

Embracing Transit in Central Puget Sound: Challenges and Community-Building Opportunities

City of Bellevue

Seattle Planning Commission



American Planning Association
Washington Chapter

Making Great Communities Happen

2010 Conference
October 5 & 6, 2010
Kennewick, Washington

Session Speakers

Barb Wilson

Colie Hough-Beck, ASLA

Kevin McDonald, AICP



Presentation Outline

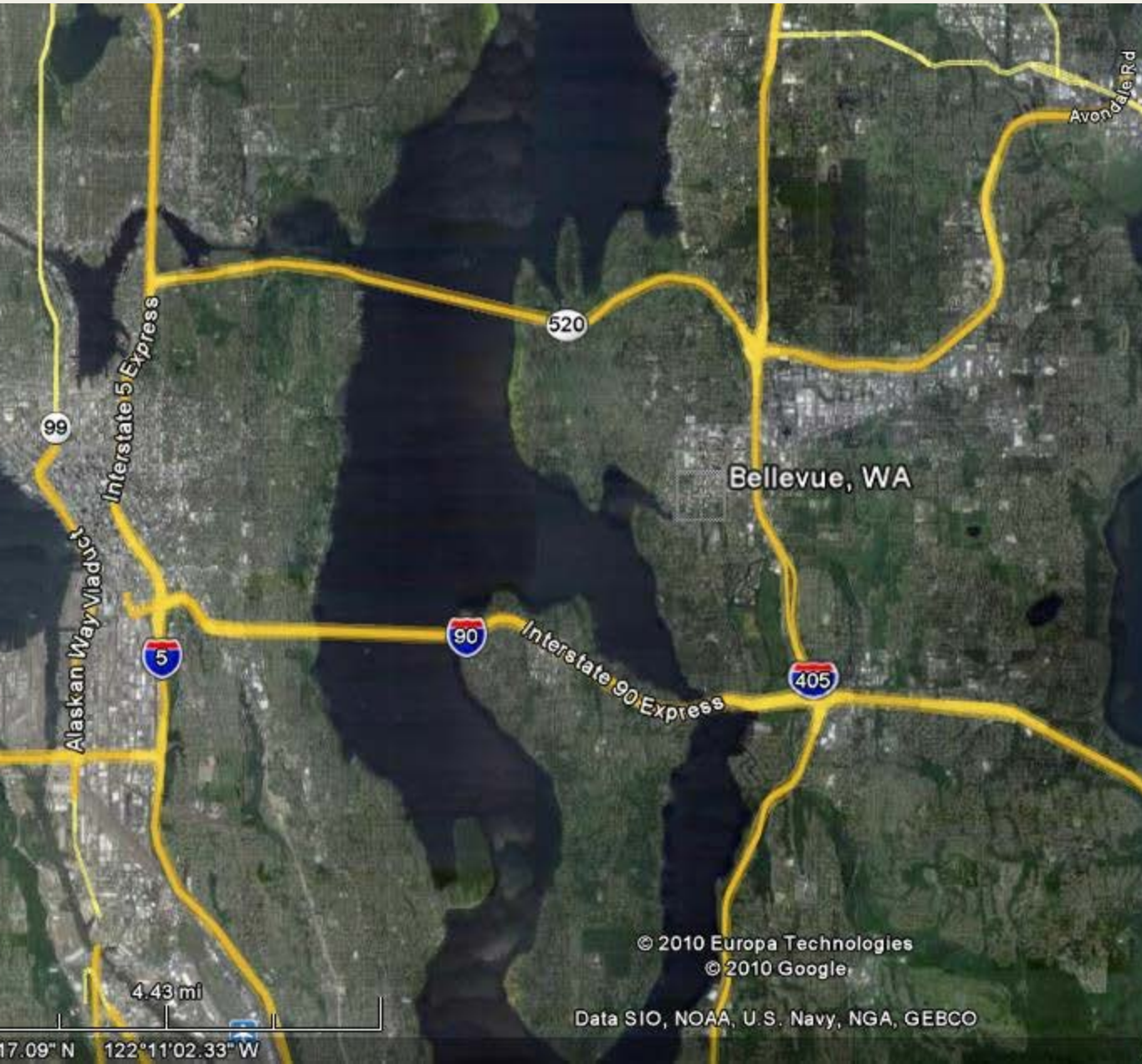
Downtown Bellevue Light Rail

- Sound Transit East Link
- Downtown Bellevue Concept Design Report
- Transportation Decision Criteria

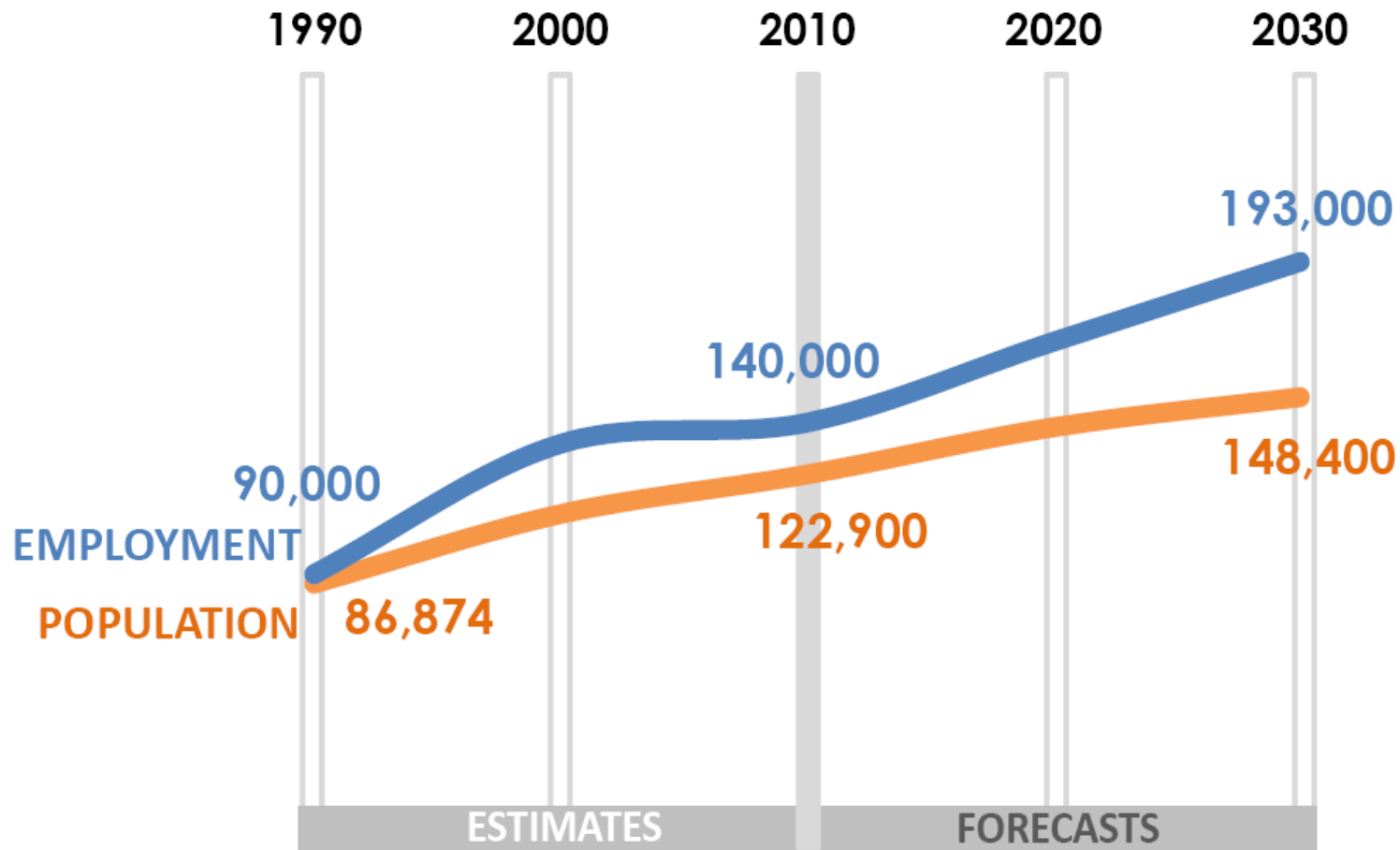
Seattle Transit Communities

- Transit Modes Creating Opportunities
- Transit Community Typologies
- Recommendations

City of Bellevue, WA



Bellevue population & employment



Downtown Bellevue Today

2010 Estimates

5,500 Residents

38,000 Jobs



Downtown Bellevue Growth

2030 Forecasts
19,000 Residents
79,000 Jobs



Transportation Investments to Support Growth

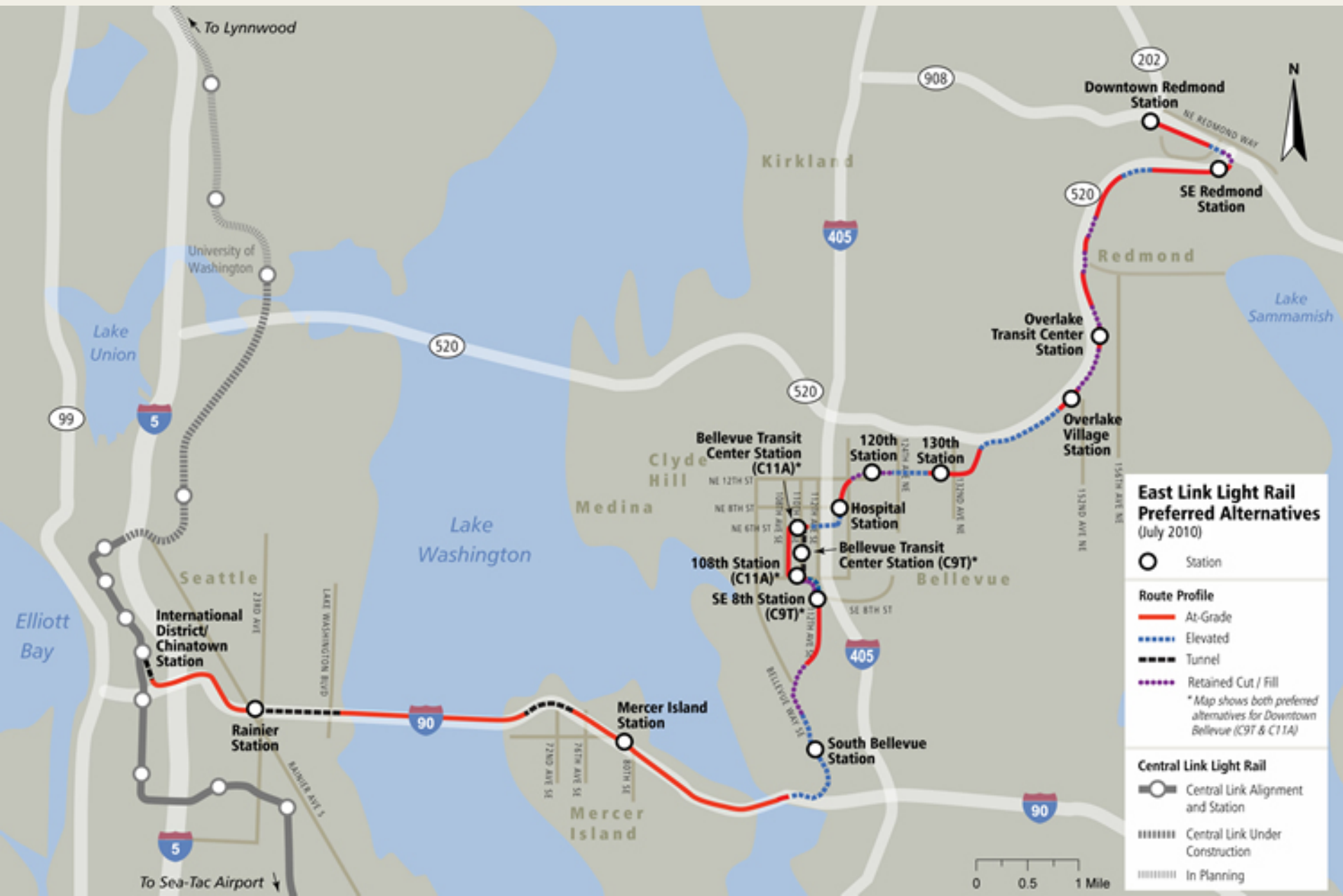
- Regional
 - I-405, SR 520
- Local Roadways
 - Arterial Connections and Expansions
 - Operational Improvements
- Transit
 - Light Rail
 - Express and Local Bus
- Pedestrian and Bicycle

Sound Transit East Link

Downtown Seattle - Bellevue - Redmond



East Link – Sound Transit Preferred Alternatives



South Bellevue: I-90 to Downtown



View looking north towards Downtown Bellevue

Bel-Red Corridor: Downtown to Overlake



***Downtown
Bellevue***

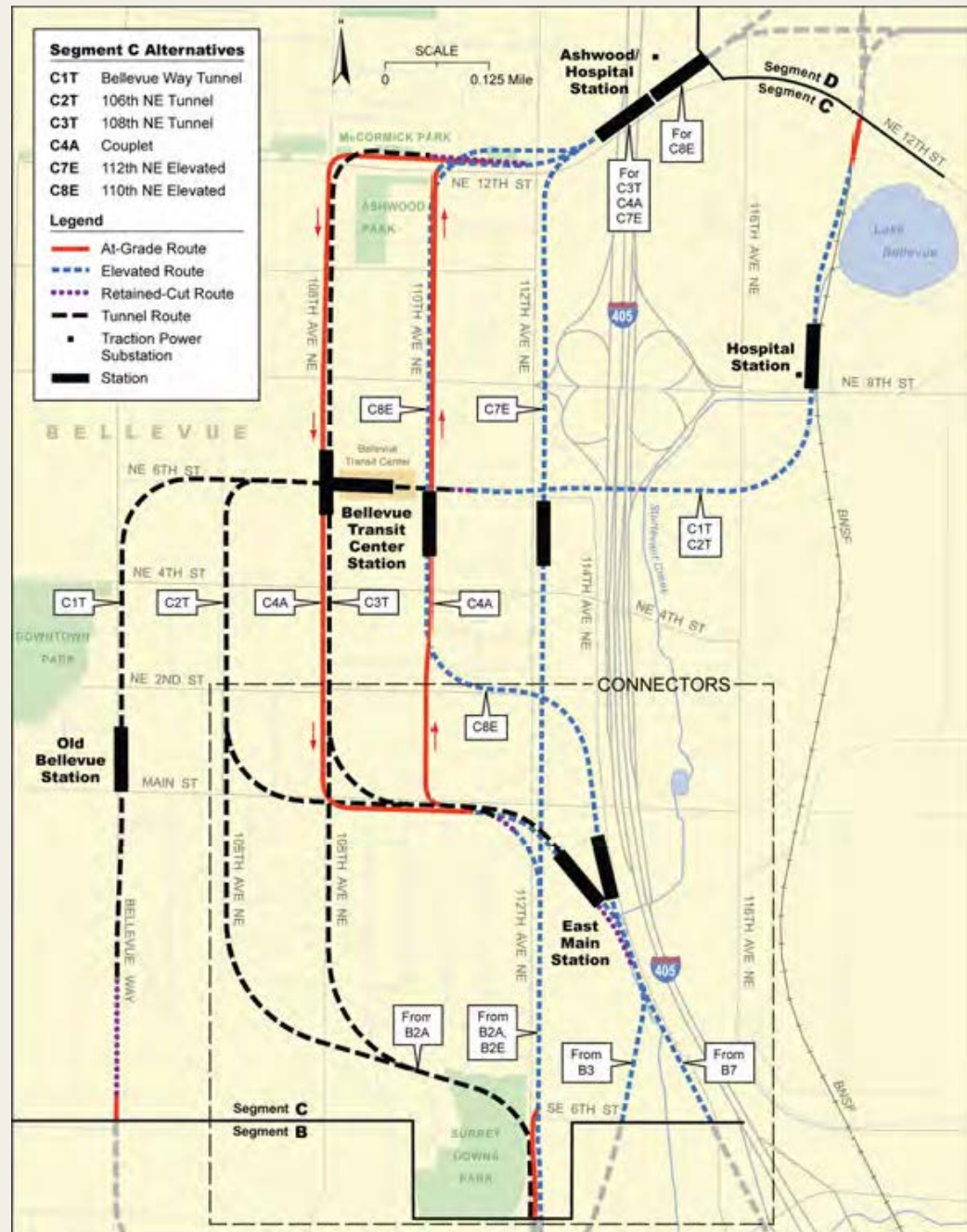
***Bel-Red
Corridor***

Overlake

Sound Transit Draft EIS - Nov 2008

Downtown Alternatives

- Bellevue Way Tunnel (C1T)
- 106th NE Tunnel (C2T)
- 108th NE Tunnel (C3T)
- Couplet At-Grade (C4A)
- 112th NE Elevated (C7E)
- 110th NE Elevated (C8E)



Light Rail in Downtown Bellevue

Finding the Best Fit

Sound Transit Peer Review Panel – Oct 2009

- National Light Rail Experts
- Charge:
 - Review analysis methodology
 - Recommend changes to analysis methodology – not to state a preferred alignment
- Recommendations:
 - Modify the alignments
 - Sound Transit and Bellevue should collaborate rather than develop parallel analysis

Light Rail in Downtown Bellevue

Finding the Best Fit

Downtown Bellevue Light Rail Alternatives

Concept Design Report

FEBRUARY 2010



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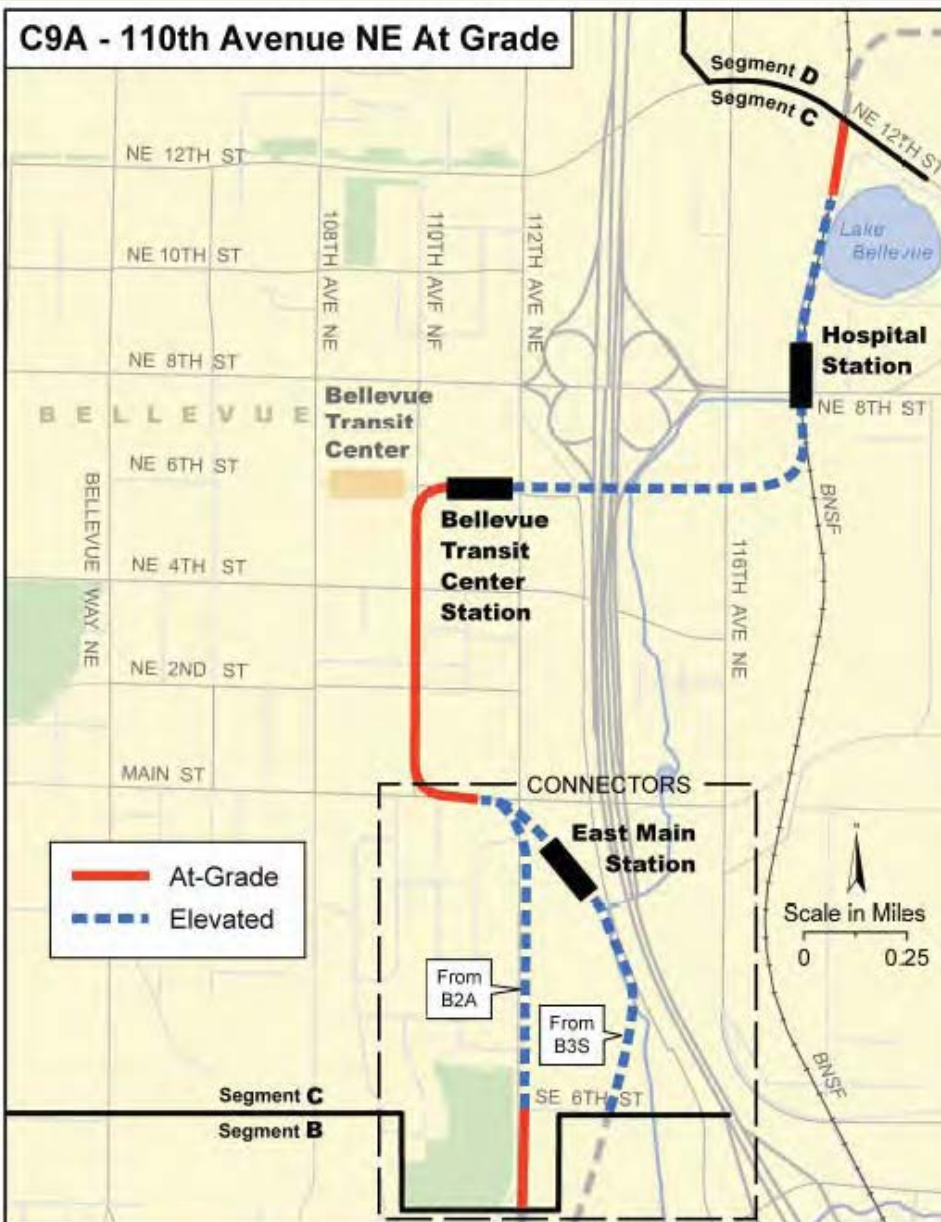
Concept Design Report

- Basis for comparing alternatives
- Not a recommendation
- Evaluation of conceptual designs
- Screening level analysis of environmental impacts
- Criteria and the methods used to assess each alternative
- Describes the relative trade-offs of the alternatives
- Visual simulations and graphics to illustrate how each alternative would look in Downtown Bellevue

Grade Separated Alternatives



At Grade Alternatives



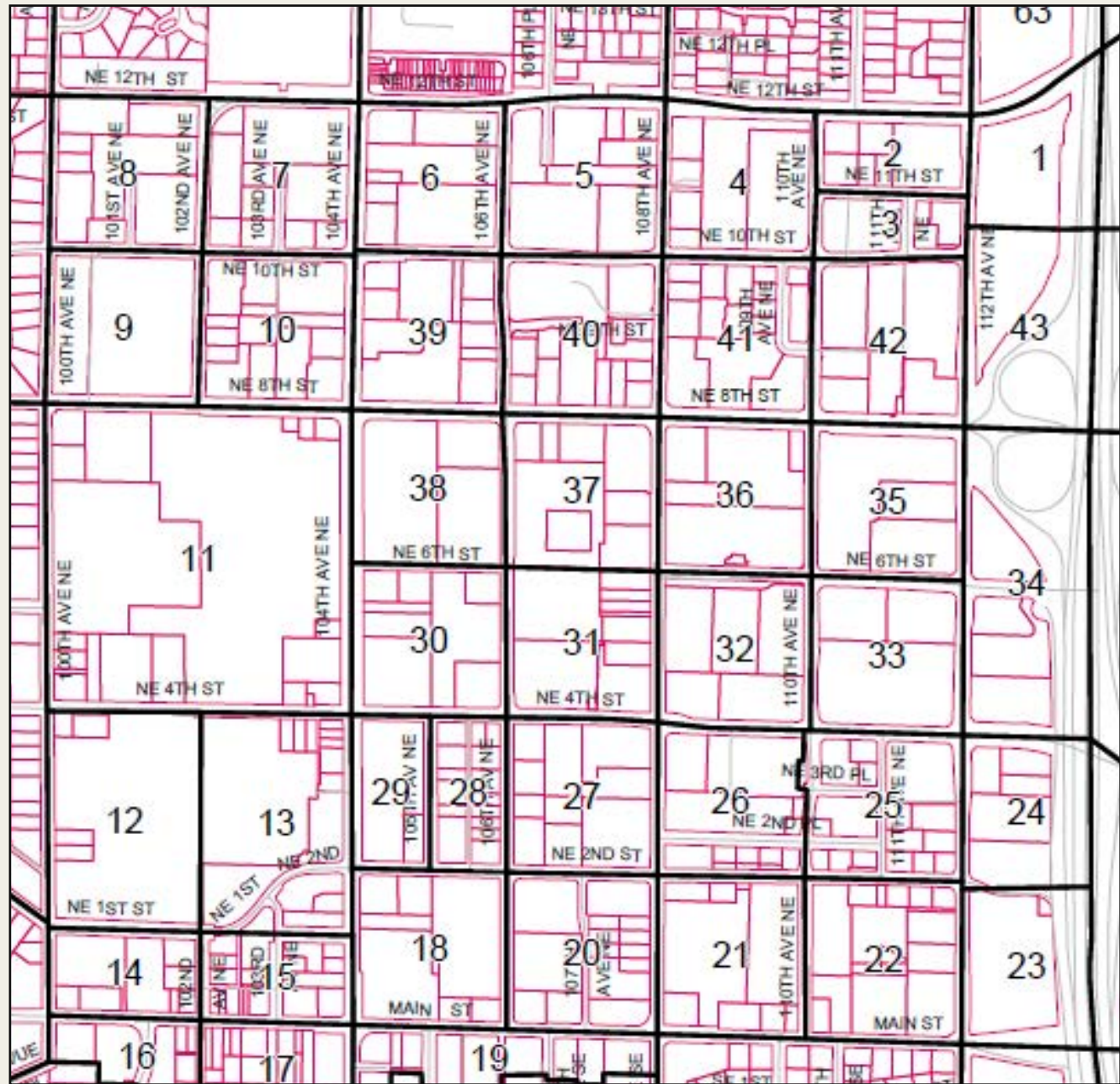
Concept Design Report Evaluation Criteria

Criteria category	Criteria
Cost	Capital cost
Land Use accessibility/ Walk distance	Land use within walking distance of stations
Ridership	Estimated 2030 ridership and light rail travel time
Traffic operations	Downtown traffic congestion for vehicles
Environmental impacts	Displacements
	Noise and vibration
	Parks
	Ecosystems
Construction effects	Construction effects
Construction risk	Construction risk
Consistency with City plans and policies	Consistency with policies related to downtown alignments

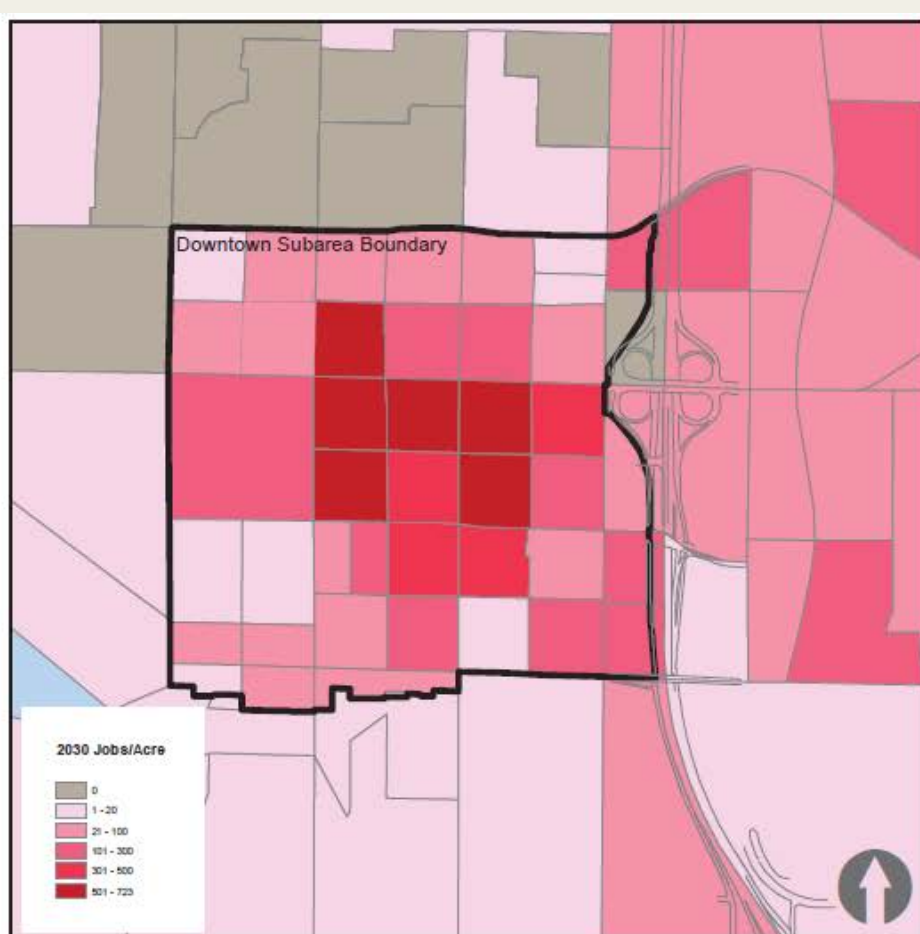
Concept Design Report Evaluation Criteria

2030 Downtown jobs within walking distance of a station	Percent within a 5 & 10-minute walk
2030 Downtown residents within walking distance of a station	Percent within a 5 & 10-minute walk
Traffic Operations	Southbound/Northbound vehicle travel time (minutes)
	Eastbound/Westbound vehicle travel time (minutes)
	Percent of vehicle demand into and out of Downtown served
	Average Downtown vehicle delay at intersections (seconds)
	Average vehicle delay at key affected intersections (seconds)

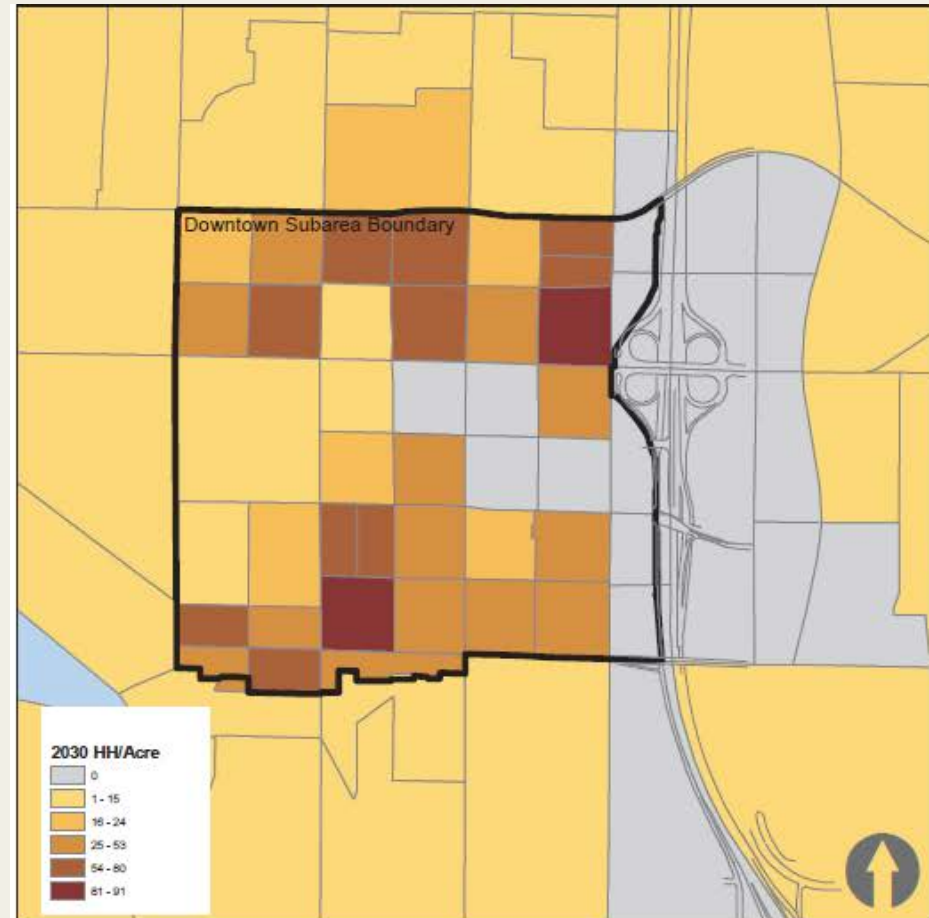
Land Use Forecasting Zones



2030 Land Use Intensity



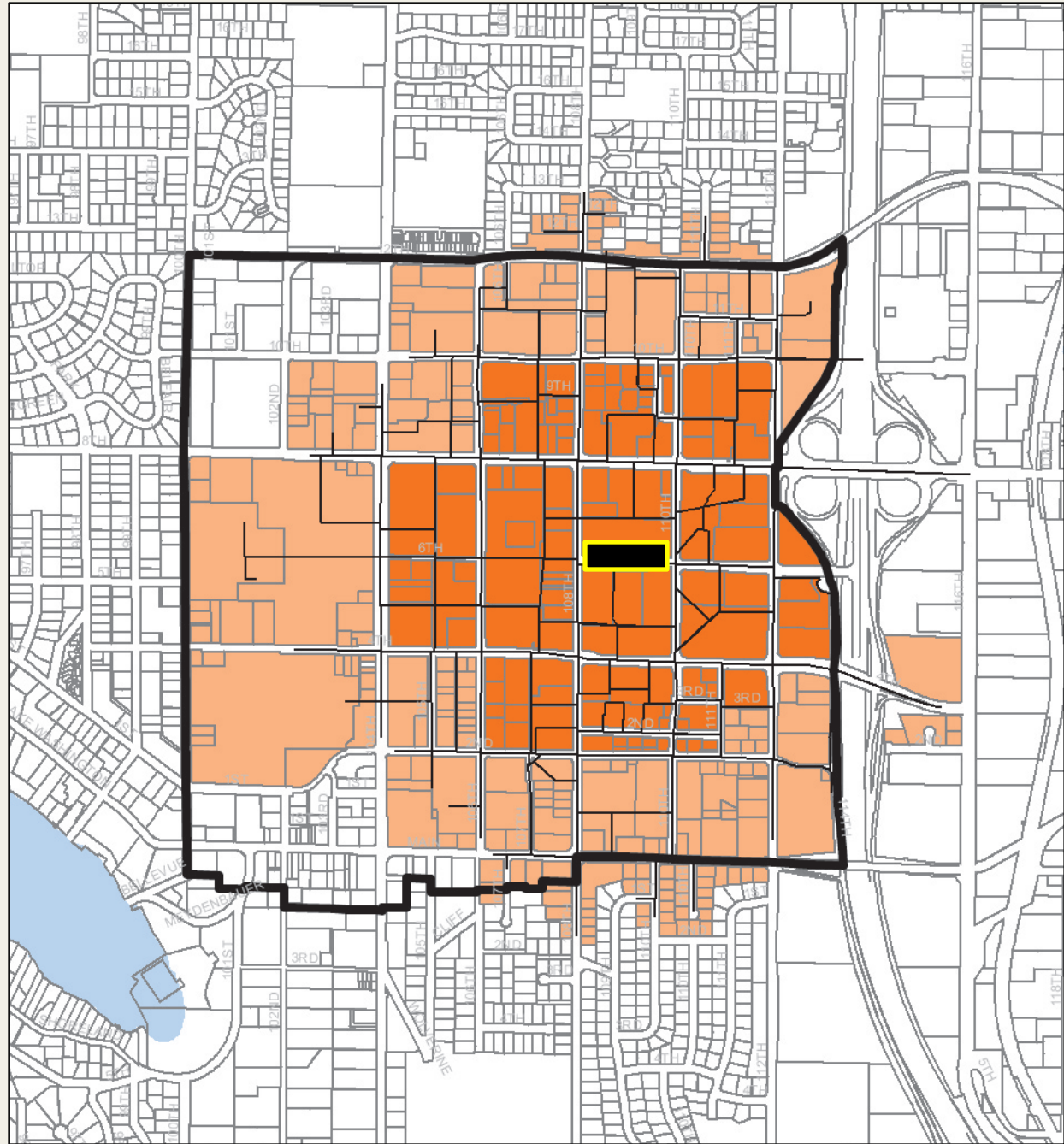
Forecast 2030 Employment Density by TAZ (Jobs/Acre)



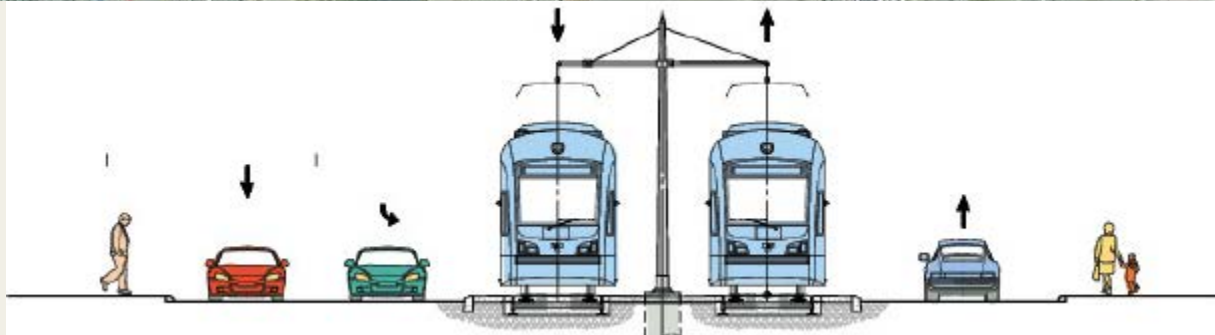
Forecast 2030 Housing Density by TAZ (HHs/Acre)

Darker colors indicate higher intensity in 2030

Development of Walksheds



Alternative C9A (At-Grade)



Alternative C9A (At-Grade)



C9A: 110th NE At-Grade Alternative – North Transition Structure and Station at City Hall Plaza Looking Northeast

Alternative C9A (At-Grade)

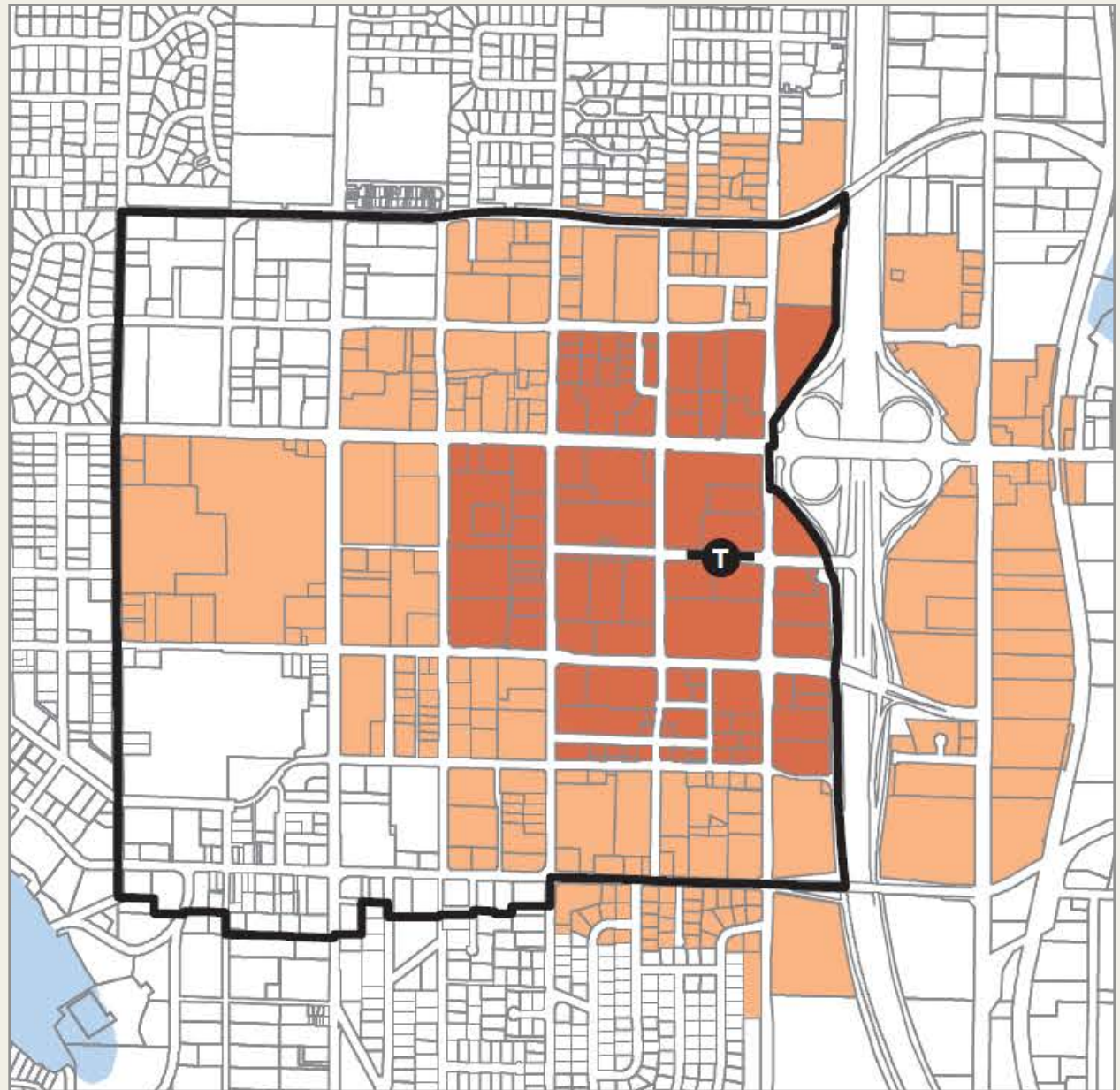
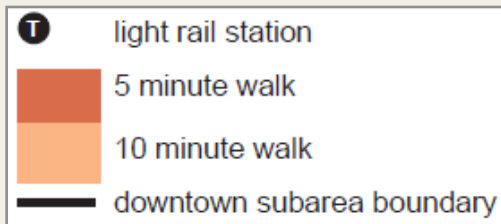


C9A: 110th NE At-Grade Alternative – North Transition Structure and Station at 110th Avenue NE Looking Southeast

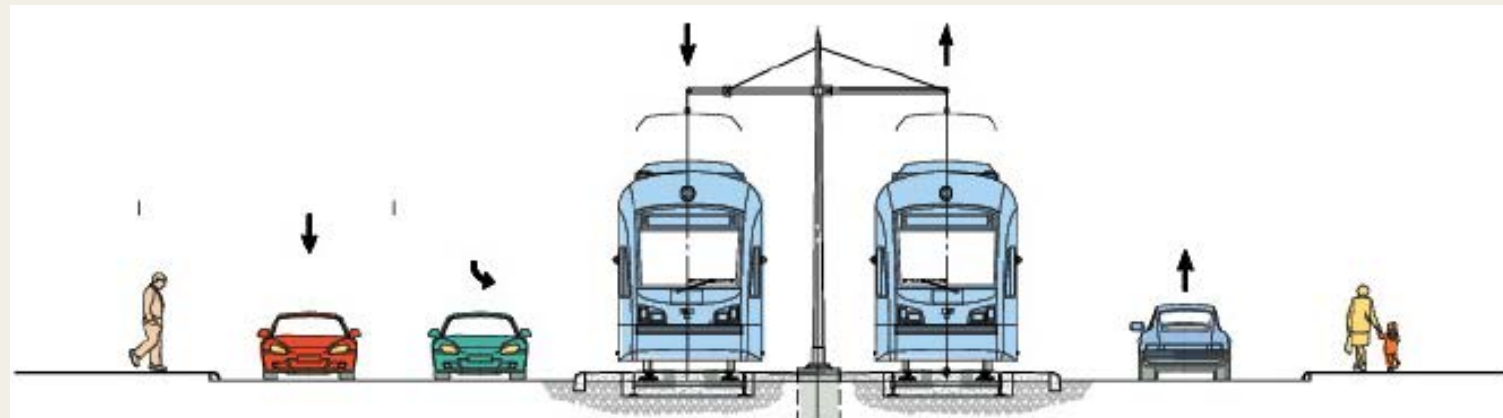
Walk Analysis

Alt C9A

(At-Grade)



Alternative C11A (At-Grade)



Alternative C11A (At-Grade)

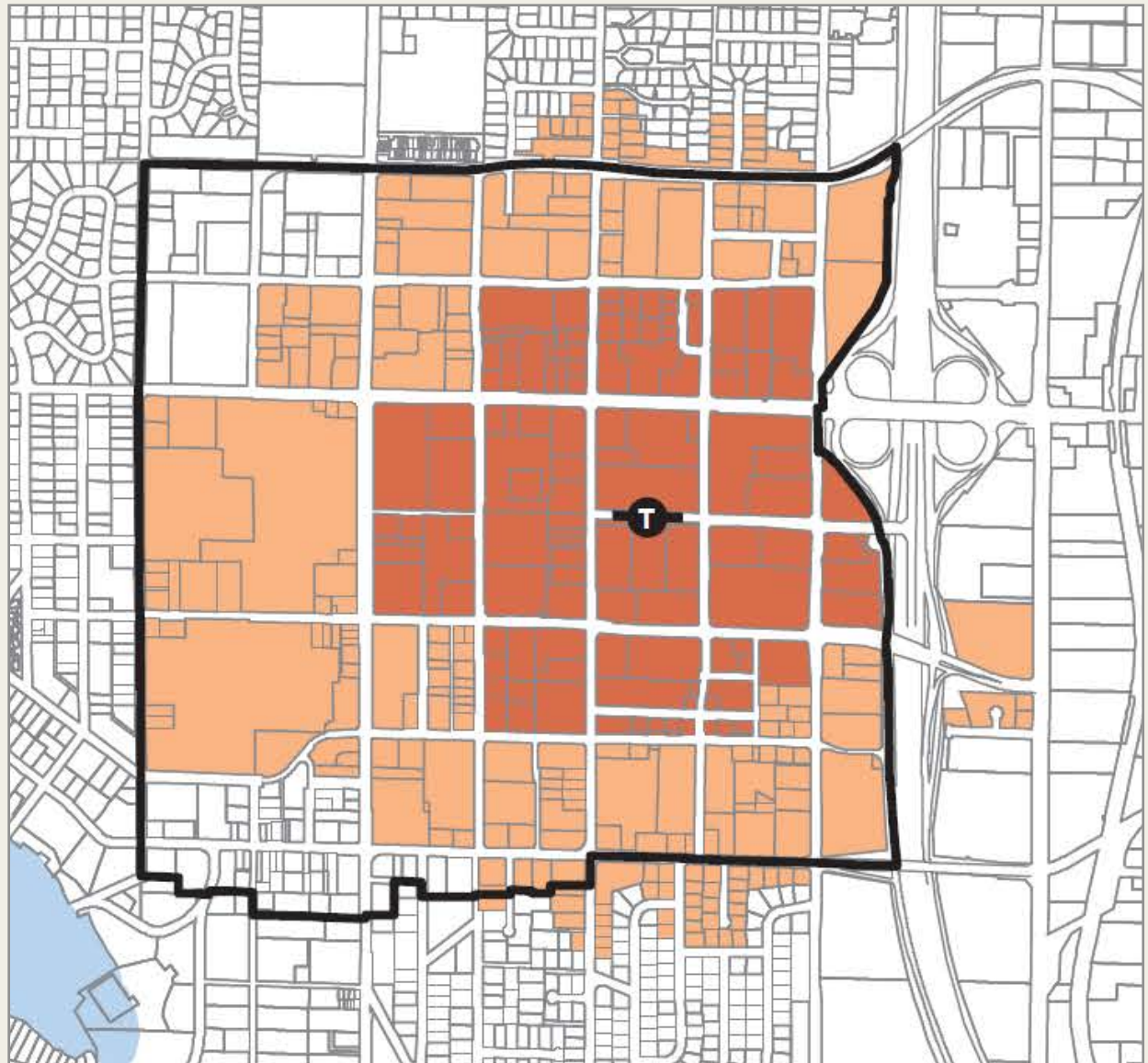
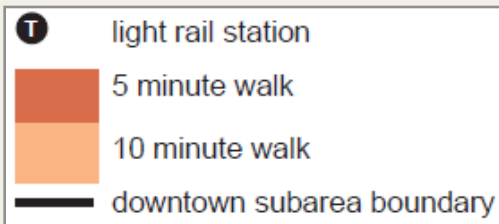


C11A: 108th NE At-Grade Alternative – Station at NE 6th Street and 108th Avenue NE Looking Southeast

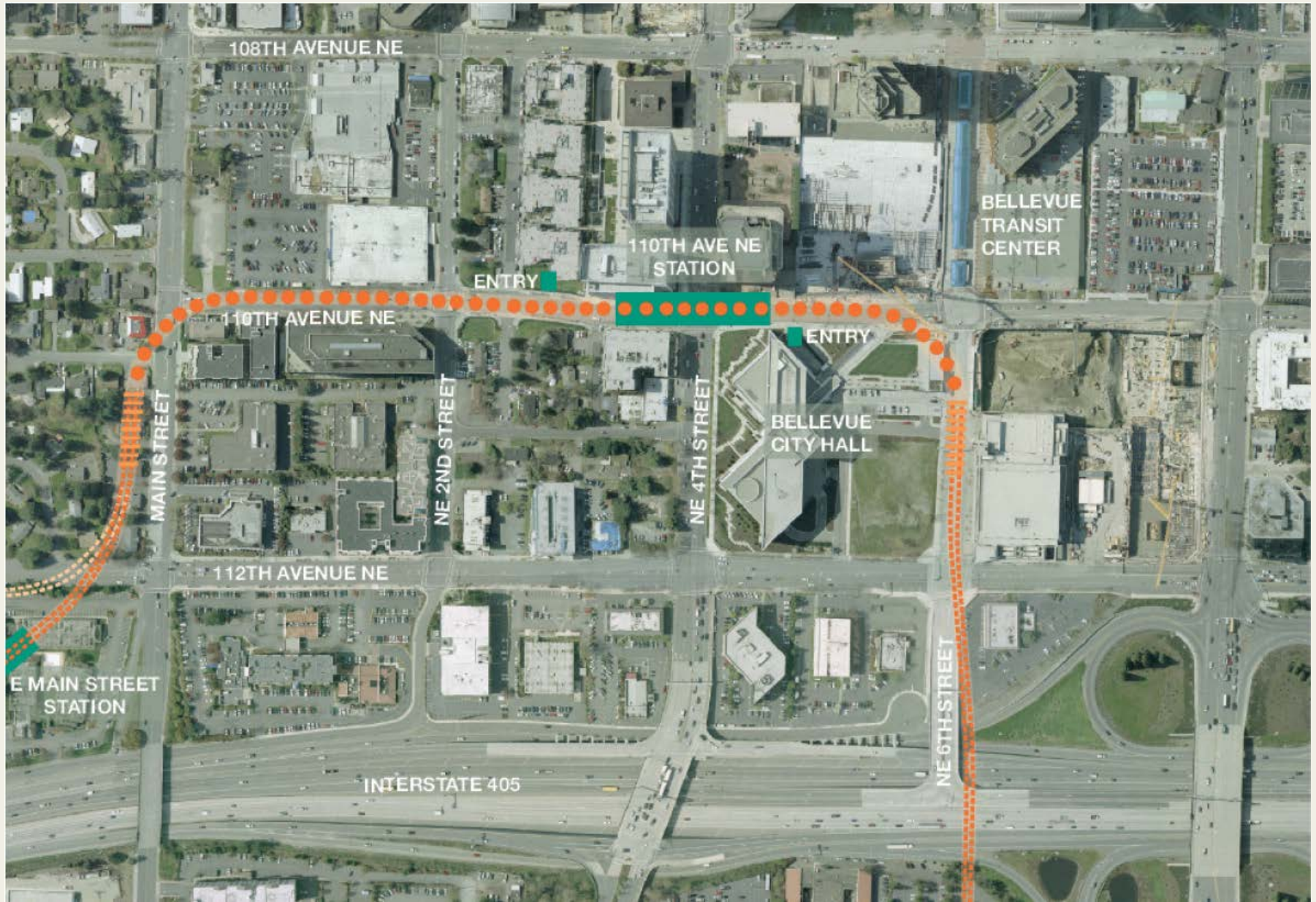
Walk Analysis

Alt C11A

(At-Grade)



Alternative C9T (Tunnel)



Alternative C9T (Tunnel)

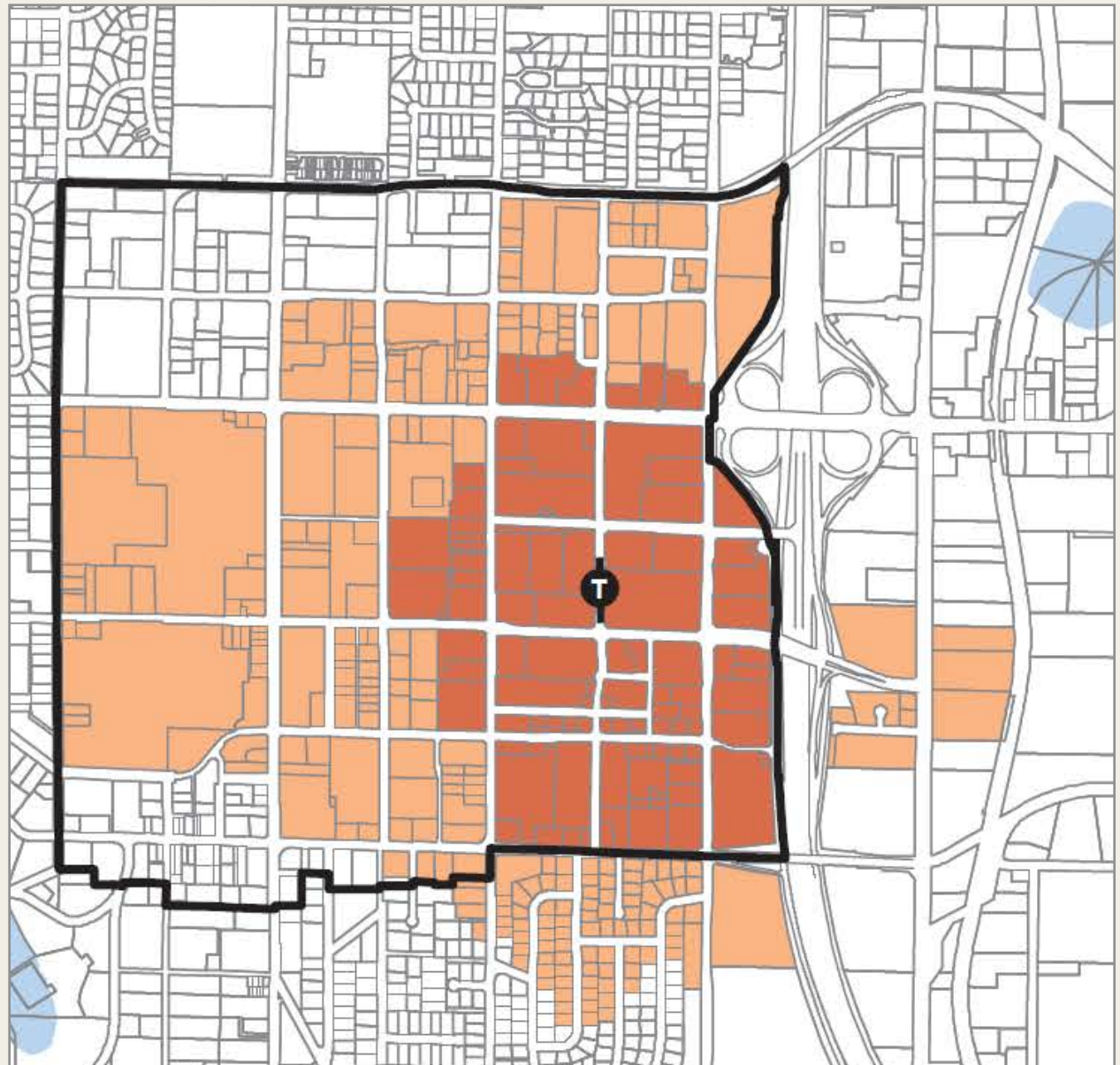
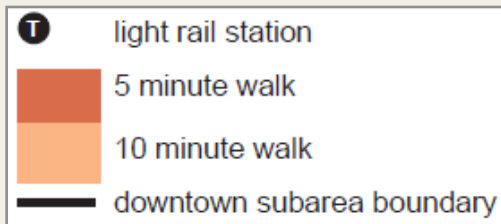


C9T: 110th NE Tunnel Alternative – North Portal on NE 6th Street Looking Southeast

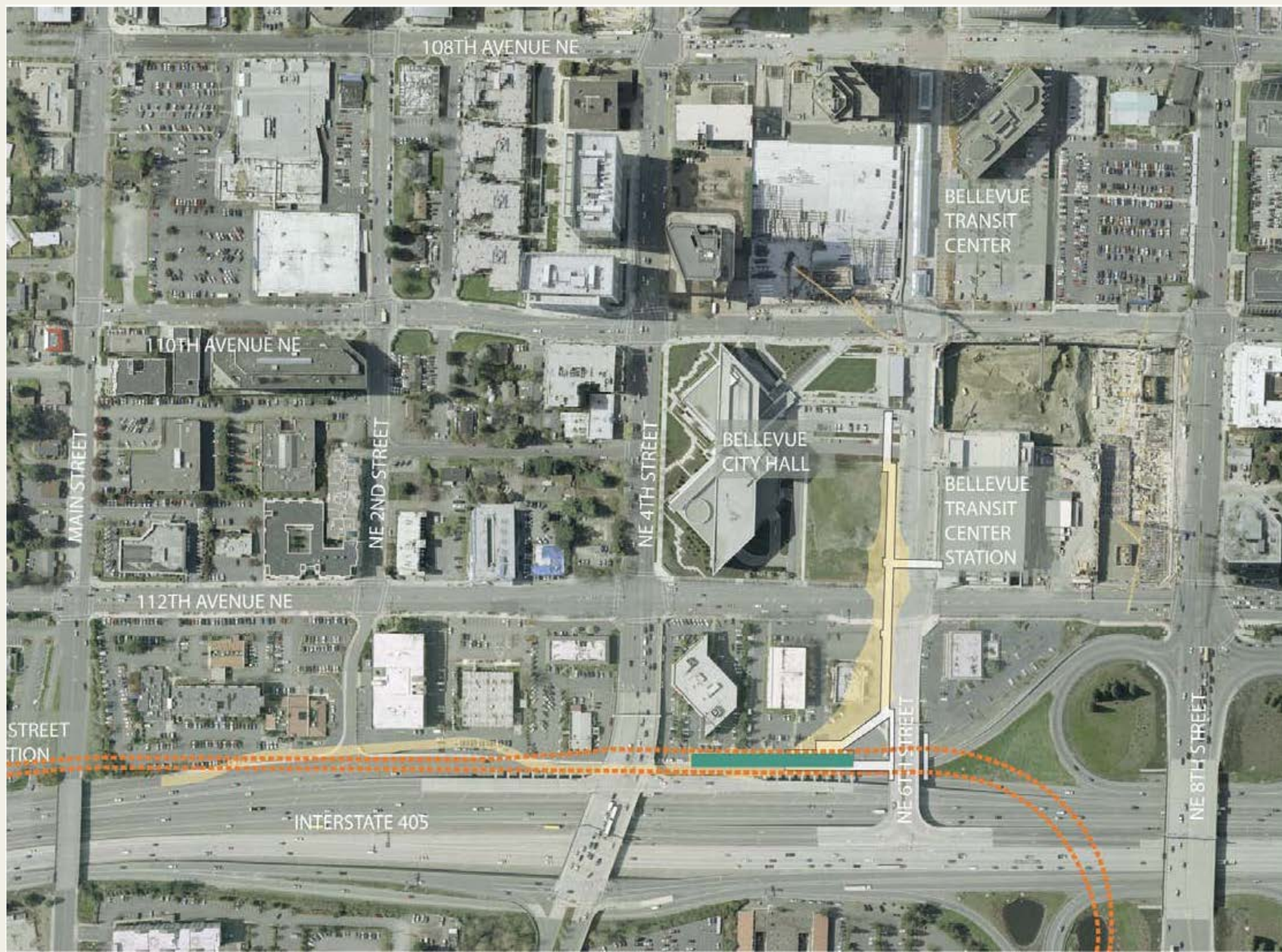
Walk Analysis

Alt C9T

(Tunnel)



Alternative C14E (Elevated)



Alternative C14E (Elevated)

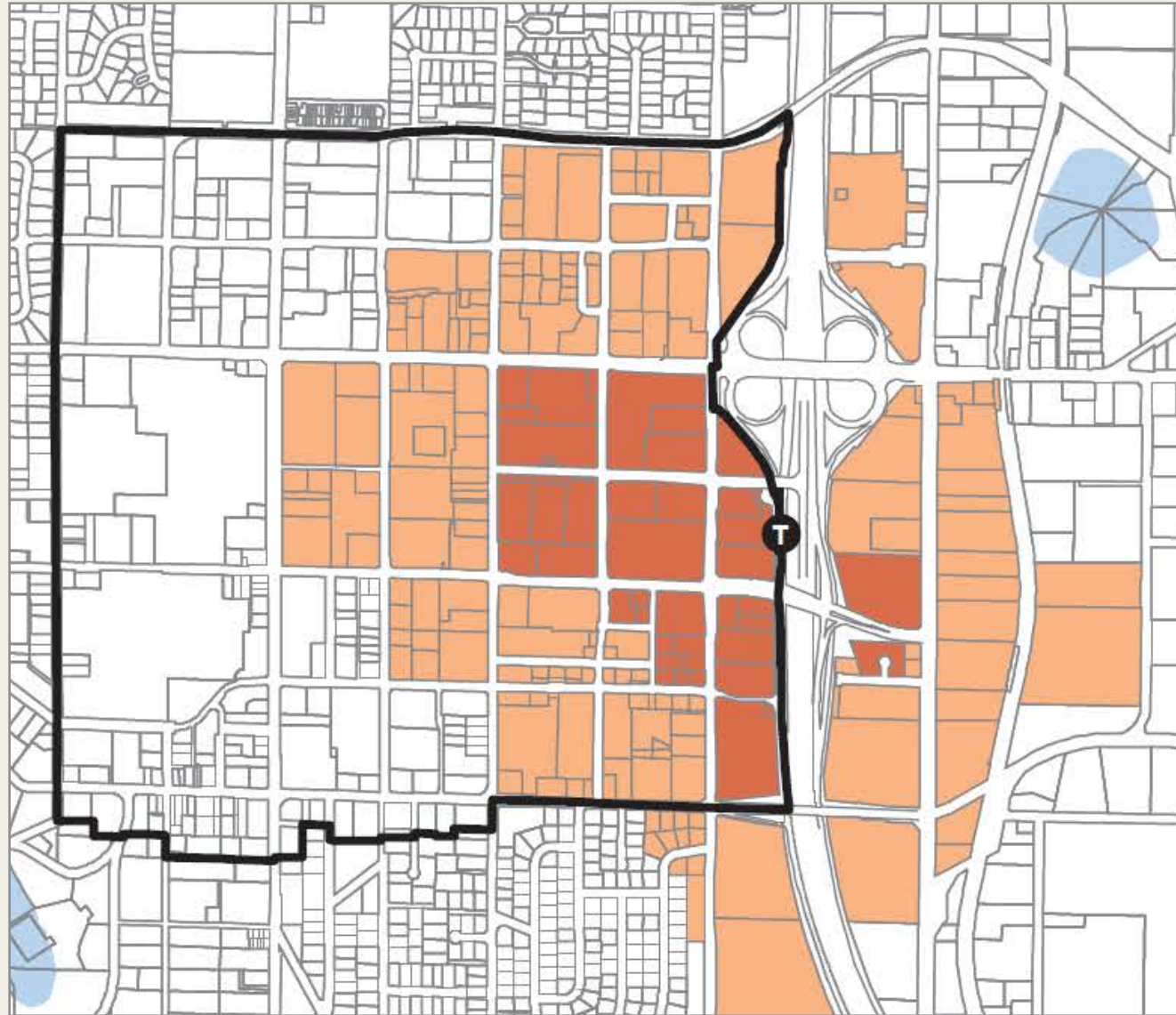
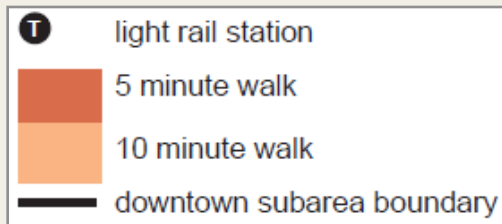


C14E: 114th NE Elevated Alternative – Station at 114th Avenue NE Looking Northwest

Walk Analysis

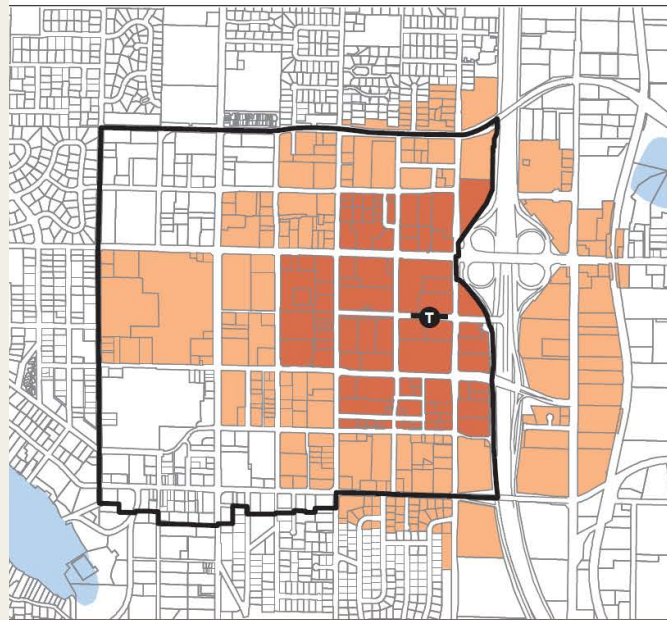
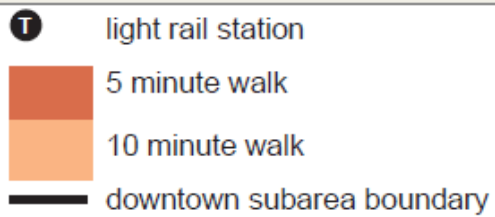
Alt C14E

(Elevated)

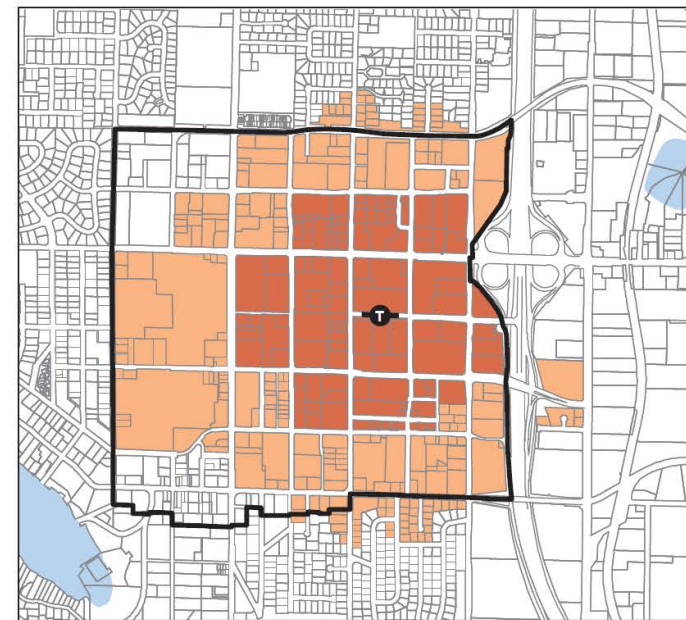


Walk Analysis

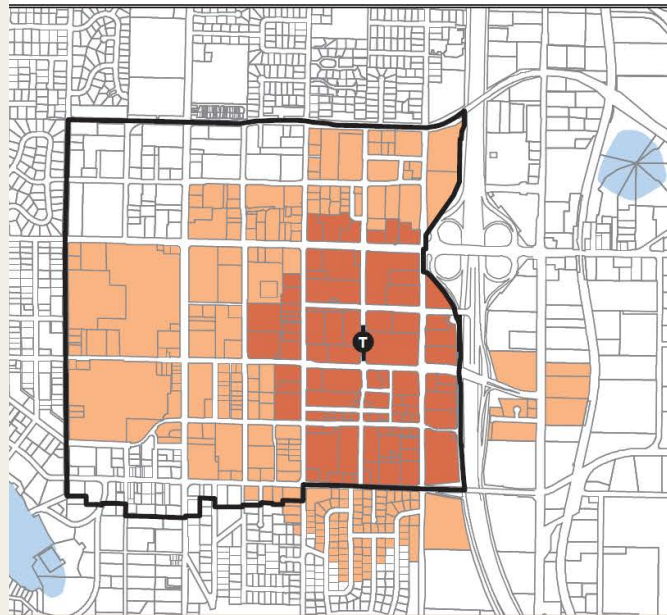
Primary Downtown stations



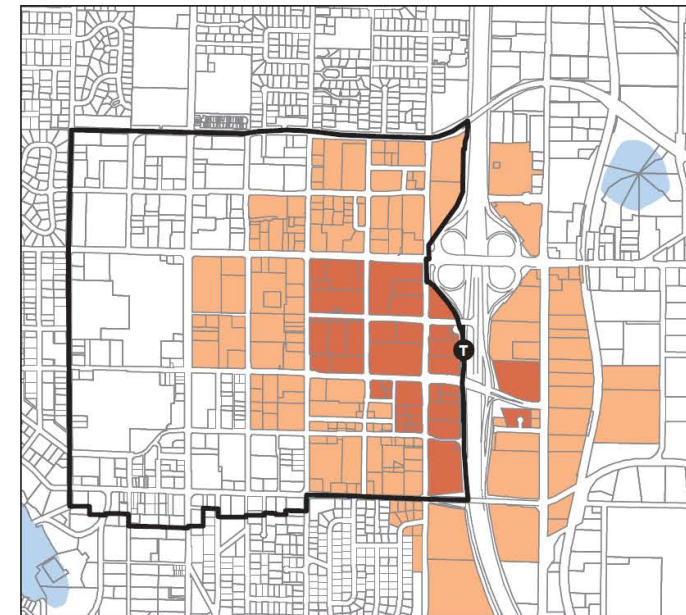
NE 6th Station at City Hall, part of C9A



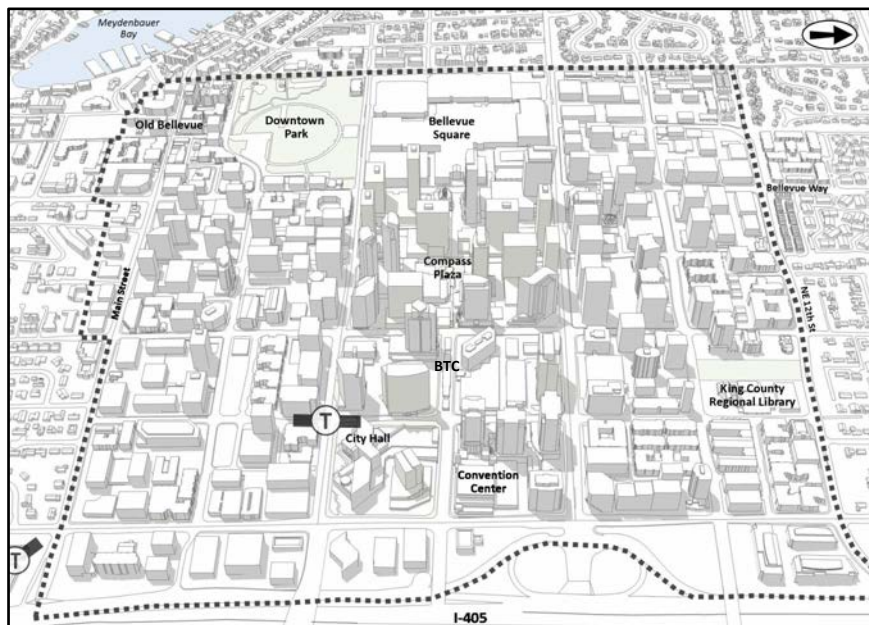
NE 6th Station at BTC, part of C11A



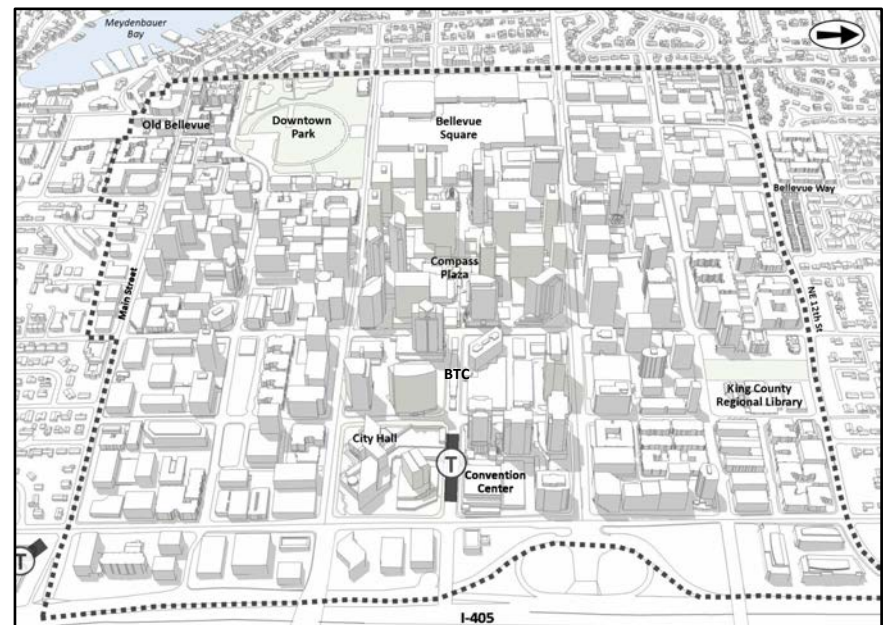
110th Avenue Tunnel Station, part of C9T



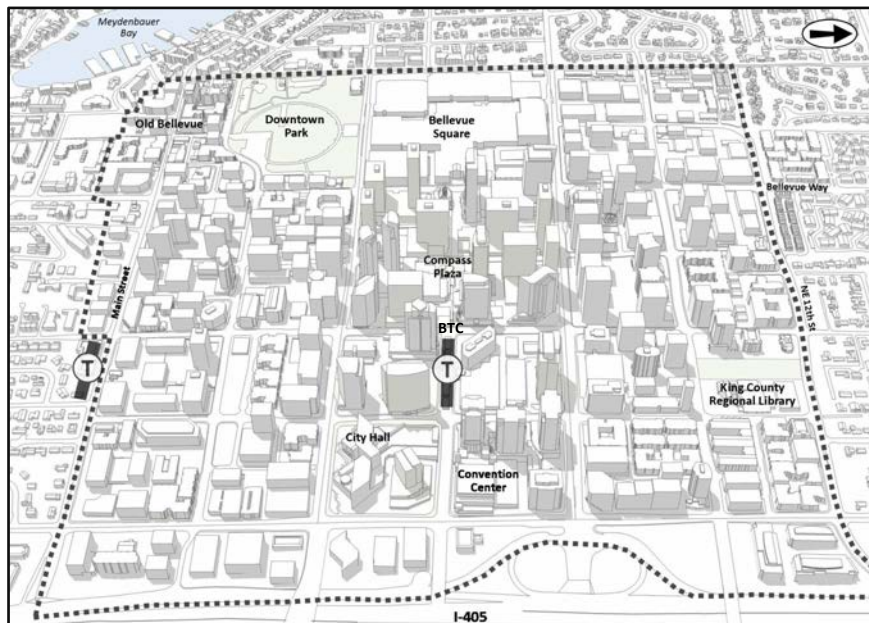
114th Avenue Elevated Station, part of C14E



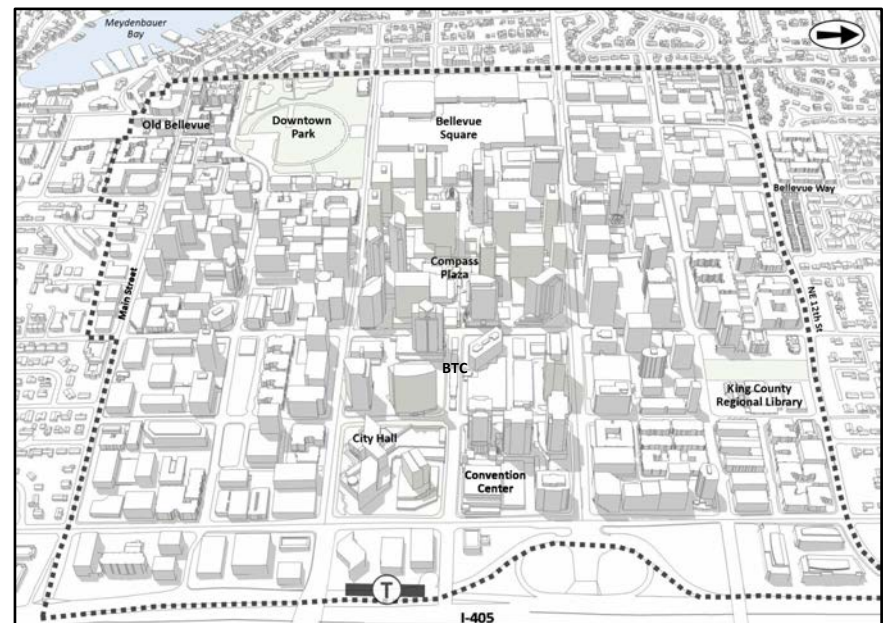
C9T: Station Location w/ 2030 Forecast



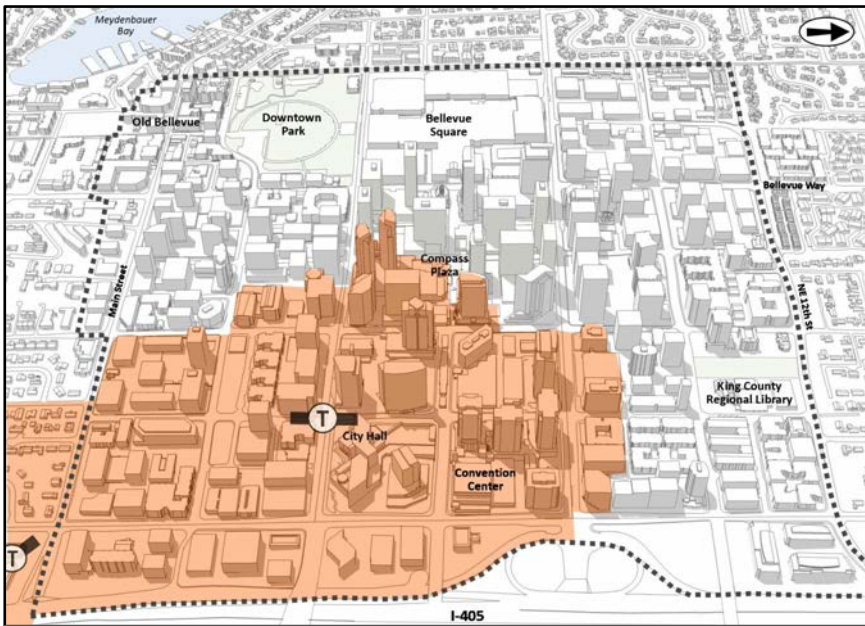
C9A: Station Location w/ 2030 Forecast



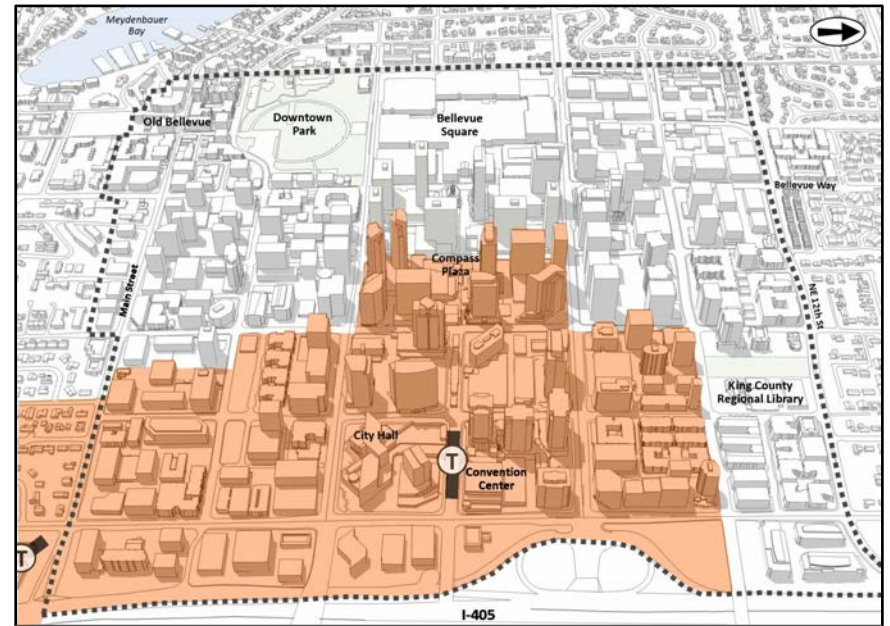
C11A: Station Location w/ 2030 Forecast



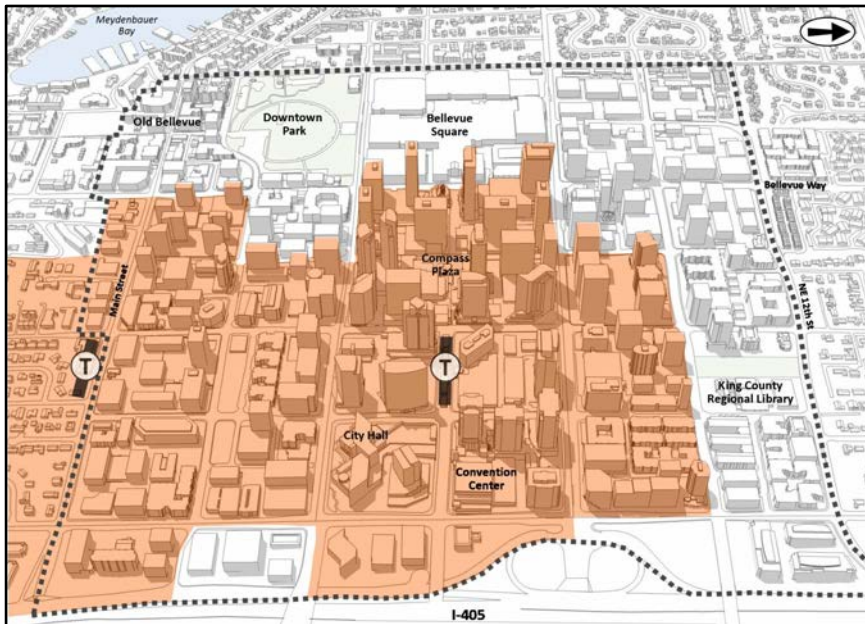
C14E: Station Location w/ 2030 Forecast



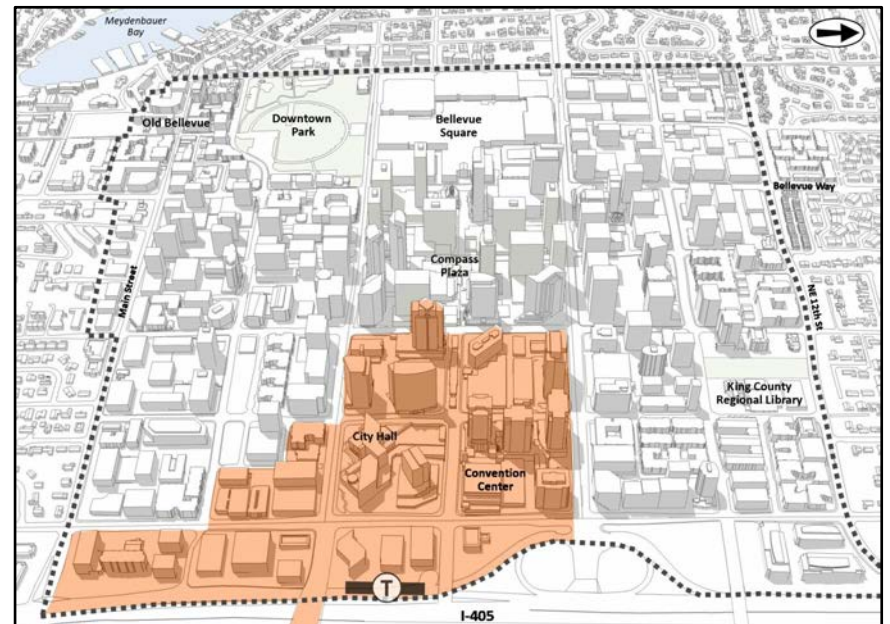
C9T: 5-minute Walk



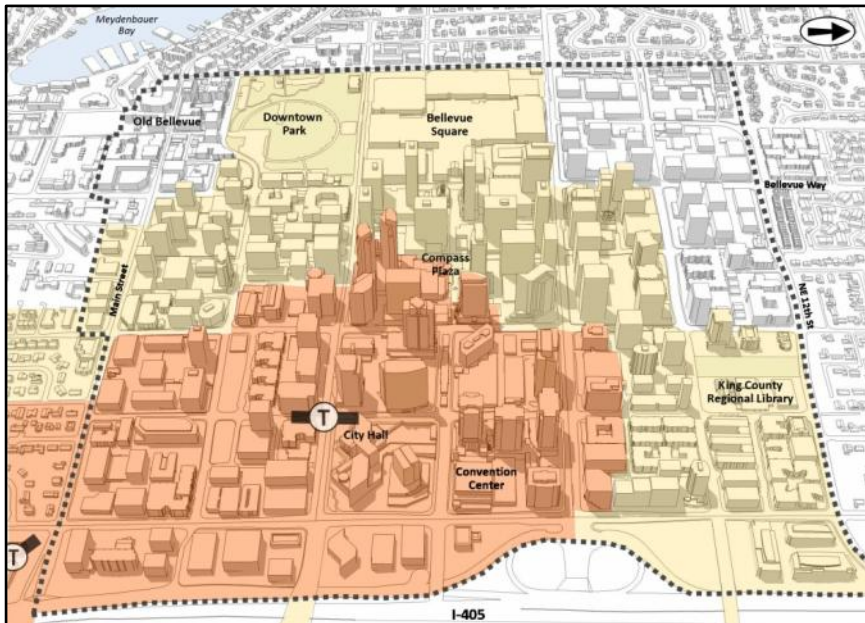
C9A: 5-minute Walk



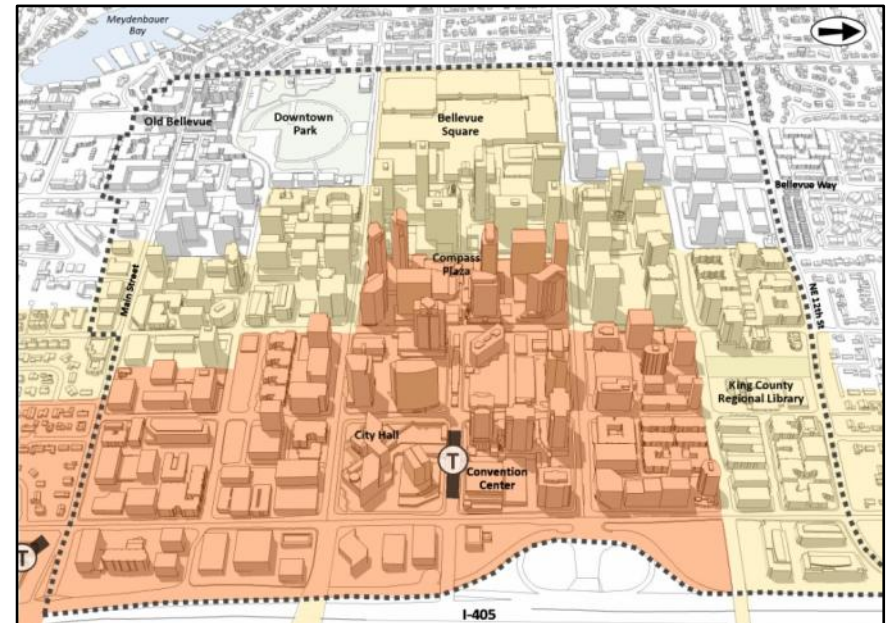
C11A: 5-minute Walk



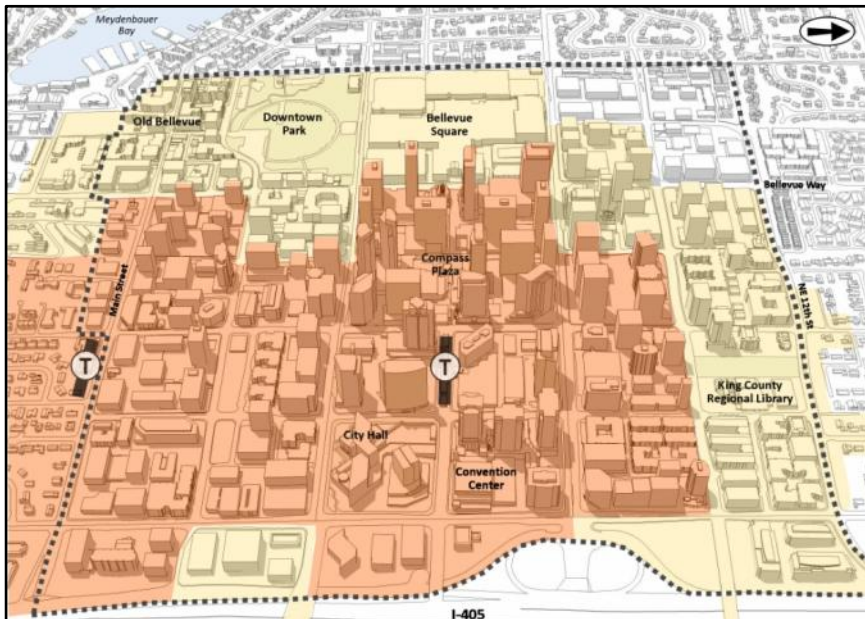
C14E: 5-minute Walk



C9T: 10-minute Walk



C9A: 10-minute Walk



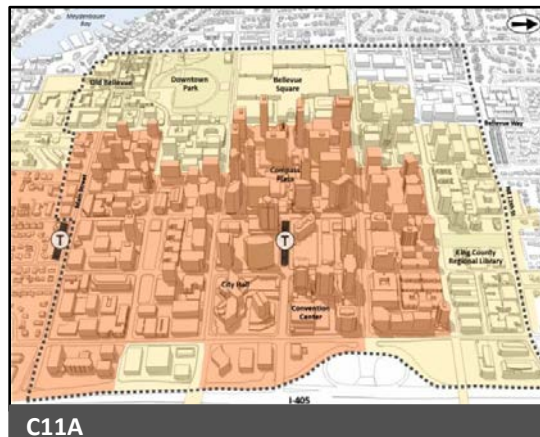
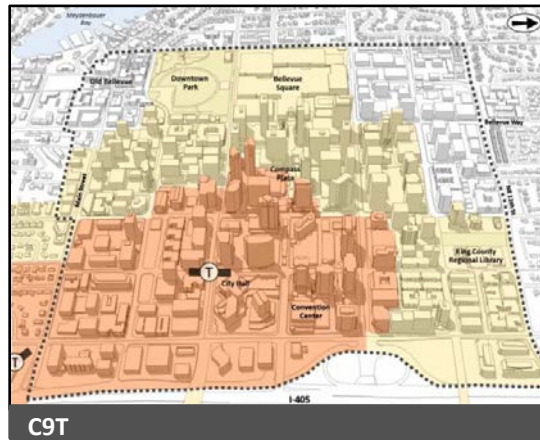
C11A: 10-minute Walk



C14E: 10-minute Walk

Analysis Results Downtown Bellevue Alternatives

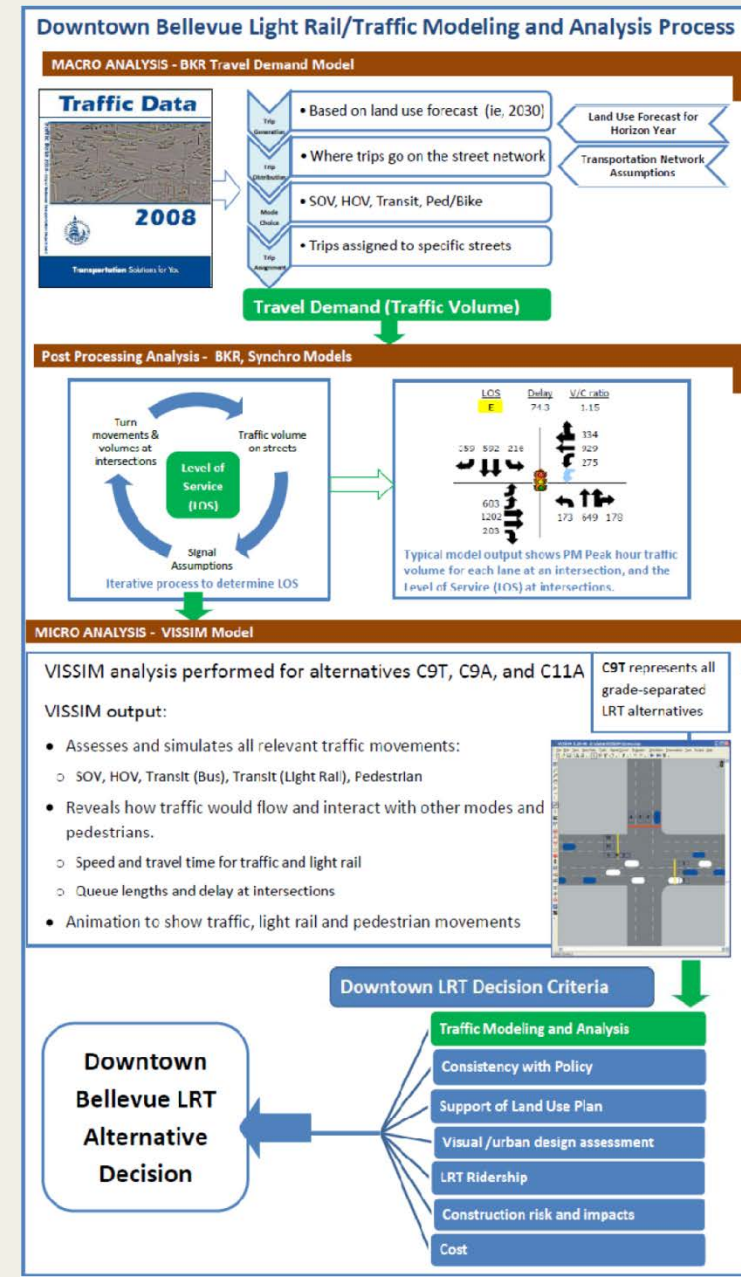
Criteria	Measure	C9T	C9A	C11A	C14E
2030 Jobs 79,000	% w/in 5 minute walk	44%	51%	76%	27%
	% w/in 10 minute walk	97%	96%	99%	79%
2030 Residents 19,000	% w/in 5 minute walk	21%	28%	53%	7%
	% w/in 10 minute walk	66%	63%	92%	46%



Downtown Bellevue Traffic Operations

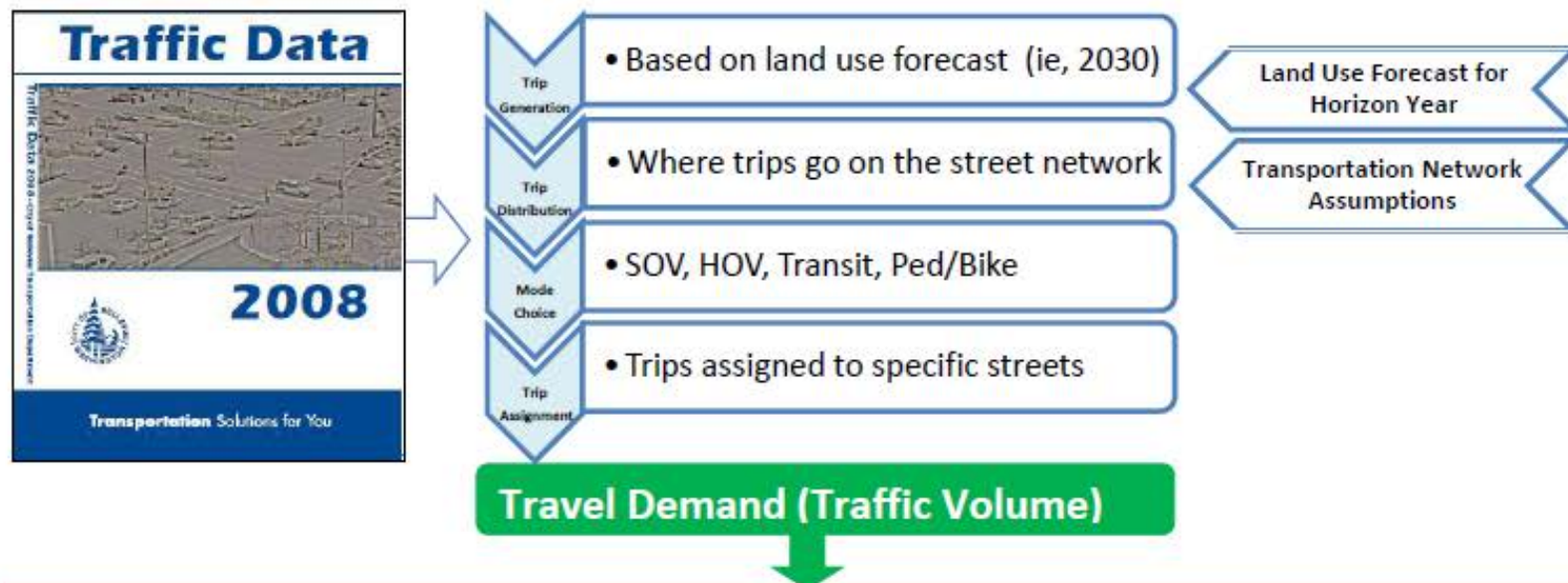
Traffic Modeling and Analysis

- Travel Demand Modeling
- Traffic Simulation

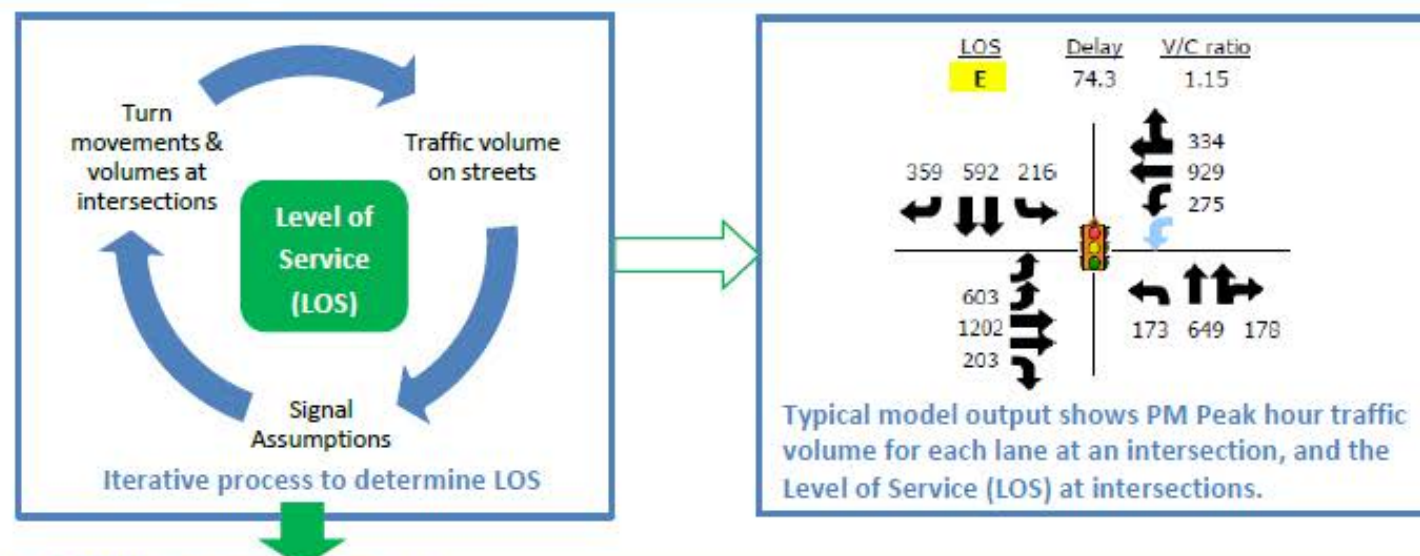


Downtown Bellevue Light Rail/Traffic Modeling and Analysis Process

MACRO ANALYSIS - BKR Travel Demand Model

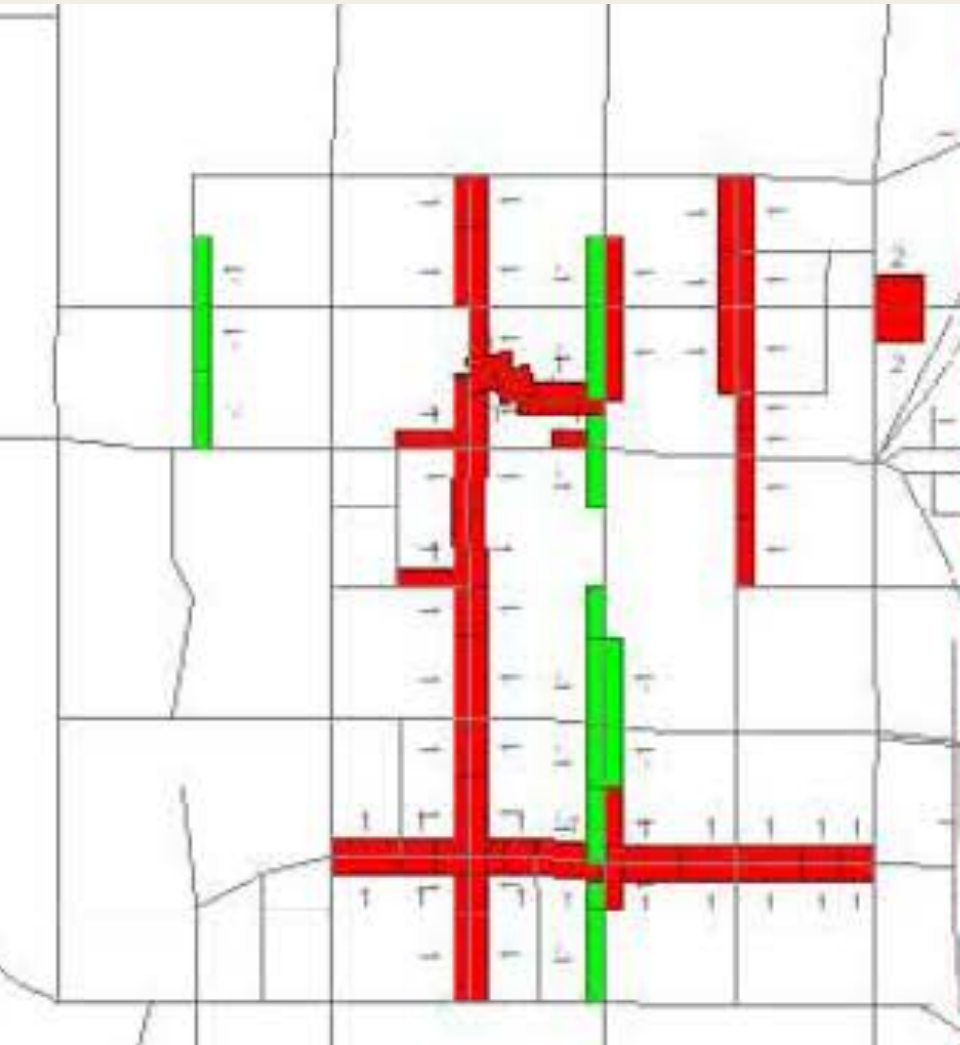


Post Processing Analysis - BKR, Synchro Models



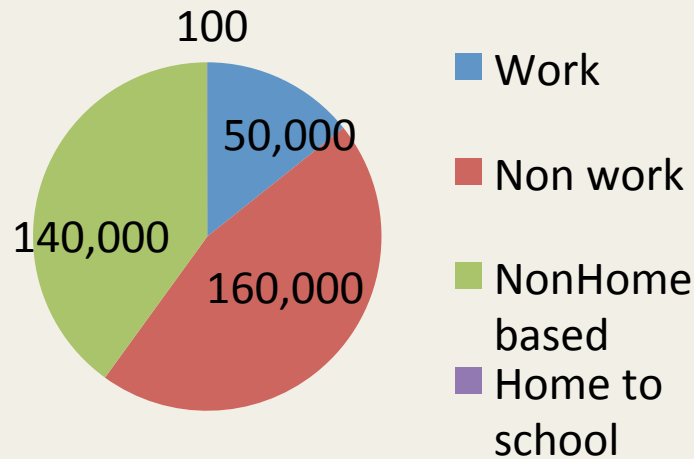
MICRO ANALYSIS - VISSIM Model

2030 Roadway Configurations

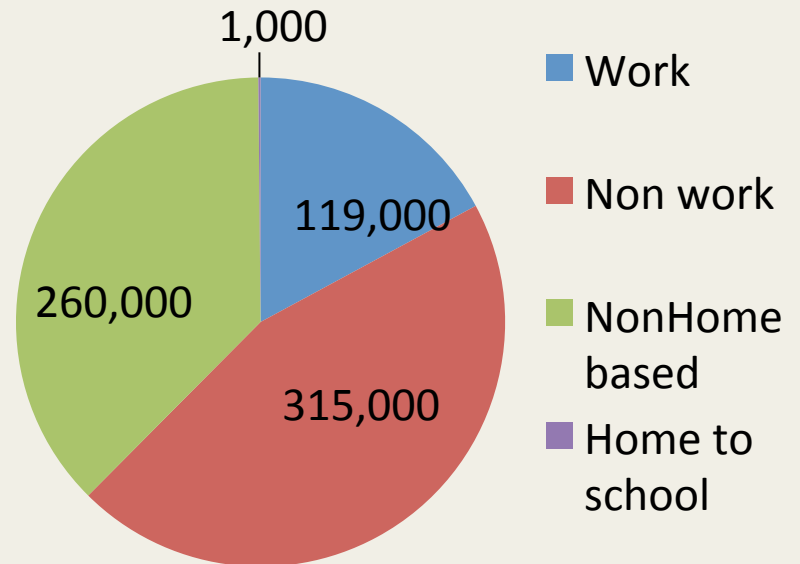


Downtown Bellevue Travel Demand

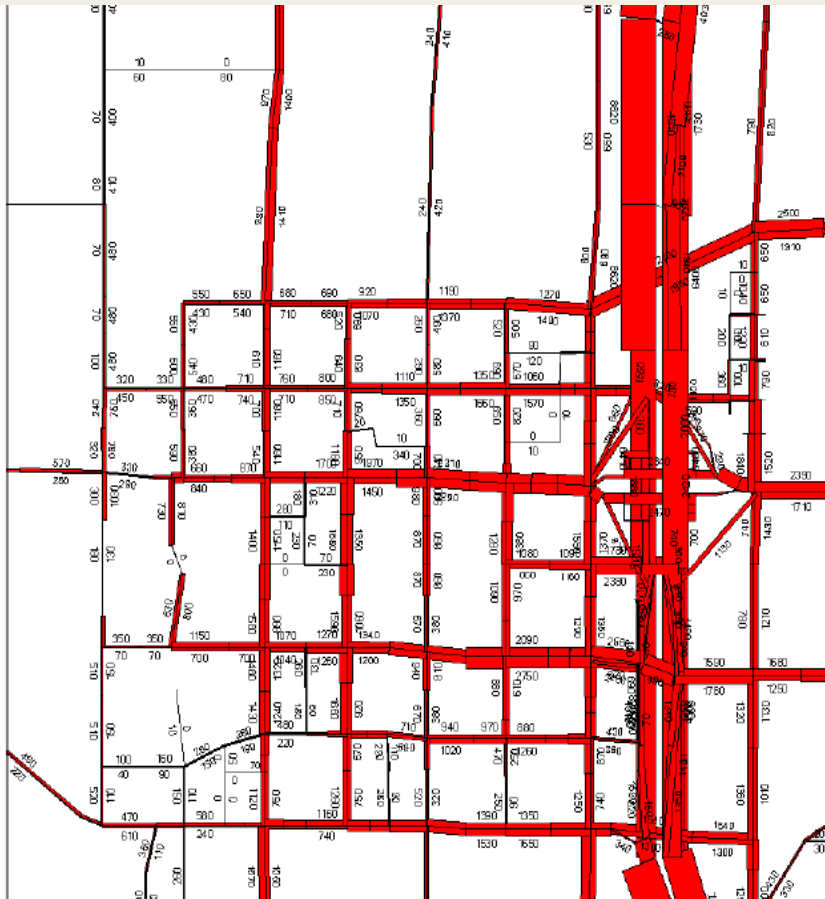
350,000 Daily Trips 2008



695,000 Daily Trips 2030



Downtown Bellevue Travel Demand

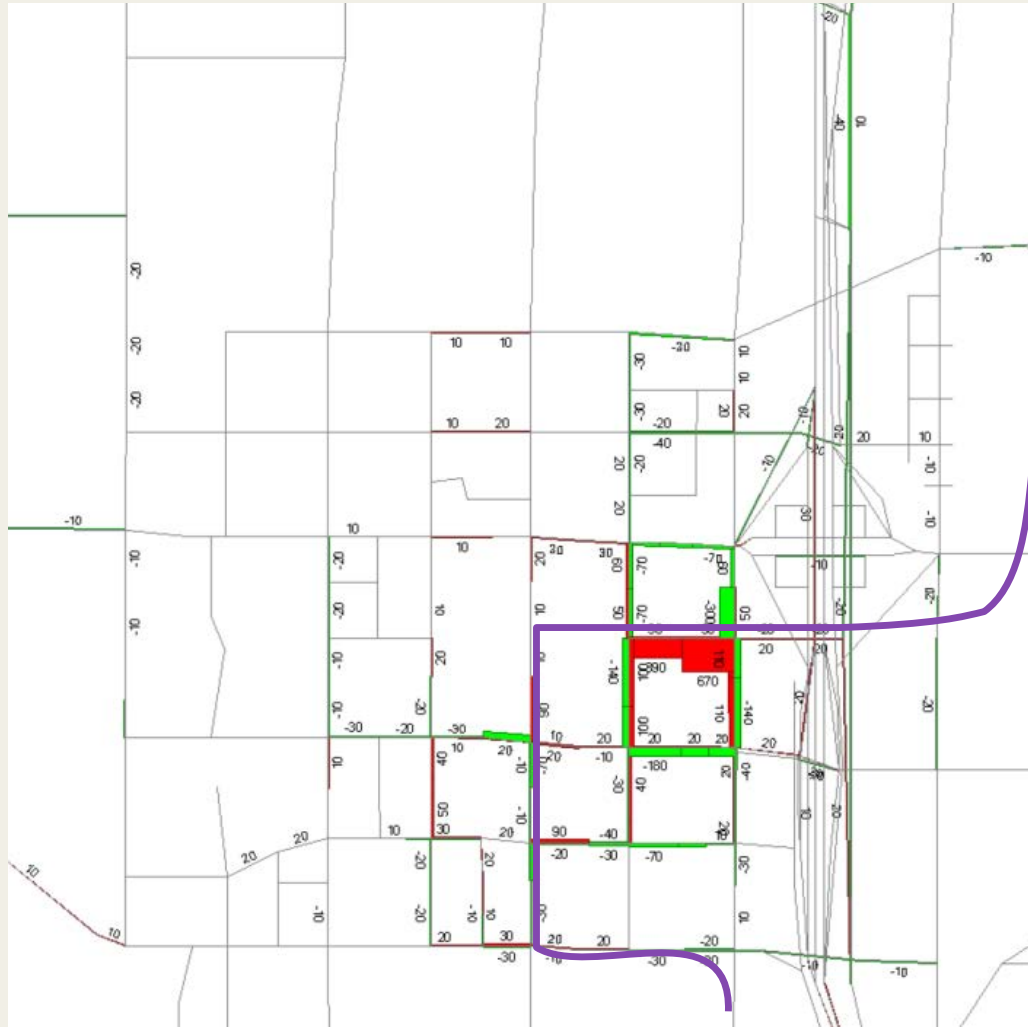


Total PM Peak Trips
Alternative C9T



Total PM Peak Trips
Alternative C11A

Downtown Bellevue Travel Demand



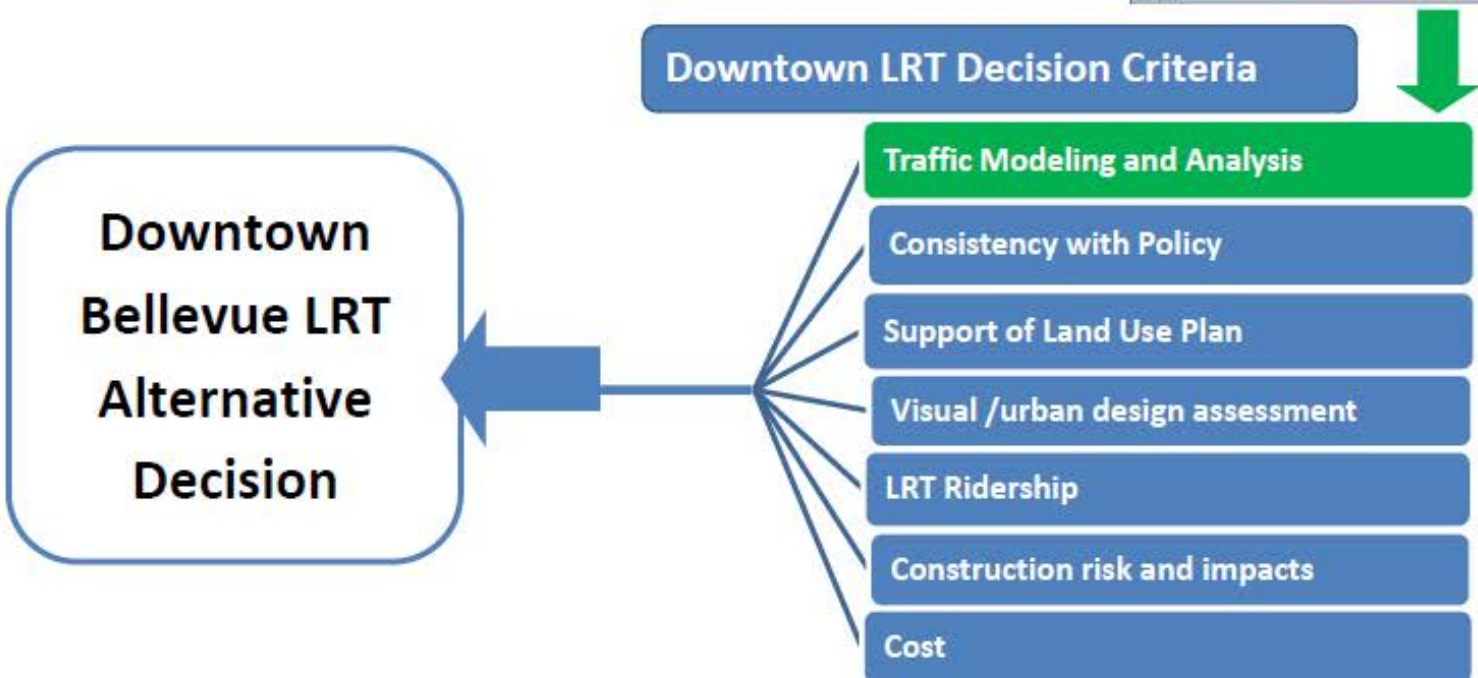
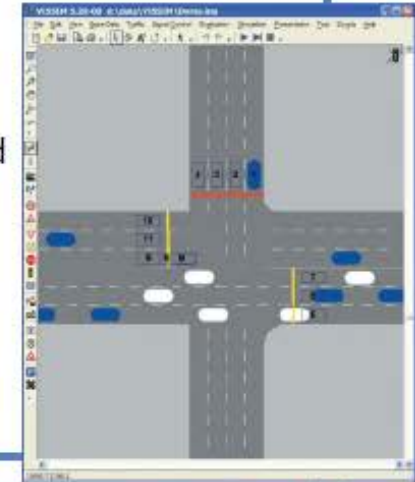
Total Trips PM Peak – Difference between C9T and C11A

VISSIM analysis performed for alternatives C9T, C9A, and C11A

C9T represents all grade-separated LRT alternatives

VISSIM output:

- Assesses and simulates all relevant traffic movements:
 - SOV, HOV, Transit (Bus), Transit (Light Rail), Pedestrian
- Reveals how traffic would flow and interact with other modes and pedestrians.
 - Speed and travel time for traffic and light rail
 - Queue lengths and delay at intersections
- Animation to show traffic, light rail and pedestrian movements



VISSIM Street Network

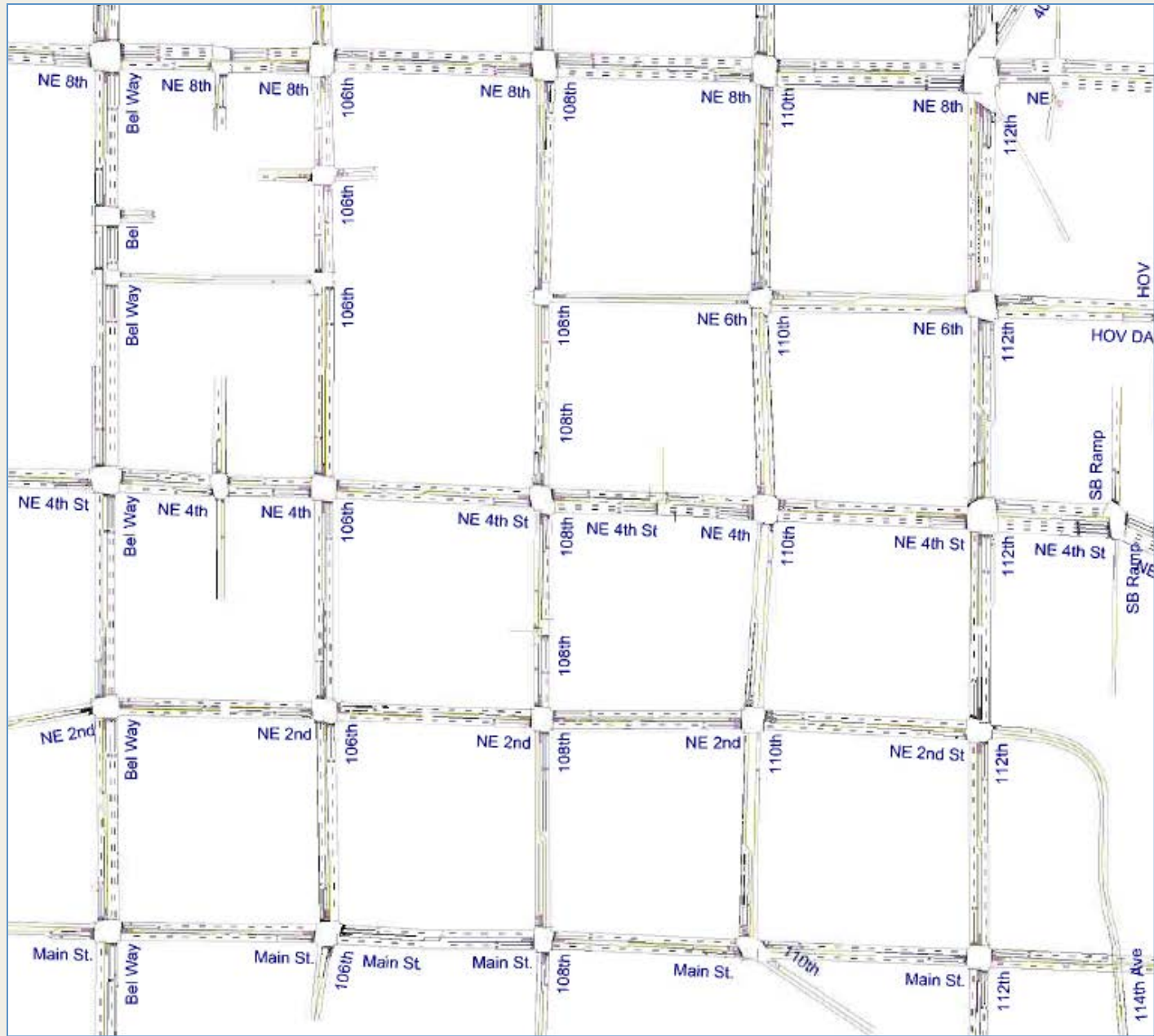
Travel lanes

Turn pockets

Signalized intersections

Signalized driveways

Mid-block crossings

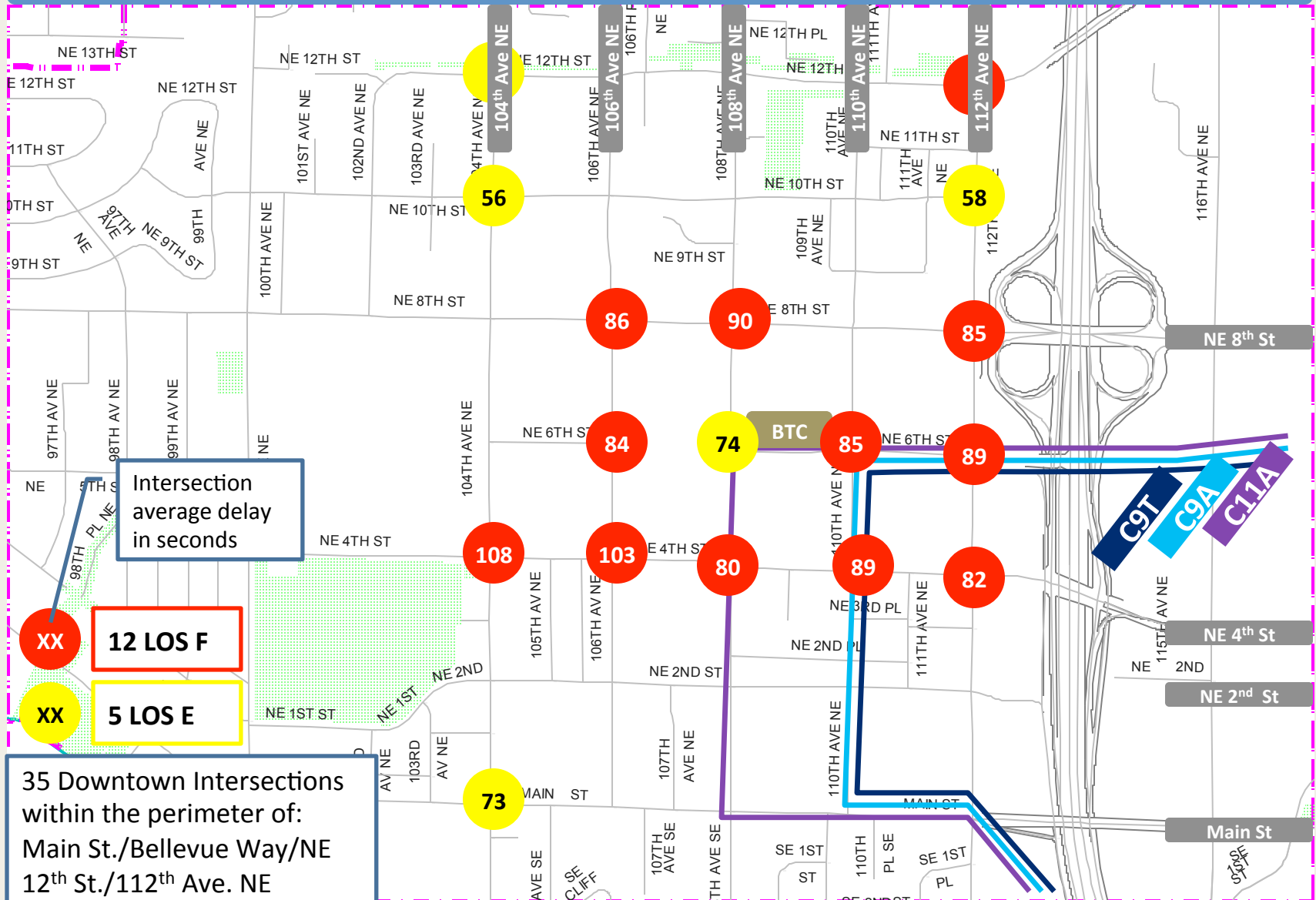


VISSIM Spreadsheet Output

	C9T/C14E		C9A		C11A	
Key Intersection	LOS	Delay	LOS	Delay	LOS	Delay
108th Avenue/Main Street	C	25.3	D	50.5	F	94.1
108th Avenue/2nd Street	D	42.7	F	123.6	F	132.0
108th Avenue/4th Street	E	79.9	F	106.8	F	120.0
108th Avenue/6th Street	E	73.6	E	61.7	F	111.5
110th Avenue/Main Street	C	26.0	E	55.5	D	53.5
110th Avenue/2nd Street	D	41.0	F	137.3	E	55.2
110th Avenue/4th Street	F	89.0	F	117.3	F	125.6
110th Avenue/6th Street	F	85.0	F	83.9	F	80.2
112th Avenue/Main Street	D	51.0	D	52.6	E	70.6

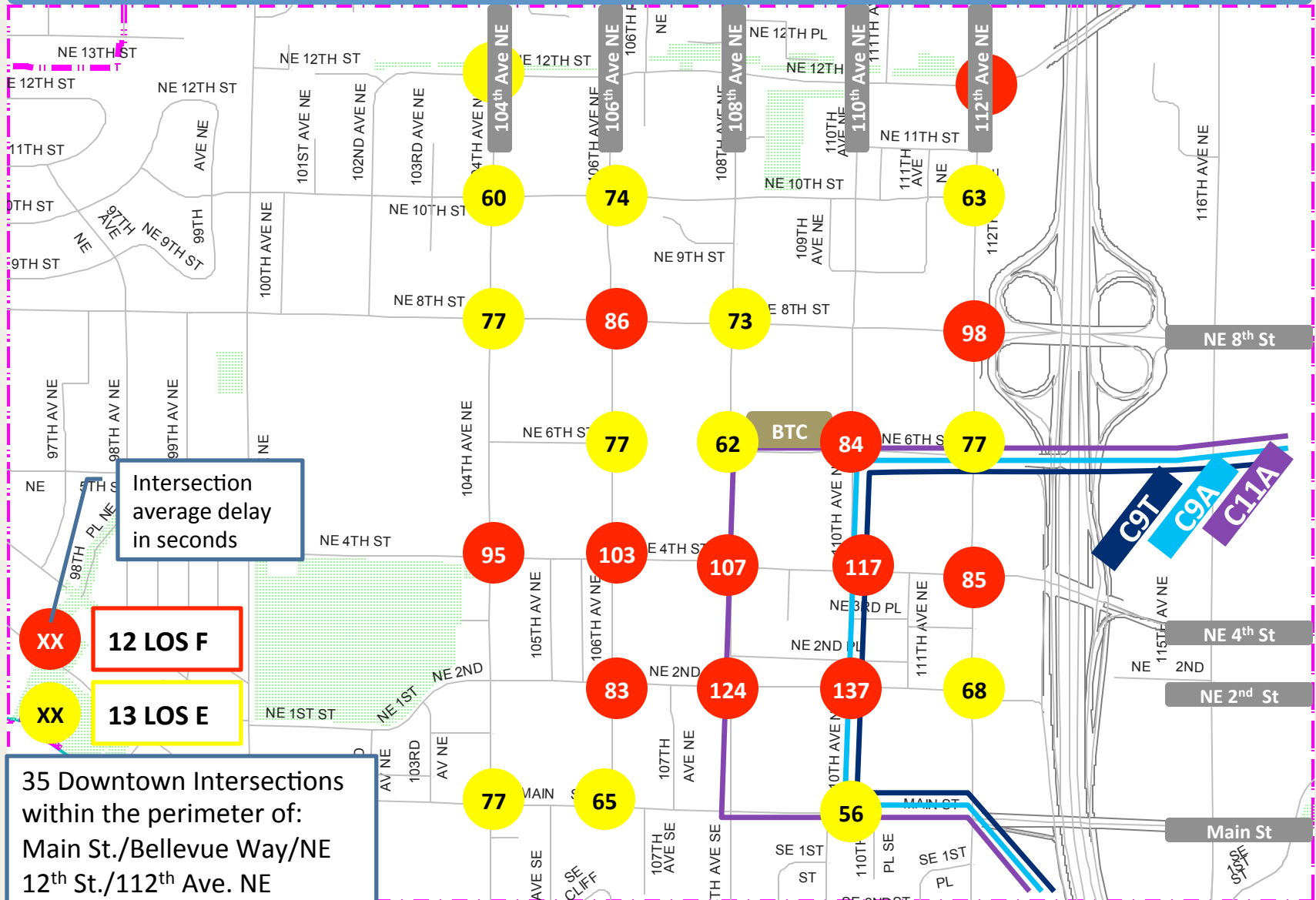
Intersection LOS E and F in LRT Alternatives C9T and C14E

V1.2



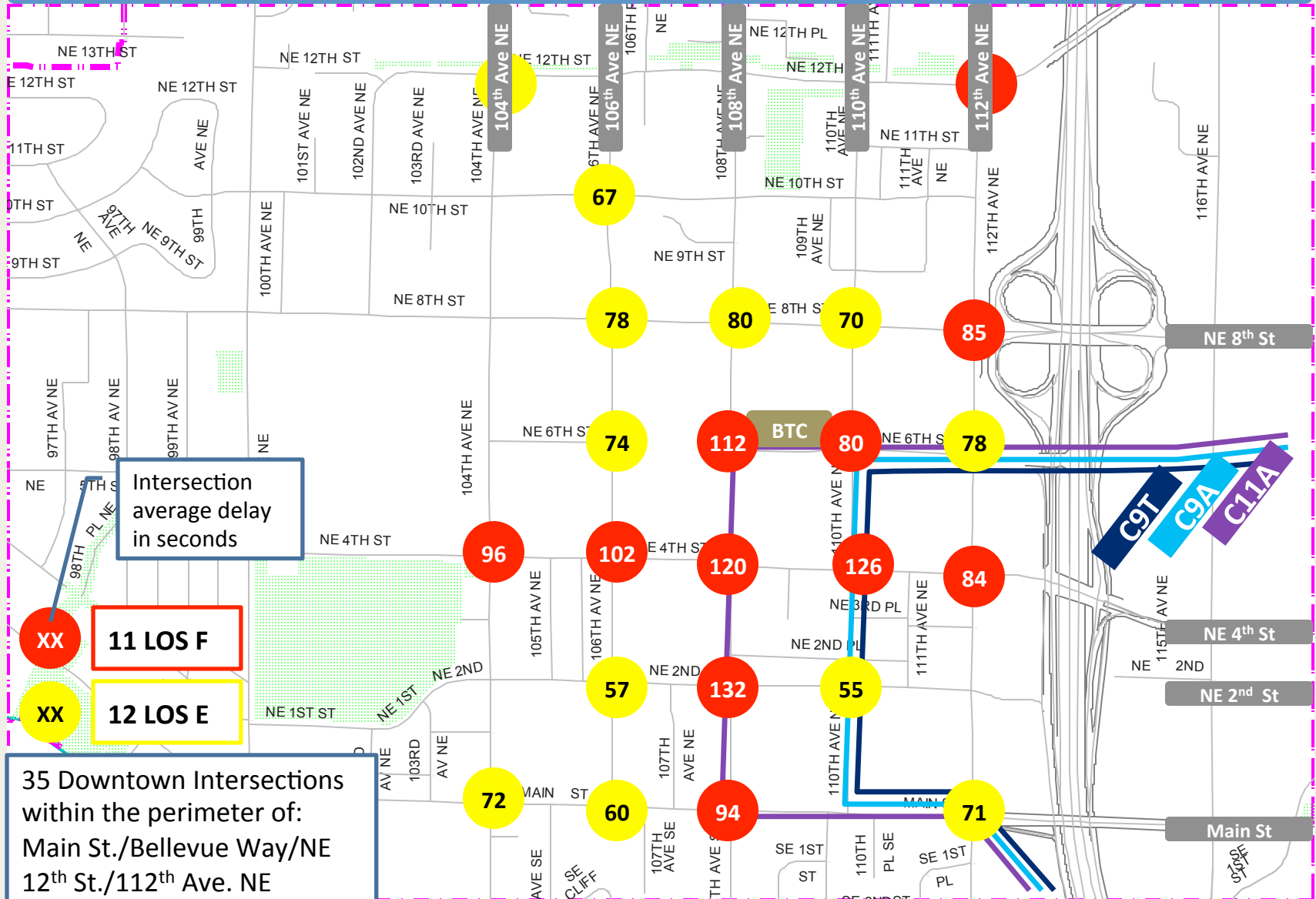
Intersection LOS E and F in LRT Alternative C9A

V1.2

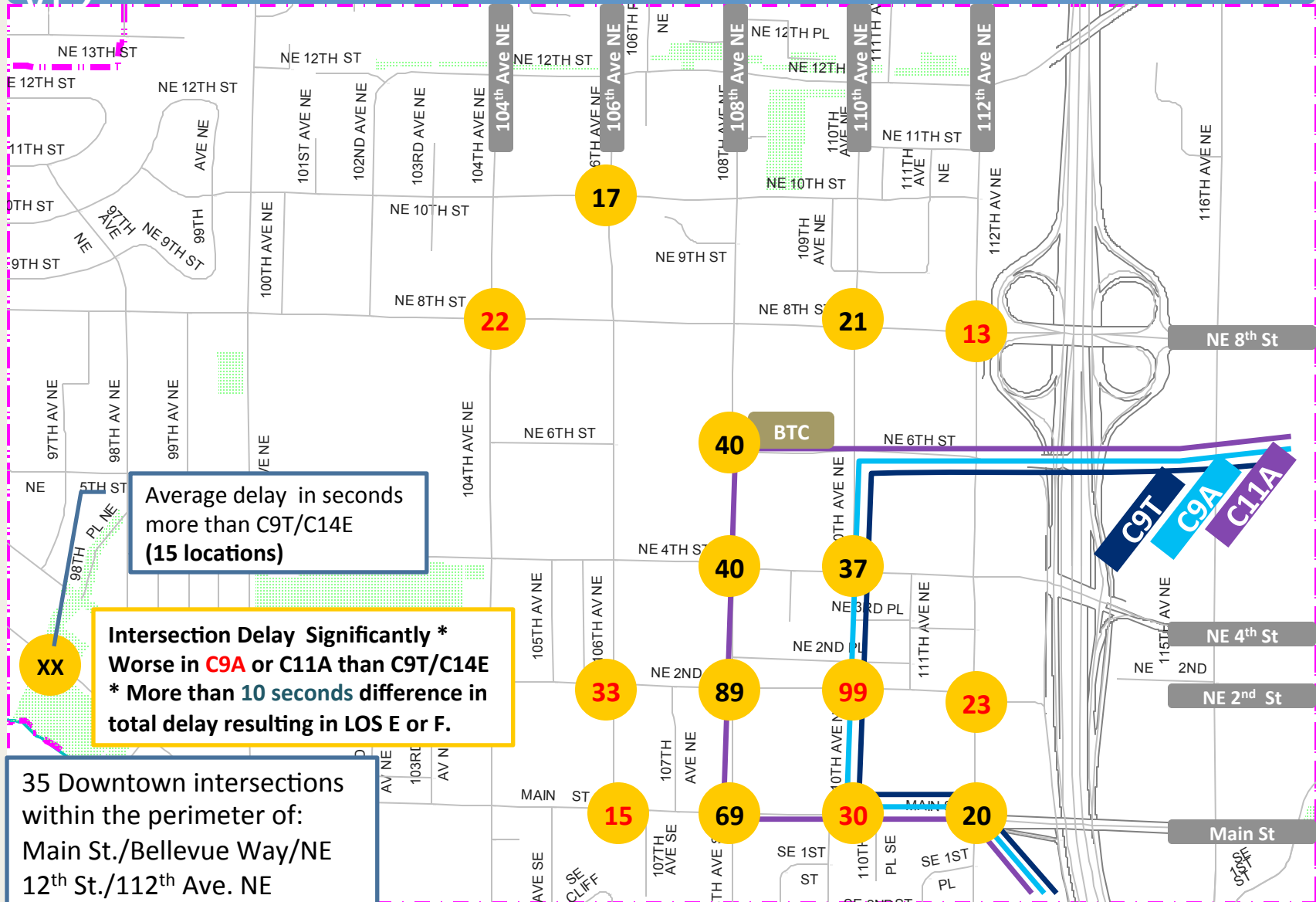


Intersection LOS E and F in LRT Alternative C11A

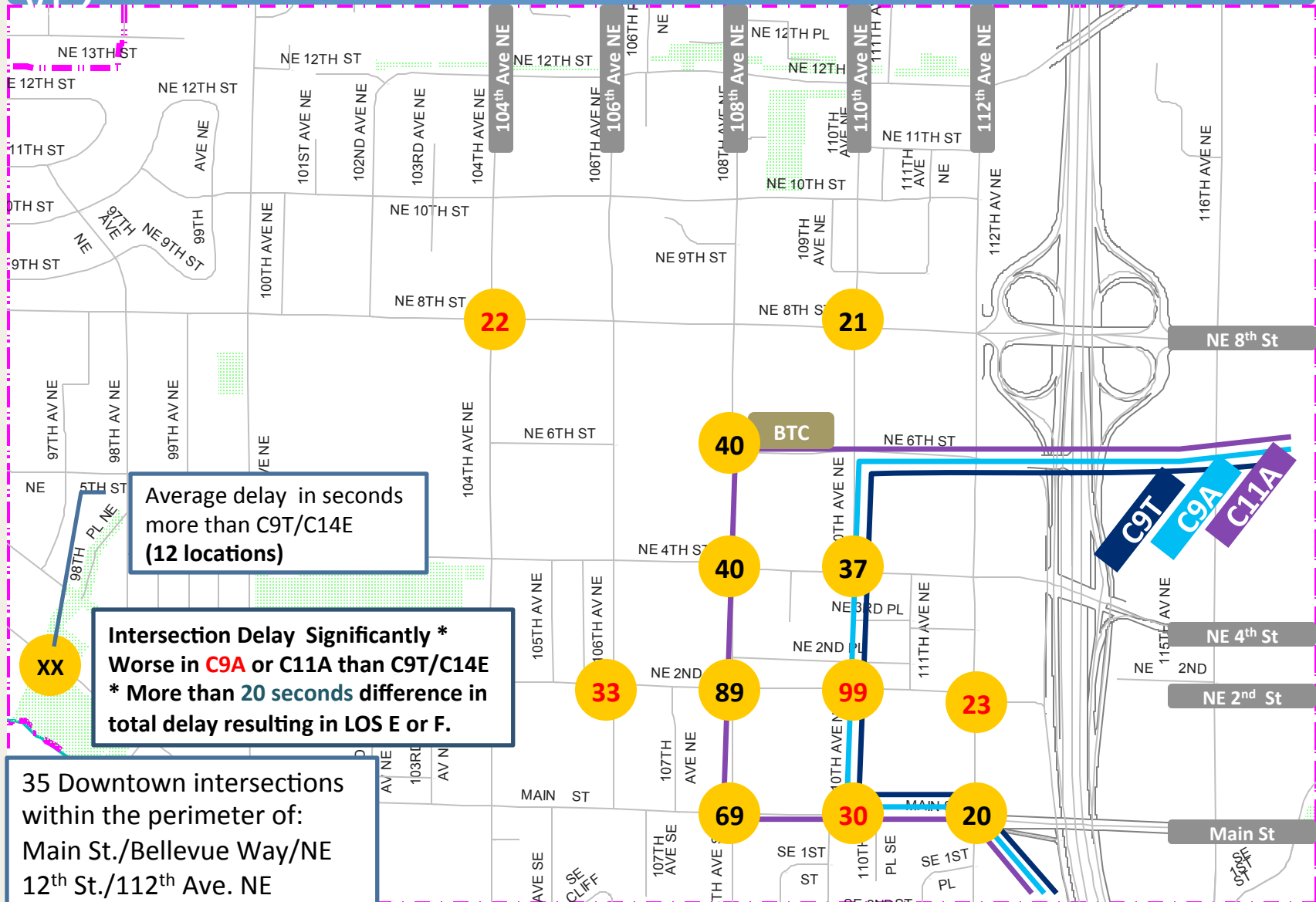
V1.2



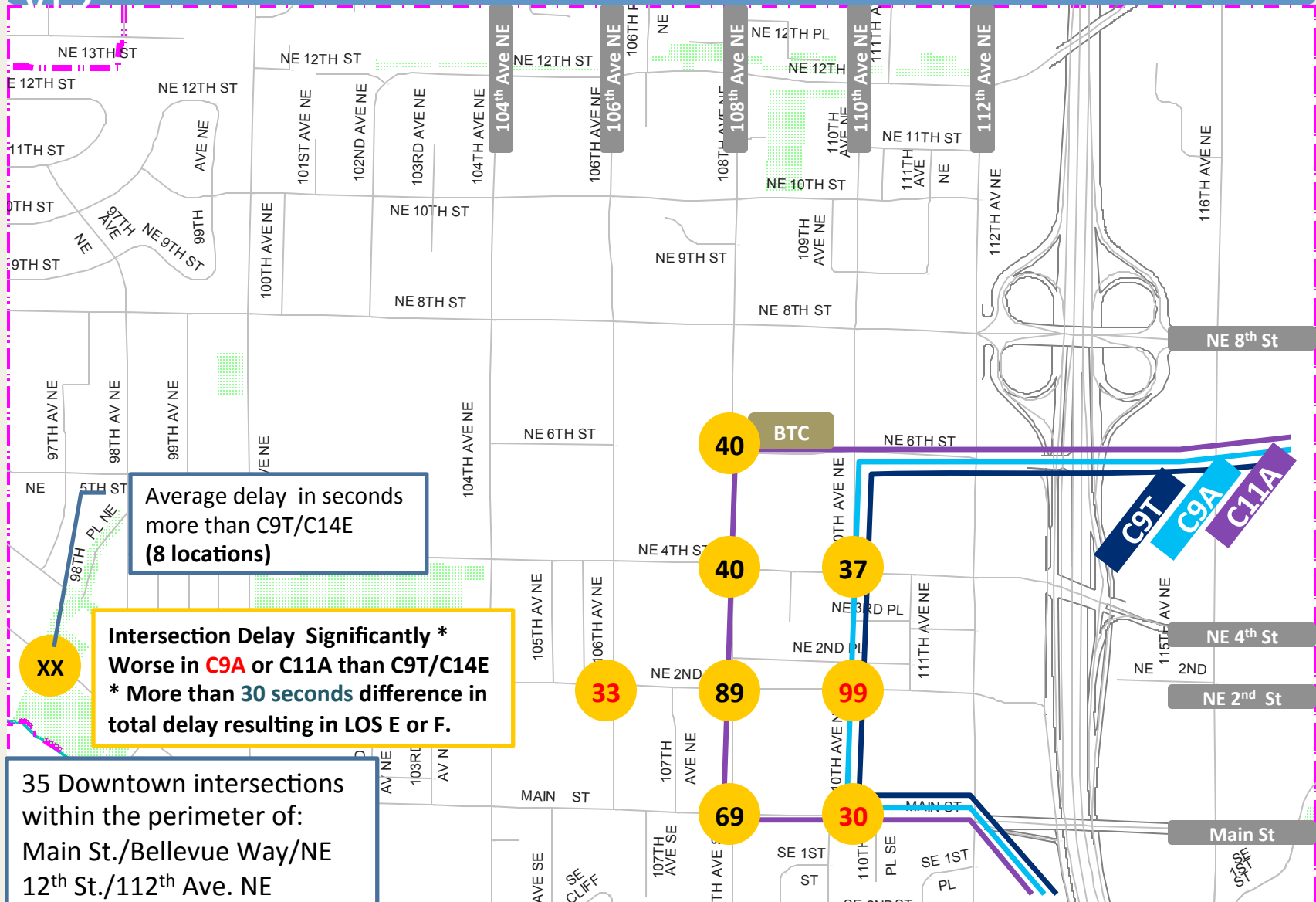
V1.2



V1.2



V1.2



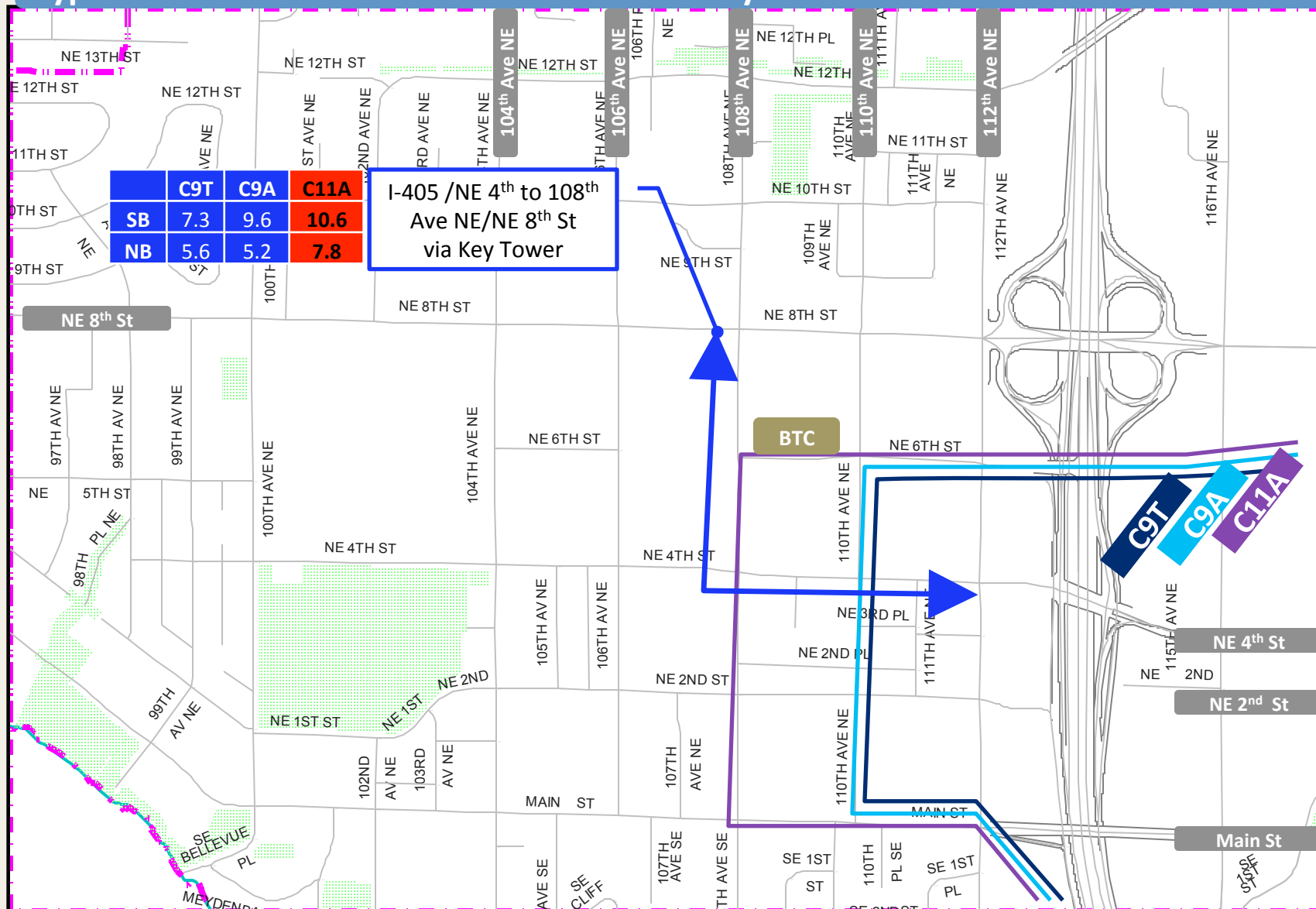
Concept Design Report

Downtown Bellevue Vehicle Travel Time

Criteria	C9T 110 th Tunnel	C9A 110 th At-Grade	C11A 108 th At-Grade	C14E 114 th Elevated
Southbound vehicle travel time (minutes)	6.5	8.0	7.4	6.5
Northbound vehicle travel time (minutes)	5.8	6.5	5.6	5.8
Eastbound vehicle travel time (minutes)	5.0	4.9	5.3	5.0
Westbound vehicle travel time (minutes)	4.9	5.2	5.8	4.9
Average travel time (minutes)	5.55	6.15	6.03	5.55

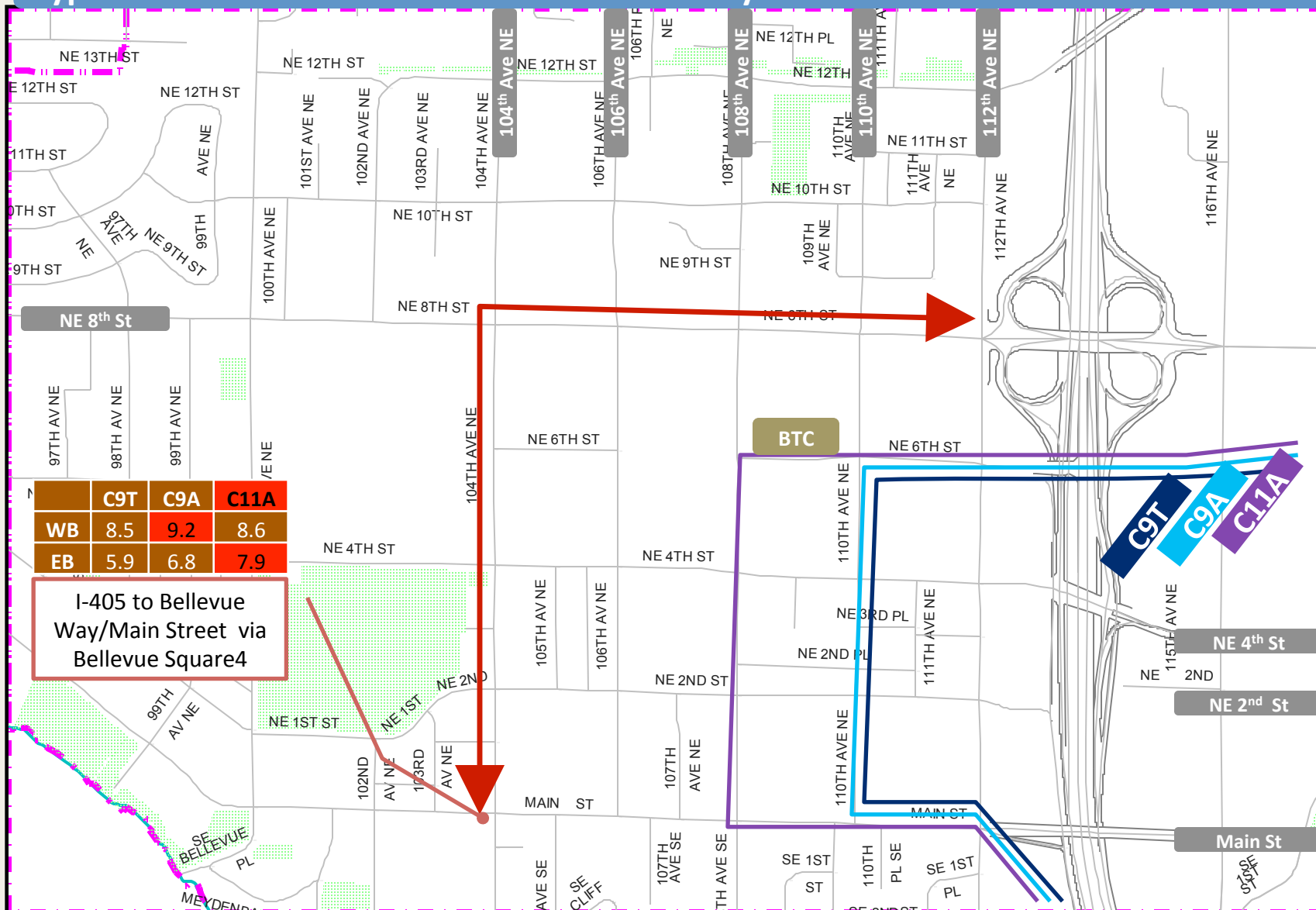
Typical Downtown Routes - Travel Time Analysis

V1.2



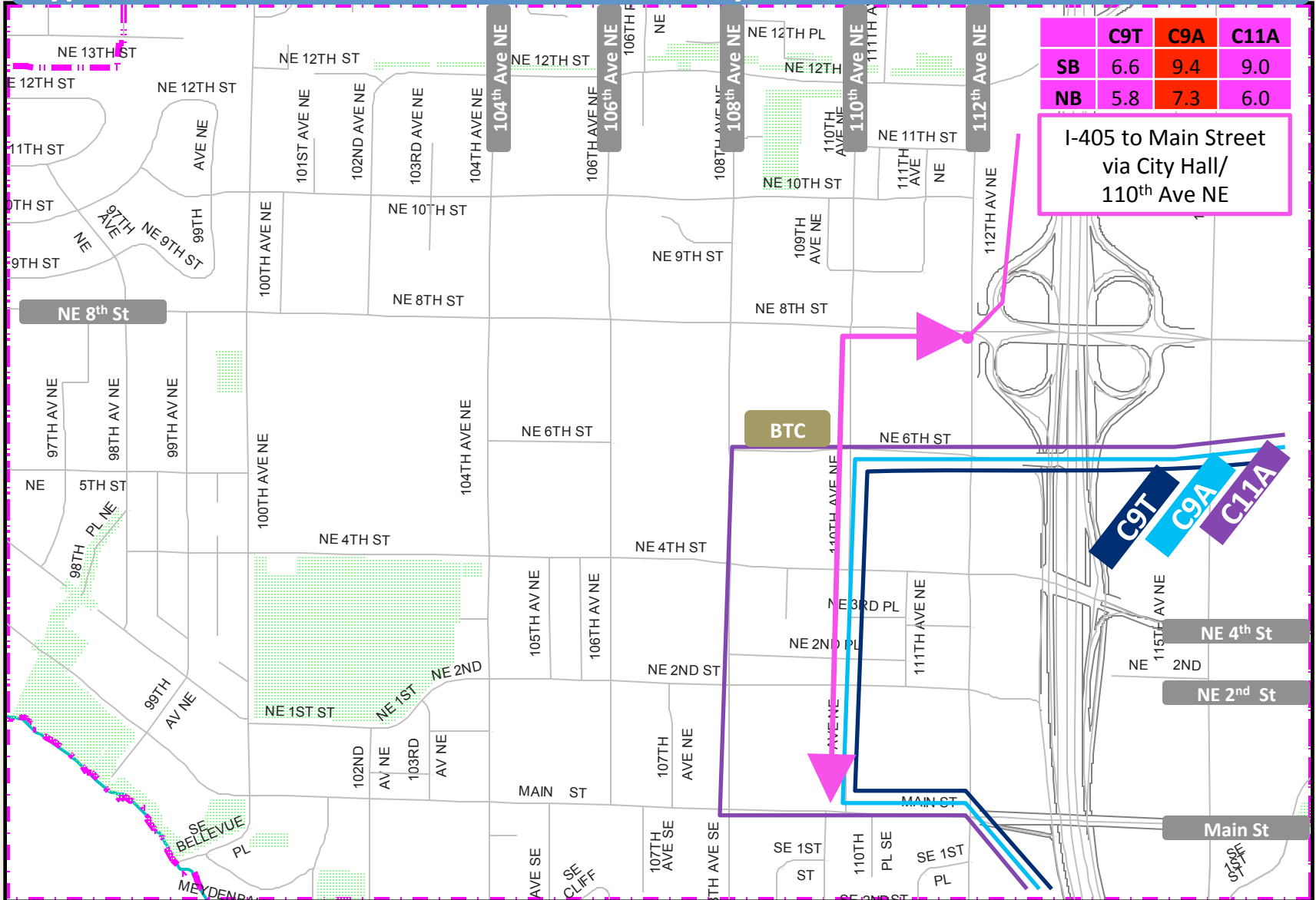
Typical Downtown Routes - Travel Time Analysis

V1.2



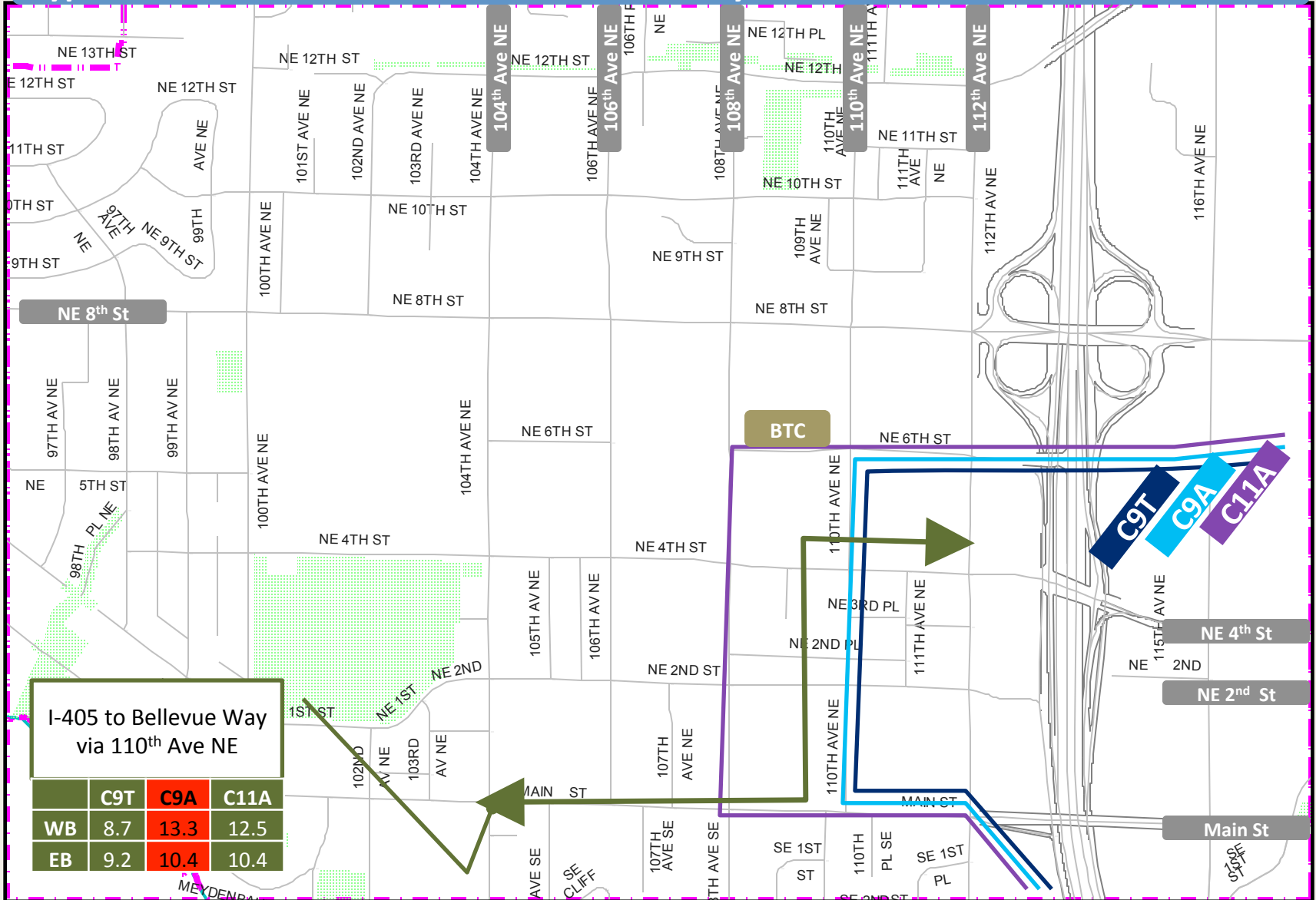
Typical Downtown Routes - Travel Time Analysis

V1.2



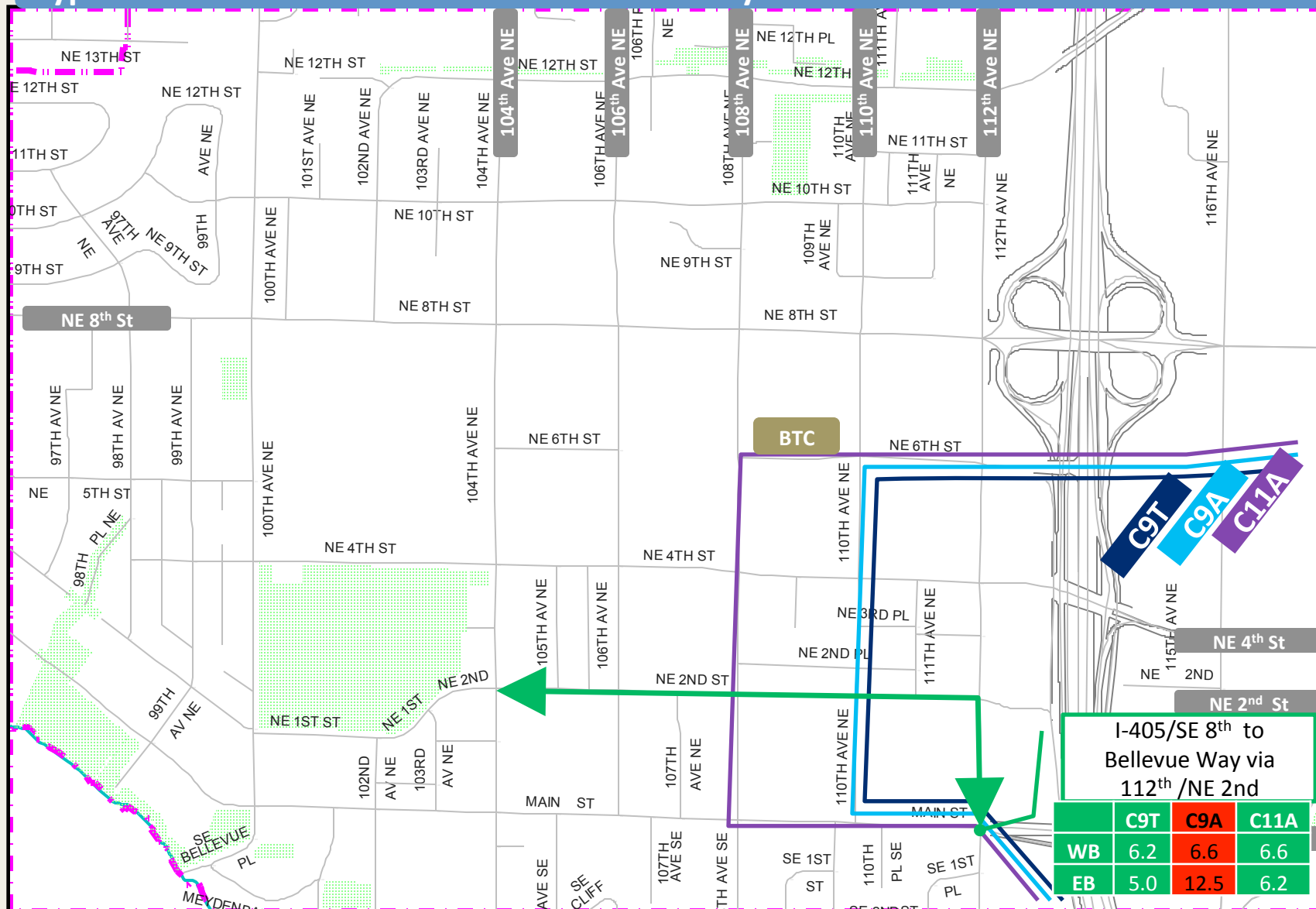
Typical Downtown Routes - Travel Time Analysis

V1.2



Typical Downtown Routes - Travel Time Analysis

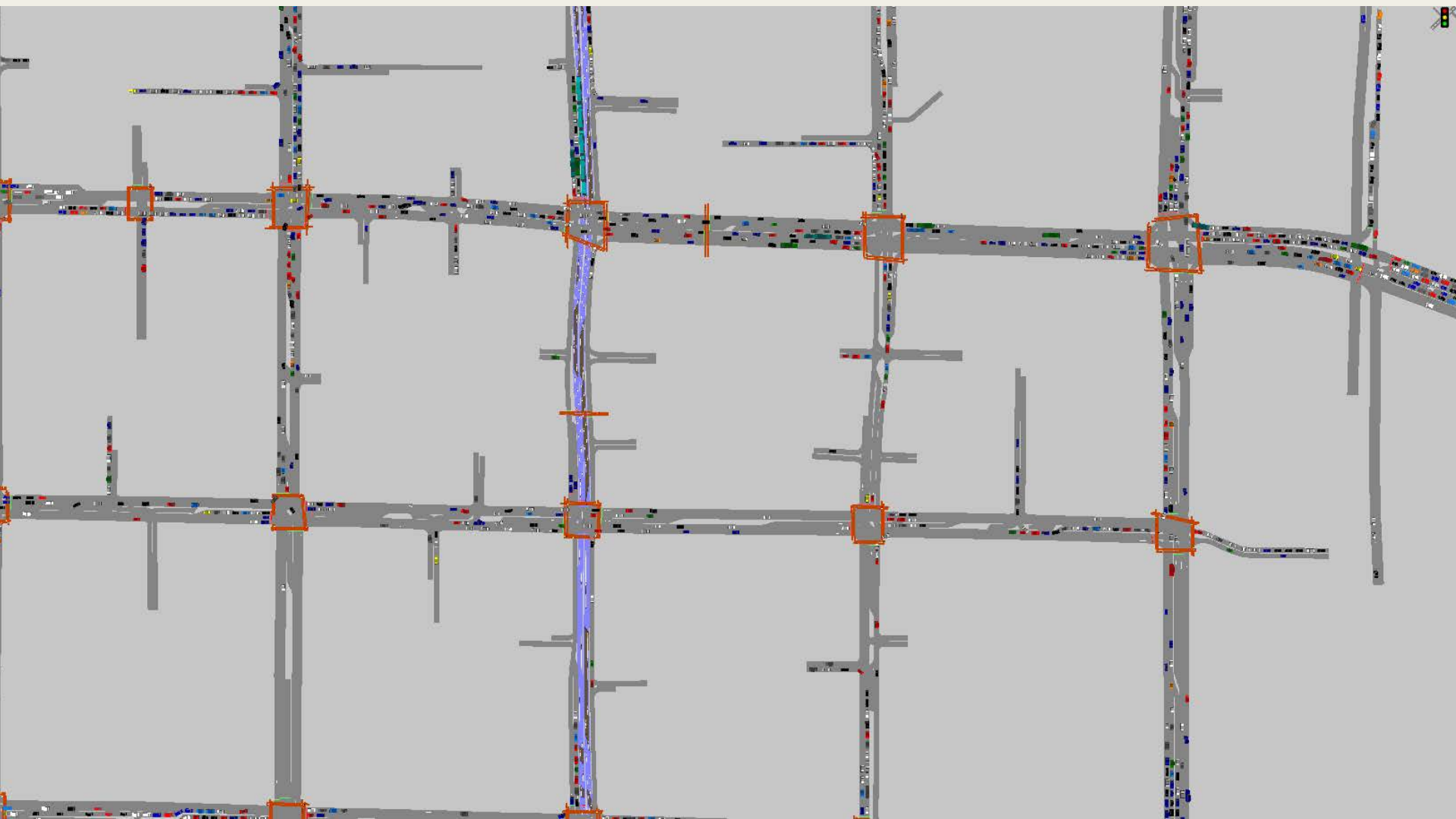
V1.2



VISSIM Traffic MicroSimulation



VISSIM Traffic MicroSimulation



Light Rail Review Panel

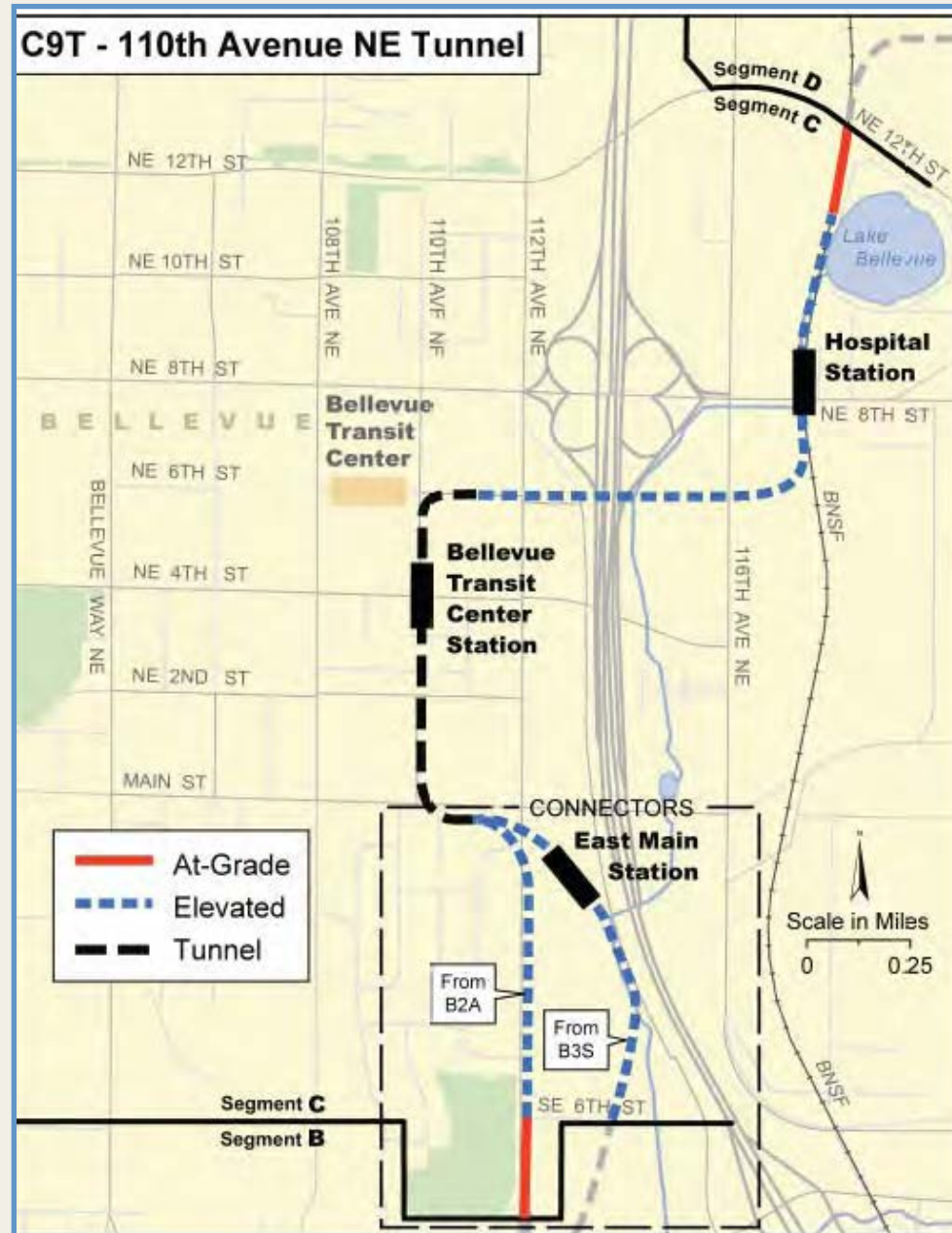
February 2010 Findings/Recommendations

- Traffic modeling, simulation, and operational analyses sufficient to inform decisions
- Surface alternatives will impact traffic operations similar to Portland, Denver, and San Diego
- Maintain east-west traffic flow through signal timing and operation strategies
- Use maps or other graphical displays to communicate information – not tables
- Commend Sound Transit and Bellevue for working together

Bellevue City Council

City Council Recommendation Spring 2010

- Alternative C9T
 - Traffic impacts
 - Accidents



Sound Transit Board

ST Board Recommendation April 2010

- Alternative C11A, or
- Alternative C9T with Bellevue \$150M contribution
 - Reduce ST cost
 - Increase ST funding



Sound Transit

Supplemental DEIS

- Draft Environmental Impact Statement (DEIS) published in December 2008
- New alternatives have been developed
- Supplemental DEIS November 5, 2010
- 45-day public comment period
- Public hearing November 30

Downtown Bellevue Light Rail Alternatives Concept Design Report

FEBRUARY 2010



PREPARED FOR



PREPARED BY



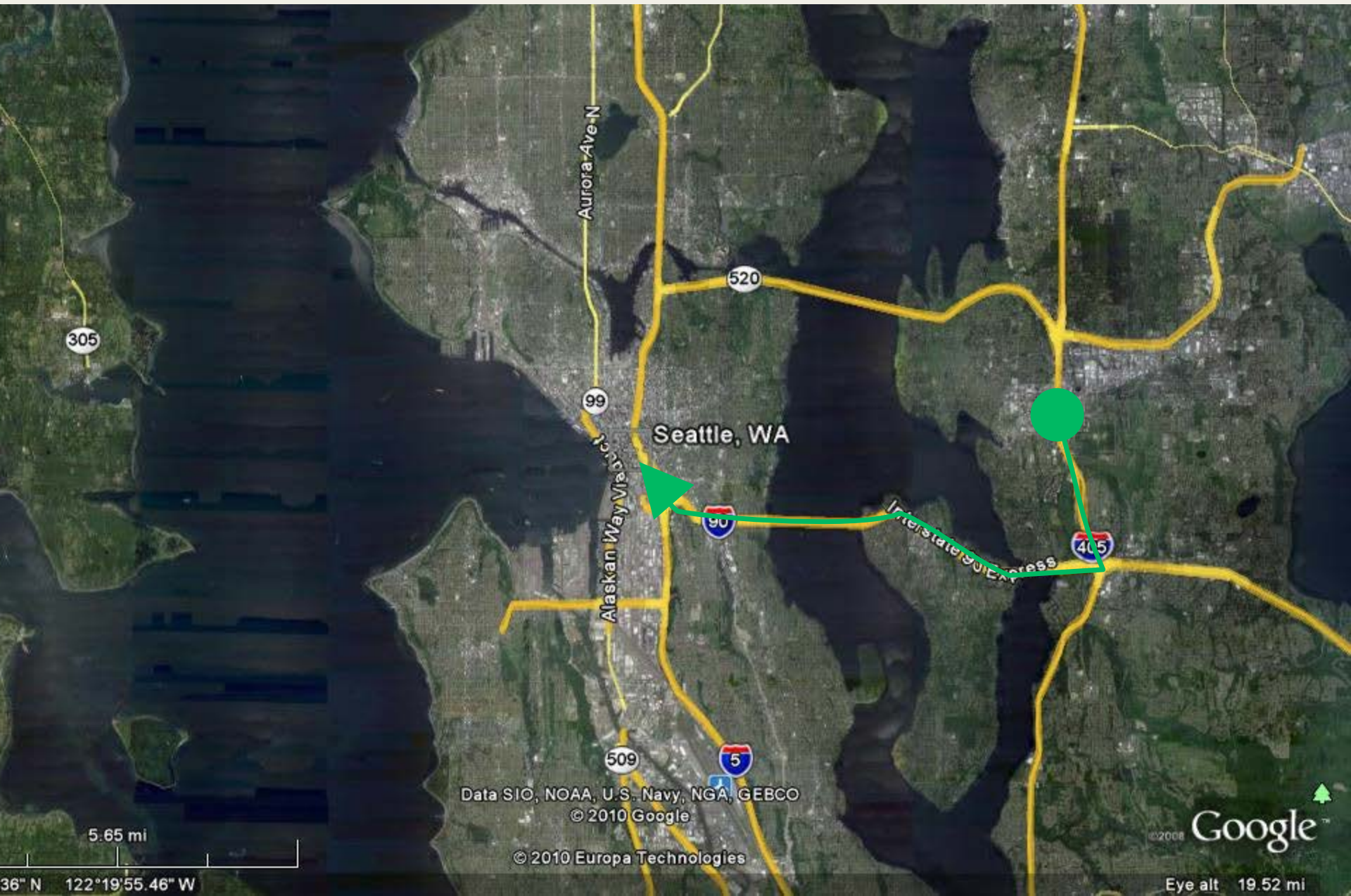
<http://projects.soundtransit.org/Projects-Home/East-Link-Project/East-Link-Library.xml>

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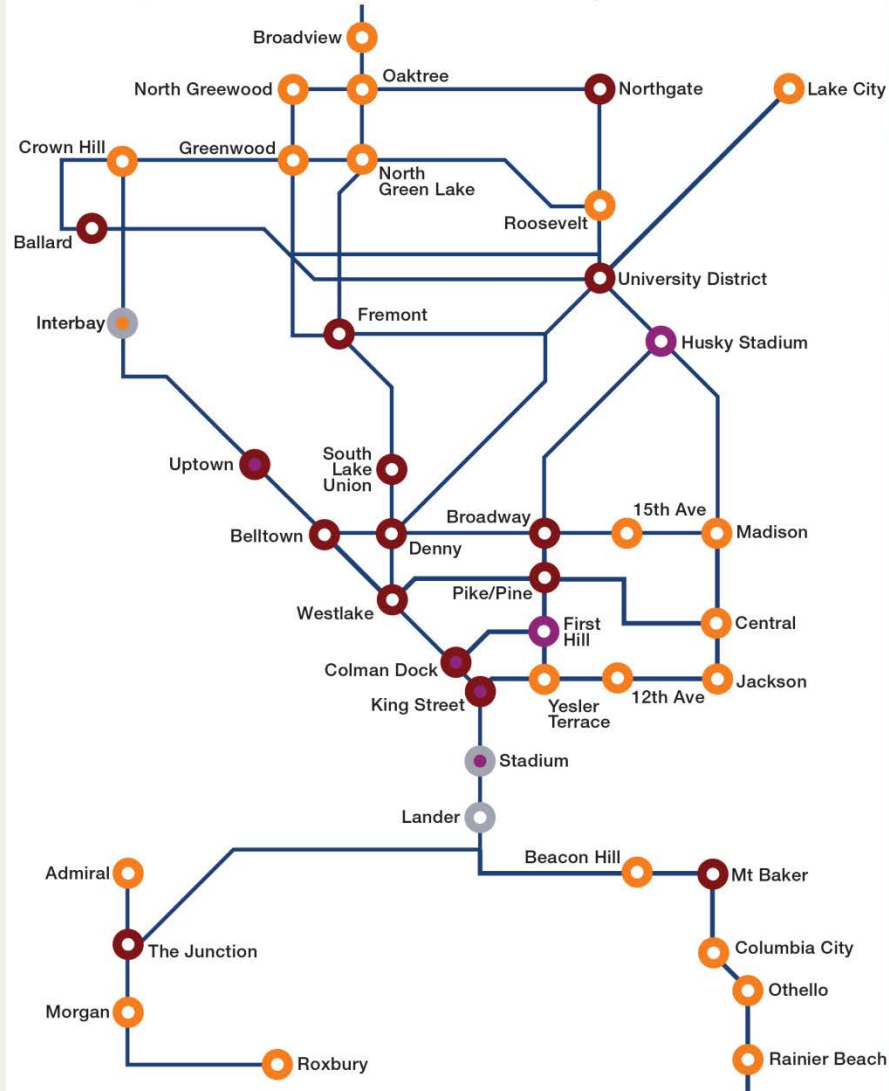
Over to Seattle....



Seattle Transit Communities

Integrating Land Use and
Essential Components with Transit

A report from the Seattle Planning Commission



Seattle Planning Commission



- 16 member volunteer advisory board
- Professional experts and neighborhood planners
- Provide the Mayor and City Council with independent and objective analysis on land use and zoning matters, transportation and housing issues.
- Produce independent reports, white papers, user guides and policy recommendations
- Conduct public involvement processes on planning policies and development plans and projects.

Background

April 2008 SPC Retreat

- Initiative to encompass high priority objectives
 - Develop densely near transit hubs
 - Increase supply of affordable housing
 - Provide essential components of livability in dense neighborhoods
 - Foster local businesses

November 2008 Roundtable Discussion

- Challenges – Opportunities – Best Practices
 - Elected officials
 - Department representatives
 - Transit agency representatives

Background

Applicable Policies and Regulations

- Comprehensive Plan
- Transportation Plan
- Pedestrian and Bicycle Master Plans
- Land Use Code

Basic Principles

- Compelling reasons to live/do business
- Unique context, not cookie-cutter
- Choice and diversity
- Prioritize people over cars

Background

Case Studies

- Portland
- Washington, DC
- Vancouver, BC
- SEATTLE!

Best Practices

- Transit creates opportunities depending on mode
- Mix up the uses
- Make it a neighborhood



Goals for Seattle Transit Communities

- Create vibrant, walkable communities
- Accommodate expected growth sustainably
- Create opportunities from transit investment
- Develop transit oriented communities
 - Land use – jobs, housing, services
 - Infrastructure – vehicle, pedestrian, bicycle



Transit Communities Not a New Idea

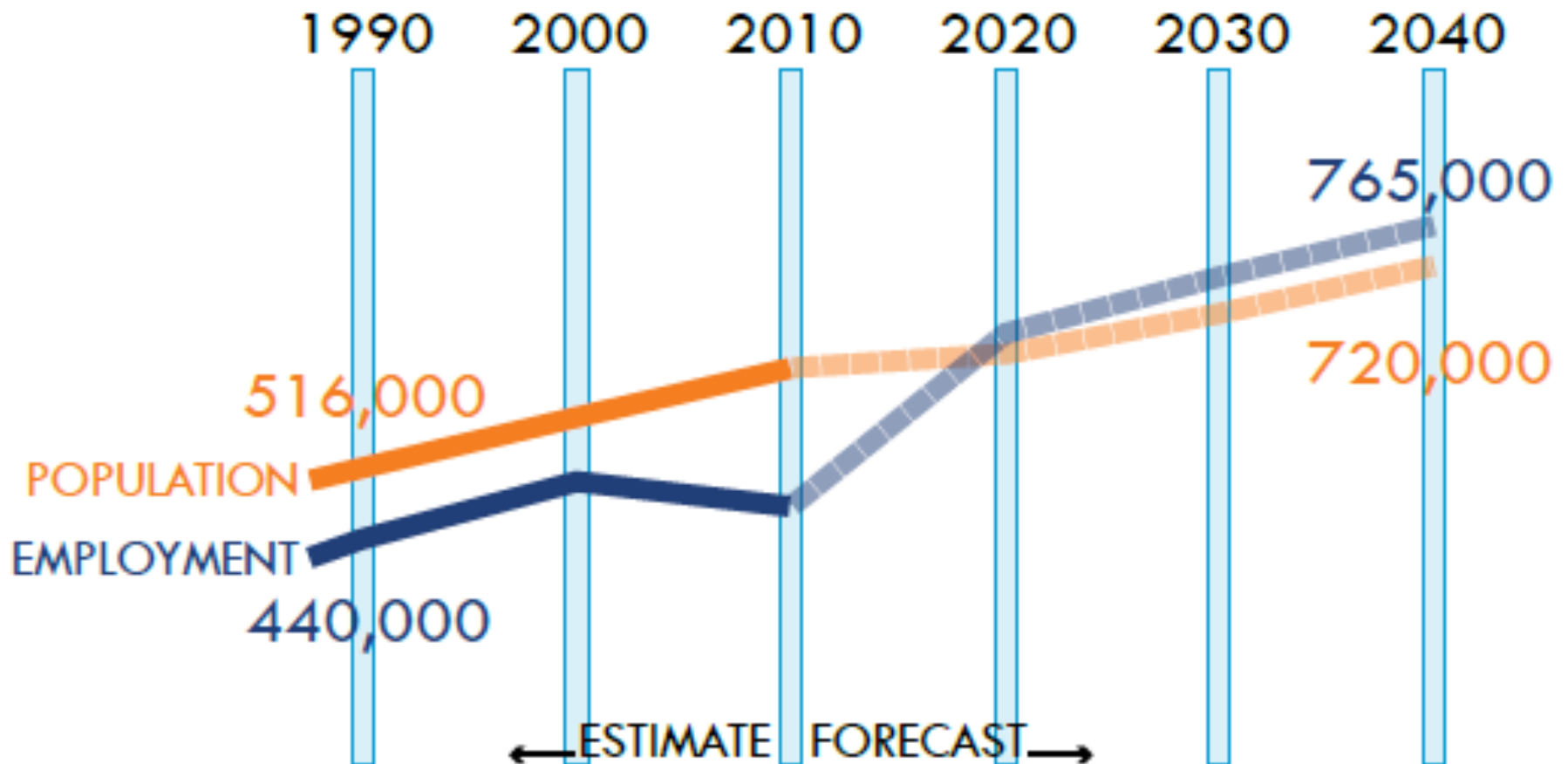


Transit Communities Report will help decision makers understand what it takes to develop successful communities around transit.



Transit Communities Accommodate Growth

Seattle population & employment



Transit Communities Saving Households Money



Different types of transit create different opportunities

Ferries



Commuter rail



Local bus



Light rail



Bus Rapid Transit



Streetcar



Seattle's Urban Villages & Frequent Transit Service

URBAN CENTERS/VILLAGES

- Urban Centers
- Hub Urban Villages
- Residential Urban Villages
- Manufacturing/
Industrial Centers

TRANSIT SERVICE BY ROUTE FREQUENCY

- <15 minute headways existing
- <15 minute headways planned & funded
- >15 minute headways existing



Much of Seattle is well served by transit

These locations are the opportunities to create and enhance transit communities

- Urban Centers
- Hub Urban Villages
- Residential Urban Villages
- Manufacturing / Industrial Centers

Transit Community Typologies

- Each transit community is unique
- Build communities around transit
- Accommodate growth/preserve desirable characteristics
- Report identifies four types of communities
 - Mixed Use Center
 - Mixed Use Neighborhood
 - Special Districts
 - Industrial Job Center
- Distinguish by intended land use, infrastructure , and essential components for livability



Mixed Use Center



Characteristics

- Vibrant and eclectic
- Jobs, residents, services

Examples

- Downtown, Capitol Hill, Ballard

Activities

- Commuting, working, shopping

Street View

- Tall buildings, high density housing/jobs
- Regional retail
- Lots of pedestrians and street-level uses

Amenities/Essentials

- Breathing room
- Complete streets

Strategies

- Mixed-use zoning
- Design guidelines

Mixed Use Neighborhood



Characteristics

- Complete community
- Pedestrian friendly
- More housing than jobs

Examples

- Upper Queen Anne, Morgan Junction

Activities

- Evening and weekend shopping/dining
- Commuting to and from

Street View

- Mixed use along arterials with residential
- Neighborhood serving shops

Amenities/Essentials

- Vibrant street life
- Community for all walks of life

Strategies

- Mixed use
- Bicycle parking

Special Districts



Characteristics: Entertainment and sports venues, major institutions

Examples: King Street Station, Husky Stadium, Seattle Center

Activities: Sporting events, concerts

Street View: Large venue structures, wide sidewalks sometimes empty

Amenities/Essentials: Sidewalks accommodate large crowds, wayfinding

Strategies: Allow street vendors, discourage surface parking

Industrial Job Center



Characteristics: Industry and commerce

Examples: SODO station, E3 Busway

Activities: Commuting, working, lunch

Street View: No residential, big trucks - little pedestrians

Amenities/Essentials: Ped/bike infrastructure, landscaping

Strategies: Industrial zoning, development standards

Recommendations

- Identify Transit Communities
- Prioritize Transit Communities Using Guidelines
- Recommend Action for Transit Communities
- Identify Funding and Implementation Tools



Identify Transit Communities

49 “transit connections” identified by SDOT

2 Work Sessions Hosted by Planning Commission

- Seattle Department of Transportation
- Department of Planning and Development
- Office of Housing
- Design Commission
- City Council Central Staff
- Mayor’s Office

Identify Transit Communities

Work Sessions

- Typology criteria applied to 49 “transit connections”
- Each transit connection assigned a typology (or not)



Identify Transit Communities

Work Sessions

- 49 “transit connections”
 - 44 Transit Communities
 - 2 combined into 1
 - 1 eliminated
 - 3 remain “transit connection”



Recommendations

Transit Investment should support
transformative change in a community

- Strengthen Comprehensive Plan to Encourage and Build Transit Communities
- Enhance Transit Communities Through:
 - Land Use
 - Zoning
 - Transportation
 - Housing
 - Environmental/Sustainability
- Maximize Opportunities for Leveraging, Collaboration and Funding
- Prioritize Planning and/or Infrastructure Investment

Provide the basics for any “transit connection” even those
that aren’t designated a Transit Community

Prioritization

Guidelines for Determining Near-Term Priorities

- Land Use Readiness
 - Development environment
 - Opportunities for place making
 - Planning efforts
- Transit Readiness
 - Transit here? Soon?
 - Quality of service
 - Mode
- Balancing Considerations
 - Leveraging/funding opportunities
 - Community support
 - Social and geographic equity



Prioritization

Tools for Focused Area Planning

Comprehensive Plan *Toward a Sustainable Seattle*

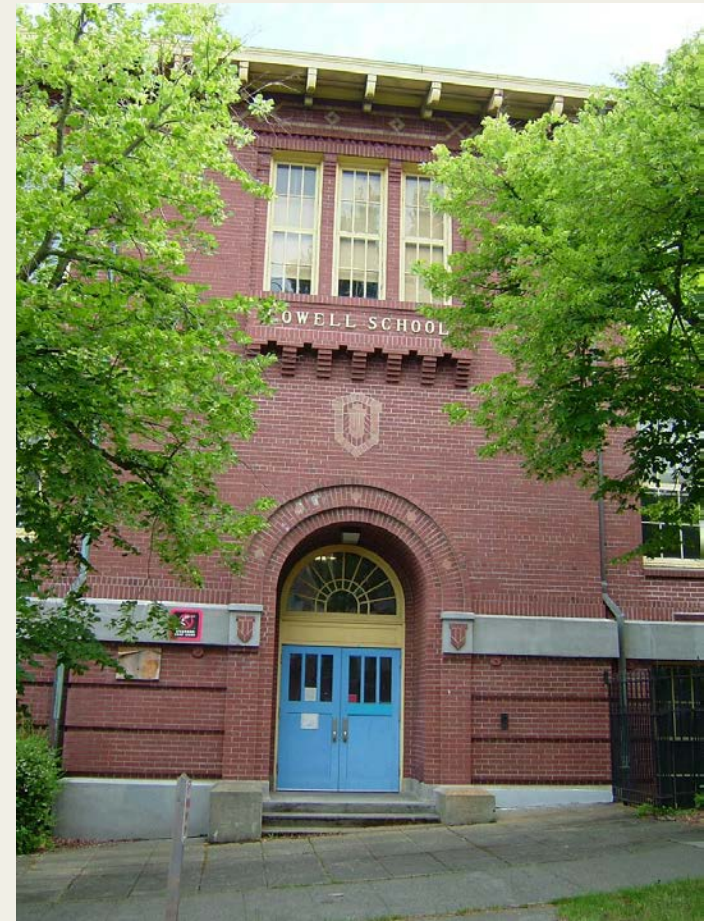
- Goals and policies to guide growth over the next 20 years

Policy Plans

- Urban Center Plans
- Neighborhood Plans

Implementation Plans

- Urban Design Framework
- Station Area Plan
- Corridor Plan
- Community Development Strategy



Prioritization

14 Transit Communities Identified

- Typology
- Planning Tool
- Key Actions



King Street Station

- Typology: Mixed Use Center
- Planning Tool: Station Area Plan
- Key Actions:
 - Connect open space and ped/ bicycle infrastructure
 - Increase mixed-income housing opportunities
 - Establish a clear, consistent wayfinding system



Funding and Implementation



Infrastructure investments



Community development



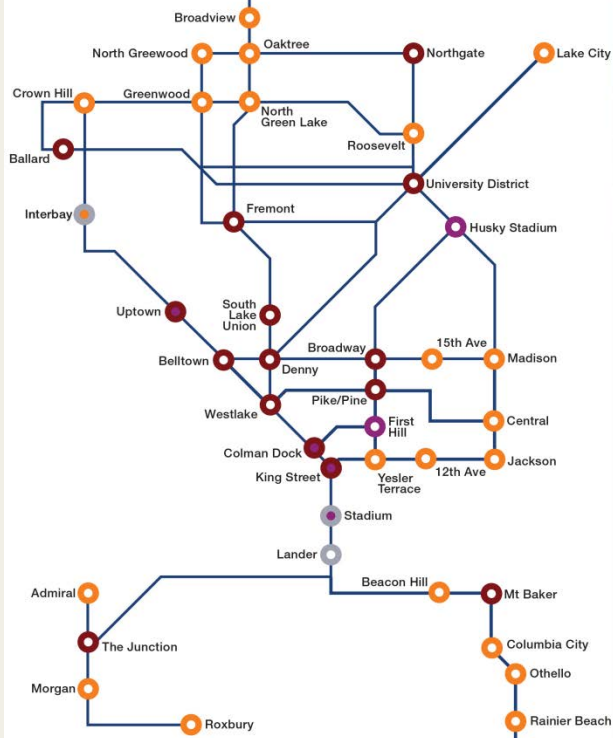
Parks & open space

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206-684-0433

[WWW. .seattle.gov/planningcommission](http://www.seattle.gov/planningcommission)

Downtown Bellevue Light Rail Alternatives Concept Design Report

FEBRUARY 2010



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<http://projects.soundtransit.org/Projects-Home/East-Link-Project/East-Link-Library.xml>

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