sqft	Operational cost. Dependent on the project site and general contractor. <ul style="list-style-type: none"> No direct hard costs however this will impact construction and incur soft costs depending upon the number of trees & location
Preservation of Landmark Trees bonus: <ul style="list-style-type: none"> Calculated at 20 sq ft per inch dbh (Trees must meet City of Kirkland's definition of Landmark Trees) 	\$1/sqft	\$100/sqft	Operational cost. Dependent on the project site and general contractor. <ul style="list-style-type: none"> No direct hard costs however this will impact construction and incur soft costs depending upon the number of trees & location
Preservation of existing evergreen trees bonus: <ul style="list-style-type: none"> Calculated at 20 sq ft per inch dbh (Preserved evergreen trees must have a minimum diameter of 6" at dbh) 	\$1/sqft	\$100/sqft	Operational cost. Dependent on the project site and general contractor. <ul style="list-style-type: none"> No direct hard costs however this will impact construction and incur soft costs depending upon the number of trees & location
Ground covers or other low plants <ul style="list-style-type: none"> Calculated at 6 - 4" plants per sqft (less than or equal to 2' tall at maturity) 	\$12/sqft	\$30/sqft	4" groundcovers ranging from 2-5\$. <ul style="list-style-type: none"> Pricing referenced from T&L wholesale nursery
Medium Shrubs or perennials <ul style="list-style-type: none"> Calculated at 9 sq ft per plant (2'-4' tall at maturity) 	\$6/plant	\$22/plant	Added category for medium shrubs (matches Seattle) <ul style="list-style-type: none"> Pricing referenced from T&L wholesale nursery
Large Shrubs or perennials <ul style="list-style-type: none"> calculated at 36 sq ft per plant greater than 4' tall at maturity) 	\$6/plant	\$30/plant	Added category for large shrubs (matches Seattle) <ul style="list-style-type: none"> Pricing referenced from T&L wholesale nursery
Small Trees or equivalent with calculated soil volume that meets or exceeds 500ft ³ per tree. <ul style="list-style-type: none"> Calculated at 90 sq ft per tree (canopy spread 10' to 15' at maturity) 	\$50/plant	\$1000/plant	Prices range due to species & maturity of the tree at purchase: young tree = lower cost, mature tree = higher cost. <ul style="list-style-type: none"> Added Soil volume requirement
Medium Trees or equivalent with calculated soil volume that meets or exceeds 1000 ft ³ per tree. <ul style="list-style-type: none"> Calculated at 230 sq ft per tree (canopy spread 16' to 24' at maturity) 	\$50/plant	\$2,000/plant	Prices range due to species & maturity of the tree at purchase: young tree = lower cost, mature tree = higher cost. <ul style="list-style-type: none"> Added Soil volume requirement, increased weighting from .3
Large Trees with calculated soil volume that meets or exceeds 1500 ft ³ per tree <ul style="list-style-type: none"> Calculated at 350 sq ft per tree (canopy spread 25' and greater at maturity) 	\$50/plant	\$5000/plant	Prices range due to species & maturity of the tree at purchase: young tree = lower cost, mature tree = higher cost. <ul style="list-style-type: none"> Price may also increase depending on species, plus larger trees may need heavy machinery to move

Green Roofs	Cost low	Cost High	Assumptions & Reference
Area planted with at least 2" of growth medium but less than 4" of soil	\$15/sqft	\$20/sqft	References: The Costs and Benefits of Green Roofs DeepRoot Blog GSA, cost-benefit analysis
Area planted with at least 4" but less than 8" of soil	\$20/sqft	\$45/sqft	- Added criteria for 4-12"
Area planted with at least 8" of but less than 30" of soil	\$45/sqft	\$75/sqft	- Added criteria for 12-30"
Area planted with tree(s) and at least 30" of soil within 42" of the tree(s)	\$75/sqft	\$300/sqft	- Added criteria for 30-42"
Green Walls			
Façade or wall surface obstructed with vines - (calculate at 3 years of growth)	\$10/sqft	\$30/sqft	References: Cost concerns for increasingly popular green walls
Façade or wall surface planted with a green wall system - must have year-round irrigation and maintenance plan	\$70/sqft	\$150/sqft	
Landscape Quality Benefits			
Landscaped areas in food cultivation	\$20/sqft	\$100/sqft	Depends on the level of structure required - i.e. at grade with cedar boxes or on the roof
Landscaped areas planted with native or drought-tolerant plants	\$10/sqft	\$50/sqft	sample base project: using existing landscape, topdressing with compost, and installing plant)
Landscape areas at sidewalk grade	\$5/sqft	\$50/sqft	
Landscaped areas where at least 50% of annual irrigation needs are met using harvested rainwater	\$10/sqft	\$500/sqft	updated language to match Seattle
Planting that provides food, forage, and refuge for a diversity of species - native insects, pollinators, birds, and urban wildlife	\$10/sqft	\$50/sqft	
Permeable Paving			
Permeable paving over a minimum 6" and less than 24" of soil or gravel	\$7/sqft	\$40/sqft	Lid-stormwater Design: Permeable Pavers - dependent on the depth of base and site accessibility
Permeable paving over at least 24" of soil or gravel	\$10/sqft	\$60/sqft	
Innovation			
Contributes to district sustainability goals including habitat connectivity, tree canopy, or stormwater goals beyond the site boundary. - i.e. Treating stormwater from public ROW on project site, enhancing and maintaining landscaping in ROW - Scoring to be awarded at the discretion of the City of Kirkland	\$10/sqft	\$500/sqft	Added criteria

11.10

**Appendix —
Supplemental
Transportation Memo**

Representative Infrastructure Studies

(Published October 2021)

Appendix 1. Supplemental Transportation Study

This Study is an Appendix to the [NE 85th Street Station Area Plan project](#) **Fiscal Impacts and Community Benefits Analysis Study Technical Memo (Technical Memo)**. The Station Area Fiscal Impacts and Community Benefits Analysis was scoped to answer this question: If the City were to implement its vision of the Station Area as a thriving, walkable urban center with plentiful affordable housing, jobs, sustainable development, and shops and restaurants linked by transit, can the City afford the investments necessary to address increased demand on public services, especially schools, parks/open spaces, transportation, and utilities, and avoid a reduction in service for existing community members and businesses?

Study Purpose

To support the Technical Memo's assumptions, planning level **Representative Infrastructure Studies** were conducted to determine a set of representative infrastructure investments needed to maintain service levels in transportation, water and sewer, and stormwater, in alignment with the full 23-year buildout scenarios described for the two key development alternatives analyzed in the Technical Memo – June Alternatives A and B. The purpose of the Infrastructure Studies was to inform an understanding of area-wide representative infrastructure and service needs and costs and for incorporation as assumptions in the fiscal analysis. Note that as “representative infrastructure,” these identified investments are ones that are likely to be similar in scale and type to those needed to support future Station Area development, but are likely to differ somewhat from the specific infrastructure investments that will ultimately be adopted for the Station Area. Information about the Representative Infrastructure Studies is presented in Section 3 of the Fiscal Impacts and Community Benefits Technical Memo. The Fiscal Impact model assigns all representative infrastructure investments either to development projects or to the City, roughly following City policy. Any assumptions about parcel- and quadrant-level development and phasing included in the studies are hypothetical and not meant to presuppose decision-making by private landowners or the actions of the market. The representative investments identified in the Infrastructure Studies are distinct from and should not be construed as preferred plan recommendations or final project configurations, which will be developed in later stages of planning and are subject to City Council approval.

Key Contacts

City of Kirkland Project Lead: Allison Zike

Consultant Project Lead: Mithun

Fiscal Impacts and Community Benefits Supplemental Study Technical Memo

Lead Author: BERK; Contributors: EcoNorthwest, Fehr and Peers, Mithun

Representative Infrastructure Studies

[Appendix 1. Supplemental Transportation Study](#) Lead Author: Fehr and Peers

[Appendix 2. Supplemental Water and Sewer Study](#) Lead Author: RH2

[Appendix 3. Supplemental Stormwater Memo](#) Lead Author: RKI

Memorandum

Date: October 12, 2021

To: Allison Zike, Jeremy McMahan, Joel Pfundt, and Thang Nguyen, City of Kirkland

CC: Erin Christensen Ishizaki, Brad Barnett, and Becca Book, Mithun

From: Kendra Breiland and Team, Fehr & Peers

Subject: Kirkland 85th Station Area Plan – Supplemental Transportation Summary

SE20-0719.01

As part of the Mithun project team, Fehr & Peers is supporting the City of Kirkland in providing supplemental information to understand the community benefits, tradeoffs, and fiscal impacts of different alternatives for the I-405/NE 85th Street Station Area Plan (SAP) from the perspective of transportation. This memo and attached exhibits present the findings of our analysis, spanning the following topics:

- Travel modeling for the two new future year alternatives: June Alternatives A and B
- Traffic operations analysis for June Alternatives A and B within the study area, including interchange operations
- Transit analysis for June Alternatives A and B
- Analysis of the comfort of facilities for people walking and biking in the study area with existing and committed¹ transportation investments and how that could change with recommended investments for the SAP
- Analysis of how far people can comfortably walk or bike within 5, 10, and 15-minutes of the proposed station with existing and committed transportation investments and how that could change with recommended investments for the SAP
- Potential package of investment strategies to support full implementation of June Alternatives A and B:
 - Roadway geometric & operational changes
 - Implementation of a robust transportation demand management strategy
 - Transit access & speed and reliability considerations

¹ Committed projects are transportation infrastructure, such as sidewalks, trails, and bike lanes that are likely to move forward independent of the 85th Street Station Area Plan.



- System improvements to improve conditions for walking and biking

This memo has been revised based on feedback from City staff and the Transportation Commission on the merits of the proposed package of investment strategies in meeting the City's vision for the SAP.

Land Use Discussion

Based on public comment and community feedback, a charrette held with City staff in May, and guidance from the City Council and Planning Commission, two alternatives were developed (known as the June Alternatives). These June Alternatives narrow the range of alternatives studied in the DSEIS in the following ways:

- Remove the level of growth shown in DSEIS Alternative 3 from further consideration
- Use a revised version of DSEIS Alternative 1 as the lower limit of growth to be studied (June Alternative A: Current Trends)
- Use a reduced version of DSEIS Alternative 2 as the upper limit of growth to be studied (June Alternative B: Transit Connected Growth)

These scenarios represent a range of possibilities to be studied for the Station Area, defined by the total potential growth in employment and residential housing units that the City of Kirkland could plan for over the next two decades.

June Alternative A: Current Trends

This alternative maintains existing zoning heights throughout the district and slightly adjusts the assumed 2044 growth projections to reflect current market trends, showing more jobs, and only slightly more housing than DSEIS Alternative 1 (**Exhibit 1**). The additional jobs were studied in portions of the study area currently zoned for more intensive development.

Exhibit 1: June Alternative A "Current Trends" (Growth through 2044)

Quadrant	Households	Employment
NW	515	1,164
NE	1,104	3,918
SW	710	3,787
SE	600	3,449
Totals	2,929	12,317

Source: Mithun/EcoNW, 2021



June Alternative B: Transit Connected Growth

This alternative is aligned with the overall SAP growth framework in the Initial Concepts and incorporates elements shown in the commercial corridors of DSEIS Alternative 3 into the overall land use pattern established in DSEIS Alternative 2. The intent of this strategy is to:

- Optimize for workforce and affordable housing, in particular the number of units provided through linkage fees and/or inclusionary zoning.
- Attract new jobs to foster economic activity and meet Citywide targets.
- Balance the distribution of commercial-focused development across the study area.
- Foster an environmentally-sound land use pattern that helps achieve the City's sustainability goals.

June Alternative B responds to the public comment heard during the DSEIS comment period and the May 26, 2021 Council Listening Session. Although a wide range of comments were shared, many participants reiterated a desire to maintain existing residential character, and concerns regarding the maximum allowable zoning heights proposed in DSEIS Alternative 3. June Alternative B only studies increased allowable heights in areas that provide clear benefits to the community and take advantage of regional transit connections. To that end, several areas where height increases had been proposed as part of DSEIS Alternative 2 and 3 have been removed from consideration in this alternative. These include areas that are unlikely to redevelop due to market forces, are limited by development feasibility, or are constrained by other considerations.

This alternative results in similar household growth to DSEIS Alternative 2, but lower overall employment, showing a better jobs-housing balance (**Exhibit 2**). The Southwest Quadrant has lower growth numbers, closer to what was proposed for DSEIS Alternative 1.

Exhibit 2: June Alternative B "Transit Connected Growth" (Growth through 2044)

Quadrant	Households	Employment
NW	568	1,561
NE	2,670	8,660
SW	916	3,356
SE	3,998	9,174
Totals	8,152	22,751

Source: Mithun/EcoNW, 2021



Overall Objectives for Both Alternatives

For both June Alternatives, the project team has been charged with identifying necessary infrastructure and policies that support achieving the following objectives related to transportation:

- Preserve the functionality of NE 85th Street, while enhancing and expanding its role as an urban, multimodal street.
- Incorporate transportation improvements that preserve community character, including minimizing significant changes such as road widening in areas outside of where proposed growth is occurring.
- Accommodate transit effectively along NE 85th Street and other streets in the study area.
- Establish a low-street priority bike and pedestrian network that serves the full study area

The remainder of this memo describes the travel modeling and mobility analysis conducted to identify a transportation system that would achieve these objectives.

Travel Demand Modeling and Forecasting

Fehr & Peers incorporated land use assumptions for future alternatives in the Bellevue-Kirkland-Redmond (BKR) travel demand model to fully capture the resulting impact on traffic operations in the station area. The alternatives considered in the travel modeling include:

- 2035 No Action Alternative from the DSEIS
- 2044 Alternative 2 from the DSEIS
- 2044 June Alternative A (identified by Kirkland City Council in June 2021)
- 2044 June Alternative B (identified by Kirkland City Council in June 2021)

As discussed in the prior section, June Alternative A represents 2044 conditions with similar development patterns to the 2035 No Action Alternative. Similarly, June Alternative B represents 2044 conditions but with greatly increased office employment and housing in the study area relative to the No Action Alternative. June Alternative B represents a refinement to Alternative 2, which was evaluated in the DSEIS.

The BKR travel demand model was used to develop traffic volume forecasts for future alternatives based on the transportation infrastructure envisioned in the 2035 Comprehensive Plan and respective land use forecasts. Prior to the modeling process, MXD+, a trip generation tool that accounts for the variation in land use type and density, provided estimates of new vehicle trips for the future alternatives. **Exhibit 3** shows the net new vehicle trips for each alternative by quadrant of the station area, as well as the single occupancy vehicle (SOV), carpool, and transit mode share estimates in the BKR travel model for each scenario. Of note, while the mode share estimates are relatively similar among future year alternatives (due to consistent assumptions about transit



services and parking charges in the BKR travel model), the number of vehicle and transit trips vary greatly due to the differences in development intensity assumed under each alternative.

Exhibit 3: PM Peak Hour Vehicle Trip Generation using MXD+/BKR Model Mode Share Estimates

Quadrants	2035 No Action	2044 Alternative A	2044 Alternative B	2044 Alternative 2
NW	930	930	1,280	1,000
NE	3,850	4,480	4,920	10,110
SW	1,910	1,850	2,360	2,190
SE	3,630	3,880	7,580	4,300
Total	10,320	11,140	16,140	17,600
Mode Share Estimates (SOV/Carpool/Transit)	70%/23%/7%	70%/22%/8%	71%/21%/8%	72%/21%/7%

Source: Fehr & Peers, 2021

Consistent with land use trends, Alternative A includes modest growth in vehicle trips in the NE and SE quadrants. The total vehicle trips generated by Alternative B and Alternative 2 are similar; however, there is a substantial shift in which quadrants the land use growth is located (from NE to SE). These results were used to calibrate the BKR travel demand model to reflect similar growth in trips. Additional adjustments were also made to the BKR travel demand model for adequate distribution of trips, particularly trips accessing the Lee Johnson site. **Exhibits 4 and 5** show the modeled increase in roadway volumes that would occur under Alternative 2 and Alternative B relative to the No Action Alternative. As the exhibits show, Alternative B features a more even distribution of trips than Alternative 2.



Exhibit 4: Traffic Volume Increase (2035 No Action vs. 2044 Alternative 2)

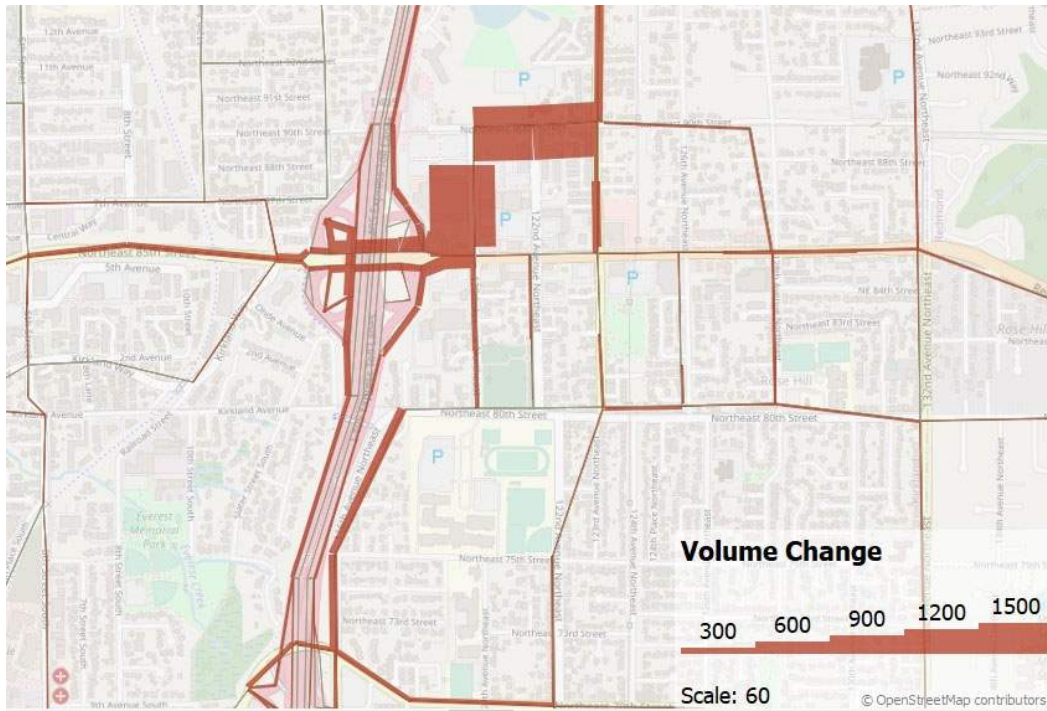
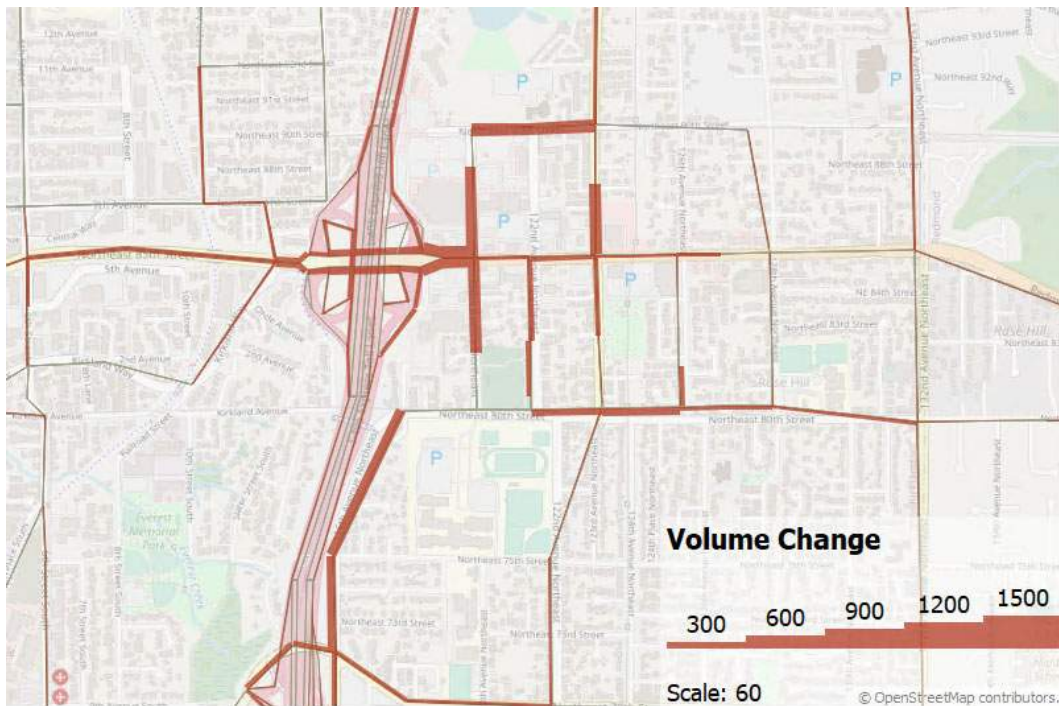


Exhibit 5: Traffic Volume Increase (2035 No Action vs. 2044 Alternative B)





Traffic volume forecasts from the refined versions of the BKR model were then used to evaluate traffic operations at the following intersections (**Exhibit 6a**):

1. NE 90th Street & 124th Avenue NE (Intersection 8 in DSEIS)
2. NE 85th Street & 6th Avenue NE (Intersection 1 in DSEIS)
3. NE 85th Street & 120th Avenue NE (Intersection 6 in DSEIS)
4. NE 85th Street & 124th Avenue NE (Intersection 9 in DSEIS)
5. NE 83rd Street & 120th Avenue NE
6. NE 80th Street & 118th Avenue NE
7. NE 80th Street & 122nd Avenue NE
8. NE 70th Street & 116th Avenue NE

Exhibit 6b shows the original list of intersections evaluated in the DSEIS.

The map displays the proposed transit station locations for the NE 85th Street area in Portland, Oregon. The stations are numbered 1 through 8, with their locations relative to NE 85th Street and NE 124th Avenue NE as follows:

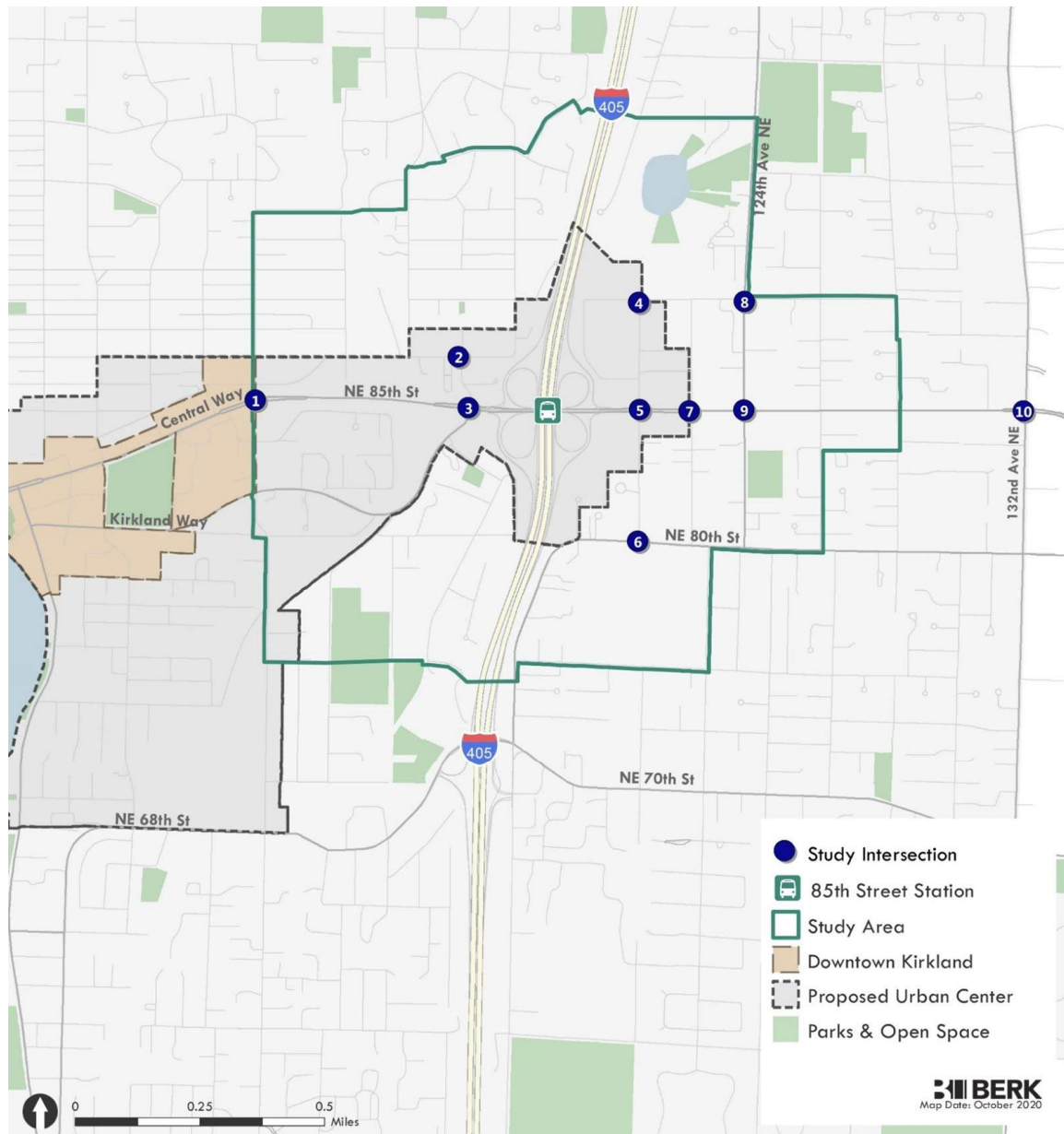
- 1: NE 90th Street & 124th Avenue NE
- 2: NE 85th Street & 6th Street
- 3: NE 85th Street & 120th Avenue NE
- 4: NE 85th Street & 124th Avenue NE
- 5: NE 83rd Street & 120th Avenue NE
- 6: NE 80th Street & 118th Avenue NE
- 7: NE 80th Street & 122nd Avenue NE
- 8: NE 70th Street & 116th Avenue NE

The map also shows NE 85th Street, NE 80th Street, NE 70th Street, and NE 68th Street, along with NE 124th Avenue, NE 122nd Avenue, NE 118th Avenue, NE 116th Avenue, and NE 114th Avenue. A scale bar indicates 0 to 0.5 miles, and a north arrow is present.

- Study Intersections
- Study Area
- Parks & Open Space



Exhibit 6b: Study Intersections Originally Considered in the DSEIS



Intersection Level of Service

Intersection level of service (LOS) is a concept used to describe traffic operations from the driver's perspective. LOS is defined by intersection delay in seconds and ranges from LOS A with no congestion and little delay to LOS F with substantial congestion and delay. Traffic operations were analyzed using the Synchro 10 software package and Highway Capacity Manual (HCM) 6th Edition methodology. We performed PM peak hour analysis for all intersections shown in **Exhibit 6a**, and AM peak hour analysis was exclusive to two intersections (NE 85th Street & 120th Avenue NE and



NE 85th Street & 124th Avenue NE). The project team modeled the existing (2019) conditions and each of the future alternatives bulleted below.

- 2044 Alternative A
- 2044 Alternative B
- 2044 Alternative 2

The modeled Synchro networks reflect traffic volumes (passenger vehicles, heavy vehicles, and pedestrian and bicycle counts) and roadway network assumptions, including segment and intersection geometry and signal timings that align with each scenario. For signalized and all-way stop controlled intersections, LOS is based on the average delay of all movements. For side street stop-controlled intersections, LOS is based on the movement with the highest delay. **Exhibit 7** summarizes the LOS and delay thresholds specified in the Highway Capacity Manual, which is a standard methodology for measuring intersection performance.

Exhibit 7: LOS and Delay Thresholds for Signalized and Unsignalized Intersections

LOS	Signalized Intersections (Delay in Seconds)	Unsignalized Intersections (Delay in Seconds)
A	≤ 10	≤ 10
B	> 10 to 20	> 10 to 15
C	> 20 to 35	> 15 to 25
D	> 35 to 55	> 25 to 35
E	> 55 to 80	> 35 to 50
F	> 80	> 50

Source: Highway Capacity Manual (Transportation Research Board), 2016.

Findings

Exhibit 8 reports the findings of the intersection analysis conducted by the methodologies described above. Key findings include:

- All study intersections are currently operating within the City's or WSDOT's standards.
- Under Alternative A, which represents current growth trends continuing through 2044, the following intersections would fail to meet adopted LOS standards:
 - **NE 90th Street & 124th Avenue NE:** this intersection would operate at LOS F due to land use growth anticipated in the NE quadrant and the lack of streets connecting north of NE 90th Street.



- **NE 85th Street & 6th Street:** this intersection will operate at LOS F under all future year alternatives due to planned modifications to better accommodate transit, walking, and biking modes.
- Alternative B considered two transportation scenarios for the southeast quadrant, with allowed development at 250 feet maximum height:
 - The first assumes only one general access driveway² to the Lee Johnson site via NE 83rd Street to a signalized intersection with 120th Avenue NE;
 - The second scenario considers the same access as above, plus an additional south access to the site along 118th Avenue NE, which connects to 80th Street NE with a newly signalized intersection.
- The reconfiguration of land use growth in Alternative B would substantially improve intersection operations relative to Alternative 2. However, the land use growth envisioned by this alternative would increase vehicle trips on the roadway network (compared to existing conditions or Alternative A/No Action scenario) such that the following intersections would not meet adopted LOS standards under Alternative B:
 - **NE 85th Street & 6th Street:** this intersection will operate at LOS under all future year alternatives due to planned modifications to better accommodate transit, walking, and biking modes. Moreover, additional growth throughout the SAP would result in higher delays than are anticipated for Alternative A.
 - **NE 85th Street & 120th Avenue NE:** this intersection could not meet City standards without mitigation, as this is the main access point for growth in the SE quadrant.
 - **NE 90th Street & 124th Avenue NE:** this intersection could not meet City standards without mitigation, as this is the main access point for growth in the NE quadrant.
 - **NE 83rd Avenue & 120th Avenue NE:** under the scenario in which this intersection serves as the only general access to the Lee Johnson site, it will require signalization (as assumed) as well as additional lanes.
 - **NE 80th Street & 120th Avenue NE:** under the scenario in which only one general access is provided to the Lee Johnson site along NE 83rd Avenue, increased traffic through this intersection would result in LOS F delays without mitigation.
 - **80th Street & 118th Avenue NE:** similarly, under a single access point scenario to the Lee Johnson site, this intersection would also be impacted by additional traffic along 80th Street, although it is unclear whether a signal would be warranted to address the side street delay.

² Assumes the Lee Johnson site's direct access to NE 85th Street would be limited to a controlled access point for select trip or vehicle-types.

Exhibit 8: LOS Results for Evaluated Alternatives (Without Mitigation)

ID	Intersection	LOS Standard	Peak Hour	2019 Existing	2044 Alternative A	2044 Alternative B-1: 2 Driveways	2044 Alternative B-2: 1 Driveway	2044 Alternative 2 (DSEIS Results)
1	NE 90th Street & 124th Avenue NE	D	PM	C / 21	F / 83	F / 158	F / 158	F / 380
2	NE 85th Street & 6th Street	E	PM	D / 41	F/109^	F / 145^	F / 145^	F / 138^
3	NE 85th Street & 120th Avenue NE	D	AM PM	C / 22 C / 21	C / 24 D / 39	F/ 114 F/ 113	F/ 114 F/ 113	F / 572 F / 616
4	NE 85th Street & 124th Avenue NE	D	AM PM	C / 29 D / 35	C / 33 D / 41	D / 39 D / 45	D / 39 D / 45	D / 35 E / 59
5	NE 83rd Street & 120th Avenue NE	D	PM	B / 11	B / 13	B / 18*	B / 20**	A / 8*
6	NE 80th Street & 118th Avenue NE	D	PM	B / 15	C / 20	A / 8**	F / 94	A / 6**
7	NE 80th Street & 120th Avenue NE	E	PM	B / 11	B / 14	B / 13	F / 222	B / 20
8	NE 70 th Street & 116 th Avenue NE	E	PM	C / 28	D / 35	E / 75	E / 75	E / 67

Source: Fehr & Peers.

Notes:

^ Intersection reconfiguration with transit queue jump and dedicated WBR turn pocket

* Signalized without any geometric improvements

**Signalized with EBL, SBR turn pockets

Proposed Geometric Mitigation Strategies

Exhibit 9 summarizes the results of mitigations tested to address impacted intersections. The following summarizes modifications to the roadway network that would be necessitated by traffic impacts measured for Alternatives A or B.

- **NE 90th Street & 124th Avenue NE:** This intersection is impacted under both Alternatives A and B. Identified mitigation for this intersection includes adding northbound and southbound through lanes and restriping the eastbound through lane to be an eastbound through/left/right lane with east/west split phasing. The additional northbound lane would need to be carried through to north of NE 90th Street. With these improvements in place, the intersection would meet the City's LOS standard under both Alternatives A and B.
- **NE 85th Street & 120th Avenue NE:** Given high delays measured at this intersection under Alternative B during both the AM and PM peak hours, we tested several potential mitigation scenarios to address capacity needs. Based on a site visit, as well as feedback from City staff and the Transportation Commission, two potential geometric mitigation options were identified:
 - Option 1 (See **Exhibit 10a**):
 - Adding an eastbound right turn lane from the I-405 off ramp to 120th Avenue NE to facilitate trips for future intensive development
 - Removal of the western crosswalk of NE 85th Street (since pedestrians would have to cross at least eight vehicle travel lanes with planned widening related to both the interchange and eastbound right turn lane proposed above)
 - Restriping the northbound approach to include a left turn lane and a shared left/through/right turn lane
 - Restriping the southbound approach to include dedicated left, through, and right lanes, with the right turn lane protected by a "pork chop" to create a free movement³
 - Revising the signal to provide northbound/southbound split phasing to allow for left turn movements out of either lane from the south approach
 - Option 2 (See **Exhibit 10b**):
 - Restriping the northbound approach to include a left turn lane and a shared left/through/right turn lane
 - Restriping the southbound approach to include dedicated left, through, and right lanes, with the right turn lane protected by a "pork chop."

³ In designing this improvement it would be important to consider weaving interactions between traffic making the southbound free right and westbound traffic accessing northbound I-405. The viability of installing a pork chop should also be evaluated in final intersection design.



Unlike Option 1, the right turn would not be a free movement since the western crosswalk would remain.

- Revising the signal to provide northbound/southbound split phasing to allow for left turn movements out of either lane from the south approach
- **NE 83rd Street & 120th Avenue NE:** With the allowed development in the southeast quadrant at a maximum height of 250 feet anticipated under Alternative B, this intersection would need to be signalized. If this intersection serves as the only primary entrance (and a southern entrance via 118th Avenue NE is not provided), this intersection requires additional geometric modification. There are various ways that this intersection could be configured. For the purposes of this modeling, it was assumed that the west leg would include a left-turn pocket, plus a shared left/through/right lane with all other approaches served by one lane. This would require that the northbound left turn lane at the 85th Street intersection be extended to provide a second northbound receiving lane. These improvements are illustrated in **Exhibits 10c**.
- **NE 80th Street & 118th Avenue NE:** Based on delay analysis, this intersection would require mitigation under Alternative B regardless of whether 118th Avenue NE serves as a primary access point. This is due to additional traffic passing through the intersection along 80th Avenue. It should be noted that this intersection is located on a curve and may require additional treatments to ensure safe sight distance. Before constructing a signal, it would also be important to conduct a signal warrant analysis.
- **NE 80th Street & 120th Avenue NE:** If the Lee Johnson site has only one primary entrance (via 83rd Street & 120th Avenue NE), this intersection would require geometric mitigation (a southbound left turn pocket) to maintain the City's LOS standard. This improvement, illustrated in **Exhibit 10d**, could be a standalone improvement, as it would better serve areawide circulation.

No additional geometric modifications have been identified to address impacts at NE 85th Street & 6th Street.

Exhibit 9: LOS Results for Evaluated Alternatives with Geometric Mitigations

ID	Intersection	LOS Standard	Peak Hour	2019 Existing	2044 Alternative A	2044 Alternative B: 2 Driveways	2044 Alternative B: 1 Driveway	2044 Alternative B: 1 Driveway (Mitigated)
1	NE 90th Street & 124th Avenue NE	D	PM	C / 21	F / 83	F / 158	F / 158	D / 52
2	NE 85th Street & 6th Street	E	PM	D / 41	F/109^	F / 145^	F / 145^	same
3	NE 85th Street & 120th Avenue NE	D	AM PM	C / 22 C / 21	C / 24 D / 39	F/ 114 F/ 113	F/ 114 F/ 113	F / 104 F / 88 (Mit. Option 1) F / 126 F / 96 (Mit. Option 2)
4	NE 85th Street & 124th Avenue NE	D	AM PM	C / 29 D / 35	C / 33 D / 41	D / 39 D / 45	D / 39 D / 45	same
5	NE 83rd Street & 120th Avenue NE	D	PM	B / 11	B / 13	B / 18*	B / 20**	D / 37
6	NE 80th Street & 118th Avenue NE	D	PM	B / 15	C / 20	A / 8***	F / 94	A / 5*
7	NE 80th Street & 120th Avenue NE	F	PM	B / 11	B / 14	B / 13	F / 222	D / 52
8	NE 70 th Street & 116 th Avenue NE	E	PM	C / 28	D / 35	E / 75	E / 75	same

Source: Fehr & Peers.

Notes:



* Signalized without any geometric improvements

** Signalized with EBL, NBL, SBR turn pockets

*** Signalized with EBL, SBR turn pockets

^ Intersection reconfiguration with transit queue jump and dedicated WBR turn pocket

Exhibit 10a: Potential Geometric Modifications to NE 85th Street/120th Avenue NE

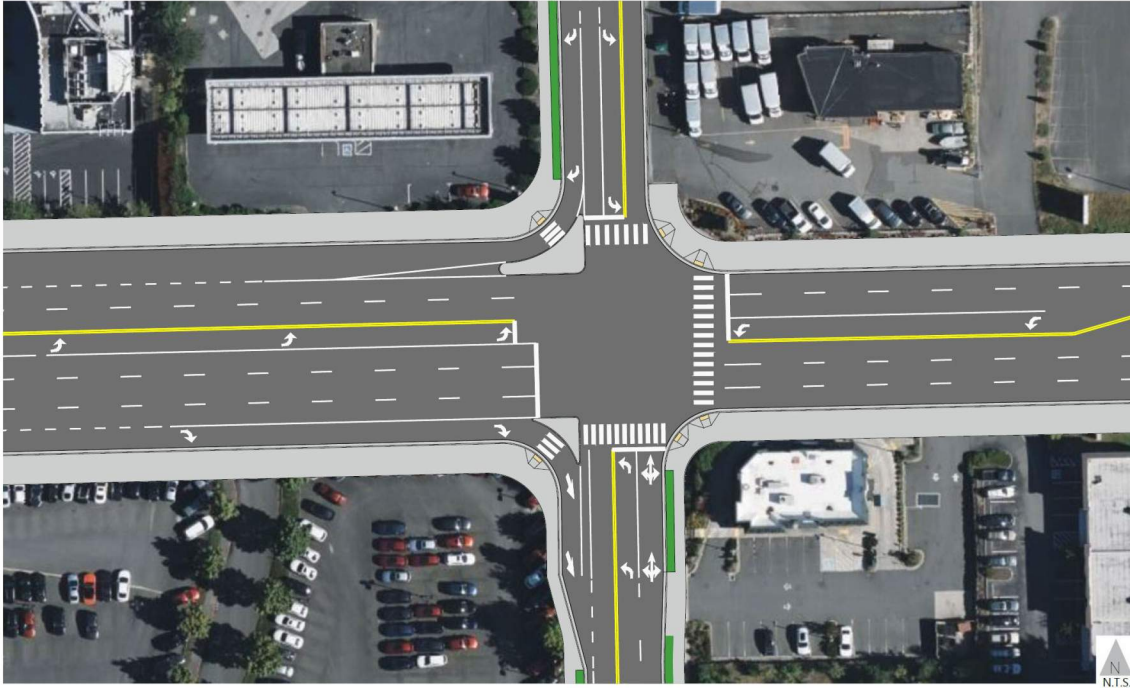


Exhibit 10b: Potential Geometric Modifications to NE 85th Street/120th Avenue NE

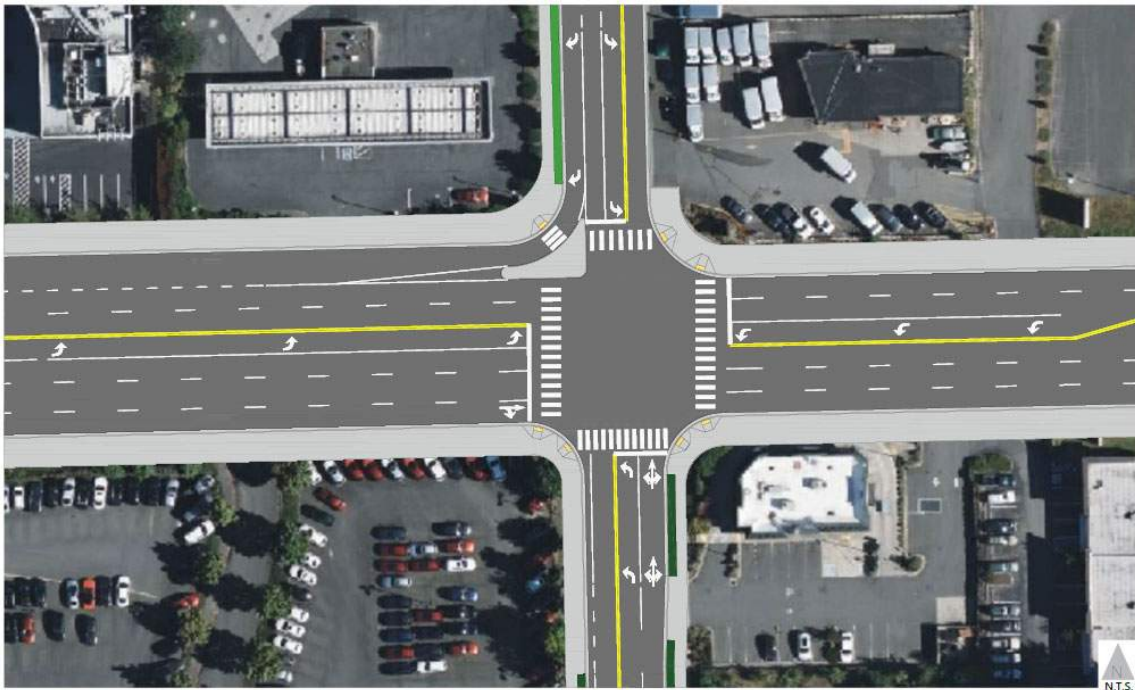




Exhibit 10c: Potential Geometric Modifications to NE 83rd Street/120th Avenue NE

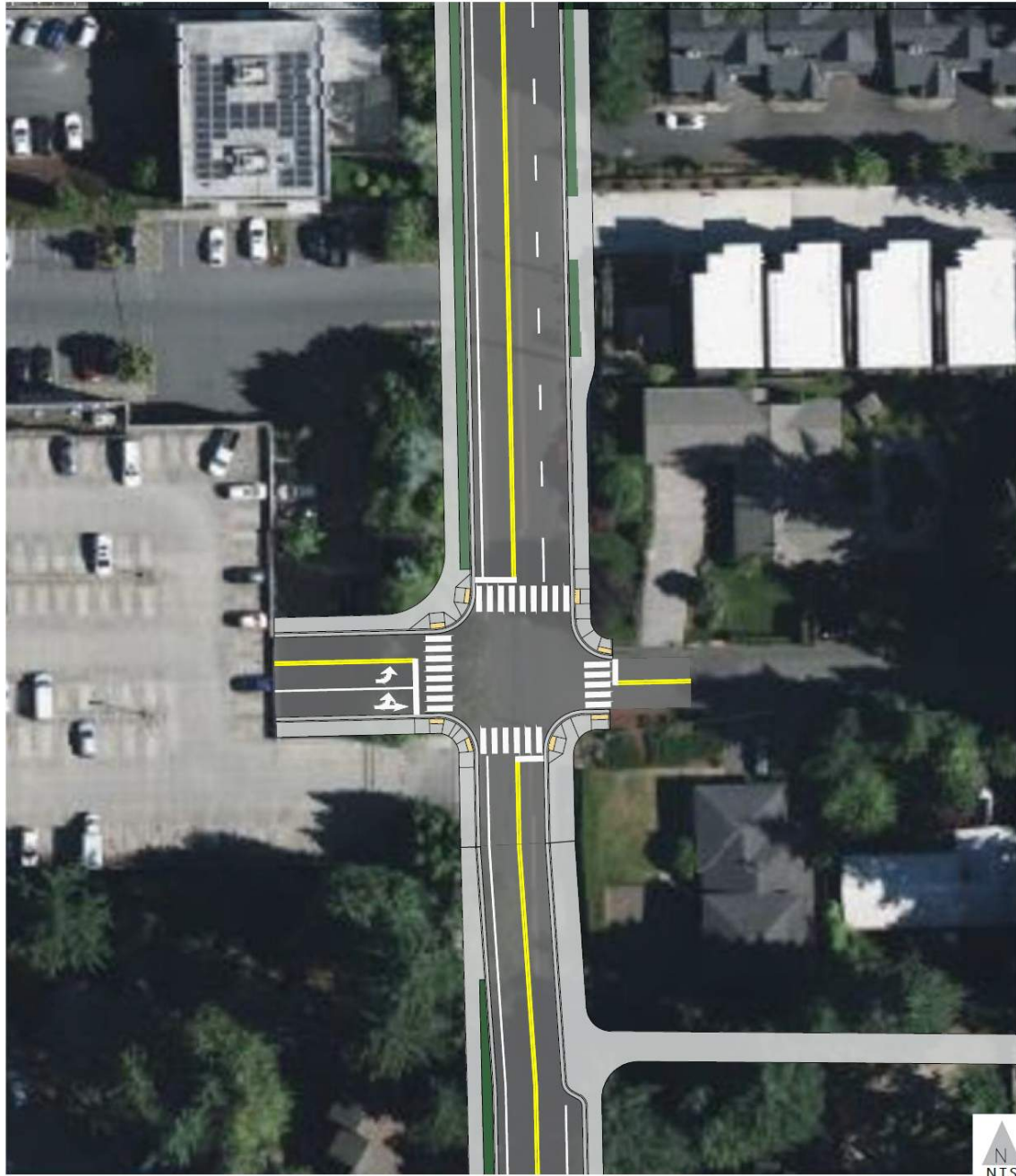
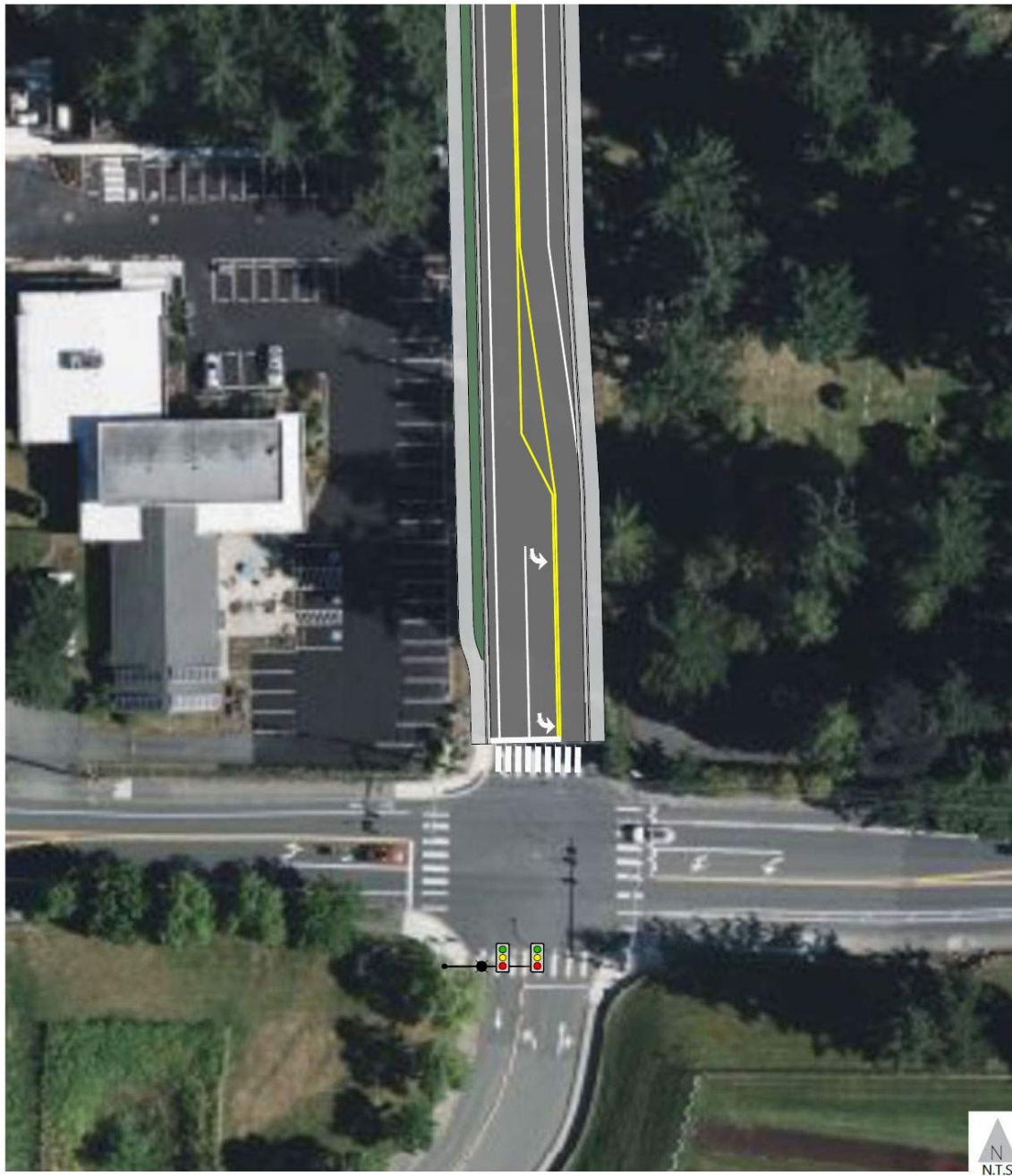




Exhibit 10d: Potential Geometric Modifications to NE 80th Street/120th Avenue NE





NE 85th Street Interchange Analysis

The operations at the I-405/NE 85th Street interchange were evaluated using the microsimulation traffic models developed by WSDOT for their interchange study. This sensitivity test was conducted to determine whether the additional land use growth allowed under the 85th Station Area Plan would affect the operations at the redesigned interchange. The Vissim model provided by WSDOT simulates NE 85th Street between 6th Street and 124th Avenue NE, including the freeway ramps to and from I-405 as well as the BRT station and access points.

Details about our analysis and overall findings are included in **Appendix A**. Overall, the Station Area Plan will result in slightly higher delays and queuing along NE 85th Street in the future than estimated by WSDOT in their interchange analysis. However, the increases do not significantly affect the operations of the interchange or the freeway mainline.

Transportation Demand Management Strategies

The trip generation estimates produced from the BKR model and MXD trip generation tool predict mode share based primarily on land use and demographic information but do not take additional TDM measures into account. This approach provides a conservative estimate of the transportation conditions for each alternative in the absence of robust TDM measures. However, additional mitigation measures could be considered to modify and expand current TDM strategies. These strategies would not only help to reduce driving, which in turn lessens traffic congestion and greenhouse gas impacts, but fundamentally align with the City's values and vision for the station area.

Potential TDM Strategies

A comprehensive set of strategies were considered by City staff to select those that are most likely to be implemented both because they are within the City's control and consistent with the City's vision for the study area; these are listed as Tier 1 strategies below. While these actions are within the City's control, many would require investment of additional City staff time or code revisions to implement. An additional set of strategies, listed below as Tier 2, could also be pursued but would either be led by developers or would require additional partnerships beyond sole City control.

Tier 1 TDM Strategies

- Unbundle parking to separate parking costs from total property cost, allowing buyers or tenants to forgo buying or leasing parking spaces if they do not park a car.
- Revise parking code to reduce the amount of parking new developments must provide or implement parking maximums to further reduce the amount of parking supply in the



Study Area beyond what is assumed under Alternatives 2 and 3. This would limit the number of parking spaces which can be built with new development.

- Implement managed on-street parking strategies (e.g., designate special use zone for activities such as loading/unloading or emergencies, implement time restricted parking, and charge for parking).
- Require new development to charge for parking off-street.
- Implement requirements for robust monitoring and management of parking and the TDM measures in the Study Area to ensure that people are not parking in the surrounding neighborhood to avoid these parking management measures.
- Encourage or require transit pass subsidies from developers/property owners.
- Expand upon Kirkland's Green Trip program to utilize commute marketing programs to advertise different commuting options and encourage walking, biking, transit use, carpooling, vanpooling, or other means of travel.
- Utilize an Emergency Ride Home program to provide a taxi voucher or other way for employees to travel home if an emergency or unexpected late work makes them miss their normal transit, carpool, or bike ride home.
- Accommodate bicyclists by requiring development to provide secure, covered, and convenient bicycle parking at office and residential buildings; showers and lockers at offices; and public repair stations.
- Utilize a Ridematch Program to assist potential carpoolers in finding other individuals with similar travel routes. These may be open or closed systems, but generally a larger population will have more potential matches.

Tier 2 TDM Strategies

- Provide shared off-street parking with new developments.
- Provide private shuttle service or gondola as a first mile/last mile solution to make the 85th Street Station more accessible from Downtown Kirkland, the 6th Street Google campus, Kirkland Urban, and other destinations, and to provide an attractive transportation alternative for locations that are less served by fixed-route transit. Two shuttle routes should be explored – one to Downtown Kirkland and Kirkland Urban using NE 87th Street/7th Avenue and 5th Street, and one that goes to the 6th Street Google Campus and Houghton/Everest Neighborhood Center at 108th Avenue NE & NE 68th Street using the Cross Kirkland Corridor. This could start as a pilot program in partnership with Uber or Lyft to provide subsidized rides to gauge demand for a shuttle. Ultimately, Gondola service routes should be further explored connecting the station area to Downtown Kirkland using the NE 85th Street/Central Way corridor with three stations - the first station would be in the vicinity of the NE 85th Street/I-405 In-line Station and Interchange, the second station could be located in the northeast corner of the 6th Street



and NE 85th Street Intersection and the third station would be in the vicinity of the downtown Kirkland Transit Center.

- Encourage or require transit pass provision programs for residents— King County Metro has a Passport program for multifamily housing that is similar to its employer-based Passport program. The program discounts transit passes purchased in bulk for residences of multifamily properties.
- Partner with Transportation Network Companies (TNCs) such as Uber or Lyft to provide pooled ridesharing options, ideally as a last-mile connection to transit or as an aspect of an Emergency Ride Home program.
- Launch a bikeshare or other micromobility system in Kirkland.

Efficacy of TDM Strategies

Because the Tier 1 strategies are most likely to be implemented, the quantitative efficacy of those strategies was estimated and the resulting trip reductions were incorporated into the traffic operations analysis to understand how the strategies would affect operations at the intersection level. Tier 2 strategies could still be pursued but have not been quantified in terms of their effects on traffic operations because they are more speculative at this time.

To evaluate the potential efficacy of the proposed TDM measures, Fehr & Peers used its TDM+ tool. TDM+ is a tool that allows the user to estimate how a set of TDM strategies will affect vehicle trip generation. The tool uses a realistic, evidence-based assessment of how similar strategies have worked in similar locations. By incorporating nuances such as the urban form and limiting the measures included to those with well-documented research, the TDM+ approach allows for a high level of technical rigor and defensibility when quantifying a program's potential to reduce vehicle trips or vehicle miles.

This quantitative approach emerged from a 2010 partnership with the California Air Pollution Control Officers Association (CAPCOA) to develop a comprehensive set of guidelines for assessing and quantifying reductions in vehicle miles traveled and greenhouse gas emissions associated with more than 50 TDM strategies, both individually and in combination.⁴ The CAPCOA report is a resource for local agencies to quantify the benefit, in terms of reduced travel demand, of implementing various TDM strategies. Working with the Bay Area Air Quality Management District, the evaluation methods were validated by comparing the strategies to the San Francisco Bay Area. Fehr & Peers has continued to update TDM+ since the initial CAPCOA report, with the most recent iteration incorporating information from new studies published through 2018.

Exhibit 11 summarizes the range of estimated efficacy for each of the Tier 1 strategies. Combined these strategies have an estimated overall efficacy of 9 to 38 percent, with 13 percent

⁴ California Air Pollution Control Officers Association, Quantifying Greenhouse Gas Mitigation Measures. August 2010.



recommended for typical planning applications.⁵ In **Exhibit 12**, we apply these strategies to our traffic operations analysis to see the combined efficacy of geometric and TDM strategies in mitigating transportation impacts. As the exhibit shows, TDM serves to reduce delays, although the intersections of NE 85th Street with 6th Street and 120th Avenue NE would have delays exceeding City standards.

⁵ Full implementation of Tier 2 strategies could result in vehicle trip reductions that range from 10-40%, with 16% recommended for typical planning applications. It is worthwhile to note that some of the measures in the Tier 2 list, including shared off-street parking and implementation of a gondola, could not be quantified.



Exhibit 11: Tier 1 Transportation Demand Management Strategies

TDM Reduction Summary Report: Kirkland 85th Station Area Plan				
Parking	VMT % Reduction by Land Use			
	Office	Residential	Retail	Other
Increased Off-Street Fees	6% to 11%	6% to 11%	6% to 11%	
Increased On-Street Fees	1% to 5%	1% to 5%	1% to 5%	
Unbundled Parking	—	—	—	
Pay-as-you-Go Parking Rates				
Parking Supply	up to 4%	4% to 4%	up to 4%	
Transit	Office	Residential	Retail	Other
Subsidies	up to 2%	—	—	
Transit Frequency				
Transit Coverage				
Private Point-to-Point Shuttles				
Last Mile Shuttle				
Commute Programs	Office	Residential	Retail	Other
Commuter Incentives				
Commute Marketing Program	2% to 16%	3% to 21%	up to 3%	
Emergency Ride Home	up to 1%	—	—	
TNC Partnerships				
Bike and Walk	Office	Residential	Retail	Other
Secure Parking	—	up to 1%	—	
Showers & Lockers	—	—	—	
End of Trip Repair Stations	—	up to 1%	—	
Pedestrian-Oriented Design				
Bikeshare System & Subsidies				
Ride	Office	Residential	Retail	Other
Carpool/Vanpool Incentives				
Ridematch Program	up to 6%	up to 6%	up to 6%	up to 6%
Carshare				
Carshare Subsidy				
Total of All Measures	9% to 38%	13% to 40%	7% to 22%	-



Exhibit 12: Transportation Demand Management Strategies Efficacy in Mitigating Intersection Impacts

ID	Intersection	LOS Standard	Peak Hour	2019 Existing	2044 Alternative A	2044 Alternative B: 2 Driveways	2044 Alternative B: 1 Driveway	2044 Alternative B: 1 Driveway (TDM + Geometric Mitigations)
1	NE 90th Street & 124th Avenue NE	D	PM	C / 21	F / 83	F / 158	F / 158	D / 46
2	NE 85th Street & 6th Street	E	PM	D / 41	F/109^	F / 145^	F / 145^	F / 139^
3	NE 85th Street & 120th Avenue NE	D	AM PM	C / 22 C / 21	C / 24 D / 39	F/ 114 F/ 113	F/ 114^^ F/ 113	F / 85^^ E/ 80
7	NE 80th Street & 120th Avenue NE	F	PM	B / 11	B / 14	B / 13	F / 222	B / 13

Source: Fehr & Peers.

Notes:

* Signalized without any geometric improvements

** Signalized with EBL, NBL, SBR turn pockets

*** Signalized with EBL, SBR turn pockets

^ Intersection reconfiguration with transit queue jump and dedicated WBR turn pocket

^^ Assumes Option 1 geometric mitigations

TDM Strategy Implementation

As noted above, implementation of TDM strategies would require investments by the City in several forms, including:

- City staff time to develop code revisions and manage compliance, for example requiring developers to provide a transit subsidy to tenants.
- Creation of new staff positions to implement and operate new programs, for example on-street parking policing and management and off-street parking program implementation.
- Capital investments, for example micromobility charging stations.

These costs, both for initial start-up and ongoing program management, should be considered within the financial evaluation of the plan.

Transit Analysis

As of 2021, the Station Area is served by 14 transit routes, as summarized in **Exhibit 13**.

Exhibit 13: Transit Routes in the Station Area Plan (2021)

Route Number	Agency	Route Description	PM Headway (min)
230	King County Metro	North Creek - Bothell - Juanita - Kirkland TC	30 - 32
231	King County Metro	Woodinville - Brickyard - Juanita - Kirkland TC	30 - 33
237	King County Metro	Woodinville P&R - Bellevue TC	47
239	King County Metro	UW/Cascadia Coll - Totem Lake TC - Kirkland TC	27 - 36
245	King County Metro	Kirkland Transit Center - Crossroads - Factoria	14 - 16
250	King County Metro	Avondale - Redmond TC - Kirkland TC - Bellevue TC	15 - 16
255	King County Metro	Totem Lake TC-Kirkland TC-UW Link Sta-Univ Dist	7 - 15
257	King County Metro	Brickyard P&R - Downtown Seattle	22 - 36
311	King County Metro	Woodinville - Downtown Seattle	20 - 25
342	King County Metro	Shoreline P&R - Renton TC	28 - 71
424	Community Transit	Snohomish - Seattle	94
532	Sound Transit	Everett - Bellevue	15 - 30
535	Sound Transit	Lynnwood - Bellevue	30
230	King County Metro	North Creek - Bothell - Juanita - Kirkland TC	30 - 32

Source: Fehr & Peers, 2021



Fehr & Peers considered three primary elements to understand potential change to transit conditions under the different land use alternatives: passenger loads, speed and reliability, and access-to-transit. We briefly describe how the growth anticipated by Alternatives A and B influences these transit elements and then present our analysis of the relative impact of each land use alternative on these elements of the transit environment.

- **Passenger load analysis** provides an understanding into how land use growth may generate additional transit ridership and potentially cause overcrowding on routes that access the area.
- The additional vehicles trips land use growth generated within the subarea may cause challenges with **transit speed and reliability**.
- Land use growth also brings new transit riders and a need for enhanced **access-to-transit** solutions

Ridership and Passenger Loads

To evaluate the impact of the future year action alternatives on the transit passenger loads in the study area, Fehr & Peers utilized the 2042 Sound Transit (ST) Model⁶ and bus crowding threshold guidance from King County (KC) Metro⁷. The 2042 ST Model provided PM peak period transit boardings and alightings at stops within a block of NE 85th Street, which were used to determine transit ridership distribution and average transit trips along various routes in the station area. The data was extracted directly from an 'Off-the-shelf ST Model run'; therefore, no new transit ridership modeling was performed for this effort. KC Metro ridership data offered guidance on bus crowding based on available seats on a bus and route frequency to determine if a route can accommodate anticipated passenger loads. However, it should be noted that KC Metro's bus crowding thresholds do not guarantee a seat for every rider on the bus. The thresholds account for an acceptable number of both seated and standing riders.

Consistent with the 85th Station Area Plan DSEIS, an impact was identified based on the following criteria:

- The forecast passenger loads exceed the KC Metro/ST overcrowding threshold on any route in the study area that have passenger loads below the crowding threshold under the No Action Alternative
- The forecast ridership increases the passenger load by at least 5% on a route that already exceeds the guidelines under the No Action Alternative

⁶ The 2042 ST Model closely represents projected 2035 land use, as identified by PSRC LUV.2 forecasts, which are consistent with the Kirkland 2035 Comprehensive Plan reflected in No Action Alternative.

⁷ Bus seat capacity and crowding thresholds from Fall 2018 KCM Ridership Data.



Out of all the routes that run through the study area, only the I-405 BRT has a passenger load factor that exceeds 1.0 in the No Action Alternative. **Exhibit 14** indicates that all the reviewed action alternatives further impact the I-405 BRT due to the new PM peak hour transit trips; transit ridership growth for these alternatives exceeds 15 percent. There is an additional impact on Route 250 for Alternative 2 as a result of substantial (248%) growth in transit ridership and forecast passenger loads above the King County Metro crowding threshold. Alternative B also sees substantial growth, but does not exceed Metro's crowding threshold.

Exhibit 14: Impacted Transit Ridership

Action Alternative	New PM Peak Hour Transit Trips in Station Area	Routes With Passenger Load Factors Above the Threshold	New PM Peak Hour Riders per Route	Passenger Load Factor [^]	Transit Ridership Growth
Alternative A	372	I-405 BRT North	11	1.16	15%
Alternative B	603	I-405 BRT North	18	1.25	24%
Alternative 2	669	Route 250	38	1.06	285%
		I-405 BRT North	20	1.28	26%

Source: Fehr & Peers, 2021

Notes:

[^] Passenger load factor is a ratio of anticipated ridership compared to KC Metro's crowding threshold.

To address the projected overcrowding of buses along the impacted routes in **Exhibit 14**, some riders may slightly shift their commute time to avoid the peak period or access their destination via different routes. Transit agencies also regularly monitor the passenger load factor and adjust scheduling to best accommodate ridership demand. An expanded safe bicycle network to additional areas within the city and region would also help alleviate transit overcrowding by providing alternatives to riding transit.

Transit Speed and Reliability

As shown in the previous traffic operations section, several intersections along NE 85th Street that transit serves will operate at LOS E or worse with the future land use alternatives, including at the intersections with 6th Street and 120th Avenue NE. Additional delay at these intersections may slow down transit and degrade the reliability of service. A queue jump is currently being planned at NE 85th Street and 6th Street to improve transit operations through that intersection. The project stemmed from an initial project identified in ST3 to fund bus-only lanes along NE 85th Street between the I-405 BRT station and Downtown Kirkland. The Kirkland Transit Implementation Plan (KTIP), adopted in early 2019, identified the 6th Street queue jump along with other transit-supportive projects across the city. Several alternatives were reviewed during the KTIP development to identify optimal transit priority solutions along NE 85th Street, including side and



center-running transit lanes between I-405 and 6th Street. However, the transit lane options were removed for further consideration because the transit lanes would provide limited speed and reliability benefits for the substantial cost while potentially constraining pedestrian access and limiting bus station location options. In addition, the KTIP identified the NE 85th Station as a top priority to provide non-motorized access improvements. The KTIP also evaluated a potential queue jump at NE 85th Street and 124th Avenue NE, but the project was not advanced to the final project list in the plan.

Transit Access

The next section of the memo focuses on infrastructure for people walking and bicycling. Many of the improvements have been identified for the purpose of enhancing transit access. Key improvements include:

- Construction of shared use trail connections to transit stops along 85th Street and the BRT station
- Complete street and greenway improvements on key routes accessing transit stops along 85th Street and the BRT station, including 5th Avenue, 7th Avenue/87th Street, 116th Avenue, and 90th Street
- Widened sidewalks along 85th Street throughout the SAP

To create a seamless system of transit access for all users, these investments could be paired with first/last mile rideshare services and enhanced stop amenities along NE 85th Street, recognizing the waiting conditions along a busy corridor (at Kirkland Way, 120th Ave NE, etc.)

Comfort for People Walking and Biking

Fehr & Peers evaluated how well the study area can accommodate people walking and biking under two scenarios:

- **Existing Plus Committed Project Conditions:** This scenario considers transportation infrastructure on the ground today, as well as transportation infrastructure that is likely to be constructed independent of the SAP. Infrastructure assumed under this scenario is mapped in **Exhibit 15**.
- **Recommended Station Area Investments:** This scenario considers all of transportation infrastructure from the prior scenario plus capital investments recommended as part of the SAP to accommodate trip growth anticipated with development, better connect to the BRT station, and/or provide a more complete and low-stress active transportation network. Infrastructure assumed under this scenario is listed below and mapped in **Exhibit 16** and more fully described in the Factsheets, which are **Appendix B** to this memo.



Project Number	Recommended Station Area Investment
1	Lee Johnson East Access (Including 120th Corridor from NE 83rd to NE 85th Street)
2	Lee Johnson South Access
3	NE 80th Street/120th Avenue NE Signal Improvement (Including 120th Corridor from NE 80th to NE 83rd Street)
4	124th Avenue NE Widening
5	NE 85th Street/120th Avenue NE Improvements
6	5th Avenue to Kirkland Way Shared Use Trail
7	5th Avenue Greenway
8	6th Street Widened Sidewalks
9	Kirkland Way Complete Street
10	7th Avenue/NE 87th Street Complete Street
11	NE 87th Street/116th Avenue NE Complete Street
12	116th Avenue NE Greenway
13A	405 Interchange Path (SW)
13B	405 Interchange Path (NE)
13C	405 Interchange Path (SE)
14	NE 90th Street Complete Street
15	NE 90th Street Greenway
16	122nd Avenue NE Bike Route
17	120th Avenue NE to 122nd Avenue NE Ped-Bike Connection
18A	NE 85th Street Enhanced Sidewalks
18B	NE 85th Street Enhanced Sidewalks
18C	NE 85th Street Enhanced Sidewalks
18D	NE 85th Street Enhanced Sidewalks
18E	NE 85th Street Enhanced Sidewalks
19	116th Avenue NE Pedestrian/Bike Access to Overcrossing
20	120th Avenue NE improvements (NE 85th Street to NE 90th Street)
P1	6th Street/7th Avenue Intersection Treatment
P2	NE 85th Street / 122nd Avenue NE Bicycle Signal Improvements
P3	NE 87th Street/116th Avenue NE Enhanced Intersection
P4	122nd Avenue NE and NE 80th Street Intersection Treatment



Exhibit 15: Existing Plus Committed Projects

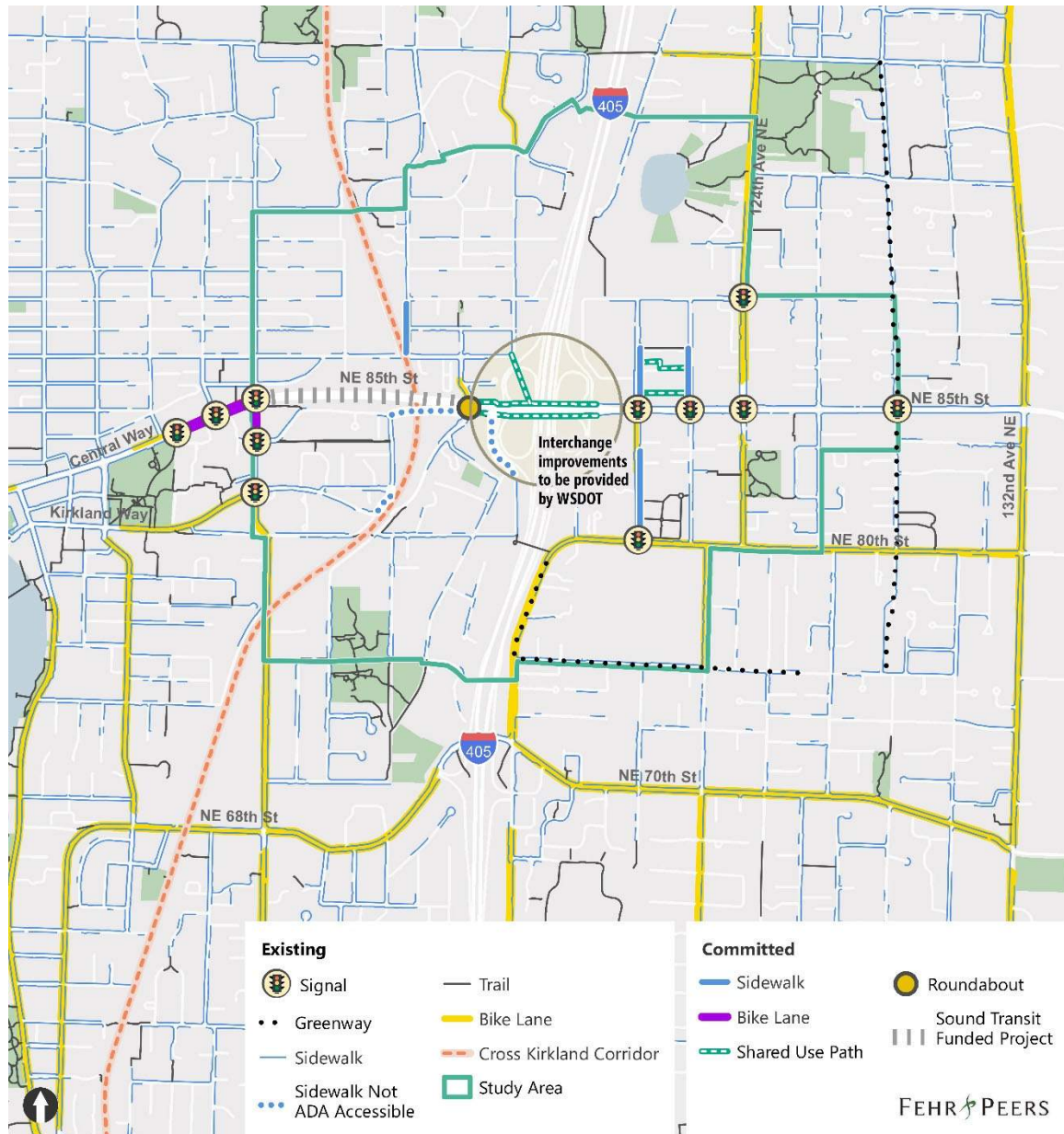
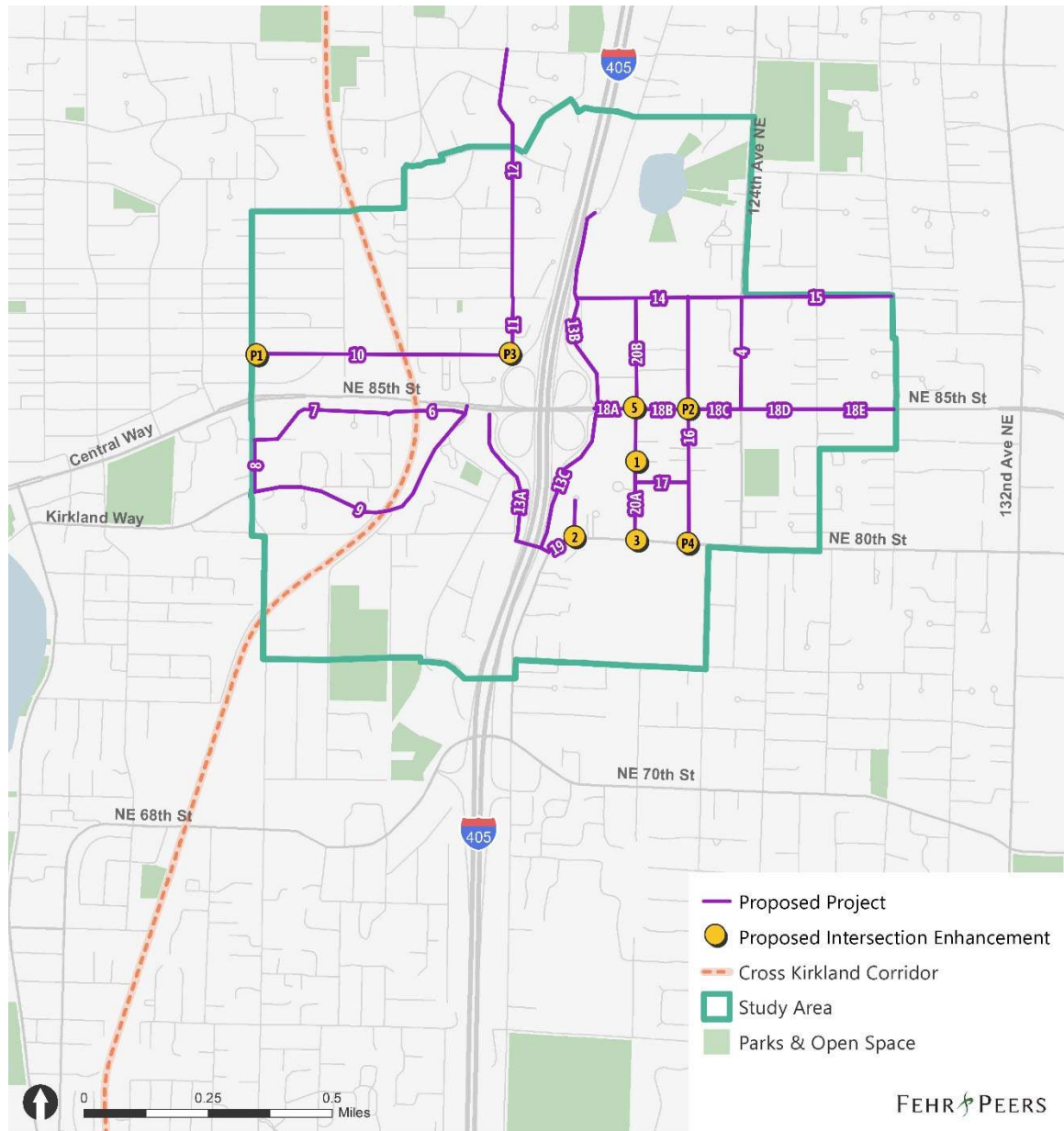




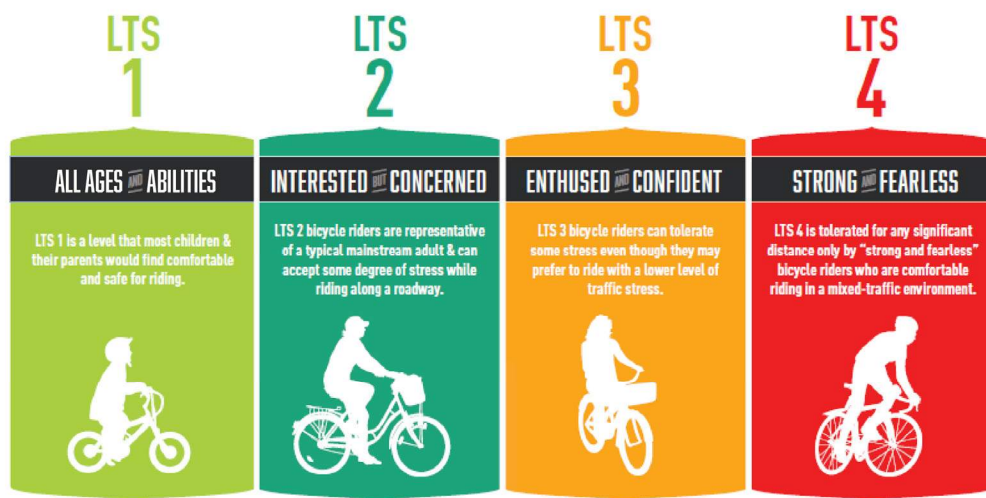
Exhibit 16: Recommended Station Area Investments





The comfort of facilities for people walking and biking is measured quantitatively using a metric called “level of traffic stress.” This metric describes conditions for on a scale of 1-4, with level 1 representing conditions that are comfortable for people of all ages and all abilities and level 4 representing conditions that are stressful for almost everyone (see **Exhibit 17**). To increase the number of people who choose to walk or bike, communities should strive to provide the most comfortable facilities possible within given constraints such as right of way, slope, environmental feasibility, modal conflicts, and cost.

Exhibit 17: Level of Traffic Stress Concept



Exhibits 18-19 present the criteria that was used to screen level of traffic stress for people walking under the Existing Plus Committed Infrastructure scenario. These criteria recognize that increases in the number of travel lanes and posted speeds lead to a more stressful network, as does a narrower sidewalk environment.

It should be noted that this screening methodology identifies areas of potential high stress for people walking, but is not an algorithm intended to be employed once a low-stress intervention, such as wider, physically separated sidewalks buffered from vehicle traffic are in place. It is assumed that the treatments recommended for the station area, which include wider sidewalks and buffering from vehicle traffic by bike facilities, landscaping, and on-street parking would provide a low-stress environment that fits the context of the overall station area plan vision. The measured comfort levels of transportation facilities in the study area under the Existing Plus Committed Conditions and with Recommended Station Area Investments scenarios are shown in **Appendix C** of this memo.



Exhibit 18: Pedestrian LTS – Detached¹ Sidewalk Screening Criteria

Criteria	LTS 1	LTS 2	LTS 3	LTS 4
# of Travel Lanes	2-3 lanes	4-5 lanes	6+ lanes	(no effect)
Usable Sidewalk Width	>= 10 feet	9 to 8 feet	6 to 7 feet	< 6 feet
Posted Speed Limit	<= 25 MPH	26-30 MPH	31-35 MPH	>=36 MPH

Source: Fehr & Peers, 2021

Notes:

1 Detached sidewalks have a buffer between the sidewalk and the adjacent curb, which could include on-street or off-street bicycle facilities, on-street parking, landscaping, or an amenity zone.

Exhibit 19: Pedestrian LTS – Attached¹ Sidewalk Screening Criteria

Criteria	LTS 1	LTS 2	LTS 3	LTS 4
# of Travel Lanes	2-3 lanes	(no effect)	4-5 lanes	6+ lanes
Usable Sidewalk Width	>= 10 feet	9 to 8 feet	6 to 7 feet	< 6 feet
Posted Speed Limit	<= 20 MPH	21-25 MPH	26 - 30 MPH	31 – 35 MPH

Source: Fehr & Peers, 2021

Notes:

1 Attached sidewalks are directly adjacent to the travel-way and separated by only a curb.

Exhibit 20 presents the criteria used to evaluate level of traffic stress for biking. These criteria were applied to evaluate comfort levels of cyclists under both the Existing Plus Committed Infrastructure and Recommended Station Area Improvements scenarios. The measured comfort levels of transportation facilities in the study area under the Existing Plus Committed Conditions and with Recommended Station Area Investments scenarios are shown in **Appendix C** of this memo.



Exhibit 20: Bicycle LTS and Roadway Characteristics

Speed Limit (mph)	Arterial Traffic Volume	No Marking	Sharrow Lane Marking	Striped Bike Lane	Buffered Bike Lane	Protected Bike Lane	Physically Separated Bikeway
≤25	<3k	1	1	1	1	1	1
	3-7k	3	2	2	2	1	1
	≥7k	3	3	2	2	1	1
30	<15k	4	3	2	2	1	1
	15-25k	4	4	3	3	3	1
	≥25k	4	4	3	3	3	1
35	<25k	4	4	3	3	3	1
	≥25k	4	4	4	3	3	1
40	Any volume	4	4	4	4	3	1

Source: Fehr & Peers, 2021



Accessibility Analysis

Fehr & Peers evaluated how accessible the study area will be under from the perspective of people walking and biking. To make this determination, we considered how far someone could get traveling to or from the proposed station (assumed to be at the I-405/NE 85th Street interchange) on foot or by bike under the Existing Plus Committed Conditions and with Recommended Station Area Investments Scenarios. Our specific study parameters for each analysis are documented below and the results are mapped in **Appendix D**.

Pedestrian Walkshed Assumptions

Pedestrians are assumed to use sidewalks, trails, and/or low volume/speed residential roads (with or without sidewalks). Arterials without sidewalks were not included in the network. Existing sidewalks, trails, and committed projects were included to create walksheds based on the actual walking path of a pedestrian both to and from the station. Walk time (in minutes) along each segment in the network is calculated by dividing the length of each sidewalk by an assumed walking speed of 3 mph (265 feet per minute). Walksheds were created for the full network, and a network that excludes ADA non-compliant facilities.

Bicycle Walkshed Assumptions

To plan for the broader cycling population, cyclists are assumed to only use low stress networks (LTS 1 and LTS 2). It is assumed that cyclists will walk their bike on the sidewalk of any LTS 3 or LTS 4 portion of a network. Existing bicycle infrastructure and committed projects were included to create bikesheds based on the actual biking path of a cyclist to and from the station. Bicycle travel time (in minutes) along each segment in the network is calculated by dividing the length of each segment by an assumed cycling speed of 10 mph. On LTS 3 or LTS 4 portions of the network, cyclists are assumed to walk their bike on a sidewalk at a walking speed of 3 mph (265 feet per minute).

It was assumed that the baseline speed of bicyclists on flat terrain is 10 MPH. Bicycle impedances were introduced if a slope was encountered in the direction of travel. The impedance (minutes of travel time) was inflated along the segment based on the change in energy requirements to bicycle uphill relative to the energy requirement to bicycle up a 2% slope. Slopes less than 2% are assumed to be at a speed that is the same as the baseline speed of 10 MPH. The equations used to compute changes in energy requirements are based on literature from sports science⁸ looking at changes in energy requirements in response to slopes. In our equation, we only accounted for changes in rolling resistance and gravitation potential energy based on the following equation:

$$Watts = k^r * M * s + g * i * M * s$$

⁸ Cycling Uphill and Downhill. David Swan. Wellness Institute & Research Center. Sports Science, 1998.



- K^r – is the coefficient of rolling resistance, in our case for bitumen we used 0.005
- M – is the mass of the cyclist and the bike, in our case 90 kg.
- s – is the speed of the cyclists going uphill, we used 5.5 mph
- g – is the gravitation acceleration of earth at 9.8 m/s^2 at sea level
- i – is the incline or grade of the slope, this is an approximation since the sine of the road angle should be technically used

Based on a comparison of a segment slope to the energy required for a 2% incline, a ratio is derived that is used to inflate the impedance values for the uphill slope of the segment. All downhill slopes were assumed to have no significant change in impedances.

Proposed Package of Investment Strategies

In this section, we describe the full package of improvements recommended to provide safe and comfortable mobility for all within the SAP should the City move to selected growth aligned with June Alternative B.

Roadway and Geometric Changes

The following modifications are recommended to provide capacity to lessen or fully mitigate impacts on the roadway system:

- **NE 90th Street & 124th Avenue NE (Alternatives A and B):** Identified mitigation for this intersection includes adding northbound and southbound through lanes and restriping the eastbound through lane to be an eastbound through/left/right lane with east/west split phasing. The additional northbound lane would need to be carried through to north of NE 90th Street. With these improvements in place, the intersection would meet the City's LOS standard under both Alternatives A and B.
- **NE 85th Street & 120th Avenue NE (Alternative B):** Based on a site visit, as well as feedback from City staff and the Transportation Commission, two potential geometric mitigation options were identified:
 - Option 1:
 - Adding an eastbound right turn lane from the I-405 off ramp to 120th Avenue NE to facilitate trips for future intensive development
 - Removal of the western crosswalk of NE 85th Street (since pedestrians would have to cross at least eight vehicle travel lanes with planned widening related to both the interchange and eastbound right turn lane proposed above)
 - Restriping the northbound approach to include a left turn lane and a shared left/through/right turn lane



- Restriping the southbound approach to include dedicated left, through, and right lanes, with the right turn lane protected by a “pork chop” to create a free movement⁹
- Revising the signal to provide northbound/southbound split phasing to allow for left turn movements out of either lane from the south approach
- Option 2:
 - Restriping the northbound approach to include a left turn lane and a shared left/through/right turn lane
 - Restriping the southbound approach to include dedicated left, through, and right lanes, with the right turn lane protected by a “pork chop.” Unlike Option 1, the right turn would not be a free movement since the western crosswalk would remain.
 - Revising the signal to provide northbound/southbound split phasing to allow for left turn movements out of either lane from the south approach
- **NE 83rd Street & 120th Avenue NE (Alternative B):** With the intensive allowed development of 250 feet of maximum height allowed in the southeast quadrant, this intersection would need to be signalized. If this intersection serves as the only primary entrance (and a southern entrance via 118th Avenue NE is not provided), this intersection requires additional geometric modification. There are various ways that this intersection could be configured. For the purposes of this modeling, it was assumed that the west leg would include a left-turn pocket, plus a shared left/through/right lane with all other approaches served by one lane. This would require that the northbound left turn lane at the 85th Street intersection be extended to provide a second northbound receiving lane.
- **NE 80th Street & 118th Avenue NE (Alternative B):** Based on delay analysis, this intersection would require mitigation regardless of whether 118th Avenue NE serves as a primary access point. This is due to additional traffic passing through the intersection along 80th Avenue. It should be noted that this intersection is located on a curve and may require additional treatments to ensure safe sight distance. Before constructing a signal, it would also be important to conduct a signal warrant analysis.
- **NE 80th Street & 120th Avenue NE (Alternative B):** If the Lee Johnson site has only one primary entrance (via 83rd Street & 120th Avenue NE), this intersection would require geometric mitigation (a southbound left turn pocket) to maintain the City’s LOS standard. It should be noted that this improvement, while necessary to mitigate impacts of the intensive allowed development contemplated by Alternative B, could be a standalone improvement, as it would better serve areawide circulation.

⁹ In designing this improvement it would be important to consider weaving interactions between traffic making the southbound free right and westbound traffic accessing northbound I-405. The viability of installing a pork chop should also be evaluated in final intersection design.



Transportation Demand Management

This report identifies a suite of TDM strategies that could be implemented by the City or required of development over time within the SAP. Implementation of these strategies would not only help to reduce driving, which in turn lessens traffic congestion and greenhouse gas impacts, but fundamentally align with the City's values and vision for the station area. It is recommended that these strategies be implemented as part of **Alternative B**.

Implementation of TDM strategies would require investments by the City in several forms, including:

- City staff time to develop code revisions and manage compliance, for example requiring developers to provide a transit subsidy to tenants.
- Creation of new staff positions to implement and operate new programs, for example on-street parking policing and management and off-street parking program implementation.
- Capital investments, for example micromobility charging stations.

These costs, both for initial start-up and ongoing program management, should be considered within the financial evaluation of the plan.

Transit Access & Speed and Reliability Improvements

This report considers evolution of a Station Area Plan, thus consideration of high-quality transit service, speed and reliability, and stop and station access should always be front of mind. The following recommendations apply to either **Alternative A or Alternative B**:

- Continue to support King County Metro in moving forward with implementation of the Metro K-Line Rapid Ride.
- Consider incorporation of transit priority infrastructure such as queue jumps and signal priority at NE 85th Street and 120th Avenue NE, NE 85th Street and 124th Avenue NE, and signal priority along the full extent of the NE 85th Street corridor within Kirkland
- Transit access strategies, such as first-last mile rideshare connections, bikeshare support, and specific pedestrian and bicycle infrastructure projects (perhaps identified in the walking/biking section)
- Coordination with King County Metro and Sound Transit to plan for and implement a pilot first/last mile shuttle connection for residents, visitors, and employees within the subarea to access the NE 85th Street BRT station
- Enhanced amenities at stops along NE 85th Street such as real-time arrival signage, expanded shelters, and bike parking and re-balanced stop locations to better align with safe signalized crossing locations.



Building a Robust System for Walking and Biking

Exhibit 16 summarizes the transportation capital investments recommended as part of the SAP to accommodate trip growth anticipated with development, better connect to the BRT station, and/or provide a more complete and low-stress active transportation network. These investments are more fully described in the Factsheets, which are **Appendix B** to this memo.

Appendix A

Kirkland 85th Interchange Analysis

The operations at the I-405/NE 85th St interchange were evaluated using the microsimulation traffic models developed by WSDOT for their interchange study. This sensitivity test was conducted to determine whether the additional land use growth allowed under the 85th Station Area Plan would affect the operations at the redesigned interchange. The Vissim model provided by WSDOT simulates NE 85th St between 6th St and 124th Ave NE, including the freeway ramps to and from I-405 as well as the BRT station and access points.

The sensitivity analysis started with the 2045 PM peak hour model for the proposed interchange project. The input volumes were then adjusted to reflect the anticipated demand and travel patterns forecasted for the 2044 June Alternative B. These adjustments increased the total demand within the model by approximately 400 PM peak hour trips or about 4% higher than the initial assumptions in WSDOT's model. A second scenario was evaluated that assumed that TDM implementation would reduce the growth associated with the Station Area Plan. For this scenario, the forecasted growth between 2018 and 2044 was reduced by 20%, which resulted in 500 less peak hour trips in the network. These two demand scenarios provide high and low bookends for the anticipated operations along NE 85th St and at the interchange. No other adjustments to the WSDOT models were made beyond updating the demand volumes.

Using the microsimulation models, the LOS was calculated at 5 intersections along NE 85th St. The LOS grade and average control delay are shown in the table below for each of the scenarios. The results show increased delay west of the interchange along NE 85th St. The 2044 SAP scenario has higher eastbound demand than the 2045 WSDOT scenario heading towards and through the I-405 interchange. This results in queuing along NE 85th St between the interchange and 6th St affecting operations at these locations. The volume reductions associated with the implementation of some TDM measures mitigates these concerns and reduces the delay and queuing. The average delay at the roundabout at Kirkland Way is still higher than was assumed in the WSDOT scenario and there is some eastbound queuing at this location, though it does extend to the intersection at 6th St.

Level of Service and Average Control Delay

Intersection	Control	2045 WSDOT	2044 85th SAP	2044 85th SAP w/ TDM
6 th St / NE 85 th St	Signal	E / 68 sec	F / 128 sec	D / 52 sec
Kirkland Way / NE 85 th St	Roundabout	C / 18 sec	F / 75 sec	E / 37 sec
120 th Ave NE / NE 85 th St	Signal	D / 39 sec	D / 54 sec	D / 52 sec
122 nd Ave NE / NE 85 th St	Signal	C / 28 sec	C / 33 sec	C / 27 sec
124 th Ave NE / NE 85 th St	Signal	F / 93 sec	F / 94 sec	E / 63 sec

The average and maximum queue lengths, estimated using the microsimulation models, are shown in the following table for several locations. The first two locations show the eastbound queues at the Kirkland Way and 120th Ave NE intersections. The anticipated queue lengths are longer than in the

WSDOT scenario for both of the Station Area Plan scenarios. The scenario with TDM reductions does significantly reduce the average queue eastbound at Kirkland Way.

The last two locations show the queue lengths on the northbound and southbound off-ramps from I-405. There is over 1,500 feet of available storage on both ramps and the maximum queues do not spill back onto the freeway mainline in any of the scenarios.

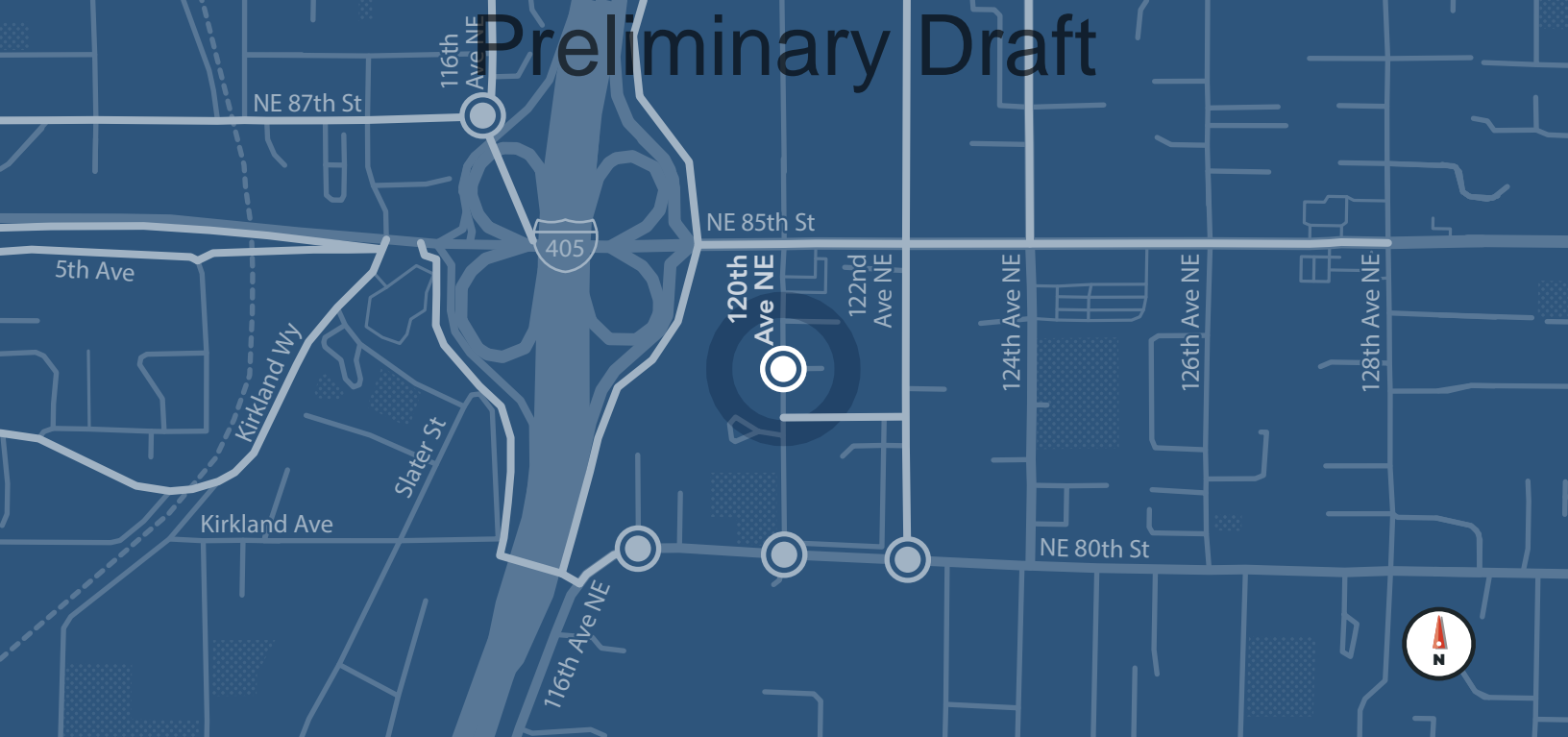
Average and Maximum Queue Lengths

Location	2045 WSDOT	2044 85th SAP	2044 85th SAP w/ TDM
EB at Kirkland Way / NE 85 th St	175ft / 625ft	1,275ft / 2,150ft	340ft / 1,150ft
EB at 120 th Ave NE / NE 85 th St	175ft / 675ft	475ft / 1,250ft	325ft / 1,100ft
I-405 NB off-ramp	50ft / 250ft	125ft / 350ft	125ft / 375ft
I-405 SB off-ramp	50ft / 275ft	375ft / 1,025ft	110 ft / 400ft

Overall, the Station Area Plan will result in slightly higher delays and queuing along NE 85th St in the future than estimated by WSDOT in their interchange analysis. However, the increases do not significantly affect the operations of the interchange or the freeway mainline.

Preliminary Draft

Appendix B: Potential Station Area Investments Factsheets



Project #1

LEE JOHNSON EAST ACCESS (INCLUDING 120TH CORRIDOR FROM NE 83RD TO NE 85TH STREET)

PROJECT DESCRIPTION

New complete street and signalized connection to 120th Avenue NE, as well as a new northbound lane on 120th Avenue NE connecting to NE 85th Street.



Project Catalyst

- Station Access
- Complete Network
- Capacity for Growth



Implementation Considerations

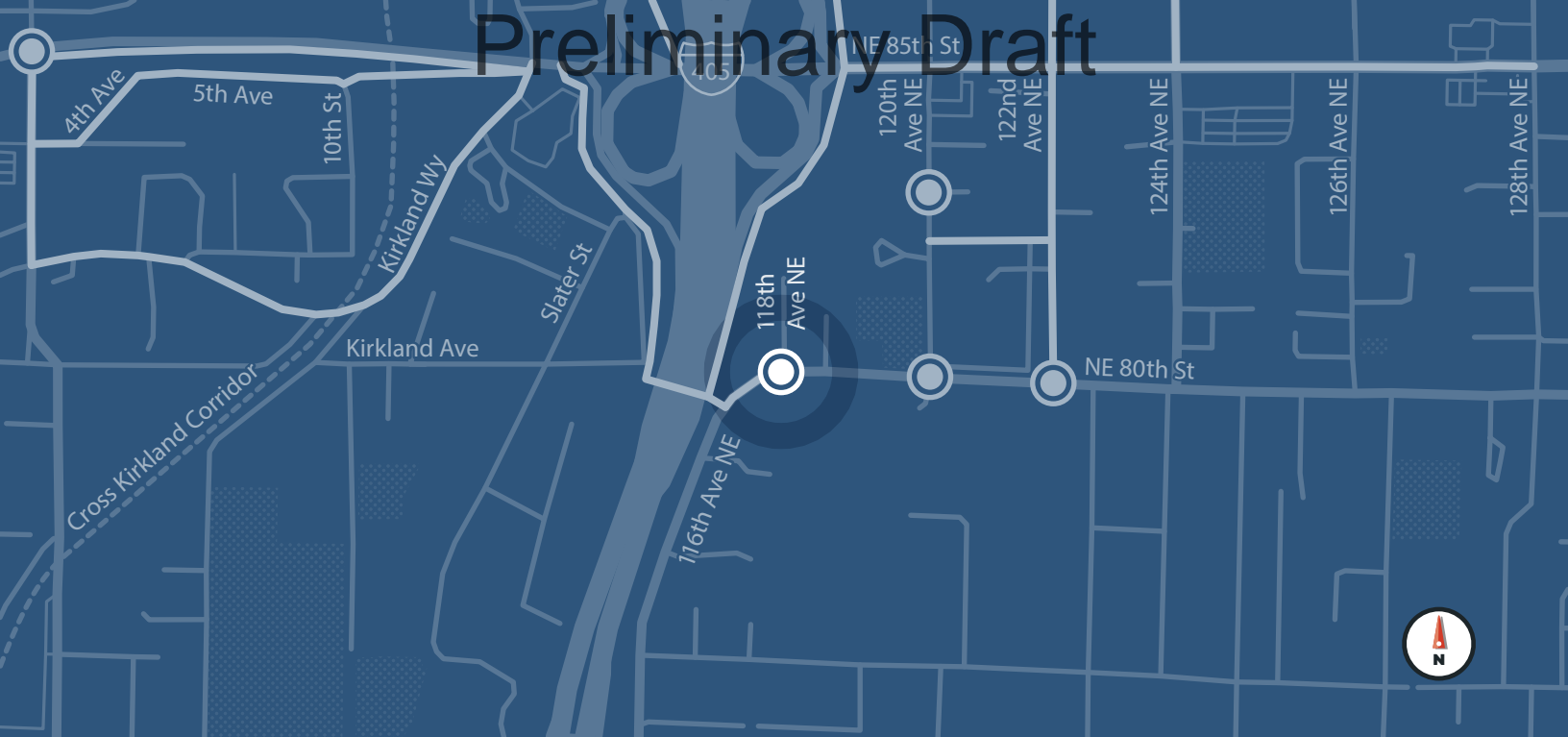
- Cost
- Right-of-way



Planning-level Cost

Low
\$1,140,000
High
1,650,000

Preliminary Draft



Project #2

LEE JOHNSON SOUTH ACCESS

PROJECT DESCRIPTION

New complete street and signalized connection to NE 80th Street via 118th Avenue NE



Project Catalyst

- Station Access
- Complete Network
- Capacity for Growth



Implementation Considerations

- Cost
- Right-of-way
- Neighborhood impacts
- Sight distance at NE 80th Street intersection

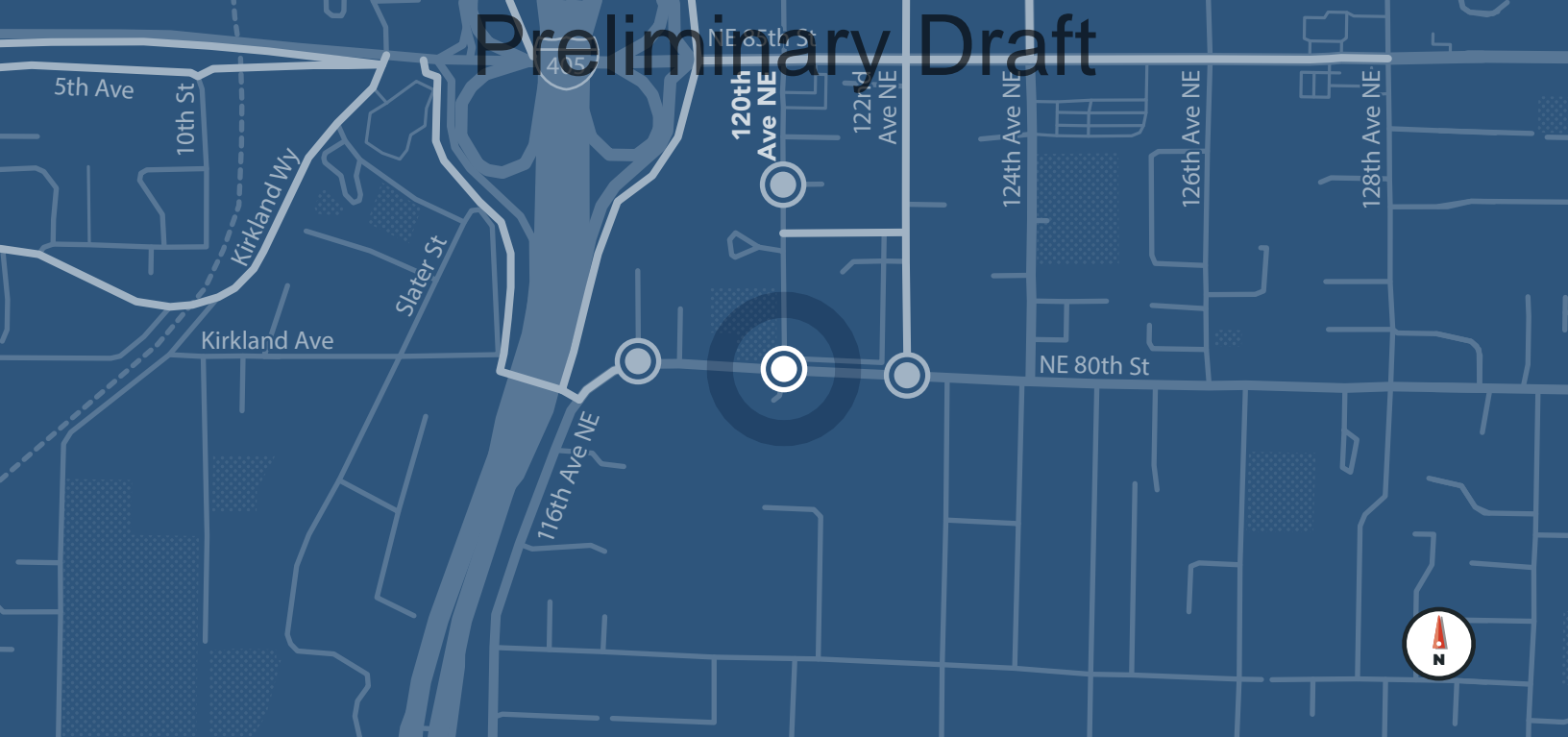


Planning-level Cost

Low
\$1,500,000

High
\$2,160,000

Preliminary Draft



Project #3

NE 80TH STREET/120TH AVENUE NE SIGNAL IMPROVEMENT (INCLUDING 120TH CORRIDOR FROM NE 80TH TO NE 83RD STREET)

PROJECT DESCRIPTION

Improve 120th Avenue between NE 80th Street and NE 83rd Street and improve intersection with NE 80th Street to add southbound left turn pocket to separate left and right turning movements.



Project Catalyst

- Station Access
- Complete Network
- Capacity for Growth



Implementation Considerations

- Cost
- Right-of-way



Planning-level Cost

Low
\$970,000

High
\$1,400,000



Project #4

124TH AVENUE NE WIDENING

PROJECT DESCRIPTION

Widen 124th Avenue NE to five lanes plus physically-separated bike lanes from NE 85th Street through the NE 90th Street intersection.



Project Catalyst

- Station Access
- Complete Network
- Capacity for Growth



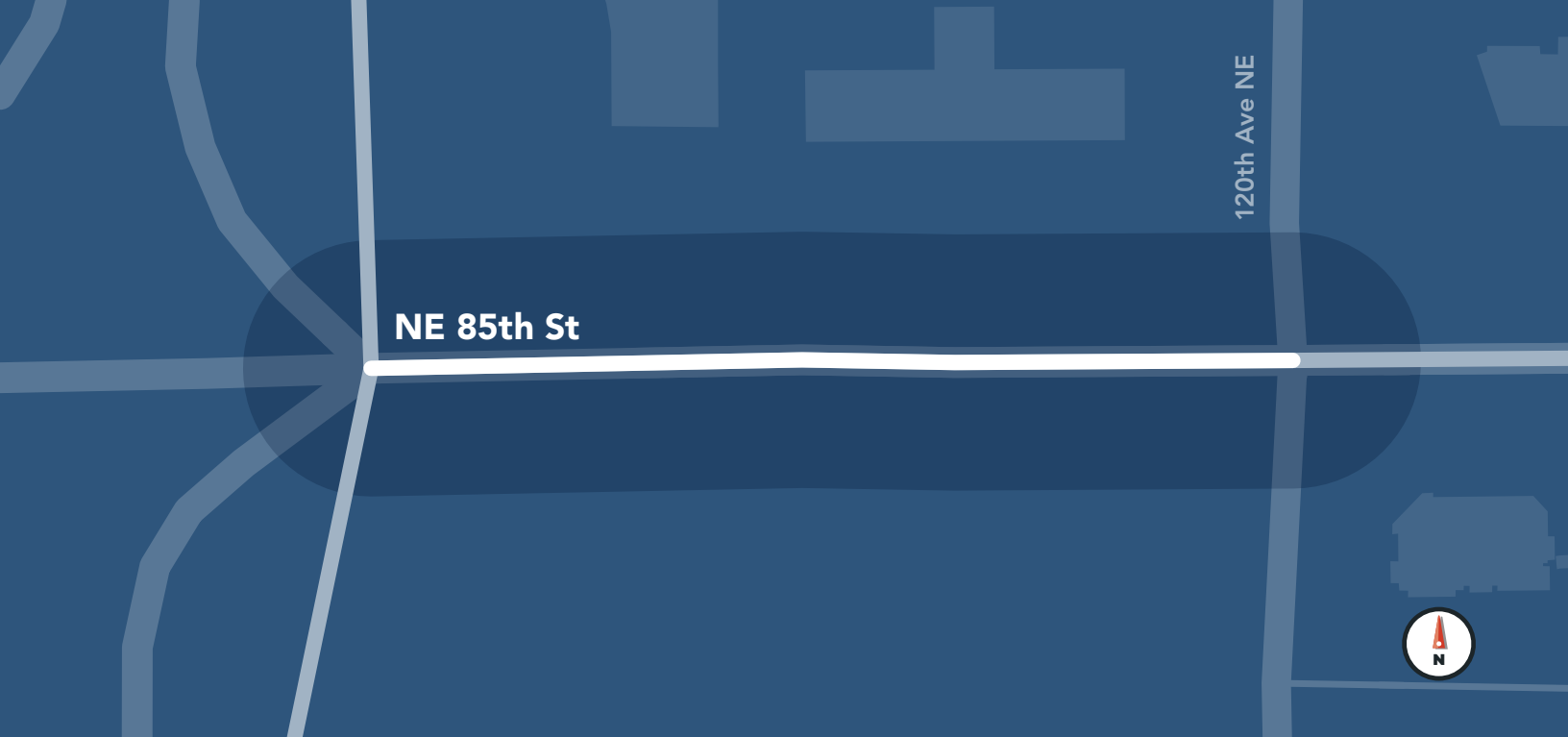
Implementation Considerations

- Right-of-way constraints
- Cost



Planning-level Cost

Low
\$8,300,000
 High
\$11,980,000



Project #5

NE 85TH STREET/120th (OPTION 1)

PROJECT DESCRIPTION

New eastbound right turn lane on NE 85th Street from I-405 off ramp to 120th Avenue NE provides additional access to Lee Johnson site



Project Catalyst

- Station Access
- Complete Network
- Capacity for Growth



Implementation Considerations

- Right-of-way constraints
- Cost
- Impact on pedestrian environment (longer crossings)



Planning-level Cost

- Low
\$1,550,000
- High
\$2,240,000

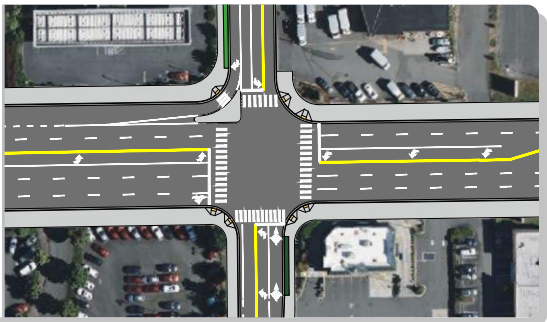


Project #5

NE 85TH STREET/120th (OPTION 2)

PROJECT DESCRIPTION

Modifications to NE 85th Street and 120th Avenue NE intersection to provide additional access to Lee Johnson site.



Project Catalyst

- Station Access
- Complete Network
- Capacity for Growth



Implementation Considerations

- Right-of-way constraints
- Cost
- Additional intersection delay



Planning-level Cost

Low
\$1,550,000

High
\$2,240,000

Preliminary Draft

NE 85th St

10th St

Cross Kirkland Corridor

Kirkland Wy



Project #6

5TH AVENUE TO KIRKLAND WAY SHARED USE TRAIL

PROJECT DESCRIPTION

Improve shared use trail from 5th Avenue to Kirkland Way by widening to 12 feet, minimizing grade, and adding lighting



Project Catalyst

 **Station Access**

 Complete Network

 Capacity for Growth



Implementation Considerations

- Right-of-way constraints
- Cost
- Grade



Planning-level Cost

Low

\$4,010,000

High

\$5,790,000



Project #7

5TH AVENUE GREENWAY

PROJECT DESCRIPTION

Add sharrows and signage to make these quiet streets serve as a greenway



Project Catalyst

 **Station Access**

 Complete Network

 Capacity for Growth



Implementation Considerations

- May require enhanced treatment on west end of corridor



Planning-level Cost

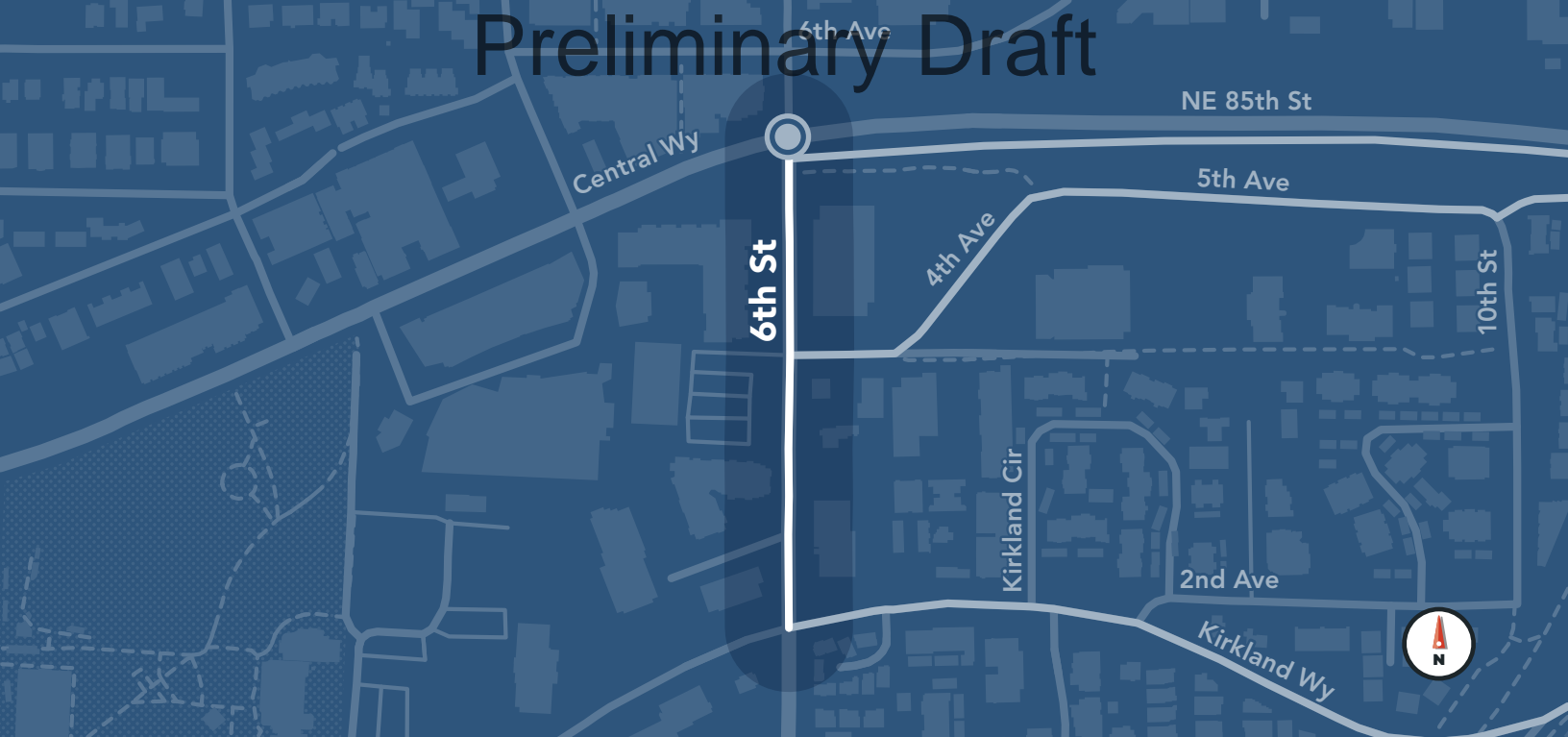
Low

\$10,000

High

\$15,000

Preliminary Draft



Project #8

6TH STREET WIDENED SIDEWALKS

PROJECT DESCRIPTION

Add widened sidewalk on the east side of 6th Street between Kirkland Way and Central Avenue so that northbound bicyclists can share the facility with pedestrians



Project Catalyst

Station Access

Complete Network

Capacity for Growth



Implementation Considerations

- Right-of-way constraints
- Cost
- Phasing with planned developments



Planning-level Cost

Low

\$1,870,000

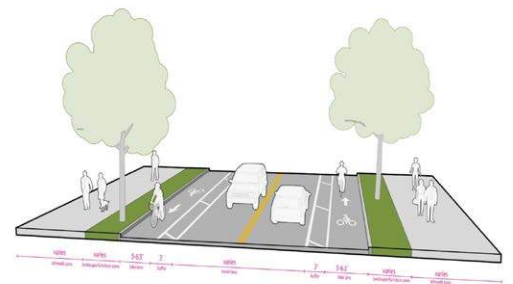
High

\$2,700,000



KIRKLAND WAY COMPLETE STREET

Provide buffered bike lanes and standard sidewalks (both sides of street) between 6th Avenue NE and NE 85th Street



- Station Access
- Complete Network**
- Capacity for Growth



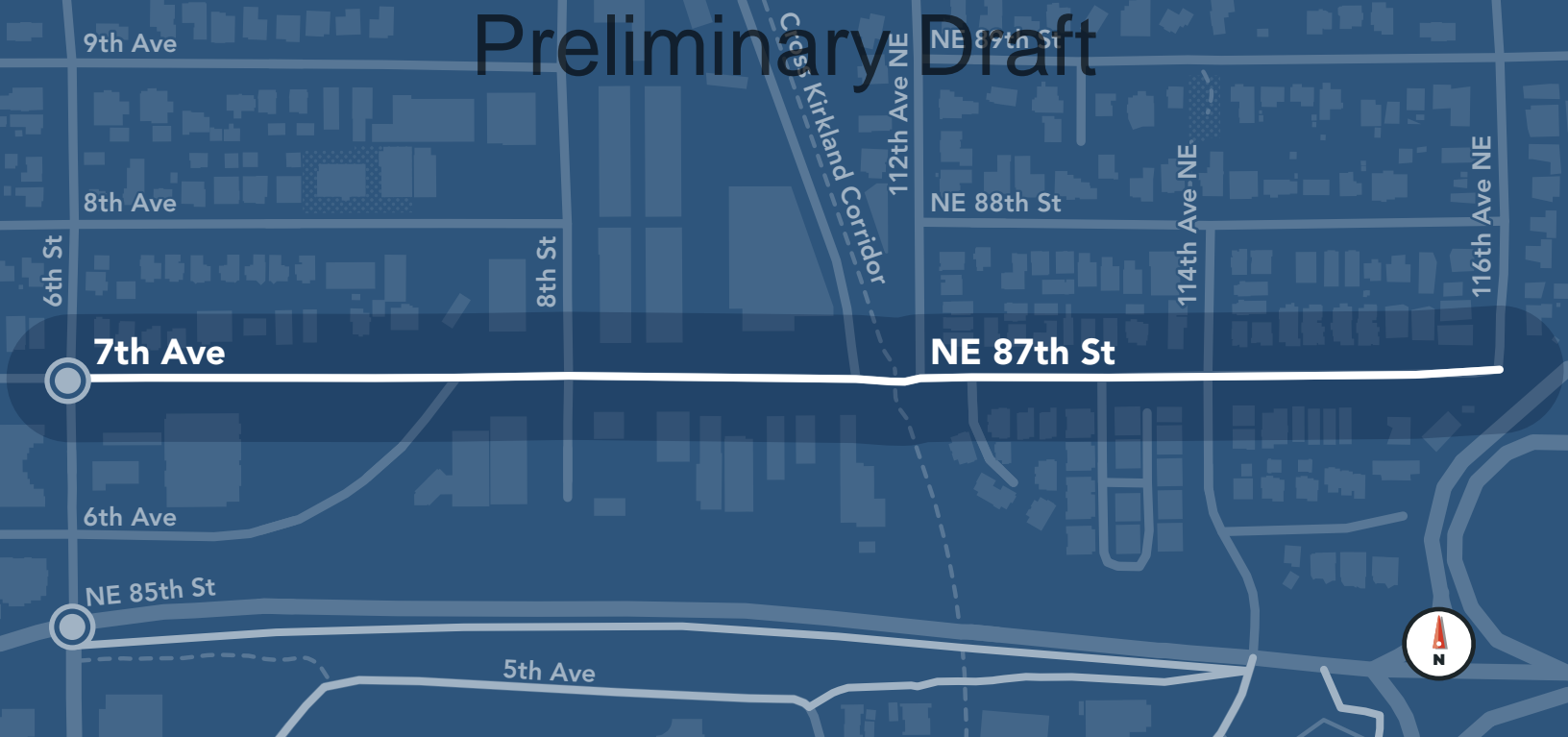
- Right-of-way constraints
- Cost
- Need to replace the CKC bridge



Low
\$14,200,000

High
\$20,500,000

Preliminary Draft



Project #10

7TH AVENUE/NE 87TH STREET COMPLETE STREET

PROJECT DESCRIPTION

Reconfigure street to provide parking-protected bike lanes and sidewalks between 6th Street and 116th Avenue NE.



Project Catalyst

 **Station Access**

 Complete Network

 Capacity for Growth



Implementation Considerations

- Cost
- Grade
- Treatments at intersections



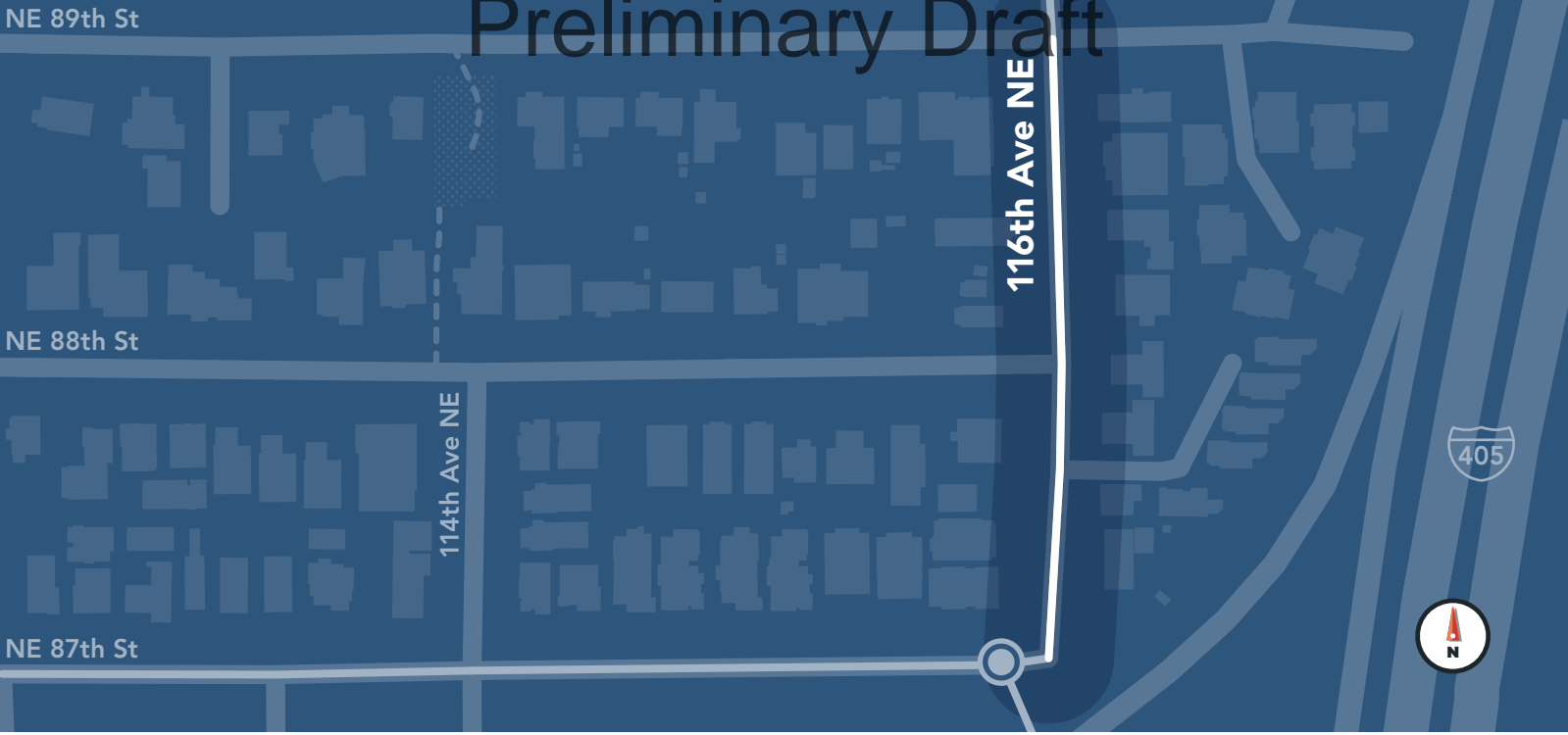
Planning-level Cost

Low

\$2,290,000

High

\$3,310,000

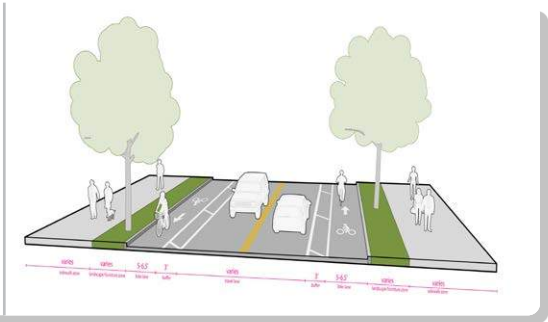


Project #11

NE 87TH STREET/116TH AVENUE NE COMPLETE STREET

PROJECT DESCRIPTION

Provide buffered bike lanes and standard sidewalks (both sides of street) north of the station access to NE 90th Street



Project Catalyst

 **Station Access**

 Complete Network

 Capacity for Growth



Implementation Considerations

- Right-of-way constraints



Planning-level Cost

Low
\$450,000

High
\$650,000

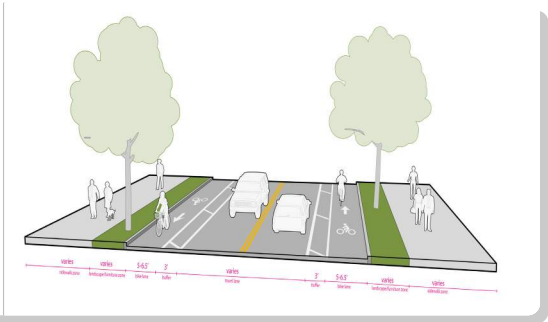


Project #12

116TH AVENUE NE GREENWAY

PROJECT DESCRIPTION

Provide buffered bike lanes and standard sidewalks (both sides of street) north of NE 90th Street



Project Catalyst

- Station Access
- Complete Network
- Capacity for Growth



Implementation Considerations

- Right-of-way constraints



Planning-level Cost

Low
\$1,990,000
High
\$2,880,000

Preliminary Draft



Project #13A

405 INTERCHANGE PATH (SW)

PROJECT DESCRIPTION

Shared-use trail connecting BRT station to 116th Avenue NE



Project Catalyst

Station Access

Complete Network

Capacity for Growth



Implementation Considerations

- Right-of-way
- Cost



Planning-level Cost

Low

\$1,530,000

High

\$2,210,000

Preliminary Draft



Project #13B

405 INTERCHANGE PATH (NE)

PROJECT DESCRIPTION

Shared-use trail connecting BRT station to Slater Avenue



Project Catalyst

 **Station Access**

 Complete Network

 Capacity for Growth



Implementation Considerations

- Right-of-way
- Cost



Planning-level Cost

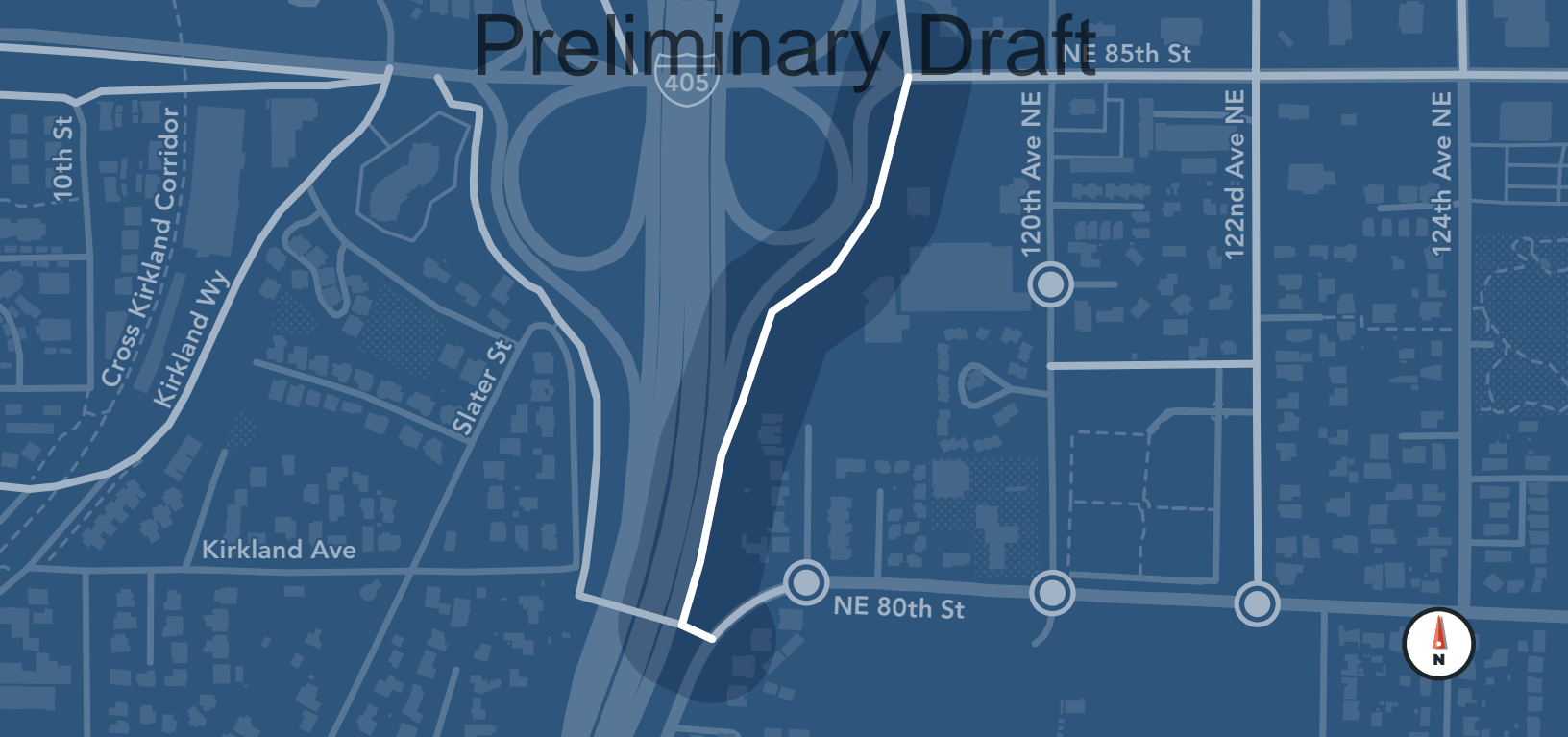
Low

\$1,910,000

High

\$2,750,000

Preliminary Draft



Project #13C

405 INTERCHANGE PATH (SE)

PROJECT DESCRIPTION

Shared-use trail connecting BRT station to NE 80th Street



Project Catalyst

 **Station Access**

 Complete Network

 Capacity for Growth



Implementation Considerations

- Right-of-way
- Cost



Planning-level Cost

Low

\$1,500,000

High

\$2,160,000

NE 90th St

120th Ave NE

122nd Ave NE

124th Ave NE



Project #14

NE 90TH STREET COMPLETE STREET

PROJECT DESCRIPTION

Reconfigure street to provide parking-protected bike lanes and sidewalks between the planned 405 Interchange Path and 124th Avenue NE



Project Catalyst

 **Station Access**

 Complete Network

 Capacity for Growth



Implementation Considerations

- Right-of-way
- Cost
- Treatments at intersections



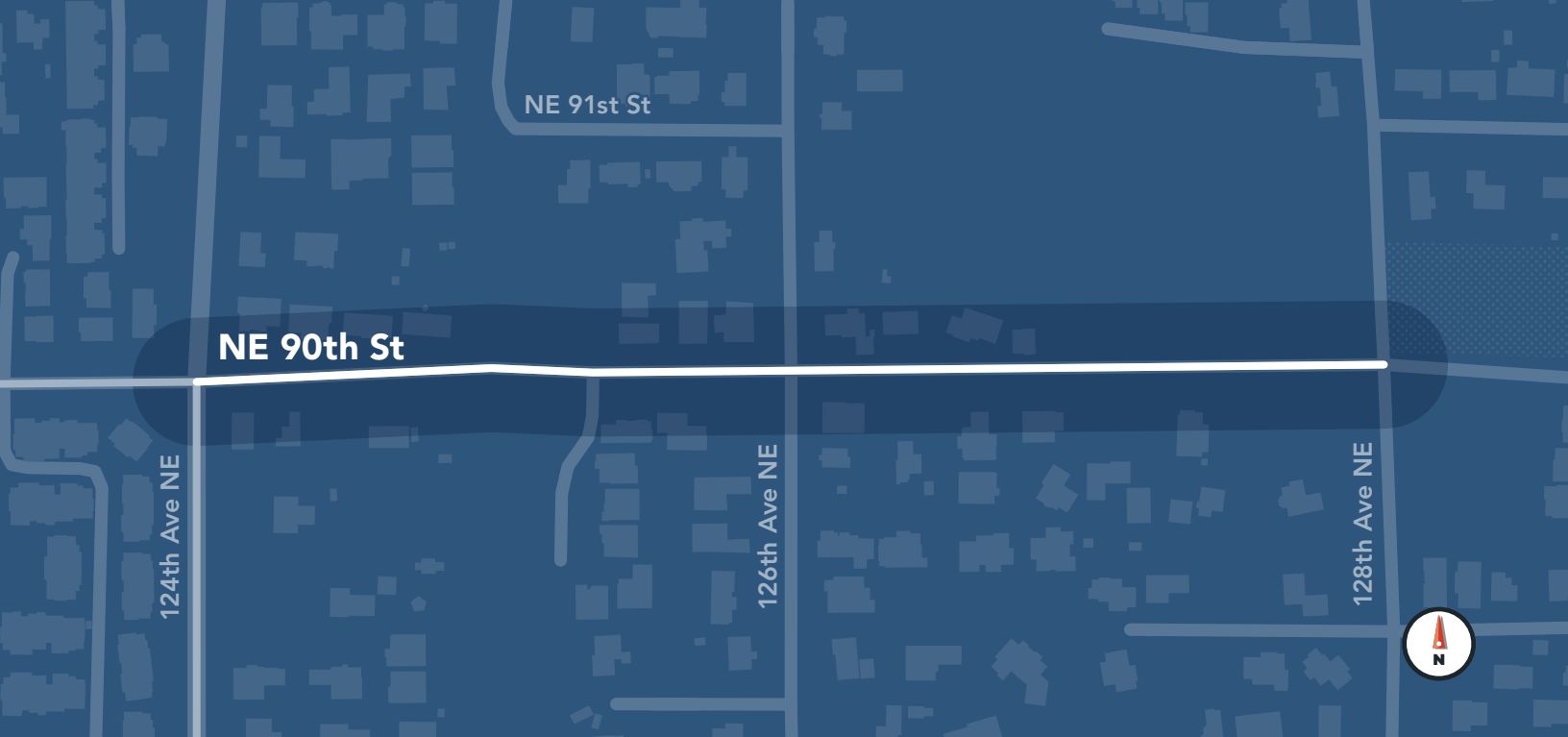
Planning-level Cost

Low

\$4,270,000

High

\$6,170,000

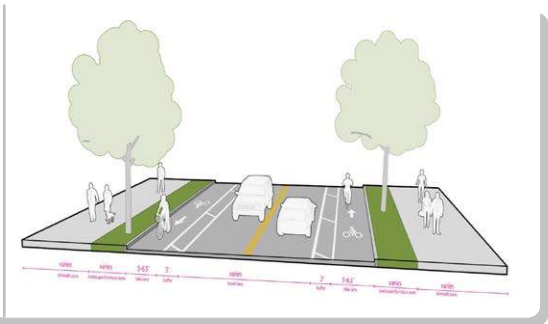


Project #15

NE 90TH STREET GREENWAY

PROJECT DESCRIPTION

Provide buffered bike lanes and standard sidewalks (at least one side of the street) between 124th Avenue NE and 128th Avenue NE



Project Catalyst

- Station Access
- Complete Network
- Capacity for Growth



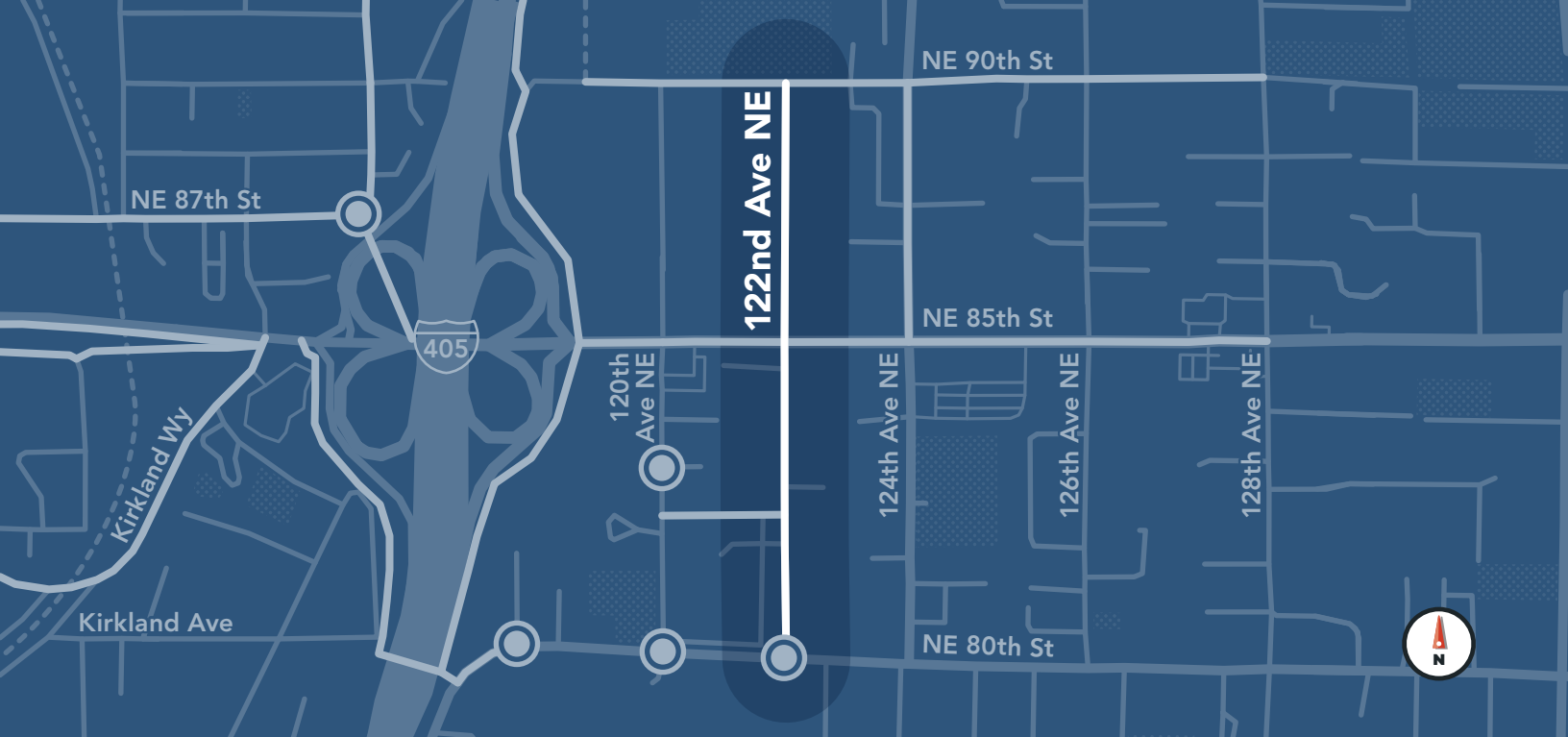
Implementation Considerations

- Right-of-way
- Cost
- Treatments through wetlands



Planning-level Cost

- Low
\$4,780,000
- High
\$6,900,000

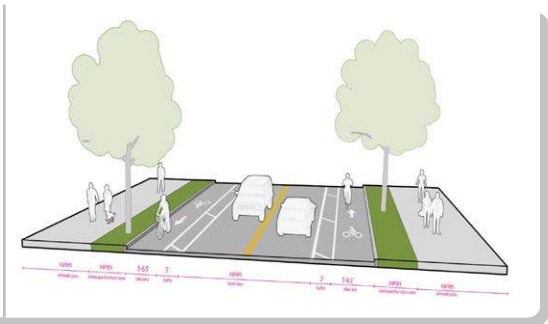


Project #16

122ND AVENUE NE BIKE ROUTE

PROJECT DESCRIPTION

Provide buffered bike lanes and standard sidewalks (both sides of street) between NE 80th Street and NE 90th Street



Project Catalyst

- Station Access
- Complete Network
- Capacity for Growth



Implementation Considerations

- Right-of-way
- Cost
- Grade



Planning-level Cost

Low
\$2,890,000
 High
\$4,180,000

120th Ave NE

122nd Ave NE



Project #17

120TH AVENUE NE TO 122ND AVENUE NE PED-BIKE CONNECTION

PROJECT DESCRIPTION

Provide a 12-foot path for walking and biking in the vicinity of NE 82nd Street.



Project Catalyst

Station Access

Complete Network

Capacity for Growth



Implementation Considerations

- Cost



Planning-level Cost

Low

\$660,000

High

\$1,000,000



Project #18A

NE 85TH STREET ENHANCED SIDEWALKS

PROJECT DESCRIPTION

Provide 15-20 foot sidewalks (including amenity zones) on both sides of NE 85th Street to provide a high-quality experience for walking and opportunity for last-mile bike connections between I-405 and 120th Avenue NE.



Project Catalyst

 **Station Access**

 Complete Network

 Capacity for Growth



Implementation Considerations

- Cost
- Right-of-way



Planning-level Cost

Low
\$1,460,000

High
\$2,120,000



Project #18B

NE 85TH STREET ENHANCED SIDEWALKS

PROJECT DESCRIPTION

Provide 15-20 foot sidewalks (including amenity zones) on both sides of NE 85th Street to provide a high-quality experience for walking and opportunity for last-mile bike connections between 120th Avenue NE and 122nd Avenue NE.



Project Catalyst

- Station Access**
- Complete Network
- Capacity for Growth



Implementation Considerations

- Cost
- Right-of-way



Planning-level Cost

- Low
\$1,290,000
- High
\$1,870,000



Project #18C

NE 85TH STREET ENHANCED SIDEWALKS

PROJECT DESCRIPTION

Provide 15-20 foot sidewalks (including amenity zones) on both sides of NE 85th Street to provide a high-quality experience for walking and opportunity for last-mile bike connections between 122nd Avenue NE and 124th Avenue NE.



Project Catalyst

- Station Access**
- Complete Network
- Capacity for Growth



Implementation Considerations

- Cost
- Right-of-way



Planning-level Cost

- Low
\$1,120,000
- High
\$1,610,000



Project #18D

NE 85TH STREET ENHANCED SIDEWALKS

PROJECT DESCRIPTION

Provide 15-20 foot sidewalks (including amenity zones) on both sides of NE 85th Street to provide a high-quality experience for walking and opportunity for last-mile bike connections between 124th Avenue NE and 126th Avenue NE.



Project Catalyst

Station Access

Complete Network

Capacity for Growth



Implementation Considerations

- Cost
- Right-of-way



Planning-level Cost

Low
\$2,680,000

High
\$3,871,000



Project #18E

NE 85TH STREET ENHANCED SIDEWALKS

PROJECT DESCRIPTION

Provide 15-20 foot sidewalks (including amenity zones) on both sides of NE 85th Street to provide a high-quality experience for walking and opportunity for last-mile bike connections between 126th Avenue NE and 128th Avenue NE.



Project Catalyst

- Station Access**
- Complete Network
- Capacity for Growth



Implementation Considerations

- Cost
- Right-of-way



Planning-level Cost

Low
\$2,740,000

High
\$3,960,000



Project #19

116TH AVENUE NE PEDESTRIAN/BIKE ACCESS TO OVERCROSSING

PROJECT DESCRIPTION

Improve space allocated for bikes and pedestrians on west side of NE 116th to provide a more comfortable connection, including provision of an enhanced crossing of NE 116th Avenue to the south.



Project Catalyst

Station Access

Complete Network

Capacity for Growth



Implementation Considerations

- Right-of-way
- Cost



Planning-level Cost

Low

\$190,000

High

\$280,000



Project #20

120TH AVENUE NE IMPROVEMENTS (NE 85TH STREET TO NE 90TH STREET)

PROJECT DESCRIPTION

Overlay and sidewalk infill between along 120th Avenue NE between NE 85th Street and NE 90th Street



Project Catalyst

- Station Access
- Complete Network
- Capacity for Growth



Implementation Considerations

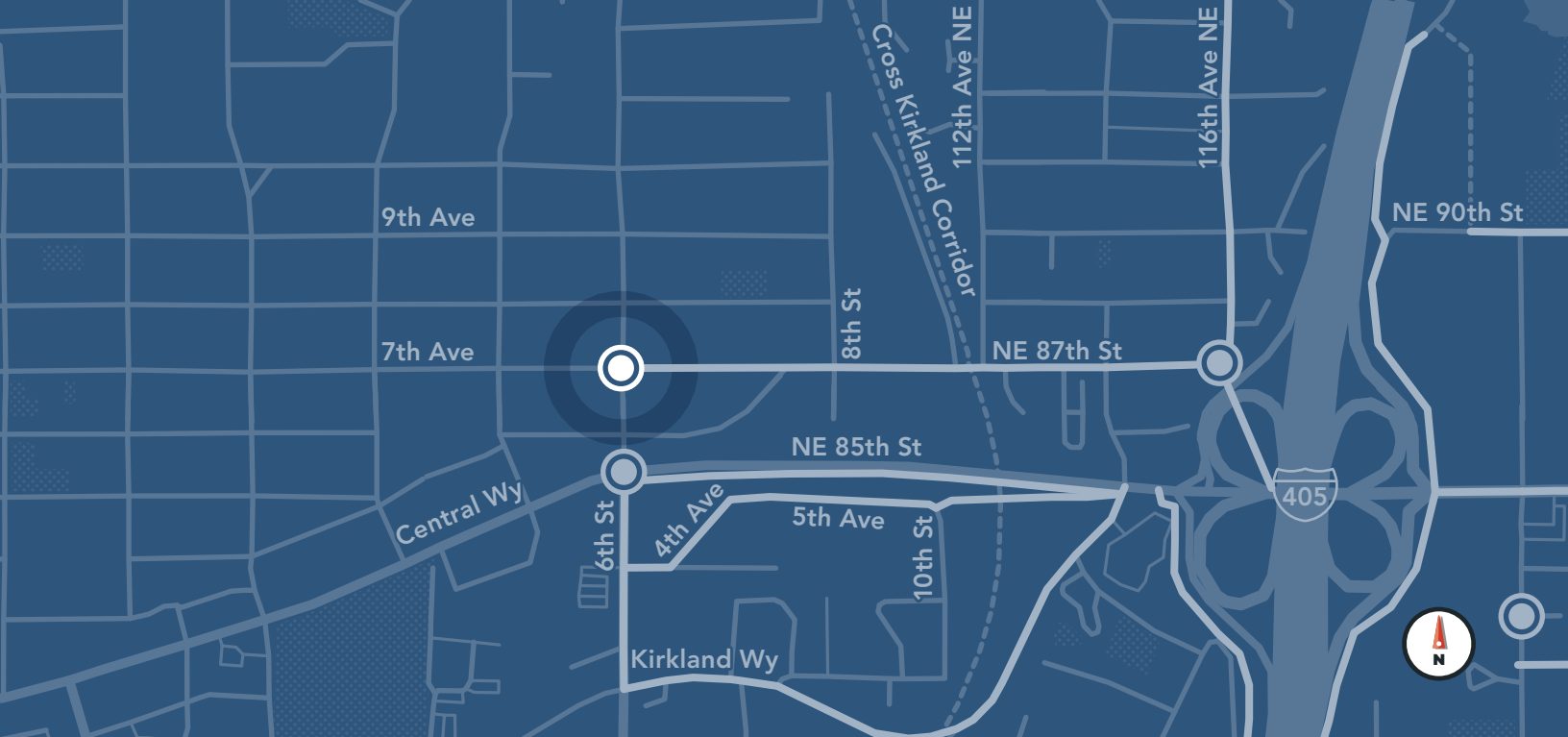
- Right-of-way
- Cost



Planning-level Cost

Low
\$500,000

High
\$720,000

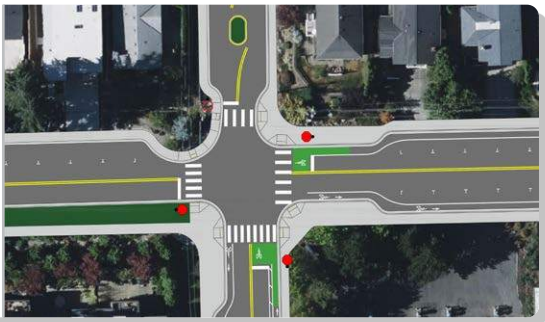


Project #P1

6TH STREET/7TH AVENUE INTERSECTION TREATMENT

PROJECT DESCRIPTION

Improve treatments for people walking and biking



Project Catalyst

- Station Access
- Complete Network
- Capacity for Growth



Implementation Considerations

- Right-of-way



Planning-level Cost

Low
\$610,000
 High
\$880,000



Project #P2

NE 85TH STREET / 122ND AVENUE NE BICYCLE SIGNAL IMPROVEMENTS

PROJECT DESCRIPTION

Improve intersection and signal to better accommodate bikes along 122nd Avenue NE and in crossing NE 85th Street



Project Catalyst

- Station Access
- Complete Network
- Capacity for Growth



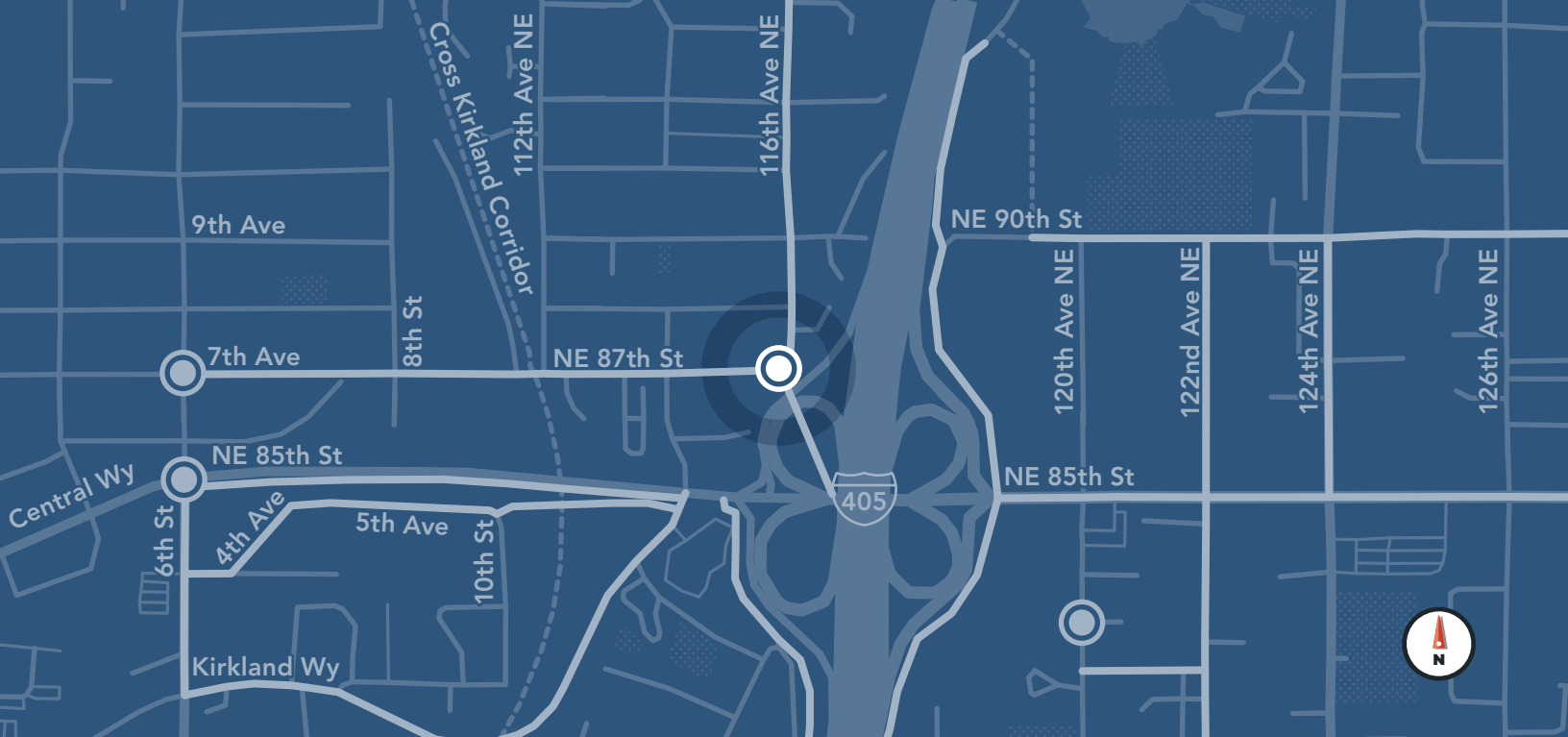
Implementation Considerations

- Right-of-way
- Cost
- Treatments at intersections



Planning-level Cost

- Low
\$320,000
- High
\$470,000



Project #P3

NE 87TH STREET/116TH AVENUE NE ENHANCED INTERSECTION

PROJECT DESCRIPTION

Improve treatments for people walking and biking at this challenging intersection in front of the BRT station. Treatments may include a raised intersection with all-way stop or a mini-roundabout.



Project Catalyst

Station Access

Complete Network

Capacity for Growth



Implementation Considerations

- Right-of-way
- Sight distance
- Cost



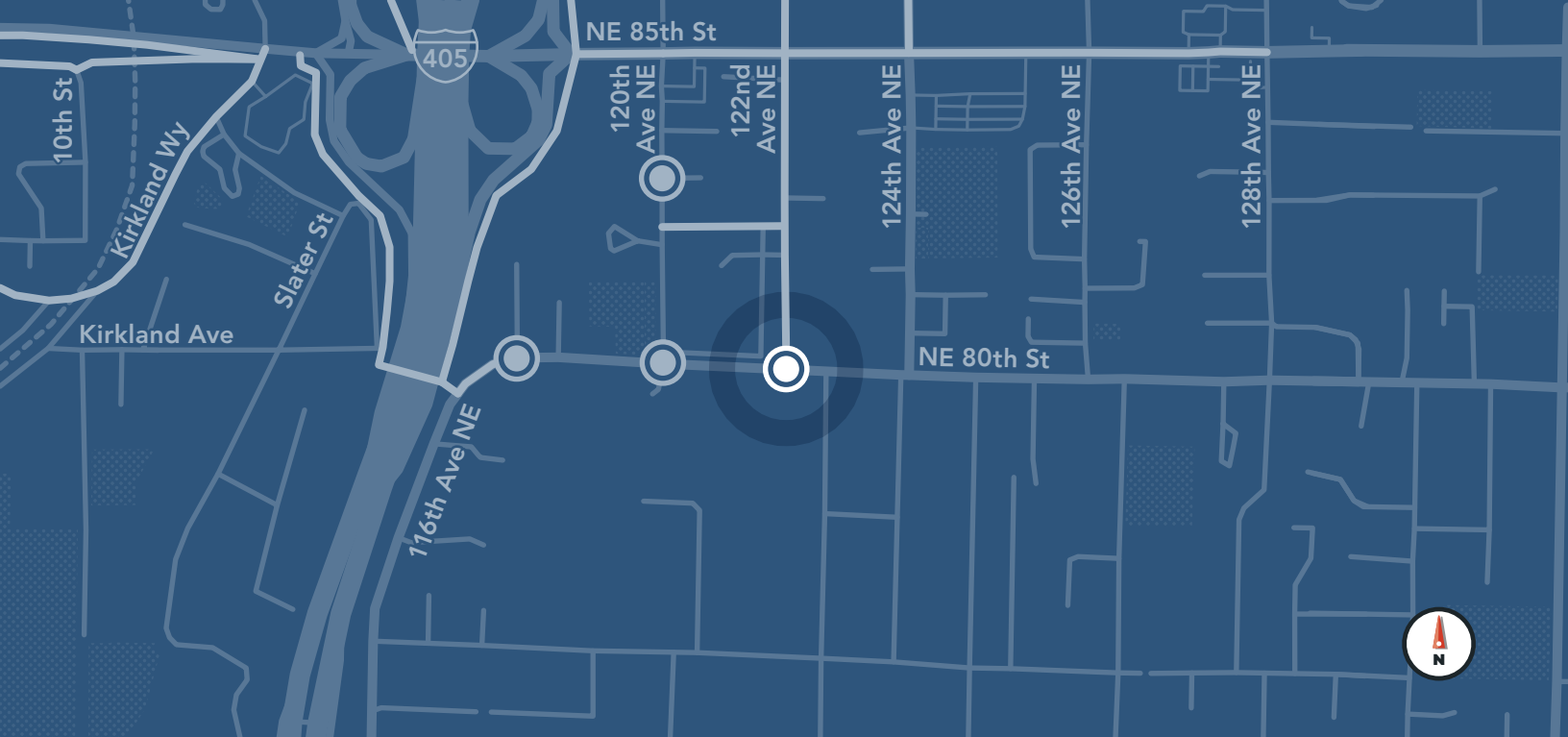
Planning-level Cost

Low

\$840,000

High

\$1,210,000

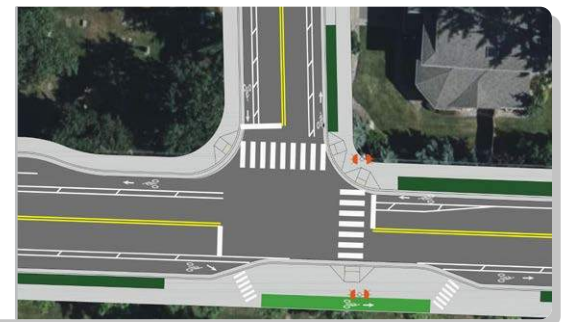


Project #P4

122ND AVENUE NE AND NE 80TH STREET INTERSECTION TREATMENT

PROJECT DESCRIPTION

Add treatments, including a RRFB, to improve crossing comfort for people walking and biking



Project Catalyst

- Station Access
- Complete Network
- Capacity for Growth



Implementation Considerations

- Right-of-way

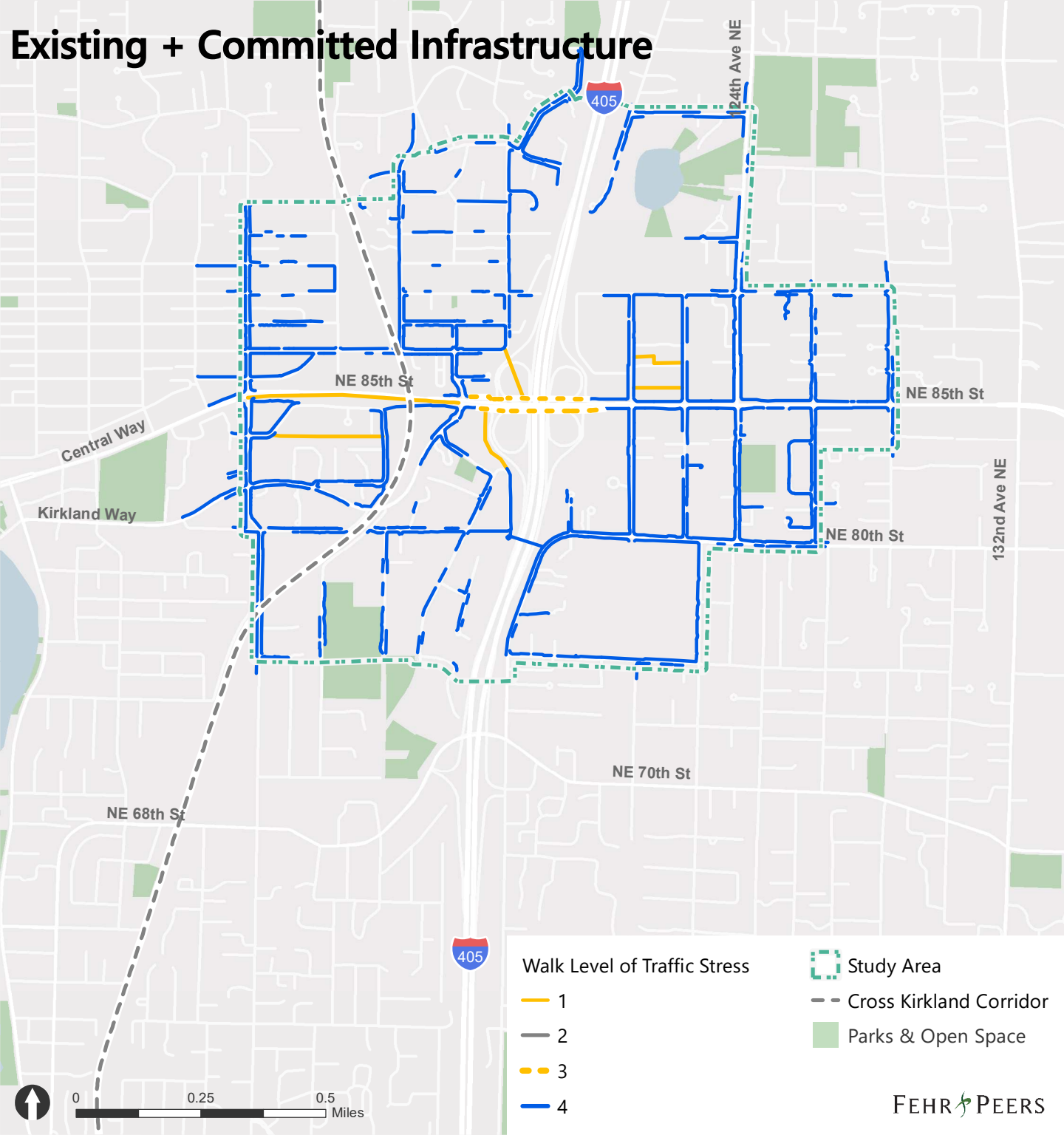


Planning-level Cost

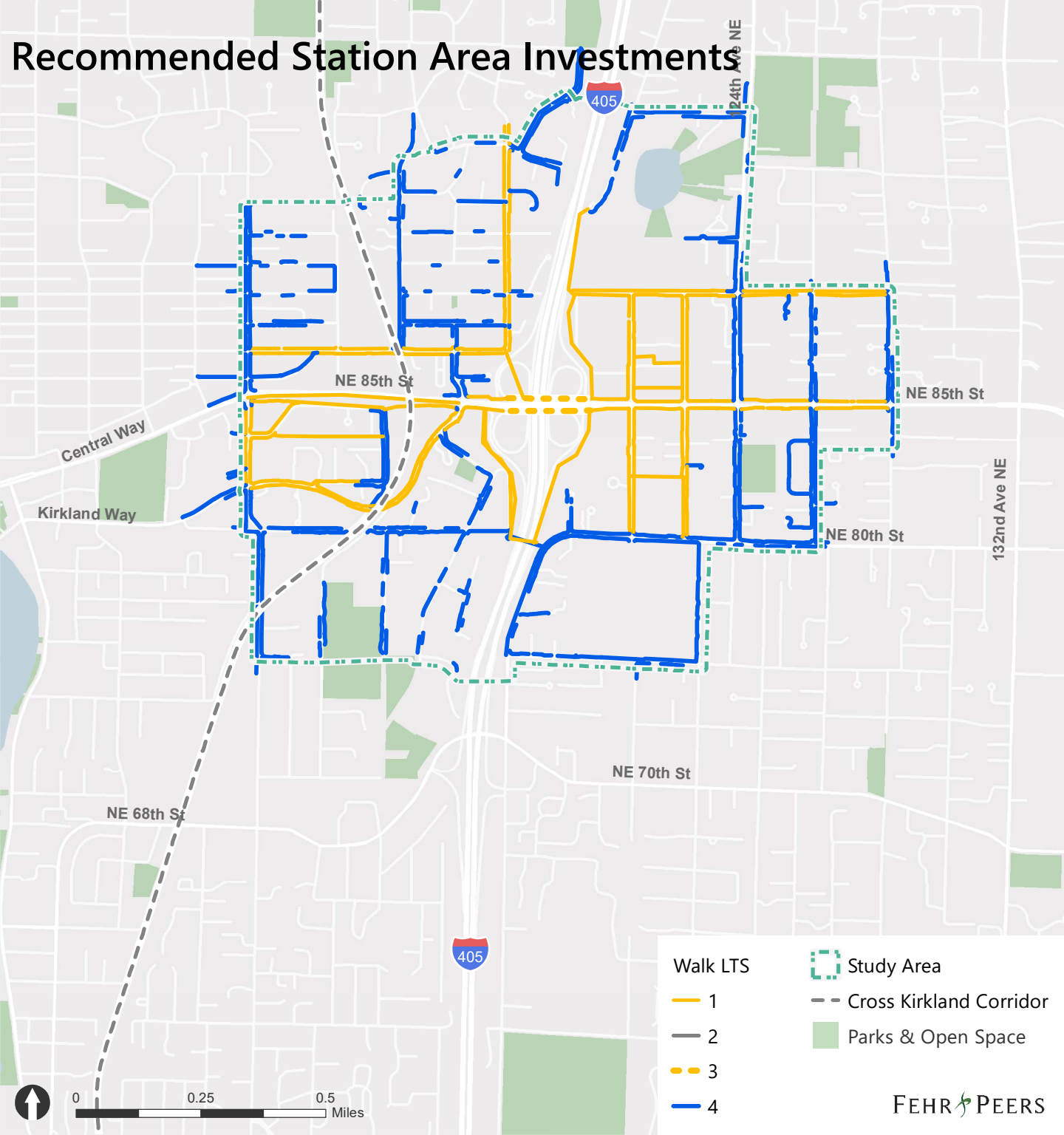
Low
\$330,000
High
\$480,000

Appendix C: Level of Traffic Stress Analysis for Walking and Biking

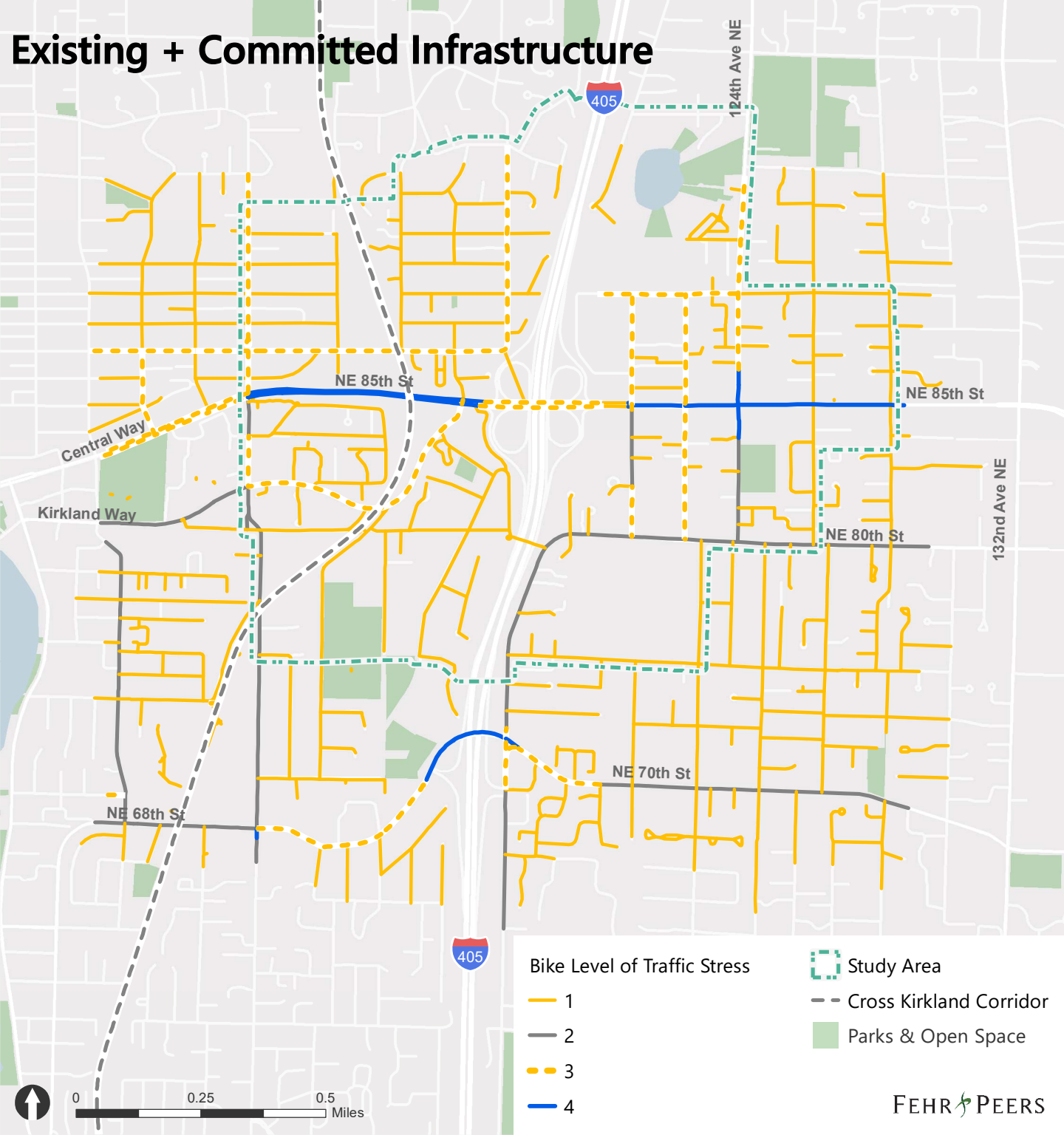
Existing + Committed Infrastructure



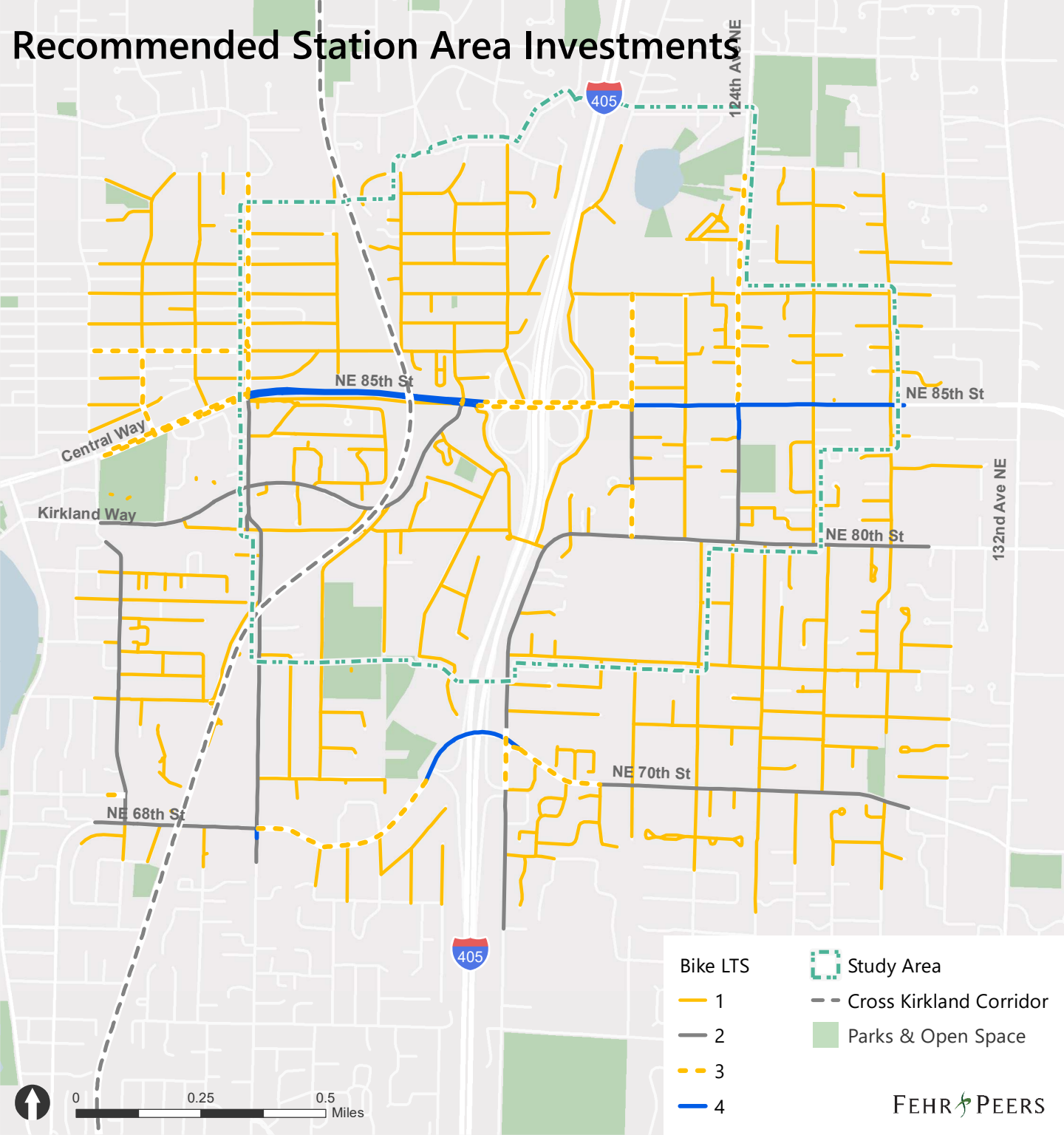
Recommended Station Area Investments



Existing + Committed Infrastructure



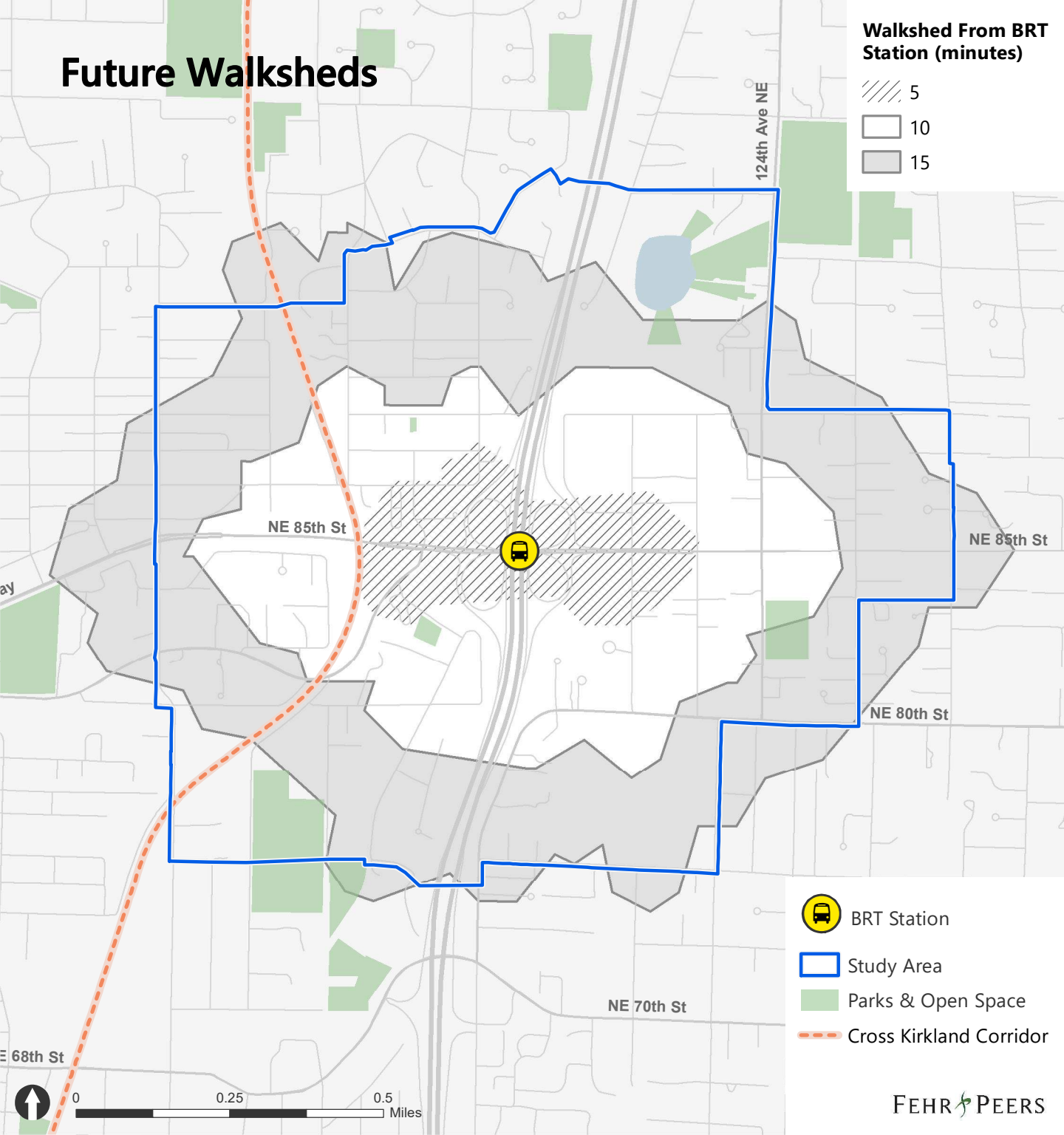
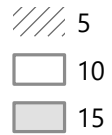
Recommended Station Area Investments



Appendix D: Travelshed Analysis for Walking and Biking

Future Walksheds

Walkshed From BRT Station (minutes)



BRT Station



Study Area



Parks & Open Space



Cross Kirkland Corridor

E 68th St

NE 85th St

NE 85th St

NE 80th St

NE 70th St

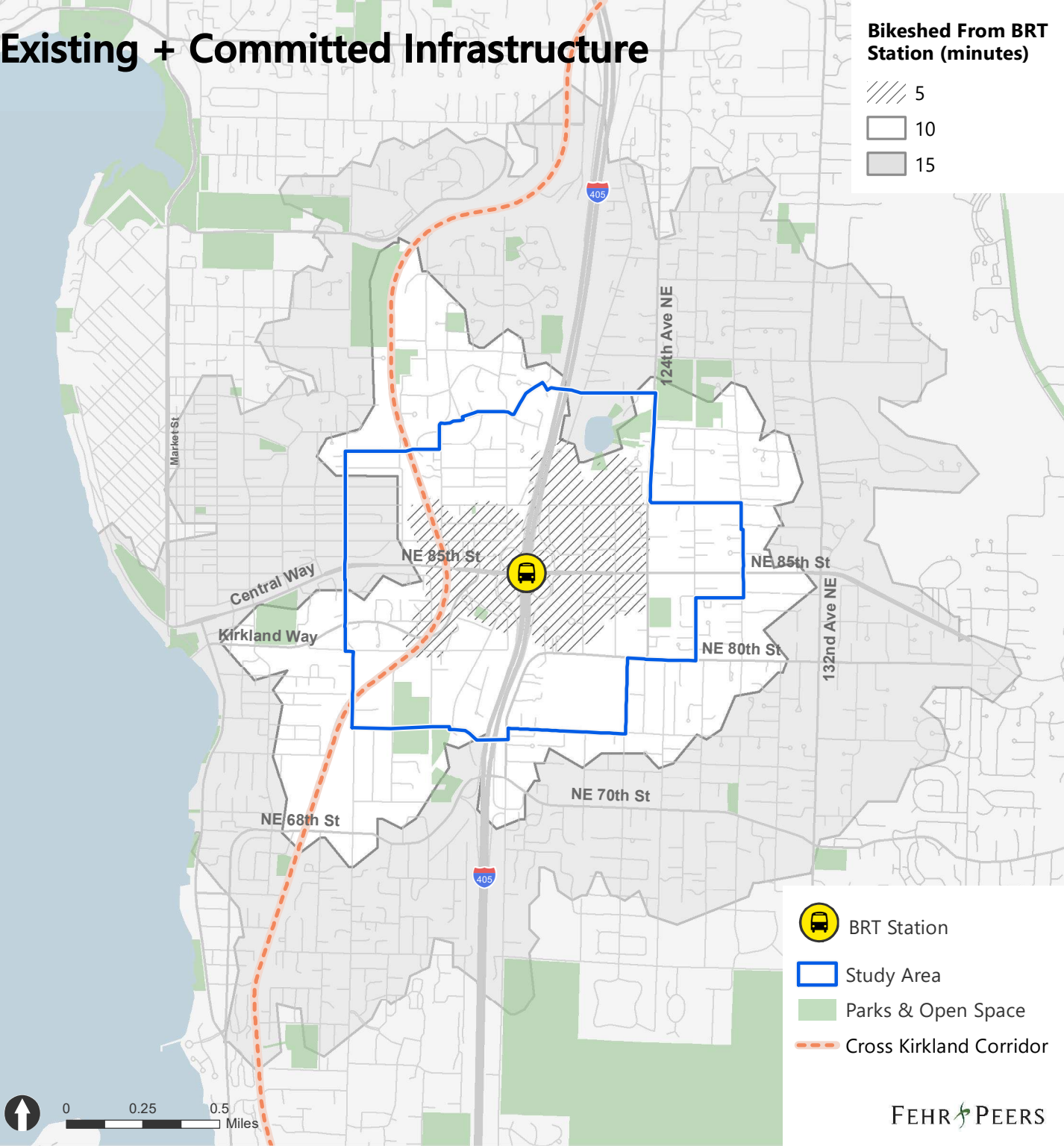
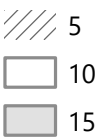
124th Ave NE



0 0.25 0.5 Miles

Existing + Committed Infrastructure

Bikeshed From BRT Station (minutes)



BRT Station



Study Area



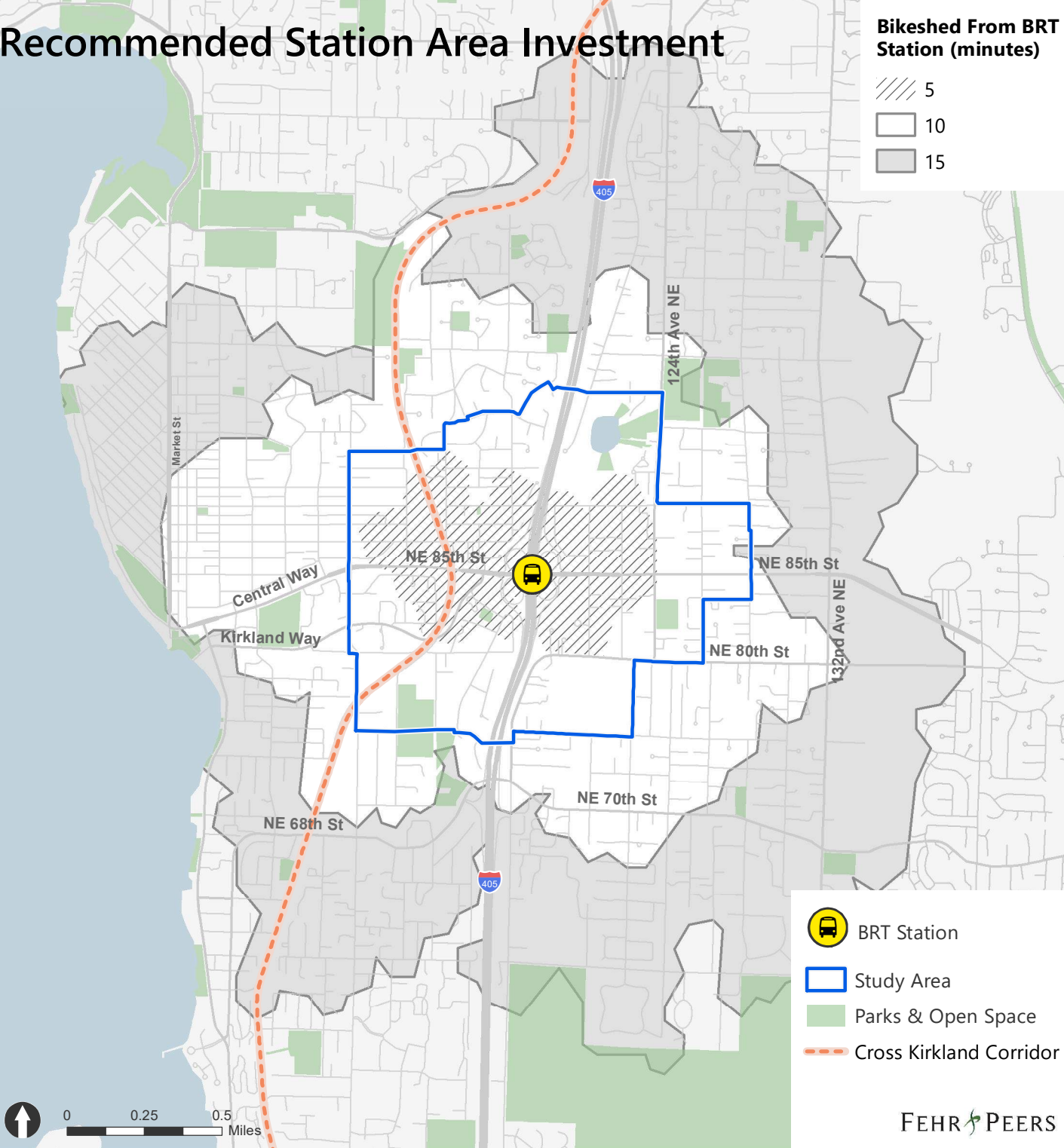
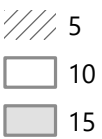
Parks & Open Space







Cross Kirkland Corridor

Recommended Station Area Investment

Bikeshed From BRT Station (minutes)



-  BRT Station
-  Study Area
-  Parks & Open Space
-  Cross Kirkland Corridor