University Area Transportation Action Strategy

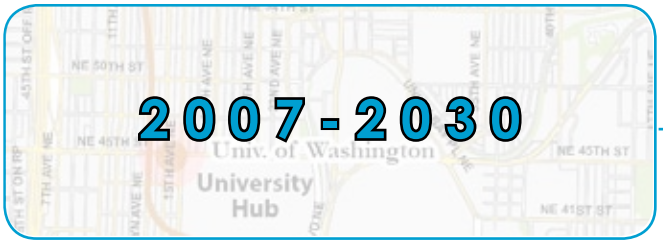
A long range plan
for the
University District
transportation system

2007 - 2030

SDOT
Seattle Department of Transportation

March 2008

University Area Transportation Action Strategy



Draft Final Report

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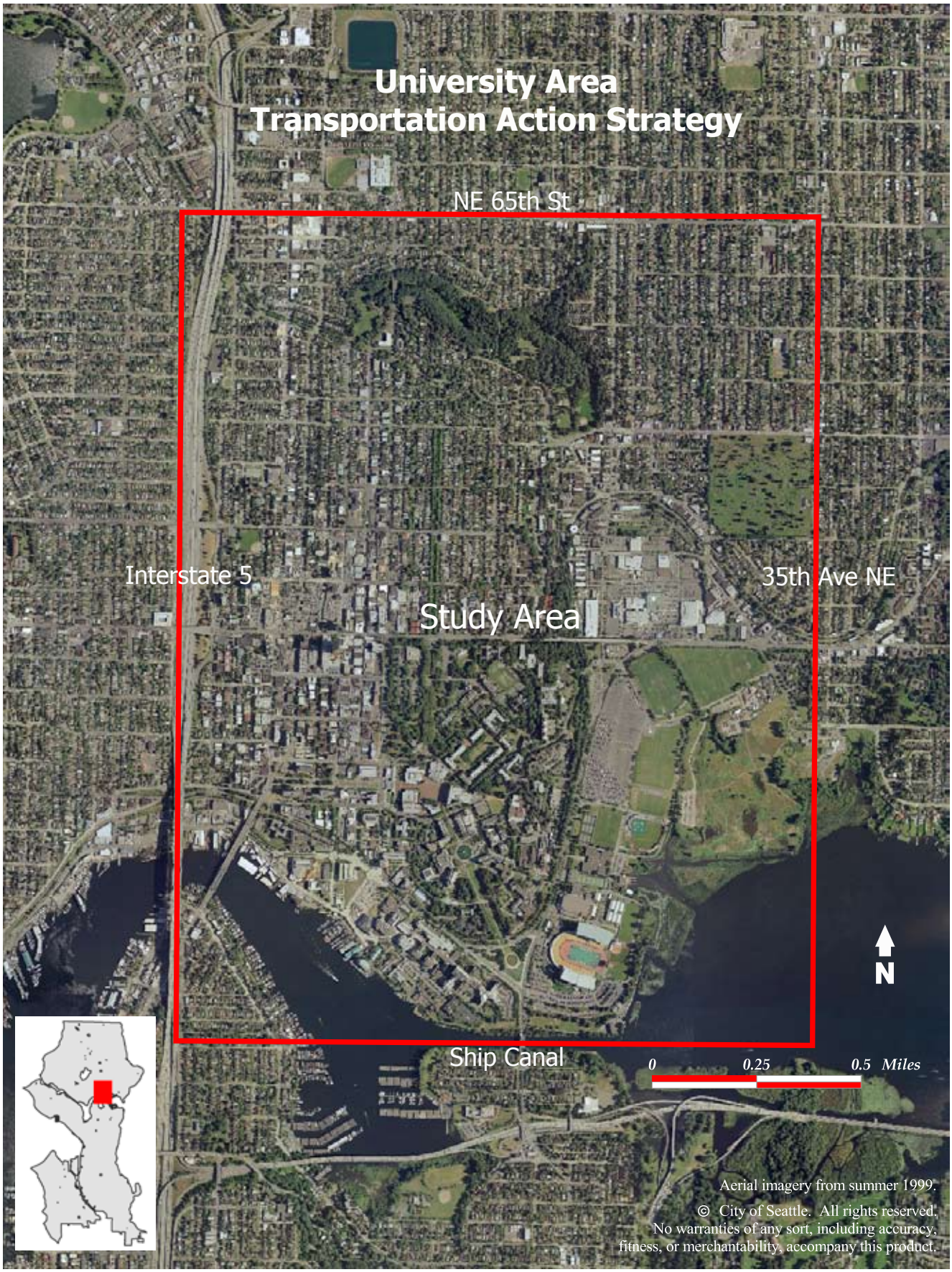
University Area
Transportation Action Strategy
NE 65th St
Interstate 5
35th Ave NE
Study Area
Ship Canal
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Aerial imagery from summer 1999.
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Introduction

In the 1880's, the area bounded by Lake Union to the southwest, Portage Bay to the east, and Ravenna Creek to the north was primarily farmland and rugged forest. Douglas fir trees soared to almost 400 feet and wildlife such as the cougar and bear were visible neighbors. The 'transportation network' for the few who lived there consisted of horse paths, boat docks, and wherever one's own two legs could take them.

By 1891, however, the area was subdivided and annexed into the City of Seattle and the forces of transformation were set in motion. Within just a few short years, new railroad and streetcar connections brought in hundreds of new residents and jobs, and enabled the University of Washington to move its increasingly constrained campus out of downtown Seattle. By the time of the 1909 Alaska-Yukon-Pacific Exposition, the area first called Brooklyn Addition, then University Station, and now known as the University District was on its way to becoming a full-fledged city within a city.

Now more than a century later, these early development patterns and infrastructure decisions still fundamentally influence the way people and goods move about the greater University Area. From inherited street alignments and widths to the man-made ship canal that now physically separates neighborhoods to the south, much of the area's "fabric" that we take for granted was established many years ago by a few key decisions. Today, as the community continues to attract new jobs and residents, and as land becomes increasingly valuable and the streets more crowded, it will be more important than ever to anticipate the long-term implications of transportation investments - whether they be modest or transformational improvements.

The construction of Interstate 5 in the 1950's, and of the Evergreen Point Floating Bridge (State Route 520) in the 1960's, is a telling example of this challenge: these historical decisions have placed impacts on the University Area that are significant, unmistakeable, and will last well into the future. Like the underlaying street grid and general development pattern of the University Area, many now consider these investments as a given part of the community. Yet with these major highways, however, there is growing recognition that the type of mobility these facilities provide must be weighed against their environmental and social costs as well as the local

transportation constraints they impose. In the case of SR 520, a facility that essentially needs full replacement due to its aged condition, the questions are being asked 'What if we don't take this historical decision for granted?' 'What if a viable opportunity has been presented to dramatically improve both the community fabric and the ways in which people and goods move around?'

These questions at the scale of a regional highway are indeed profound, which is why there is a large and focused planning effort between state, local, and neighborhood representatives to reach a preferred alternative on replacing SR 520. But what about other key decisions being looked at today that could potentially affect the University Area transportation system for the next 100 years? What about the kinds of gradual improvements needed to maintain livability and provide a viable transportation system for both now and in the future?

In order to answer these latter questions, and to identify a set of transportation improvements that adequately respond to the specific needs of the area, the Seattle Department of Transportation (SDOT) has developed the *University Area Transportation Action Strategy*.

Key decisions that have shaped the University Area (from l to r): Platting of the "Brooklyn Addition" in 1891; building the Montlake Ship Canal in 1915; construction of I-5 in the 1950's.

Planning & Neighborhood Context

The University Area is composed of the University Community Urban Center, which includes the University of Washington and University District, as well as all or parts of the Roosevelt, Ravenna/Bryant, and Montlake neighborhoods. Containing an especially wide variety of land uses, this area also has a diverse array of transportation users and system demands. As housing and jobs continue to grow over the next several decades, it will take smart investments at a range of scales – from neighborhood sidewalks to regional connections – to meet these diverse needs.

There are major improvements to the University Area's transportation system that are in the works. Sound Transit is bringing light rail service from downtown to the University of Washington campus by 2016, with the expectation of additional stations extending north as funding becomes available. Meanwhile, WSDOT has been working with regional and community stakeholders to design and construct a replacement for the SR 520 bridge, which is set to include additional HOV lanes and significant new bicycle/pedestrian connections. At the City of Seattle, proposals for improved transit service, new bicycle facilities, pedestrian safety enhancements, and major road maintenance are funded and will begin to hit the ground in 2008.

The *University Area Transportation Action Strategy* (or *Action Strategy*) is a set of project recommendations that build upon these improvements to meet the diverse and growing needs of the area. Guided by the principles of *mobility*, *sustainability*, *safety*, *access*, *and choice*, the *Action Strategy*'s aim is to sharpen the vision for a highly-functioning and responsible transportation network:

Mobility

The *Action Strategy* focuses on efficiently moving people and goods, of which improving "vehicle capacity" is only one of many potential approaches.

Sustainability

The *Action Strategy* considers today's needs as well as the needs and constraints of future residents, businesses, and institutions. All of the projects proposed are in support of Seattle's goals for improving the environment and building strong communities.

Safety

The *Action Strategy* analyzes safety issues and promotes improvements that reduce potential for conflict and injury.

Access The *Action Strategy* recognizes that a good transportation network is not an end in itself, but a means for conducting one's daily life. Retaining and improving access to employment centers, neighborhood services, and recreational facilities plays an important role in this report's recommendations.

Choice The *Action Strategy* works to reduce the historic imbalance in transportation investment by strengthening options for bicycling, walking, and transit to create "real" alternatives to driving alone.

The principle goals of the Action Strategy have been carried over from the 2002 University Area Transportation Study (UATS):

- *Build upon prior planning to provide a comprehensive, multi-modal plan for the area's transportation system*
- *Serve as a blueprint for financing and prioritizing SDOT's capital investments in the University Area for the next several decades*

Updating the 2002 Plan

The *Action Strategy* is an update to the University Area Transportation Study (UATS) completed in 2002. The UATS plan was developed to guide transportation decisions in the University Area to the year 2010 and beyond. It included 47 project recommendations that built on past planning efforts and was designed to implement the vision and goals of the Seattle's Comprehensive Plan, the Transportation Strategic Plan and the University Community Urban Center Plan.

In 2005, SDOT developed the Seattle Transit Plan, which provides a decision-making framework to help prioritize and evaluate transit investments that connect the City's urban centers and urban villages. These prioritization and evaluation measures were not available in the 2002 UATS report but are included in the Action Strategy.

Most of the UATS project recommendations have not been implemented, primarily due to lack of funding from local and state sources. In an attempt to reinvigorate and refine the 2002 study, and to improve the likelihood of implementing key projects, the *Action Strategy* set out the following objectives:

- Update "existing conditions" to the year 2007
- Extend the land use and transportation forecasts to the year 2030
- Respond to new location decisions for future light rail stations and to the ongoing planning for the SR 520 Replacement Project
- Incorporate new SDOT planning tools and funding projections

- Establish a set of prioritized projects that meet City objectives and are supported by the community

Changes since 2002

In November 2006, Seattle voters approved a new levy to help finance **Bridging the Gap**, a nine-year package of transportation projects totaling more than half a billion dollars. Bridging the Gap will allow SDOT to catch up on deferred maintenance, such as paving city streets and repairing old bridges, and to fund new pedestrian, bicycle and transit projects. The levy proceeds, combined with a commercial parking tax and an "employee hours" tax, dramatically increase the potential for SDOT to fund and maintain projects associated with the new *Action Strategy*.

In addition to an improved financial picture, there have been a number of changes in the University Area since the completion of the UATS work. These include:

BRIDGING the GAP
Your Transportation Levy Dollars at Work
- Mayor Greg Nickels

In addition to major increases in funding for bicycle and pedestrian improvements that were not available in 2002, Bridging the Gap also provides funding now for key maintenance projects such as repaving streets and replacing aging bridges.

- Changes in location and advancements in design of Sound Transit's three stations planned for the study area
- Completion of the 2005 **Seattle Transit Plan**, which designates priority transit arterials throughout the City and develops specific targets for improving transit speed, frequency, reliability, and span of service
- Advancement towards a Preferred Alternative for the SR 520 Replacement Project
- Lifting of the University of Washington's lease 'lid' in the University District, which had restricted the purchase of land for long-term facilities off-campus. An early result of the new agreement was the sale of the Safeco Insurance tower to UW in 2006
- Completion of the **Seattle Bicycle Master Plan** which will add over 380 miles of new bicycle facilities city-wide, and the launching of the **Seattle Pedestrian Master Plan**, intended to make Seattle the most walkable city in the nation.

The new *Action Strategy* incorporates these changes, which are reflected in project recommendations.

Planning horizon now 2030

Since the original study was completed in 2002, the Puget Sound Regional Council has prepared new demographic and transportation forecasts for the year 2030. The 2010 traffic forecasts prepared for UATS were updated to 2030, and recommended projects were evaluated based on projected traffic conditions in 2030.

Transportation Mitigation Program

Seattle has recently utilized a voluntary Transportation Mitigation Payment program as a means to help off-set the added strain placed by new development on the City's transportation system. Currently in place in South Lake Union and planned for the Northgate area, this program is intended to strategically pool contributions from developers to help fund previously identified transportation projects. By extending the transportation analysis and updating the recommended project list, the *Action Strategy* provides the planning framework needed to create such a program. For more information on the developer mitigation program, a Client Assistance Memo (CAM) is available at the Department of Planning & Development's website: www.seattle.gov/dpd/publications/cam/CAM243.pdf

The University Area Today

At the heart of the University Area is the University Community Urban Center, one of only five "urban center villages" designated by Seattle's Comprehensive Plan. Urban centers are intended to attract the the greatest share of Seattle's commercial and residential growth, which is reflected in their intense commercial zoning and relative lack of single-family housing. In the case of the University Urban Center, a large institution (the University of Washington) and a regional shopping mall (the University Village Shopping Center) play critical roles in supporting this capacity for urban growth. Two residential neighborhoods, however - University Park and University Heights - are also within the urban center and add significant housing variety and pockets of lower intensity uses.

Neighborhoods & Urban Villages

In addition to the urban center, the University Area also includes the southern portion of the Roosevelt Residential Urban Village, a neighborhood with a compact mix of land uses supporting transit and pedestrian activity but that is primarily residential in overall character. Together with the Ravenna/Bryant neighborhood to the east, this northern portion of the study area is predominantly single-family with small-scale retail along key arterial streets.

Mixed-use developments with housing above retail are increasingly common in the University Area, in large part to policies that direct growth to urban centers and urban villages.

There are three mixed-use 'residential urban villages' that lie just outside the study area: Green Lake to the northwest, Wallingford across I-5 to the west, and the Eastlake neighborhood to the south - all influential contributors to University Area traffic patterns and home to many University students and employees.

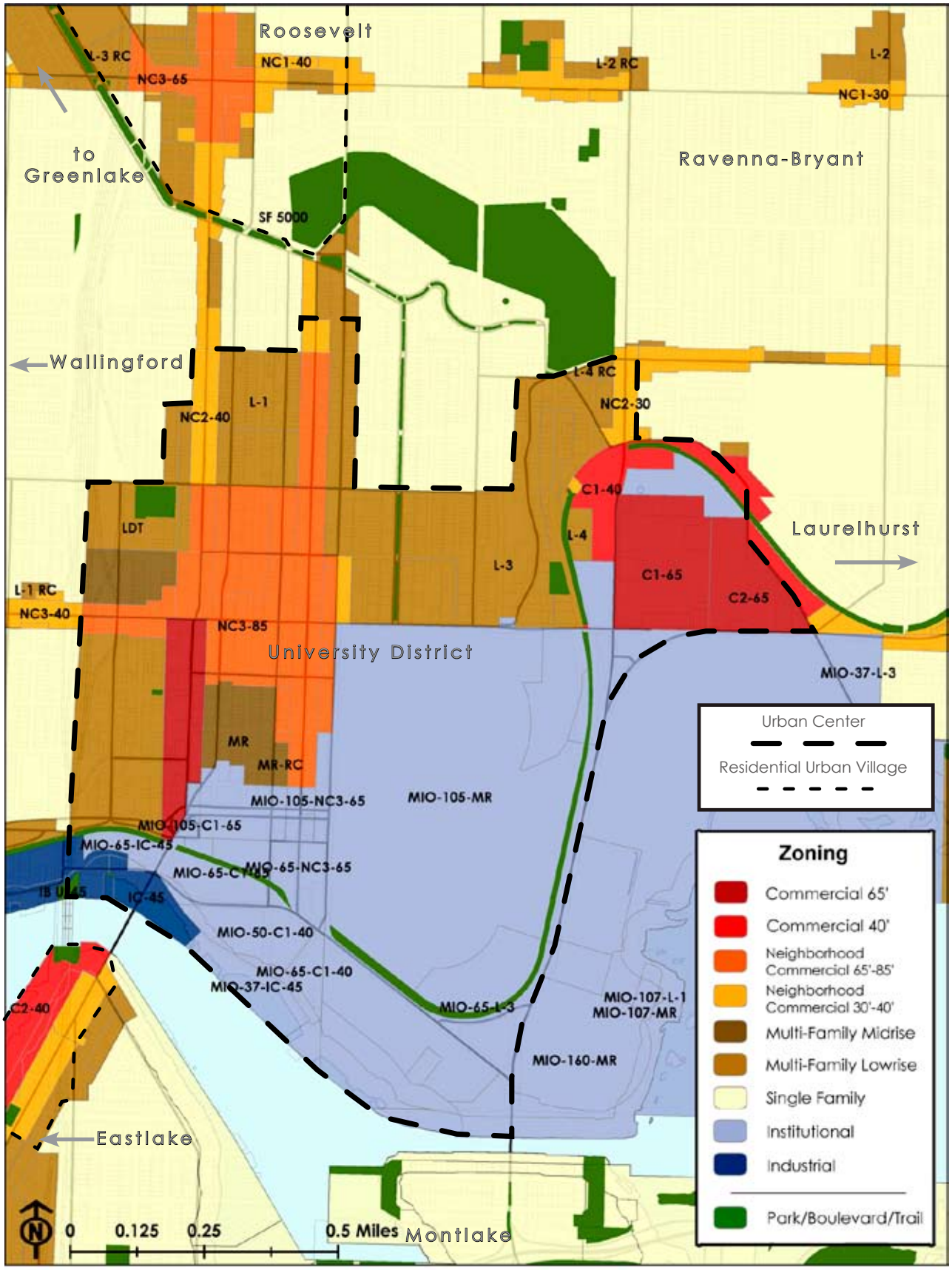
To the south and east of the study area are the single-family neighborhoods of Montlake and Laurelhurst. Both include small pockets of local retail and community services, while Laurelhurst is also home to another major institution: Children's Hospital Medical Center. With 220,000 patient visits per year, 3,600 staff, and plans for significant expansion, Children's Hospital contributes significantly to University Area traffic and activity.

Figure 1 provides a map of the study area's zoning, urban village classifications, and neighborhood locations.

Land Uses

University of Washington. Approximately one-third of the study area is taken up by the University of Washington, with 17,000 staff and an enrollment of 39,000 students. The "UW" strongly influences transportation demand throughout the study area. The City and University have worked together closely to address University-related traffic issues while ensuring that the University can grow to meet its needs. In 1983, the City and the University signed an agreement to allow development in the southeast portion of campus, with the

Figure 1: Zoning, Urban Villages and Neighborhoods



condition that no additional 'peak hour' trips crossed the Montlake Bridge. In 1992, the City's condition for approval of the University's 2001-2010 General Physical Development Plan changed the peak-hour trip requirement from a single location to address University Area-wide transportation issues.

Small-scale businesses in older 1-2 story buildings are common in the University Area, such as along Roosevelt Way at NE 64th St (above). From a transportation perspective, these buildings are notable in that most do not have parking garages or require 'curb cuts' along sidewalks - important factors in providing transit and pedestrian-friendly environments.

Business Districts are well-defined and range from regional (University Village), to local (University District), to neighborhood (Ravenna and Roosevelt), each providing a variety of retail and commercial services. Many stores and restaurants are locally-owned, with unique and diverse products and foods that attract patrons from throughout the City. The bulk of these commercial establishments are in older 1-2 story buildings that do not contain housing, although newer buildings are predominantly mixed-use and take fuller advantage of zoning and height allowances.

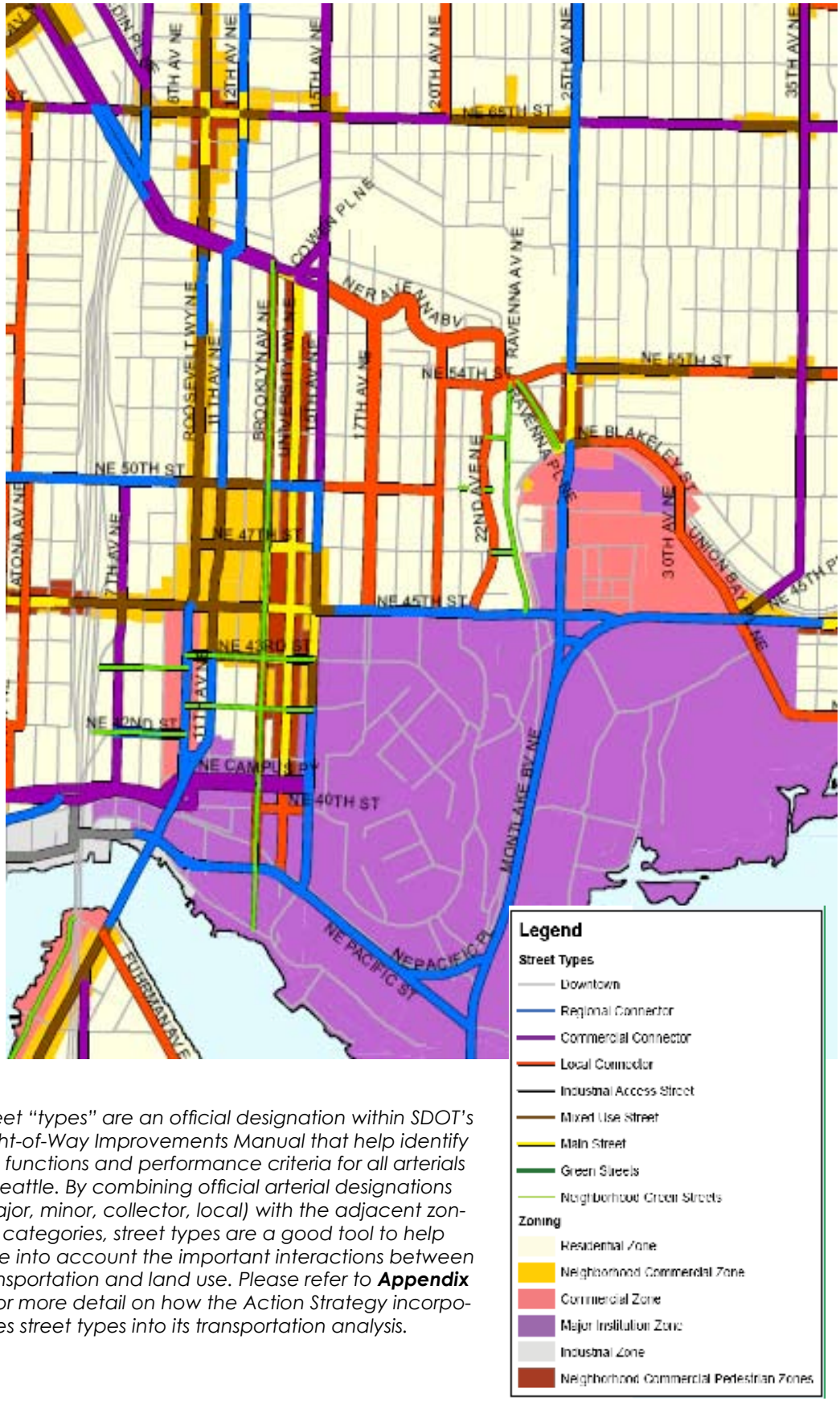
Open Spaces. The Seattle Parks Department operates 10 parks in the study area, dominated by Cowen and Ravenna Park to the north. In the heart of the University District, the University Heights Center (a former school) provides indoor meeting facilities, a community garden, and is the venue for the weekly Farmers' Market, while the University Playground (9th Ave NE/NE 50th St) provides much needed recreation space west of campus. There are a number of smaller "pocket parks" in the study area, including those at 24th Avenue NE/NE 62nd Street, 43rd Avenue NE/NE 9th Street and along the waterfront at the south edge of University campus property. In the eastern portion of the study area is the Calvary Cemetery, a 25-block open space bounded by 30th Avenue NE, NE 55th Street, 35th Avenue NE and NE 55th Street.

People

The **2000 Census** provides a "window in time" to look at the characteristics of the residents & employees of the University Area. The following is a quick summary of some of those characteristics for the University Community Urban Center:

- The University District is one of the densest in the Puget Sound region with 35 persons/acre and over 70 people & jobs/acre, while the larger University Area averages more than 18 persons/acre
- One-third (36%) of households do not own a vehicle
- People walk. More than one in three people walk to work or school while fewer than 30% drive alone
- Transit is an important component of the transportation system with about 23% of commuters traveling by bus

Figure 2: SDOT-Designated Street Types in University Area



Street "types" are an official designation within SDOT's Right-of-Way Improvements Manual that help identify the functions and performance criteria for all arterials in Seattle. By combining official arterial designations (major, minor, collector, local) with the adjacent zoning categories, street types are a good tool to help take into account the important interactions between transportation and land use. Please refer to ***Appendix A*** *for more detail on how the Action Strategy incorporates street types into its transportation analysis.*

- Students account for 71% of the residents within the University District Urban Center, with 18 to 29 year-olds comprising 80% of the overall population

- About 10% of residents are disabled within the University Urban Center, and approximately 45% of those are 65 years and older

Transportation

Getting around by vehicle in Seattle can be a challenge during commute times - and traveling through the University Area is no exception. Not only do vehicles accessing I-5 and SR 520 create significant traffic congestion at ramp locations, but the area's arterial roadway system is restricted on all sides: by I-5 to the west, the Montlake Cut and SR 520 to the south, Portage Bay to the east, and Ravenna Creek to the north. Vehicular traffic funnels to bridges and underpasses that connect across these boundaries, resulting in greater congestion and delays than with a less-restricted street grid system that could more evenly distribute traffic.

Outside of the major arterials that connect to highways and bridges,, however, the University Area transportation system works quite well. Most local streets have relatively low volumes at all times, while some arterials - such as 15th Avenue NE, 35th Avenue NE, NE 65th Street and NE Northlake Way - can operate quite well even during peak commute hours.

Seven bridges in the University Area help overcome the barriers presented by water, steep slopes, and freeways:

- *University and Montlake Bridges*
- *NE 45th St Viaduct*
- *I-5 overpasses at NE 45th and 50th St*
- *Bridge spans over Ravenna Creek on 15th Ave & 20th Ave NE*

The University Area's transportation system works for non-auto users as well. Most pedestrians can walk throughout the University District in relative comfort with few barriers, while many bicyclists and joggers travel along the Burke-Gilman Trail and Ravenna Boulevard for both commuting and recreation. Transit is also a viable alternative to driving a car, with frequent service to downtown. Some 51 transit routes serve the University Area, including Sound Transit and Community Transit regional bus service.

The Montlake Blvd/25th Ave NE corridor is somewhat of a dividing line between the transit and pedestrian-friendly core of the University District to the west and the more auto-oriented University Village shopping mall and single-family neighborhoods to the east. Steep

grade changes limit east-west pedestrian connections between these two areas, while large reservoirs of parking and severe traffic congestion on Montlake Blvd/25th Ave NE severely limit transit service levels.

U-Pass Program

Vital to the general success of the University Area's transportation system has been the University's "U-Pass" program - which provides education, steep discounts and other incentives for transit, van-pooling, and non-motorized transportation options. The program is largely responsible for the fact that only 23% of University students and employees drive alone for their commute, and roughly 40% commute by bus. While the *Action Strategy's* recommendations will go a long way towards improving transportation facilities for all modes, the continued success and influence of the U-Pass program will be critical to offering real transportation choice and effective congestion management in the University Area well into the future.

One of the many positive effects of the U-Pass program - and of offering true transportation alternatives in general - is the reduction in parking demand (which in turn helps make those alternatives more attractive). This University dormitory located along Brooklyn Ave NE and Campus Parkway is one telling example: what was designed as a parking lot for a few vehicles is now home to dozens of bicycles as well as needed recreation space.

Developing the Action Strategy

The *Action Strategy* includes 47 individual projects in the University Area. While many of the projects have been carried over from the 2002 UATS plan, the *Action Strategy* also took a new look at existing and future transportation needs. Study tasks included:

- Reviewing past and current plans and the UATS recommendations
- Working with the community and key stakeholders
- Updating data on existing conditions to 2007
- Establishing performance measures and thresholds for each mode of travel
- Forecasting 2030 traffic conditions
- Identifying and evaluating system improvements
- Prioritizing recommended projects
- Estimating costs and identifying potential sources of funding

Relevant plans & studies

The 2002 UATS study built upon a host of prior planning related to land use and transportation in the University Area. The Action Strategy reviewed these previous efforts and incorporated the latest information from more recent and on-going planning efforts. The studies and plans that are key to the development of the Action Strategy include:

Figure 8. University Community Urban Center Plan recommendations (1998).

The Action Strategy incorporates and builds upon many recommendations from past planning efforts, including the University Community neighborhood plan

University District Transportation Planning Program (1998) includes a set of recommendations for improving vehicle and transit operations along congested corridors.

Montlake/Pacific Circulation Study (1992) has recommendations for improvements on NE Pacific Street.

University Community Urban Center Plan (1997-1998), developed through the City's Neighborhood Planning Office, recommends improvements to serve pedestrians, bicyclists and transit users.

Roosevelt Neighborhood Plan (2006), calls for the development of a compact, active, pedestrian-friendly mixed core around the light rail station, establishment of a residential parking zone, and other transportation improvements to support the neighborhood business district.

University of Washington Master Plan – Transportation Analysis (2000), analyzed the transportation impacts associated with the University's projected growth out to 2012.

Transportation Strategic Plan (TSP) (updated 2004). The City adopted the TSP in 1998 as a guide for managing the City's transportation system and for implementing the vision of the Seattle Comprehensive Plan. The TSP includes street classifications, travel data, and dozens of specific strategies for prioritizing improvements to Seattle's transportation network.

Seattle Transit Plan (2005) designates a set of arterial roadways as the Urban Village Transit Network (UVTN), which is intended to prioritize investments for providing a fast, frequent and reliable transit system between the city's urban villages and within its urban centers.

University Parks Plan (2005) highlights the character of existing parks and identifies new locations and strategies for expanding the open space system, including recommendations related to the Brooklyn Ave Neighborhood Green Street concept.

Freight Mobility Strategic Action Plan (2005) contains short and long-term recommendations for maintaining freight mobility and meeting the goals of the City's Comprehensive Plan and the TSP. In the University Area, NE Pacific Street and the Montlake Bridge are identified as part of the major truck street network.

SR 520 Bridge Replacement and HOV Project (on-going). The design of a replacement for the current SR 520 bridge and freeway connections is still in flux, particularly with regards to the location and nature of the bridge approaches. The current Preferred Alternative is a six lane facility with two general-purpose lanes and one HOV lane in each direction, plus a shared bicycle and pedestrian trail.

Sound Transit University Link & North Link. Sound Transit is fully-funded to extend its light rail transit system from downtown Seattle to the University Area with an underground station at Husky Stadium. Called the University Link, the extension is scheduled to begin service in 2016. Together with a station on Capitol Hill, the University Link is expected to increase light rail ridership by 70,000, and reduce transit times between the University of Washington and downtown to 9 minutes. As part of Sound Transit 2, the North Link phase of light rail is planning additional underground stations for Brooklyn Ave NE at NE 45th St and 12th Ave NE at NE 65th St. While not currently funded, the preferred alignment analysis, preliminary station designs, and ridership forecasts exist as part of the North Link Final Supplemental Environmental Impact Statement (FSEIS).

Seattle Streetcar Plan (2004). SDOT's Seattle Streetcar Network and Feasibility Analysis includes two route options for a potential extension of the South Lake Union Streetcar along Eastlake Ave into the University Area. From the University Bridge to Campus Parkway, the conceptual alternatives include heading north on Brooklyn Ave to Sound Transit's planned light rail station at NE 45th St, or south along 15th Ave NE/NE Pacific St to the Husky Stadium Station. In 2006, a more detailed engineering feasibility study was completed which did not select an alignment and left a number of issues for future analysis, which SDOT is pursuing as part of its 2008 Streetcar Network Planning initiative.

Seattle Bicycle Master Plan (2007) will greatly expand bike facilities throughout the city, to increase bicycling and improve safety. A number of plan's recommendations were considered and refined and have been included in the *Action Strategy*.

Seattle Pedestrian Master Plan (ongoing, expected final 2008-09). The *Action Strategy* includes a number of pedestrian improvements and pedestrian level-of-service analysis which can be rolled into the Pedestrian Master Plan's project recommendations.

Public Outreach

The original University Area Transportation Study (UATS), completed in 2002, was prepared with the help of a broad range of stakeholders representing resident, business and institutional interests, who assisted in identifying issues, and proposing and prioritizing projects. The *Action Strategy* update effort continued this public outreach, from the earliest stages of the project through to the final report, once again engaging people in identifying issues, developing project recommendations and establishing priorities.

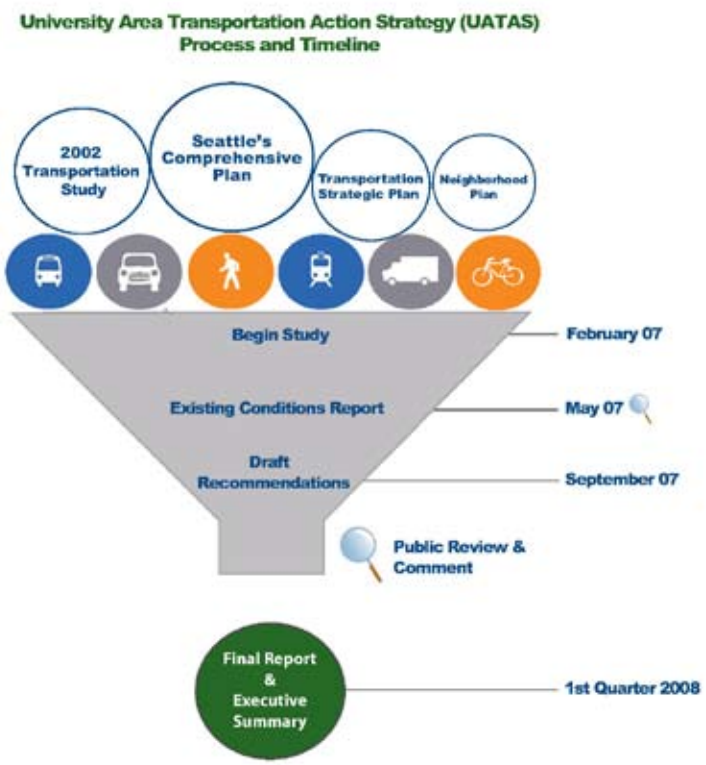
As part of Action Strategy outreach efforts, SDOT staff hosted a booth and solicited public comments for two days at the annual University District Street Fair

The **goals** of the public outreach efforts were to:

- Inform stakeholders about the study update
- Obtain input regarding key issues and proposed strategies, focusing on changes since the 2002 plan
- Build consensus for strategy recommendations.
- Manage expectations by building on the previous study and focusing on transportation projects needed to accommodate expected growth and meet the City's planning, transportation and climate change goals.

Given that the *Action Strategy* is an update, rather than a new study, outreach focused on existing, organized stakeholders groups. These included: neighborhood councils, associations and chambers of commerce; partner transportation agencies; and the

University of Washington. In addition, the general public and students in particular (most of whom would not have been living in the area five years ago) were encouraged to review and comment on proposed plans through articles in the UW Daily and North Seattle Herald, the project's website, a booth at the University Street Fair, and a public open house.



Public outreach was organized around 4 project milestones:

1. Project Kick-Off
2. Production of an Existing and Future Conditions Report
3. Draft List of Project Improvement Concepts
4. Final Report

At each of these milestones, SDOT staff and consultants contacted and/or met with community stakeholders to provide project information and solicit feedback. Refer to **Appendix J** for more details.

Existing & Future Conditions

The project team updated the UATS information about existing traffic, collisions, bus operations and transportation issues to ensure that the *Action Strategy* reflects the existing needs of the University Area. The analysis assembled a variety of available data that identified existing problem areas and changes in the transportation network that have occurred since the 2002 plan. The project team did extensive field verification from confirming sidewalk widths to

reviewing vehicle queuing at particular intersections. The intent of this effort was to gain a strong understanding of the transportation system and to identify the issues and the potential solutions.

Once the City's travel demand model was updated to reflect current conditions, household and employment growth forecasts - as well as assumptions of specific future transportation investments - were added to this model to forecast future traffic conditions for 2030. In forecasting future conditions, the City assumes a SR 520 bridge replacement with two lanes of additional traffic capacity but does not assume changes to the "interchange" location south of the Montlake Bridge. Model assumptions also include a 520 bridge toll and direct access ramps for HOV's. Light rail service is also assumed with three new stations at Husky Stadium, NE 43rd Street/Brooklyn Avenue and NE 65th Street/12th Avenue.

Details on the land use and employment growth forecasts, future transportation investment assumptions, and specific travel model outputs can be found in **Appendix C and G**.

Performance Measures/ Thresholds

Performance measures and thresholds were developed for pedestrians, bicyclists, transit and vehicles. These performance measures were used to evaluate existing problem areas and identify future needs. For each performance measure, an 'acceptable' threshold was defined. Where conditions fell below the threshold they were mapped by mode to highlight problem areas. A more detailed discussion of performance measures and thresholds by each mode is included in **Appendix A**.

Project Proposals

In addition to the detailed performance analyses for each mode, ideas for transportation projects were developed from a variety of sources, including suggestions from stakeholders and past planning efforts. Not all of the ideas the project team considered moved forward to become recommendations; each project was assessed with regards to costs, benefits, feasibility and partnership requirements and opportunities. Projects that were too costly, difficult to implement, or provided too little benefit fell by the wayside. The final set of recommended projects had to meet several criteria:

- Improve mobility, sustainability, safety ,access and choice
- Improve a significant problem that benefits a significant number of users
- Can realistically be implemented within the constraints of available right-of-way, adjacent land uses, and the need for coordination and cooperation with other public and private interests

Project Prioritization

Recommended projects were prioritized depending on how well the project met seven evaluation criteria, consistent with the method used by SDOT to prioritize projects citywide. The criteria are:

- Safety
- Mobility
- Preserving or Maintaining Infrastructure
- Cost Effectiveness or Cost Avoidance
- Supports Comprehensive Plan Urban Village Strategy
- Improving Environment
- Economic Development

Once scored, project staff grouped projects into 4 categories:

- **Low Cost/Early Implementation** projects that may be implemented relatively easily due to modest cost and low levels of complexity.

- **High Priority** projects that address major transportation issues and have a high benefit to the study area, but will require effort to obtain necessary funding & coordination.

- **Medium Priority** projects, that while beneficial to the area's transportation system, may not be able to compete with citywide priorities at this time or may address an anticipated - rather than existing - transportation need.

- **Partnership** projects that require coordination and cooperation with a partner agency. Many of these projects will likely need to be associated with larger actions, such as the SR 520 bridge replacement or improvements to the I-5 corridor, if they are to be implemented.

Identifying Potential Funding

The final step in developing the *Action Strategy* was to identify costs and funding sources that will be available for University Area projects. The project team looked at the amounts and types of funds that may be available citywide between now and 2030 and estimated a range of revenues that could potentially fund University *Action Strategy* project recommendations.

Modes

Modes are the different ways that people and goods travel, including vehicles, freight, transit, bicycling & walking.

The City of Seattle's Comprehensive Plan and Transportation Strategic Plan make it clear in their goals, policies and objectives that the historic emphasis on moving cars (of the at the expense of improving other modes) is over. Today, the goal of Seattle's transportation professionals is to 'move people and goods,' a small but important distinction that recognizes our inability to "build our way out of traffic congestion" without investing in transit and non-motorized transportation.

Creating Balance

Decades of investment focused on maximizing vehicle capacity has created an imbalanced transportation system. By creating incentives for driving at the expense of transportation choices, these investments have put in place artificial barriers for walking, biking, and taking transit. Achieving a balanced transportation system will require a very strong emphasis on removing these barriers over the next several decades. Providing viable alternatives to driving alone is also critical to achieving the goals of the Mayor's Climate Action Plan and the shared vision of Seattle as a sustainable city.

Despite current and expected growth in population and jobs within Seattle, much of the basic street infrastructure is not likely to change very much. The potential for new freeways, highways and major arterials is extremely limited, while widening existing streets is increasingly difficult, expensive, and disruptive to existing neighborhoods and businesses. The City simply will not be able to build its way out of traffic congestion. Therefore, as more Seattle residents, employees, and commerce need to get around town, the City will have to use its public rights-of-way much more efficiently than it has in the past.

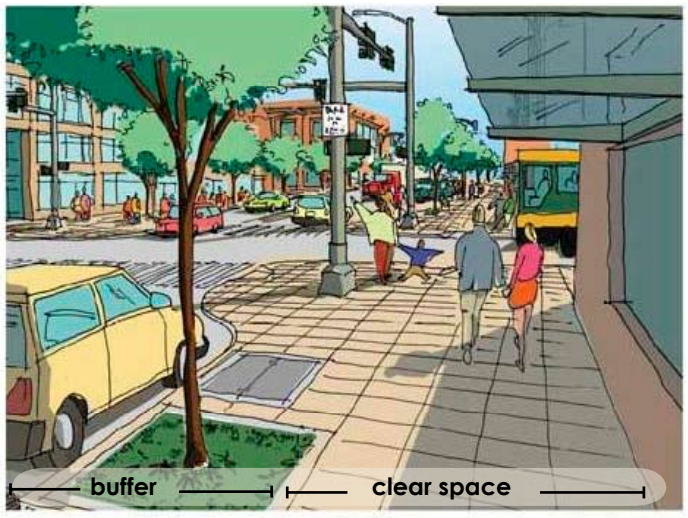
There is a strong and growing desire for people in the city to rethink the ways we live, work and shop. The Comprehensive Plan introduced many new concepts when it was developed well over a decade ago, with many citizens unfamiliar with the concept of "urban villages." Now, many people whose neighborhoods weren't designated as urban villages are asking to become one - a recognition that even single-family areas can be a part of vibrant neighborhoods, places where, when they walk out

the front door, they can run into their neighbors on the sidewalk, walk to the store and access important neighborhood services, or enjoy a great variety of places to go and things to see and do - all conveniently close to home.

Walking

In the University Area, walking is one of the primary ways people get around. **Of those people living in the urban center, more walk to work than drive alone** – 35% vs. 30%. Nearly one in four of all peak period trips to and from the University of Washington are made on foot.

Of the 47 projects recommended in this study, 28 are targeted to improve conditions for people who walk. These projects will widen sidewalks, add trail connections, improve street crossings, increase safety and reduce the wait at signals. Projects range from adding curb bulbs at intersectopms to developing a new trail connection from the University Campus to the Burke-Gilman Trail. Taken together, the projects will improve pedestrian safety, and make walking more convenient and enjoyable for more people.

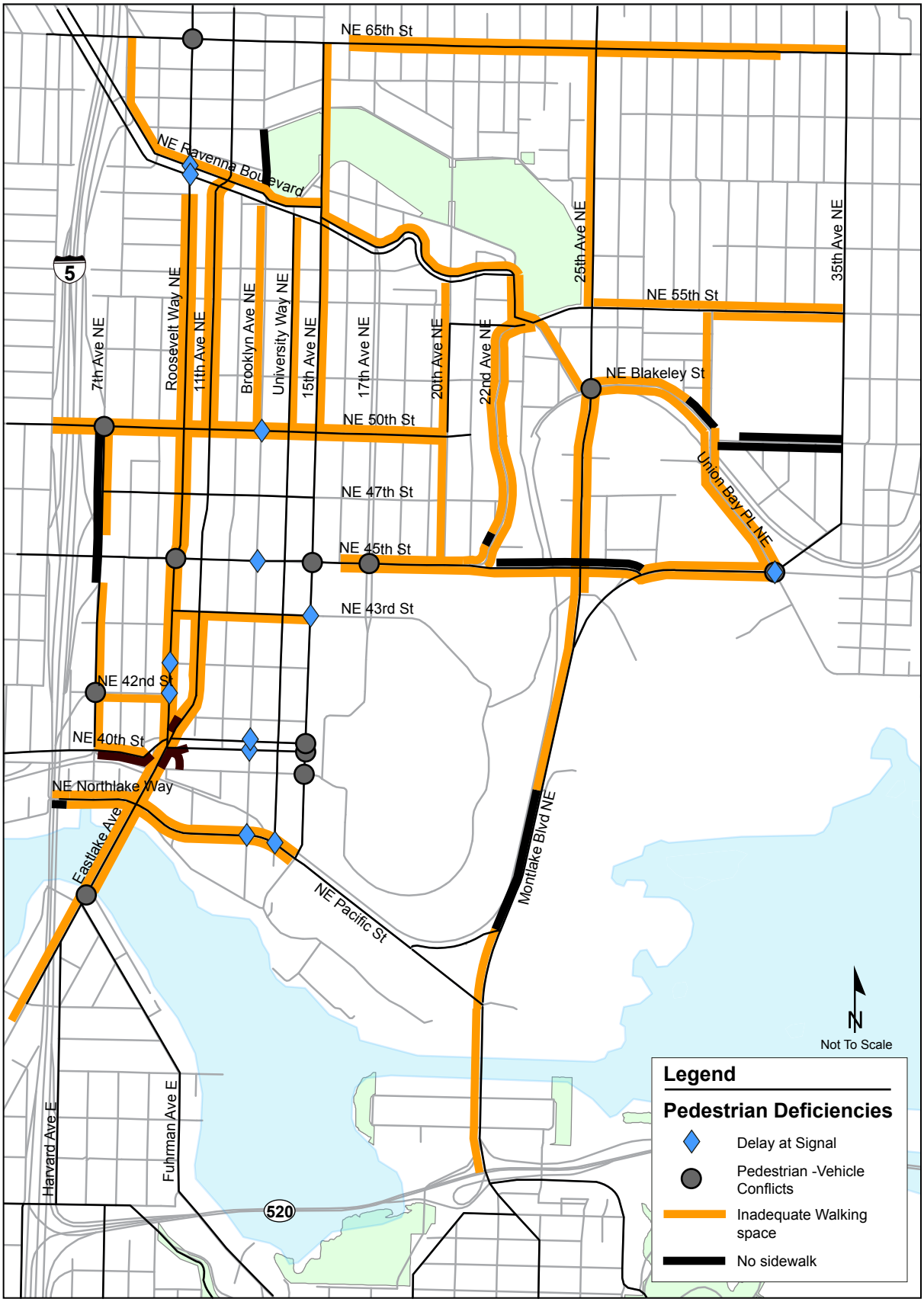


Evaluating walking

This study established a set of performance measures and thresholds for pedestrians including:

- Width of the walking space (clear space)
- Distance between walkers and moving vehicles (buffer space)
- Ease of crossing the street at intersections, including how long people have to wait to cross and how many vehicles make right and left turns across the crosswalk
- Safety (collision history)

Figure 3: Pedestrian Sidewalk Deficiencies (2007)



Based on 5 factors of pedestrian safety and comfort, the University Area Transportation Action Strategy has identified various deficiencies within the pedestrian transportation network, represented above.

Walking conditions today

In general, the University Area has a high-quality environment for pedestrians. Almost all streets have sidewalks on both sides and pedestrian crossings are well marked. Many corridors, such as University Way, have sidewalk widths that are appropriate to the foot traffic they serve. On the other hand, there are places where sidewalks don't meet 'acceptable' thresholds and where crossings could be improved. **Figure 3** shows the areas where pedestrian facilities are not adequate.

Sidewalks and traffic buffers

A good pedestrian environment includes adequate space to walk and pass as well as a separation, or buffer, from moving vehicles. Just as roads have been widened to accommodate more car traffic over the years, now Seattle's sidewalks need to be widened to encourage and serve more pedestrians. The walking space should be clear of objects and be at least six feet wide in order to be accessible, with wider sidewalks in busier areas. The areas occupied by tree pits and street furniture are not counted within the six foot minimum.

The distance between where people walk and moving traffic is the buffer space, which is generally a combination of parked cars and/or planting strips. When parking is not allowed during peak hours on busy streets, removing the parking lane and turning it into a travel lane removes an important safety buffer for pedestrians, which must be balanced against the need for more capacity for vehicles during the peak travel times.

Almost all of the heavily traveled streets in the study area provide adequate clear walking space; most, however, do not have enough buffer space, usually due to a lack of planting strips or limits to on-street parking.

Crossing the street

Delay: Walking should be convenient without unnecessary delays. If, for example, a person walking a mile catches a red light at every intersection, a 15-20 minute walk could easily lengthen into a 30-40 minute walk. Most of the signalized intersections in the study area have complete signal cycles under two minutes, meaning that the light turns green in each direction about once every minute. Where there is a separate signal phase for vehicles turning left, the total cycle time is longer.

Overall, twelve intersections fail to meet acceptable thresholds for pedestrian delay; 5 are on Brooklyn Ave NE - a "Neighborhood Green Street" which has higher expectations for pedestrian comfort, while 4 are located along Roosevelt Way - a major north/south arterial that creates barriers for east/west pedestrian travel. While few opportunities were identified to reduce

pedestrian delay at these locations, the *Action Strategy* used this analysis to help prioritize other pedestrian improvements along these corridors.

Pedestrian-vehicle conflicts: Pedestrians must use care while in a crosswalk to avoid left and right turning vehicles, even with a "walk" signal. "Pedestrian-vehicle conflict" is a measure of the number of vehicles turning across the crosswalk during the time pedestrians have a walk signal. Twelve intersections, located across the study area fail to meet conflict thresholds, which vary based on the type of street.

Safety: Compared to other urban areas in the city, the University Area is a relatively safe place to walk. Crossing the street, however, is still a challenging part of a pedestrian's journey and safety concerns are real. Between 2004 and 2006, 46 pedestrians in the study area were hit by vehicles and one was killed, all while crossing a street. More than half of the collisions (24 out of 46) occurred at busy intersections at the junction of two major roadways. About one in four collisions happened at a mid-block location rather than at an intersection. Three intersections had three collisions each:

- NE 45th St at 11th Ave NE
- NE 45th St at Roosevelt Way NE
- Roosevelt Way NE at NE 65th St

Burke-Gilman Trail

The Burke-Gilman Trail is a major transportation corridor for bicyclists and pedestrians. Volumes are particularly concentrated near the University of Washington, where the trail forms a loop around the east and south edges of the University, allowing access to many parts of the campus. Staircases, pedestrian bridges, and smaller trails connect from campus buildings to the Burke-Gilman Trail.

The evaluation of the Burke-Gilman Trail focused on identifying locations where potential conflicts occur, particularly where the trail crosses a road. Another focus was identifying where there are missing or poor connections between the trail and major destinations. The University of Washington's upcoming Burke-Gilman Trail Plan will take a comprehensive look at trail issues and make specific recommendations for improvements to the trail.

Pedestrian Master Plan

Having completed the Seattle Bicycle Master Plan, SDOT is now in the midst of a Pedestrian Master Plan process, which will define actions to make Seattle the most walkable city in the nation. The plan will use the principles of the "5 E's", Education, Engineering,

Enforcement, Encouragement and Evaluation, to:

- Get more people walking.
- Reduce the number and severity of crashes involving pedestrians.
- Engage all of Seattle in a meaningful dialogue about what is needed to create and connect walkable urban villages with important destinations.

Bicycling

Bicycle use is high throughout the study area with the highest use near the University of Washington campus and on the Burke-Gilman Trail. According to the University, **approximately 4,000 students and staff bicycle to campus**. The City recently completed the Seattle Bicycle Master Plan for the entire city. The project team used the plan's recommendations and added greater detail to key projects for the University Area.

Bicycle features are included in 23 of the recommended projects. These projects add bicycle lanes and sharrows, improve trail crossings, create better connections and increase bicyclist safety.

Evaluating bicycling

A bicyclist is more likely to ride on a street where the rider feels safe. While some experienced riders don't mind "mixing-it-up" with heavy traffic, most bicyclists prefer a street or corridor where traffic volumes and speeds are lower, and/or where space is set aside for bicycles.

The Bicycle Level of Service (BLOS) index measures the comfort level of a street for bicyclists. The BLOS includes daily traffic, speed limits, amount of on-street parking and the number and width of travel lanes. The project team applied the BLOS to each of the bicycle corridors in the study area as designated in the Seattle Bicycle Master Plan. In addition, the project team conducted a safety evaluation based on bicycle-vehicle collisions reported between 2004 and 2006.

Other than the Burke-Gilman Trail and the bicycle lanes on the University Bridge and along Ravenna Blvd NE, there are few dedicated facilities in the study area for bicyclists. While the Bicycle Master Plan will go a long way to bringing these new facilities, a bicycle 'network' that connects to the area's major destinations does not yet exist.

Figure 4 shows the bicycle corridors that fall below the acceptable BLOS, as well as locations where three or more bicycle-vehicle collisions occurred in the last three years.

Figure 4: Bicycle Network Deficiencies (2007)

Based on national Bicycle Level-of-Service (BLOS) methodology, the Action Strategy located deficiencies within the bicycle network for the University Area as designated by the Bicycle Master Plan. Facilities located on the University of Washington campus and on off-street corridors such as the Burke Gilman Trail were not analyzed.

Bicycling conditions today

With the exception of the Burke Gilman Trail, vehicles and bicycles in the University Area generally share the same roadways. Bicyclists generally ride along the edge of the roadway or along the side of a row of parked cars. About half of the study area streets commonly used by bicyclists were rated below the acceptable threshold for street adequacy. The two lowest rated streets are NE 45th Street and NE 50th Street, where there are high levels of bicyclist discomfort and high levels of bicycle-vehicle conflicts.

Street adequacy: Conflicts between vehicles and bicycles can occur where riders need to cross the stream of traffic to make left turns, where off-street pathways cross streets, where the roadway is not wide enough to comfortably accommodate both modes, or where vehicles are moving at a much higher speed than bicyclists.

Safety: City records show a concentration of bicycle-vehicle collisions occur near the intersection of Eastlake Avenue E/Fuhrman Avenue E, near the south end of the University Bridge. These collisions are related to bicyclists moving across traffic lanes to turn left onto Harvard Avenue E. Other high collision locations include the Burke-Gilman Trail crossings near the intersection of NE Pacific Street/University Way NE and at Blakeley Street/25th Avenue NE.

Bicycle Master Plan

The Seattle Bicycle Master Plan has created a vision for the University Area. The plan's major goals are to:

* Increase use of bicycling in Seattle for all trip purposes. Triple the amount of bicycling in Seattle by 2017

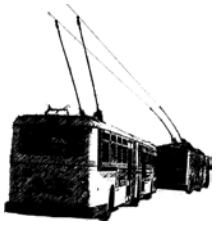
- Improve safety of bicyclists throughout Seattle. Reduce the rate of bicycle crashes by one-third by 2017

To achieve these goals, the Bicycle Master Plan has established a carefully planned set of projects to create a complete bicycle network throughout the city and has established policies to make bicycling more convenient, to promote bicycling and educate bicyclists, and to secure funding to implement the plan.

Figure 5: Bicycle Master Plan - Recommended Facilities

Most of the 2007 Bicycle Master Plan projects are not specifically called out in the Action Strategy: they are assumed to be "implemented" by the Action Strategy's 2030 timeframe. However, the Action Strategy does provide recommendations to refine and/or address unresolved issues and project alternatives identified by the Bicycle Master Plan, as well as other multi-modal projects that provide benefits to bicyclists.

Transit



The University Area enjoys one of the highest levels of transit ridership in the region. King County Metro, Community Transit, Sound Transit and the University of Washington collectively operate 51 transit routes within the area. The University of Washington's U-PASS program, which provides all students, faculty, and staff with a bus pass (unless they actively opt out), has increased ridership on King County Metro routes to the point where U-Pass trips account for nearly percent10% of all of Metro's riders. **Nearly 40% of students and staff commute to the UW campus by bus**.

Evaluating transit

The Seattle Transit Plan establishes five performance measures and benchmarks (or goals) for the Urban Village Transit Network (UVTN) corridors:

- **Frequency**: Every 7 to 15 minutes depending on route
- **Span of Service**: 16 to 24 hours a day
- **Passenger Loading**: Averaged over the day, most passengers should find a seat
- **Reliability**: Trips should be more than 3 minutes late
- **Speed**: On average, busses should travel at greater than 50% of the posted speed limit

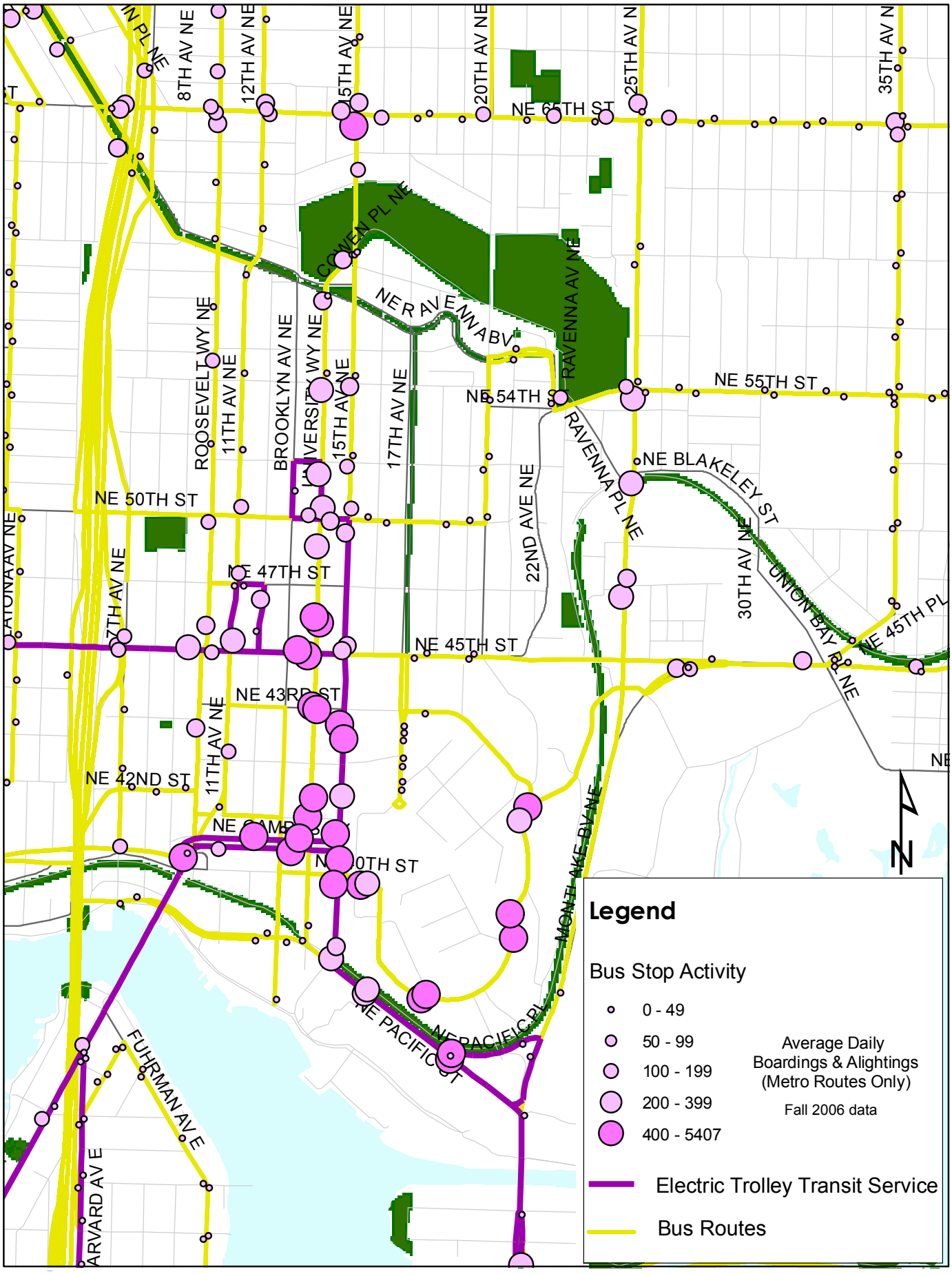
In the University Area, all bus routes currently operate on UVTN corridors. These corridors, which are identified in **Figure 6**, include:

- 15th Avenue NE
- NE Pacific Street
- University Way NE
- Eastlake Avenue
- Roosevelt Way NE
- 11th/12th Avenue NE
- 35th Avenue NE
- NE 65th Street
- NE 42nd Street
- NE Campus Parkway
- Stevens Way and Pend Oreille Rd (University of Washington campus)

Transit conditions today

Meeting the UVTN thresholds requires cooperation between the transit operators and the City. While King County Metro, Community Transit and Sound Transit are responsible for setting service hours and schedules, the ability of the buses to meet speed and reliability thresholds depends significantly on the operating conditions of city streets. Furthermore, when buses are consistently delayed in traffic, it costs more to provide frequent service as each bus takes longer to make a round trip.

Figure 6: Existing Transit Routes and Stop Activity



Speed & Reliability: The project team focused on projects to improve street operating conditions for buses that will improve transit speed and reliability. **Figure 7** show the transit corridors that fail to meet the UVTN travel speed thresholds.

When buses operate mixed with high volumes of traffic, slow speeds, plus delays while waiting to merge back into traffic, slow bus service. When buses stop to drop off and pick up passengers in the traffic lane, it speeds transit but slows other traffic, as drivers must wait behind the bus or create more congestion by changing lanes to avoid the delay.

Three primary transit corridors in the study area, NE 45th Street, NE Pacific Street and 15th Avenue NE, have very low travel speeds for buses. Other corridors with deficient speeds are Roosevelt Way NE and 11th/12th Avenue NE. Montlake Boulevard NE, although a designated UVTN corridor, has only limited transit service, so its very slow travel speeds do not affect many riders.

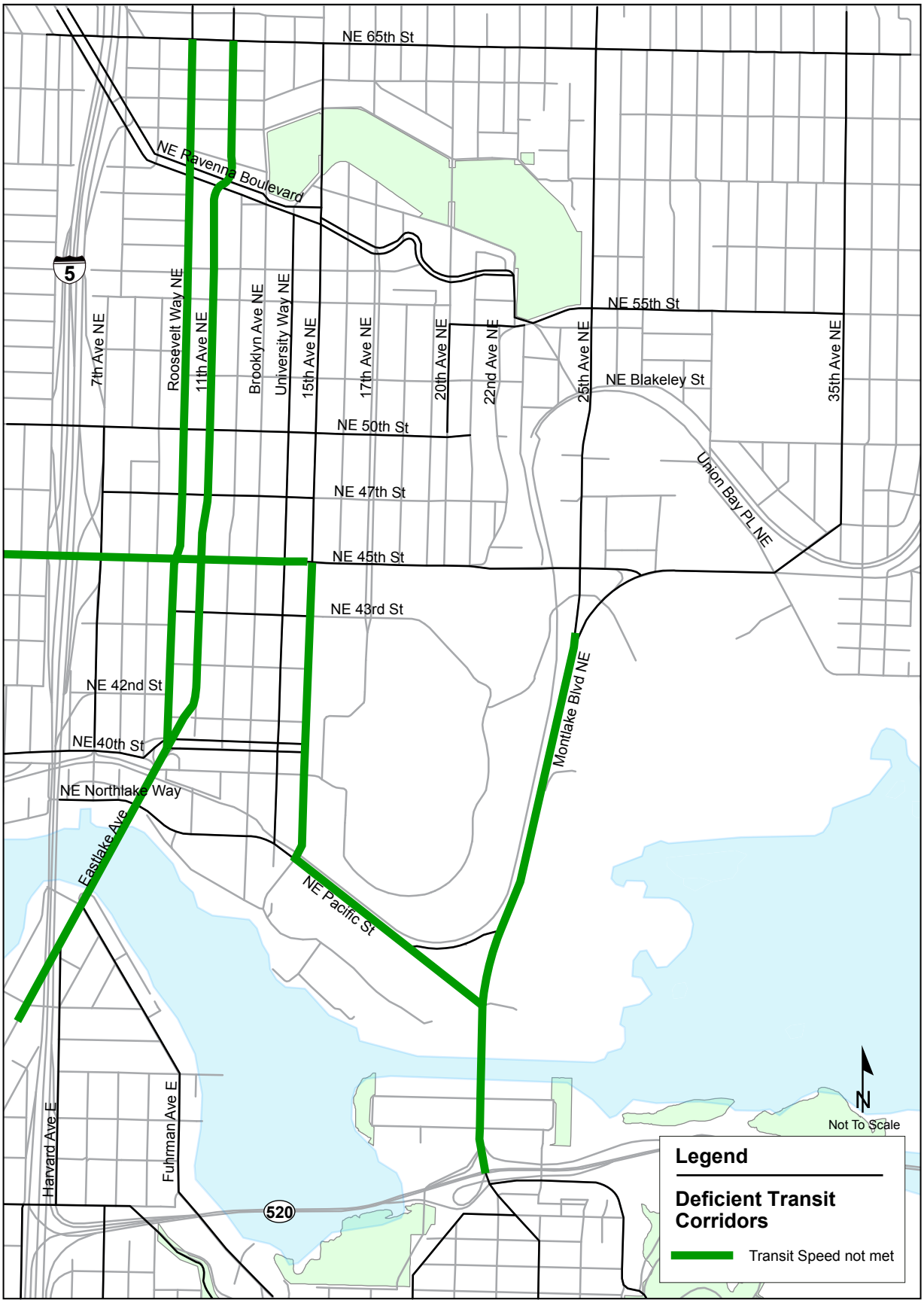
For a passenger waiting for a bus, service reliability is an important factor. To be reliable, buses should arrive within a few minutes of their posted schedule. Reliability issues are normally related traffic conditions, such as traffic congestion and crashes. In many cases, transit agencies will adjust the posted schedule to match anticipated traffic conditions. Of the UVTN corridors in the University area, nine fail to meet the transit reliability threshold. The worst corridor in terms of transit reliability is NE 45th St where traffic congestion and slow travel speeds affect the ability of buses to get to their stop locations on-time.

Future transit conditions

By 2030, the North Link Light Rail extension is expected to be constructed providing frequent, fast, reliable light rail service and the opportunity to reconfigure bus service to bring passengers to and from the three University Area stations. The North Link Final Supplemental EIS estimates a reduction in travel time between the University District and downtown Seattle from 22 minutes (currently by bus) to 8 minutes when light rail operation begins. The FSEIS also projects daily light rail boarding as 3,500 riders at the Roosevelt Station, 11,500 at the Brooklyn Station, and 21,500 at the University of Washington Station.

By 2030, however, without additional improvements, the travel speeds on roadways serving as primary bus transit corridors are projected to operate poorly, with several transit corridors having average travel speeds below 10 mph. These corridors include NE Pacific Street, NE 45th Street, 7th Avenue NE and 15th Avenue NE.

Figure 7: Transit Speed Deficiencies (2007)



The Action Strategy used the speed & reliability performance measures from the Seattle Transit Plan to analyze transit operations in the University Area.

Sound Transit

Preliminary design for the underground platform level at Husky Stadium Station.

Central Link

The first phase of development for Sound Transit's light rail system (Link) is set to begin operation from Sea-Tac airport to Westlake Station in 2009. As part of this first phase, there will be no major changes to transit (bus) routes operated by King County Metro in the greater University Area.

University Link

The second phase of Link light rail will bring service to the southern portion of the University Area, with new underground stations on Capitol Hill (Broadway between John St and Denny St) and at Husky Stadium (Montlake Blvd and Pacific St). Construction is set to begin in 2008 with the beginning of service expected in 2016.

Sound Transit 2

An extension of light rail north of Husky Stadium Station (North Link) has been planned as part of a larger "Sound Transit 2" package, which would include expanded light rail, Bus Rapid Transit (BRT), 'Sounder' commuter rail, and limited streetcar investment in some areas.

In November 2007, a proposal from Sound Transit to fund 'Sound Transit 2' was defeated as part of a larger regional transportation ballot measure known as the "Roads & Transit" package. While Sound Transit officials and planners are expected to reduce the level of investment as originally envisioned in Sound Transit 2, there is every indication that whatever plan comes forward will include expanding light rail service through the University Area, with stations at Brooklyn Ave in the University District and near 65th Ave in the Roosevelt neighborhood. The *Action Strategy* assumes these light rail connections will be in place by the 2030 timeframe, with optimistic projections having service reach these areas as early as 2018.

Vehicles

Nineteen projects recommended in this plan are targeted primarily to drivers. Of these, fifteen are designed to help speed traffic and reduce delays, while four focus on safety.

The analysis of conditions for vehicles typically measures and evaluates traffic during the worst hour of the day which is normally during the evening commute (the "peak" period). During the PM peak hour, 4,900 vehicles travel on Montlake Boulevard NE; 3,200 vehicles cross the University Bridge; and 2,300 travel on NE Pacific Street. In addition to the daily congestion associated with peak travel, traffic is also particularly heavy during events such as football games and festivals.

Evaluating vehicles

There is a long-established methodology for the evaluation of vehicle traffic conditions. Traffic vehicle counts, signal timing and phasing, percentages of truck and bus traffic are all inputs into computer models which calculate the Level of Service (LOS) for arterials and at individual intersections. These LOS measures allow traffic engineers to identify existing problems and show what the effects would be of investing in roadway improvements. In addition to LOS, the project team also evaluated vehicle collisions between 2004 and 2006.

Vehicle conditions today

Along a few of the corridors in the University Area, traffic can be congested and slow-moving for many hours each day, although on others traffic moves smoothly off-peak and acceptably in the peak. Much of the congestion in the area is related to vehicles traveling to and from I-5 and SR 520. Congestion on these regional facilities can also worsen University Area traffic by backing up traffic onto city streets and diverting trips onto arterials. In the University Area, as elsewhere in the city, topography and water have limited the ability to construct a simple grid system of evenly spaced arterials, placing more burdens on those streets that do connect across longer distances. In addition to Lake Washington, the Ship Canal, Lake Union and various small gulches, the University of Washington campus limits through routes to the edges of the campus. I-5 also creates an additional barrier, with widely spaced overpasses which tend to funnel all through traffic.

Figure 8 shows the roads and intersections that fall below an acceptable LOS threshold during the evening peak hour and the locations where high numbers of vehicle collisions have occurred.

Freight Corridors: The NE Northlake Way – NE Pacific Street – Montlake Bridge Corridor is the only designated Major Truck Street in the University Area. Major Truck Streets serve as primary routes

for transporting goods within the City's street system. Freight movements along this corridor are largely related to maritime industries located along the north shore of Lake Union and in Ballard. During peak hours, this is a highly congested corridor with eastbound movements on NE Pacific Street operating at 6 mph.

Safety: Intersection collisions within the University Area are well below the average compared to other areas in the City. During 2004-06, no intersections had more than five annual collisions, suggesting that slower travel speeds may reduce the number of collisions. Mid-block collisions between intersections, however, were higher than the 5 per year threshold and are a concern. Three mid-block locations along Montlake Boulevard and two locations along NE 45th Street had five or more collisions per year.

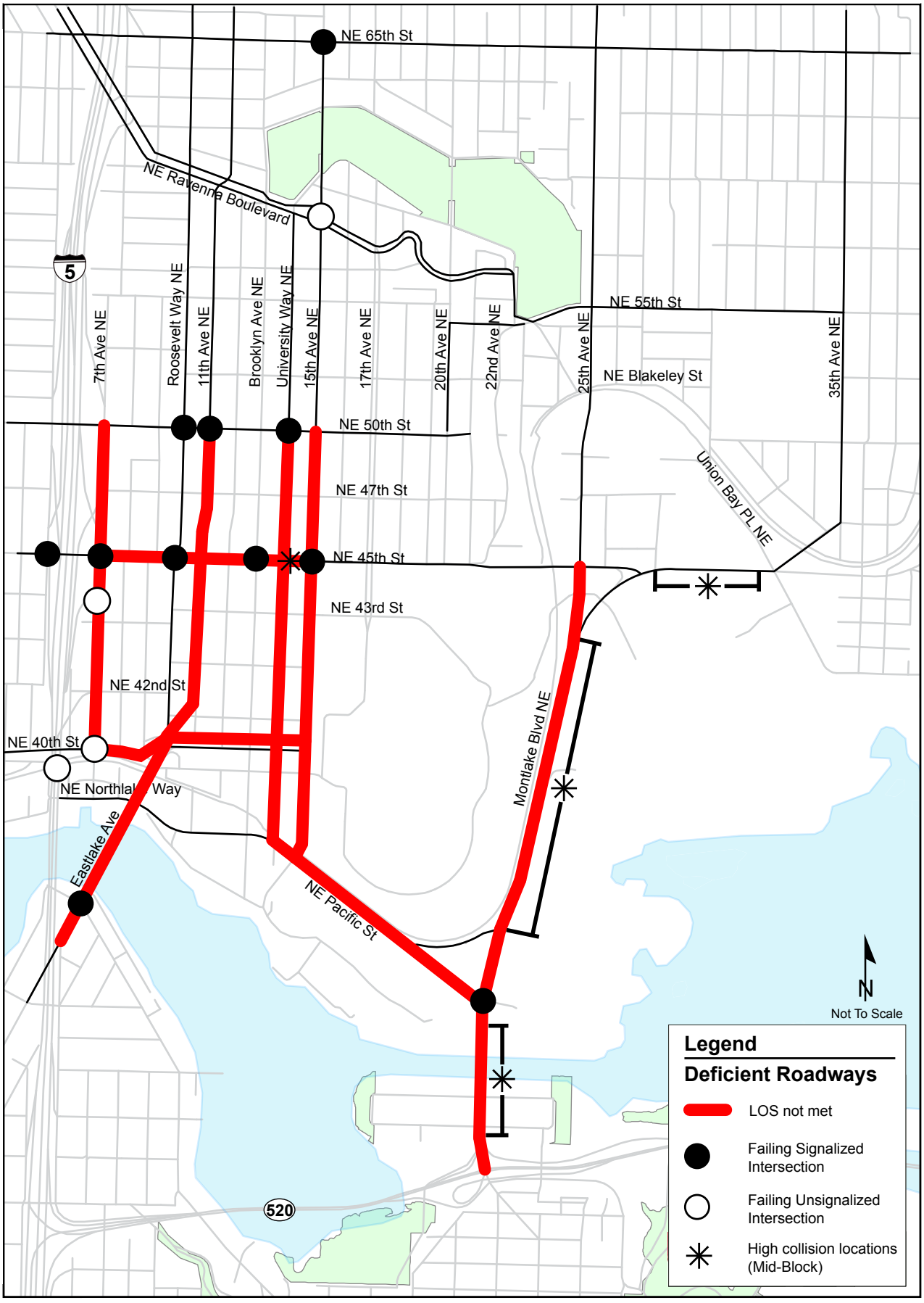
Travel Speeds: Congestion and pedestrian activity both contribute to relatively slow speeds on many streets within the study area. Montlake Boulevard in the southbound direction is the worst performing arterial with peak hour travel speeds averaging 3 mph – just under the average walking speed. In total, seven corridors operate below 10 mph in one or both directions during the evening peak hour:

- Montlake Boulevard from NE 45th Street to SR 520
- NE 40th Street from 15th Avenue NE to 7th Avenue NE
- NE Pacific St from University Way NE to Montlake Blvd
- University Way NE from NE Pacific Street to NE 50th St
- 7th Avenue NE from NE 40th Street to NE 45th St
- NE 45th Street from 7th Avenue NE to 15th Ave NE.
- 15th Avenue from NE 50th Street to NE Pacific St

Even during peak periods, 25th Avenue NE, 35th Avenue NE, NE Northlake Way and the sections of NE 45th Street east of 15th Avenue maintain an average travel speed of above 20 mph.

Intersections: Intersection operations and system-wide traffic congestion are strongly related. As the amount of traffic at an intersection increases, it becomes more difficult for an intersection to handle the traffic, to the point where the intersection "breaks down." When an intersection fails, drivers experience long delays, often waiting through two or three complete signal cycles. Impatient drivers may cut through adjacent residential areas creating neighborhood concerns. The analysis included all signalized intersections and unsignalized intersections where two arterial roadways meet. Some of the findings from the analysis of intersection operations are:

Figure 8: Vehicles Deficiencies (2007)



- Fifteen of the intersections studied operate below acceptable performance thresholds
- Five of the eight signals on NE 45th Street operate below the thresholds.
- During the PM peak hour, the all-way stop controlled intersections at NE 40th Street/7th Avenue NE and NE 40th Street/6th Avenue NE operate below thresholds
- Three out of the eight signals on NE 50th Street operate below thresholds
- The worst intersections include the signals at the I-5 ramps on NE 45th Street, Roosevelt Way/NE 45th St and the signal at NE Pacific St/Montlake Blvd NE

Future Vehicle Conditions

By using the City's traffic forecasting model, we can look ahead at future traffic conditions in 2030. The model includes changes in land use and employment and assumes Link light rail is operating and the SR 520 bridge replacement project is complete. Figure _-_ shows the University Area deficiencies in 2030.

Intersection Operations

Traffic will continue to grow within the University Area, particularly on streets that parallel corridors that operate below acceptable levels. In addition to the seven poor-performing corridors today, two additional corridors, NE Northlake Way and NE 50th St, are forecast to operate below the 10 mph threshold by 2030.

Traffic growth will continue to put pressure on intersection operations. The 2030 analysis shows nine new locations that are likely to operate below acceptable thresholds during the PM peak hour. Findings include:

- Along NE 45th St, the intersections at Union Bay Place/Mary Gates Memorial Drive and Montlake Boulevard NE will likely operate below thresholds.
- Brooklyn Ave NE will likely experience traffic growth, with deficient intersections at NE 50th St, NE 45th St, NE 43rd Street and Campus Parkway.
- Intersections at the junctions of heavily traveled streets such as NE Pacific St/15th Ave NE and NE 65th St/25th Ave NE will likely fall below thresholds.

Projects By Location

To respond to the challenges presented by existing and future transportation needs, the *Action Strategy* includes a list of projects that will provide more choices, improve mobility and safety, and will do so in a way that is sustainable to the University Area community and the City.

Project Selection

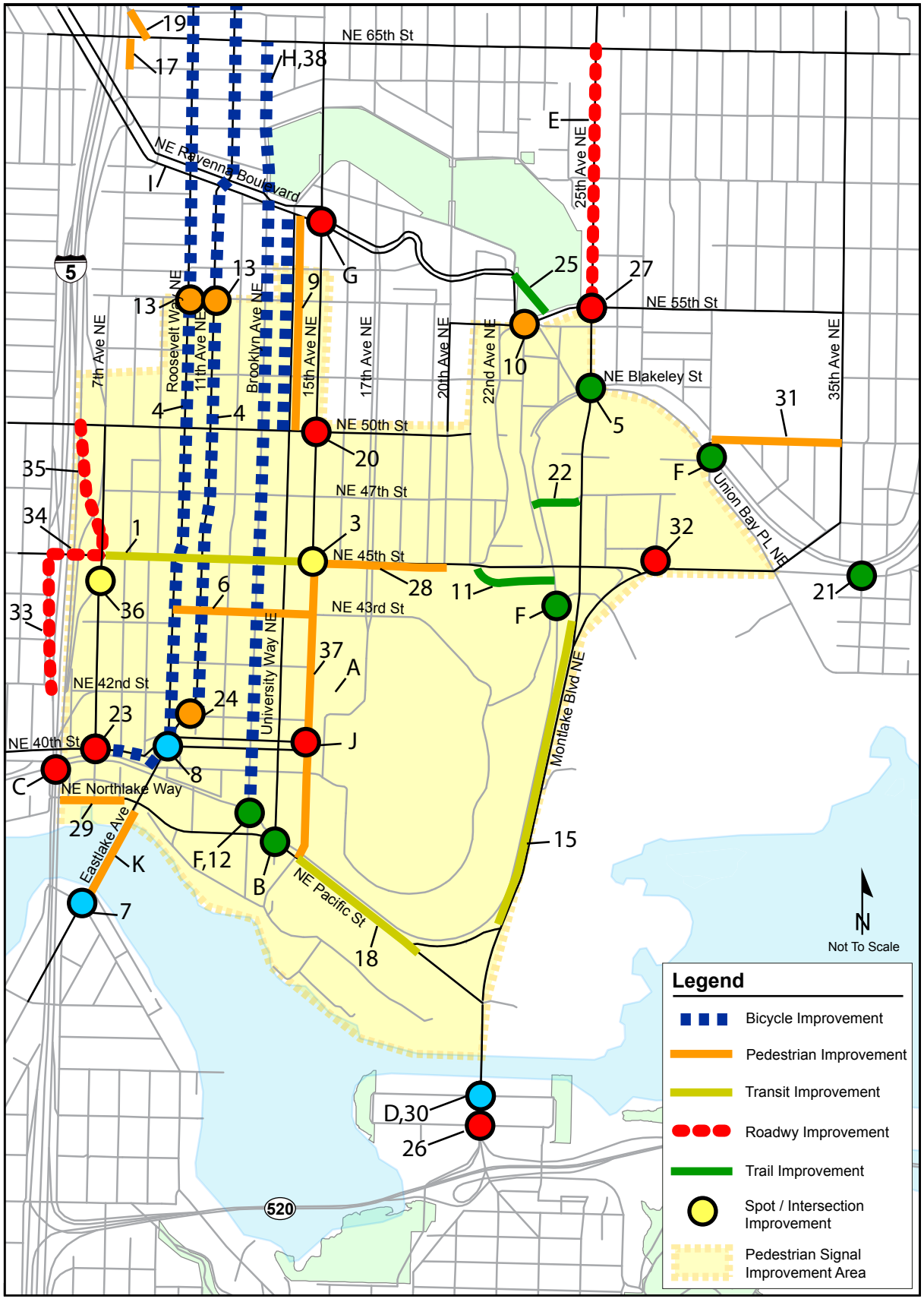
Each of the *Action Strategy* projects addresses a critical need or needs for the University Area. The recommended projects are more than a location-by-location response to the deficiencies identified by the performance measure analysis. They represent the thoughts and ideas of the community expressed during this project, as well as from past and on-going planning efforts. In some cases, identified deficiencies may not be solved by the *Action Strategy* projects, either because of high costs or competing interests. Only the best of these projects - those that meet the goals of mobility, sustainability, safety, access, and choice within reasonable constraints - were chosen for the *Action Strategy*.

The project team reviewed each proposed project based on four general criteria:

- Level of **community support**. Does the University Area community support the project?
- **Geographic equity**. Who does the project help and are overall project benefits distributed fairly across the University Area?
- Emerging **opportunities**. Does the project support a future opportunity such as the SR 520 bridge or North Link light rail?
- **Cost vs. Benefit**. Is the project important to the mobility of the University Area and can it be accomplished at a reasonable cost?

The selected projects are those that best reflected the four review criteria. Projects that were not selected may have had costs that were too high, whether in dollars or to the community, or benefits that were not deemed significant or likely. Other projects were included to meet community needs and goals that were not necessarily reflected in performance measures. All in all, the *Action Strategy* proposes a set of projects to promote a transportation system that will best meet the needs of the University Area

Figure 9 - Action Strategy Project Recommendations



The numbers and letters identifying each project correlate to the project numbers and categories that are in the projects by location description and the individual project sheets in Section X.

and its communities. **Figure 9** shows the recommended projects for the University Area.

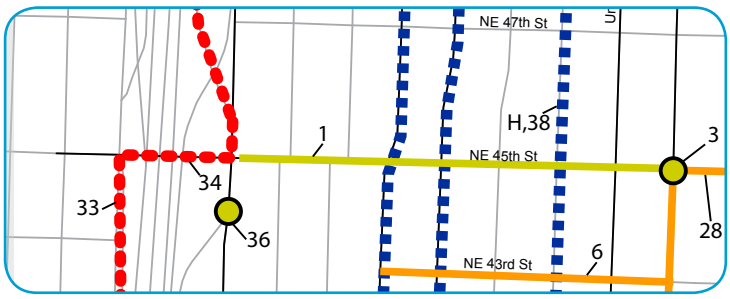
Project Organization

For the purposes of this report, the projects are grouped by a combination of geographic areas and corridors. The seven groupings used in this report are:

- **NE 45th St Corridor**
- **North/South Corridors** (Roosevelt/11th Ave, Brooklyn Ave NE, University Way NE and15th Ave NE)
- **University Bridge/Northlake Way/NE 40th St**
- **Ravenna/Roosevelt Area** (including 25th Ave NE)
- **Montlake Boulevard NE/NE Pacific St**
- **Burke-Gilman Trail**
- **Targeted Improvements**

In the following sections, the issues of the geographic areas and corridors are described, with each one followed by a list of recommended projects. In addition, other projects that affect the corridor or area are listed as Related Projects. Projects identified by letters, A through K, are the Early Implementation projects, that is projects that are thought to be (relatively) easy to accomplish using existing funds. The other three categories of projects – High Priority, Medium Priority, and Partnership Projects – are identified on the individual "project sheets" in Section 4.

NE 45th Street



NE 45th Street is a critical street for moving vehicles, particularly transit vehicles moving east-west and for general prupose access to Interstate 5. Along its length, the character of the street changes considerably, from six-lanes east of 25th Ave NE, to three-lanes climbing up the viaduct at the edge of the campus, to a four-lane urban arterial through the University District.

The street is heavily congested, particularly during the evening commute when travel speeds drop to around 10 mph. By 2030 travel speeds are forecasted to be 7 mph in the westbound direction and 5 mph in the eastbound direction. The number of buses picking up and dropping off passengers will affect the amount traffic NE 45th St can handle.

Issues

Intersections operate below acceptable thresholds. Five of the eight intersections along NE 45th St between 15th Avenue NE and

I-5 operate poorly. At signalized intersections, the signals operate with a separate phase for vehicles turning left, which reduces the time available for the primary east-west and north-south flow of traffic.

The I-5 ramps and overcrossing create spillover traffic. West of the freeway, the dual turn lanes from NE 45th St to the southbound I-5 on-ramps are not efficiently used because there is only one, relatively short, general purpose on-ramp available to store vehicles waiting to get on the freeway. Additionally, because the overcrossing is not wide enough to accommodate full-length left turn lanes, vehicles backup on NE 45th St blocking the through travel lanes.

Sidewalks along NE 45th St near the UW Campus are narrowed by streetlight poles, are in poor condition and have insufficient width to to accommodate pedestrian volumes and create a desirable walking environment along this important pedestrian corridor.

Project Recommendations

#1: Create a westbound lane for transit, business access and right turns only by removing left turn lanes and left turn signals and movements. The recommended project would start at University Way and end at the I-5 northbound ramps at 7th Ave NE. If additional transit travel time savings are needed, the lane could be started at 15th Ave NE. The project will benefit corridor travel times for both transit and vehicles by simplifying intersection signal operation and by separating buses and right turning movements from other traffic in the westbound direction.

#6: Widen the sidewalks and provide curb extensions along NE 43rd St in anticipation of the planned Brooklyn Station for Sound Transit light rail.

#28: Widen and repair the sidewalks on NE 45th St along the northern edge of the University of Washington campus.

#33: Create an additional southbound I-5 on-ramp lane to provide more vehicle storage and to gain full use of the dual left turn lanes on the NE 45th St freeway overcrossing.

#34: Expand the width of the NE 45th St overpass of I-5 to allow full length left turn lanes, bicycle lanes and improved sidewalks.

#35: Provide an additional northbound I-5 on-ramp lane to reduce traffic spillovers onto NE 45th St.

#36: Create a transit-only lane on 7th Ave NE to improve the crossing of the I-5 northbound off-ramps for buses and provide direct access to the NE 45th St transit facility and the I-5 northbound on-ramps.

Related Projects

#3: Extend the 15th Ave NE northbound-to-westbound left-turn pocket at NE 45th St and modify the signal timing to improve transit operations and reduce blocking problems for through traffic.

#11: Develop a pedestrian and bicycle path from the University of Washington campus to the Burke-Gilman Trail underneath the NE 45th St Viaduct.

#32: Install variable message signs near the junction of Montlake Boulevard and NE 45th St to better inform drivers of the relative travel times and delays in the two corridors.

Discussion: 45th St Transit Lane

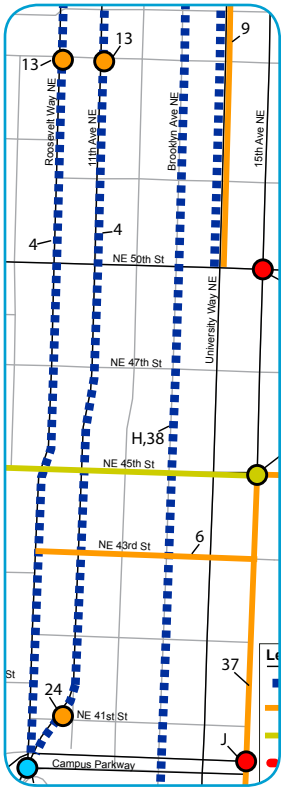
A westbound transit and business access lane on NE 45th St would create a major change to the operation of this corridor. The current configuration between 7th Ave NE and University Way NE is two travel lanes in each direction, with left turn pockets at intersections. Left turns are not currently allowed at 11th Avenue NE (except for eastbound transit) and at University Way NE. The proposed change described in Project No. 1 would eliminate left turns along the corridor and create a westbound business access and transit lane. This discussion compares the advantages of the existing corridor configuration to that of the proposed project.

Current configuration: NE 45th St operates as part of a street network and provides access to adjacent businesses and side streets from a two-way-left turn lane (west of Roosevelt) or from striped turn pockets between Roosevelt Way NE and 11th Ave NE. If left turns are eliminated, drivers will have to find new routes to their destinations, either by making a series of right turns around the block to cross NE 45th St, or by using streets north and south of NE 45th St as primary access routes.

Transit and access lane: NE 45th St has peak hour travel speeds of 9 mph eastbound and 11 mph westbound. These speeds are a result of delays at intersections for vehicles turning left, for right turning vehicles waiting for pedestrians in the crosswalk, and buses stopped in the traffic lane to pick up and drop off passengers. The westbound transit and access lane would benefit corridor travel times for both transit and vehicles by simplifying intersection signal operation (eliminating the left turn signal phasing) and by separating vehicles turning right and buses from general westbound traffic.

Proposed Action: The benefits of the transit and access lane far outweigh the costs. The project team modeled the effect of the project on intersection and corridor operations and found that westbound vehicle travel times in 2030 would improve from 6.5 mph to 14.0 mph. Eastbound general lane travel times would also improve from 5.0 mph to 8.0 mph. Transit operations would also be faster, increasing the westbound transit lane travel speed to 16.0 mph. There may be increased traffic on NE 43rd St and NE 47th St from vehicles going around the block to "make" a left turn. The analysis found there is adequate capacity on these parallel streets to handle the total of about 300 trips that might be diverted from NE 45th St during the PM peak hour.

North/South Corridors



Major projects, supplemented by spot improvements, are recommended in all but one of the continuous north/south corridors in the study area. The north/south corridors evaluated in this analysis are:

- Roosevelt Way NE and 11th/12th Avenue NE
- Brooklyn Avenue NE
- University Way NE
- 15th Avenue NE

Corridor projects will add dedicated bicycle facilities, widen sidewalks and bus zones, provide high-quality urban design, and generally improve safety for all modes. Below is a list of project recommendations, the issues the projects address and, where applicable, a discussion of the relative advantages of alternative approaches for each corridor.

Roosevelt Way NE and 11th/12th Avenue NE

This corridor is a one-way 'couplet' with southbound traffic on Roosevelt Way and northbound traffic on 11th/12th Ave. Three projects address pedestrian, bicycle and transit safety, mobility and access in this corridor.

Issues

Traffic is moderate, has grown only slightly over the last decade and operates acceptably at around 13 mph in the PM peak hour. By 2030, traffic is expected to increase by 700-900 vehicles in the PM peak hour, with peak travel speeds dropping to around 11 mph.

Parking along the street is important to businesses and residents. Parking is allowed on both sides of both streets except during commute hours when it is restricted on one side in the peak direc-

tion. North of 50th St, 11th and 12th Ave are mostly residential, but on Roosevelt Way small businesses along the length of the street rely on on-street parking for their customers.

Due to the gentle slopes and its connection to a direct route to downtown via the University Bridge, bicyclists are heavy users of the couplet. Riding on the couplet is not a comfortable experience, however, due to the volume of traffic and the lack of designated bike lanes.

When peak-hour restrictions are in effect, pedestrian crossing distances are long and uncomfortable. Particularly with many unsignallized intersections along these streets, improving east-west pedestrian safety by installing curb bulbs and pedestrian signals is a high priority.

Project Recommendations

#4: Create bicycle lanes and the opportunity for more sidewalk extensions on 11th/12th Ave NE and Roosevelt Way NE by eliminating peak period parking restrictions. At major intersections, such as NE 45th St and NE 50th St, continue to provide curbside turn lanes in order to maintain adequate vehicle capacity.

#13: Install curb extensions on the left side of Roosevelt Way and 11th Ave at NE 55th St to help pedestrians cross the street.

#24: Install a pedestrian signal and new crosswalks for people crossing 11th Ave NE at NE 41st St, to improve safety.

Related Projects

#8: Reconfigure and consolidate the northbound ramps from Eastlake Ave at the north end of the University Bridge. Construct new sidewalks along Eastlake Ave as it turns into 11th Ave NE.

Discussion: 2-way or couplet

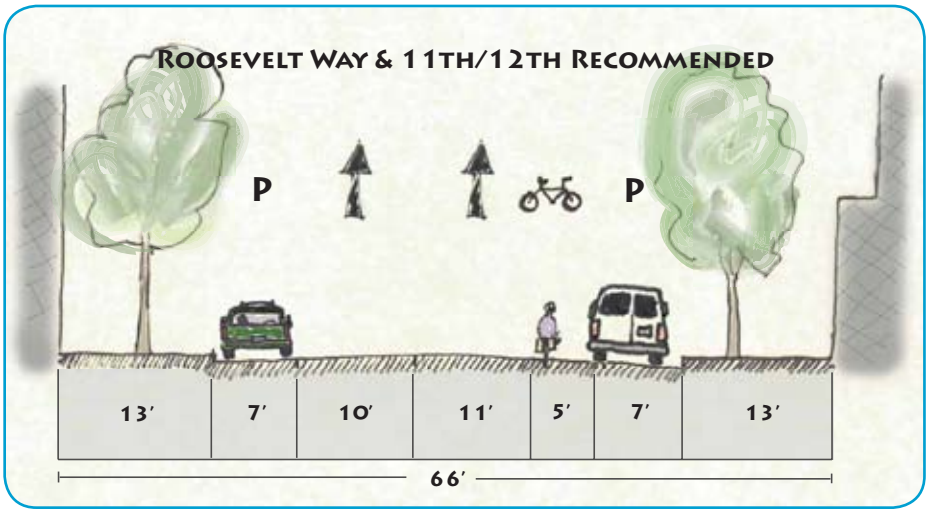
The Roosevelt Neighborhood Plan asks the City to consider eliminating the one-way couplet of Roosevelt Way and 11th/12th Ave by making both streets two-way. The intended benefit would be to improve business access for vehicles and provide a more pedestrian-friendly environment. In order to maintain vehicle capacity in the corridor, however, at least one of the two streets would need to be configured with multiple travel lanes and turn pockets to meet the expected traffic demand.

Two-way operation: Changing Roosevelt Way and 11th/12th Ave would simplify circulation patterns for drivers, particularly in the Roosevelt business district around NE 65th St; potentially calm traffic by reducing the number of through lanes; and improve street character by developing bicycle lanes and shortening pedestrian crossing distances.

The couplet: Retaining the one-way couplet would provide more vehicle capacity and faster transit times, primarily because of simpler intersection operations and the ability to make turns without opposing traffic; as well as more flexibility to configure both streets to work better for bikes and buses.

Proposed Action: Based on operational and cost-benefit analyses and public input on both options, the project team does not recommend converting these one-way streets to two-way operation. There are too many unknowns with the feasibility of two-way operation, the impact of displacing traffic, and whether the potential benefits of such a change would actually be realized.

The couplet currently is configured to move traffic with little consideration for pedestrians or bicycles. Parking is restricted during peak hours, resulting in three travel lanes in the peak direction along the length of the corridor. The third travel lane is primarily needed at major intersections such as NE 45th St and NE 50th St, where the peak traffic volumes are high. Along the remainder of the corridor, the *Action Strategy* recommends two through lanes with parking on both sides. Bicycle lanes would be striped along the outside lane of the roadway and pedestrian curb bulbs would be added to facilitate crossings. As needed at intersections, left and right turn pockets could be added now or in the future by restricting parking just prior to an intersection and not installing curb bulbs. In order to improve or maintain adequate transit speeds, in-lane bus stops could be constructed by widening sidewalks at these locations.



By allowing all-day parking on both sides of Roosevelt Way and 11th/12th Ave, a 5' bicycle lane can be added if travel lanes are slightly reconfigured. In addition to improved bicycle facilities, this project would also allow for sidewalk extensions ('curb bulbs') on both sides of the street, significantly improving pedestrian safety and comfort at key locations, including the Roosevelt Business District and at key bus stop locations.

Brooklyn Avenue NE

Brooklyn Avenue NE is a Neighborhood Green Street, a preferred biking route, and the home of a future light rail station between NE 43rd St and NE 45th St. Two projects, one short term and one long term, will help the street meet the needs of all users and function more effectively as a Green Street.

Issues

Traffic today is low, with only about 4,000-5,000 vehicles a day using the street. But the 2030 forecasts predict that increased traffic will result in a number of poorly operating intersections along this corridor.

Many novice and local bicyclists currently use Brooklyn Ave, but there are no pavement markings or signs that designate this as an officially designated bicycle corridor.

The City has designated Brooklyn as a Neighborhood Green Street, but the width of the street may encourage speeding and the sidewalks need better protection from vehicle traffic.

Project Recommendations

H: Add bicycle sharrow pavement markings on Brooklyn to create an official bicycle corridor between Ravenna Blvd and the Burke-Gilman Trail.

#38: Develop an urban design/streetscape plan for making Brooklyn Ave a "real" Green Street, with features such as widened sidewalks, landscaping and appropriately scaled lighting.

University Way NE

"The Ave" went through a major streetscape improvement, south of NE 50th St, in early 2002. This project widened sidewalks, added street trees and low-level lighting, and improved pedestrian crossings. The northern portion of University Way NE (north of NE 50th St) was not included in this renovation.

Issues

Traffic volumes are low, with only about 3,000 vehicles a day using this stretch of University Way NE. Much of the traffic on the street is related to vehicle parking or transit.

Bicycle lanes are identified in the Bicycle Master Plan. There are no pavement markings that designate this as a bicycle corridor.

The street is a UVTN transit corridor that carries a number of heavily traveled bus routes, including the 70 series of Metro express routes to downtown.

Project Recommendations

#9 (Phase 1): Repair damaged sidewalk segments, and install pedestrian lighting and street trees along University Way north of NE 50th St. As part of this first phase, an area-wide parking study should be completed to determine the near-term and long-range parking needs.

#9 (Phase 2): Provide bicycle lanes and improve the pedestrian environment given the parking needs in the corridor. Two potential design alternatives are either a two-way sidepath along the west side of University Way, or more typical bicycle lanes along each side of the street (see discussion below).

The first phase of Project 9 would improve the streetscape by improving broken sidewalk segments and adding street trees and pedestrian lighting along the University Way corridor. In addition, a parking study would be done to evaluate the needs of businesses and residents along the street. A second phase would study how to improve pedestrian and bicycle facilities. The project team developed two potential alternative configurations for the bicycle lanes on the northern portion of University Way NE. Alternative 1 would stripe bicycle lanes in both directions, and Alternative 2 would create a two-way bicycle "sidepath" along the west side of the roadway between the sidewalk and the parking lane. This sidepath would create a new corridor between the bicycle lanes on Ravenna Boulevard and the University Heights Community Center at NE 50th St.

Discussion: Bicycle Lanes or "Sidepath"

Single lanes: Single lanes would be easily understood by bicyclists and keep bicycles moving in the direction of traffic flow, including at intersections where oncoming bicyclists would be more visible to vehicles turning left across the bicycle lane. This alternative requires only street re-striping and allows the existing curbs to remain in place.

The Sidepath: A bicycle sidepath would connect the Ravenna Boulevard bicycle lanes with a similarly significant facility, and create "something new" that could attract more novice users. It also would reduce transit-bicycle and parked vehicle-bicycle conflicts and allow for the creation of bus loading areas ("bus bulbs") and additional street plantings. The sidepath would also provide a major extension of quality "public space" adjacent to the University Heights Center and Saturday Farmers' Market.

Proposed Action: The project team is excited at the prospects of the sidepath for this corridor because of its potential to create a strong bicycle connection between Green Lake and University neighborhoods. There is a concern, however, regarding the op-

eration at intersections, where cyclists may be less visible traveling in the same direction as turning vehicles. Additional work needs to be done to design these side street crossings in order to slow bicycle traffic and warn drivers of sidepath activity. Work is also needed to further clarify the connections at the north and south ends of the sidepath. The *Action Strategy* will keep both projects as alternatives for this corridor.

University Way - Alternative 1

University Way - Alternative 2

15th Avenue NE

15th Ave NE is an important transit corridor that forms the western edge of the University of Washington campus. Two early implementation projects and three additional recommendations were identified for this corridor.

Issues

Future traffic growth on 15th Ave NE requires additional improvements to meet forecasted traffic needs. The 2030 evaluation found that the intersections at NE 65th St, Ravenna Boulevard, NE 45th St, and NE Pacific St would drop below desired performance thresholds if no improvements are provided.

In the last three years, 3 pedestrian-vehicle collisions occurred at 15th Ave NE/Campus Parkway. Review of the intersection shows the potential for conflicts between northbound vehicles making left turns and pedestrians crossing the west leg of the intersection.

The street is a primary UVTN transit corridor that carries a number of heavily traveled bus routes. Improvements are needed to reduce transit delay, particularly for northbound buses making a left turn onto NE 45th St.

There were 15 collisions at NE 50th St/15th Ave NE in the last three years, the highest total number of intersection collisions in the study area. A steep slope that produces poor sightlines for turning vehicles is likely contributing to these collisions.

Project Recommendations

G: Monitor the intersection of 15th Ave NE/NE Ravenna Boulevard to see if traffic congestion worsens to the point where a traffic signal is needed at this location.

J: Evaluate the impact of a protected northbound left-turn phase the intersection at 15th Ave NE/Campus Parkway on transit speed and reliability. If transit performance is impacted, seek implementation of an alternative that addresses vehicle and pedestrian conflicts, such as improved signage and more prominent crosswalks.

#3: Lengthen the northbound left-turn pocket at NE 45th St and modify the signal timing to improve transit operations and reduce blocking problems for through traffic.

#20: Add protected eastbound and westbound left turn phases at the NE 50th St/15th Ave NE intersection to reduce vehicle conflicts.

#37: Complete a corridor study of 15th Ave NE from NE 50th St to NE Pacific St to improve the overall design for pedestrian and transit movements.

Related Projects

#1: Create a westbound transit lane on NE 45th St by removing the center turn lane and restricting left-turns from 45th St between 7th Ave NE to 15th Ave NE.

University Bridge/NE Northlake Way/NE 40th Street Area

Projects at both ends of the University Bridge will greatly improve safety by addressing conflicts between drivers, bicyclists and pedestrians. These projects include improvements to the bridge approaches and on NE 40th St, NE Northlake Way, Eastlake Ave and Campus Parkway.

Issues

At the north end of the bridge, bicyclists must ride unprotected in the traffic lane. Two vehicle exits, one looping to lower NE 40th St and one to Campus Parkway, result in a large expanse of pavement where heavy right-turn volumes create vehicle-bicycle conflicts. For pedestrians, there is no sidewalk for those travelling north to 11th Ave NE or turning onto Campus Parkway from the north end of the University Bridge. The only pedestrian route to Campus Parkway is an informal path across a grassy area inside the NE 40th St loop ramp.

The lack of adequate pedestrian facilities (such as sidewalks) on the north end of the University Bridge is highlighted by the worn-down path that crosses the NE 40th St loop ramp. Inadequate lighting also contributes to a lack of pedestrian comfort and safety.

At the south end of the bridge, eight vehicle-bicycle crashes occurred between 2004 and 2006 on Eastlake between Fuhrman Ave E and Harvard Ave E. Bicyclists turning at Harvard Ave E, to continue up to Capitol Hill, must cross two lanes of traffic to get to the left turn lane.

Poor lighting along the bridge lowers the comfort of pedestrians and bicyclists, and makes drivers less aware of people walking and bicycling in the area.

West of the University Bridge, the intersections of 6th Ave NE/Lower NE 40th St and 7th Ave NE/NE 40th St operate below performance thresholds. Long queues often form at these intersections, particularly during peak hours.

Generally speaking, there are poor bicycle connections between the Burke-Gilman Trail and the University Bridge, two of the most important and heavily travelled bicycle corridors in the city.

Sidewalks and bicycle lanes on NE Northlake Way end suddenly

west of the University Bridge. The public right-of-way is undefined and is used for haphazard parking, with parallel parking, angle parking and 90 degree parking all occurring on the same small section of roadway.

There are no bicycle lanes on either side and no sidewalks on the south side of "upper" NE 40th St between 8th Ave E and the University Bridge, the route for westbound to southbound bicyclists and pedestrians.

Many of these deficiences were identified as needing improvement in the University Community neighborhood plan.

Project Recommendations

C: Stripe left turn lanes on 6th Ave NE and westbound on Lower NE 40th St to improve intersection operation.

K: Install pedestrian lighting along the length of the University Bridge to improve the visibility of pedestrians and bicycles and to celebrate the bridge as a prominent entry into the University District.

#7: Add a southbound bicycle signal at Fuhrman Ave E to allow riders to safely cross to the left turn lanes at Harvard Ave E.

#8: Reconfigure and consolidate the northbound ramps from Eastlake Ave at the north end of the University Bridge and add bicycle lanes to reduce potential conflicts between vehicles, pedestrians, and bicyclists.

#14: Add an eastbound bicycle lane on "upper" NE 40th St between 7th Ave NE and the University Bridge.

#23: Construct a roundabout at 7th Ave NE/NE 40th St to improve traffic flow and reduce potential conflicts.

#29: Reconstruct Northlake Way by adding sidewalks, a shared-use path and improved bicycle facilities.

Related Projects

#4: Create bicycle lanes and on-street parking on 11th/12th Avenue NE and on Roosevelt Way NE.

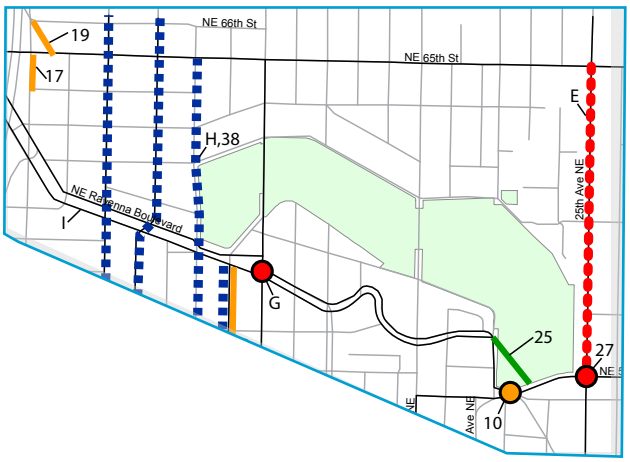
#24: Install a pedestrian signal, new crosswalk, and widen sidewalks for people crossing 11th Ave NE at NE 41st St to improve safety.

Ravenna/Roosevelt Area

Projects in the Ravenna/Roosevelt area address community issues and are focused on improving mobility for all travel modes.

Issues

The poor pavement conditions along NE Ravenna Boulevard reduce the safety and attractiveness of this important bicycle connection between Greenlake and the University Area.



Improvements are needed to the poor pedestrian walkways and an undesirable pedestrian environment along 8th Ave NE near NE 65th Street, to support the pedestrian activity related to the Green Lake park-and-ride lot and the future Sound Transit station.

The intersections of Ravenna Ave NE, Ravenna Place NE, 22nd Ave NE and NE 55th St are confusing for drivers and have long pedestrian crossing distances.

The narrow street width on Ravenna Ave NE, north of NE 55th St is inadequate for bicycles and vehicles, and the adjacent path within Ravenna Park is an inadequate alternative due to its lack of hard surface and pedestrian-scaled lighting.

Future traffic growth on 25th Ave NE may require additional improvements to meet forecasted traffic needs. The 2030 evaluation found that the intersections at NE 65th St and NE 55th St would drop below desired performance thresholds.

Project Recommendations

E: Restrict parking all-day (except overnight hours) on the east-side 25th Ave NE between NE 65th St and NE 55th St to improve transit and vehicle operations.

G: Monitor the intersection of 15th Ave NE/NE Ravenna Boulevard to see if traffic congestion worsens to the point where a traffic signal is needed at this location.

I: Prioritize the repair and repaving of NE Ravenna Boulevard between NE 65th Stand Ravenna Ave NE.

#10: Reconfigure NE 55th St between 22nd Ave NE and Ravenna Place NE to provide shorter pedestrian crossings, reduce vehicle speeds and improve intersection spacing and alignment.

#17: Widen the sidewalk along the east side of 8th Ave NE between NE 64th St and NE 65th St and add a curb extension at NE 64th St to enhance pedestrian crossings. The project would also stripe a northbound right turn lane to improve turning movements.

#19: Close off the north end of Weedin Place between at NE 66th St to improve pedestrian connections to the Roosevelt Business District and provide an opportunity for a "pocket" open space.

#25: Improve the off-street trail in Ravenna Park that runs parallel to Ravenna Ave NE to connect to the shared roadway corridor on NE 58th St. This will connect NE 55th St and NE Ravenna Blvd

#27: Create northbound and southbound left turn pockets and protected left turn phases for 25th Ave NE/NE 55th St.

Related Projects

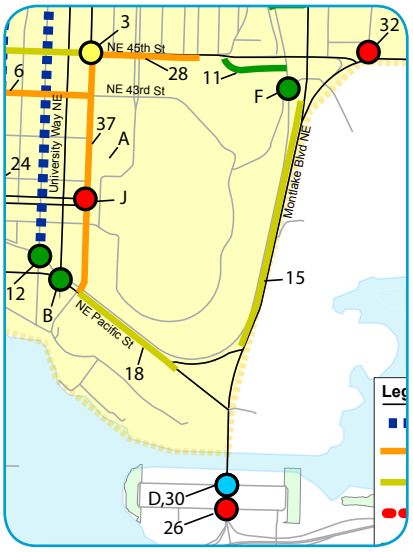
H: Add bicycle sharrow pavement markings on Brooklyn to create a bicycle-friendly corridor between Ravenna Blvd. and the Burke-Gilman Trail.

#4: Create bicycle lanes and improve pedestrian crossings on 11th/12th Ave NE and on Roosevelt Way NE.

#5: Provide a bicycle and pedestrian "lead phase" and improves the visibility of the Burke-Gilman crossing.

#38: Develop an urban design/streetscape plan for making Brooklyn a "real" Green Street, with features such as widened sidewalks, landscaping and appropriately-scaled lighting.

Montlake Boulevard NE/ NE Pacific St



Montlake Boulevard NE and NE Pacific St carry the highest volumes of traffic within the University Area. These streets provide a connection to SR 520, I-5 and Capitol Hill to the south, and to Sand Point Way NE, Children's Hospital, Magnuson Park and other areas along Lake Washington to the northeast.

Most of the traffic congestion in the southbound direction on Montlake Blvd and eastbound on NE Pacific St, is related to the vehicle access to the SR 520 and I-5 freeways. One Early Implementation project and four additional recommendations would promote better traffic flow and bicycle safety.

Issues

Pedestrian crosswalks on E Shelby St at the south end of the Montlake Bridge are set back from the intersection. This requires pedestrians to unnecessarily walk extra distances to safely cross the intersection.

The Montlake Bridge area is a critical connection in Seattle's Urban Trails and Bikeways System, but has inadequate facilities for both pedestrians and bicyclists. While the SR 520 Bridge replacement project may provide a major opportunity for new facilities, there are some relatively minor improvements - such as removing curbed barriers and striping a bicycle lane - that could be accomplished in the meantime to significantly improve conditions.

NE Pacific St is an important UVTN transit corridor that carries a number of heavily traveled routes. This will be the primary link for future transit routes serving the future light rail station near Husky Stadium.

Bicyclists travelling from the north end of the Montlake Bridge have a difficult time accessing Lake Washington Blvd E, a key connection in the Urban Trails and Bikeways System. Lake Washington Blvd E connects with both Montlake Blvd and 24th Ave E just south of SR-520. One route from the Montlake Bridge requires bicyclists to ride down the sidewalk against traffic to gain access to E Hamlin St to access 24th Ave E to Lake Washington Blvd.

Montlake Blvd NE and NE Pacific St are the most congested corridors in the study area. Traffic volumes already exceed capacity, causing vehicle travel speed to drop to walking speed during peak hours. By 2030, Montlake Blvd will have corridor travel speeds as low as 2 mph; Pacific St speeds will be as low as 4 mph. Traffic backs up well in advance of the NE Pacific St HOV lane, limiting the potential travel time savings for buses and carpools.

Project Recommendations

D: Create a southbound bicycle lane on Montlake Boulevard from the Montlake Bridge to SR 520.

#15: Add a southbound HOV lane from NE 45th St to NE Pacific Place along the west side of Montlake Boulevard. This will improve travel speeds and potentially tie to future HOV ramps on the SR 520 bridge. The Children's Hospital has expressed support for the Montlake HOV lane and has interest in exploring a future extension to the north to improve the access to its hospital campus.

#18: Extend the existing eastbound HOV lane to provide a continuous lane from 15th Ave NE to Montlake Blvd.

#26: Extend the northbound u-turn lane on Montlake Blvd at E Hamlin St to prevent vehicles from blocking through movements.

#30: Redesign the intersection at NE Shelby St to improve bicycling and pedestrian travel routes through the area.

#32: Install variable message signs near the junction of Montlake Blvd and NE 45th St to better inform drivers of projected travel times and potential closures on the two corridors.

Discussion: Montlake Triangle

The "Triangle" is the area formed by Montlake Blvd, NE Pacific St and NE Pacific Place. This discussion reviews the existing operation and needs of the Triangle as compared with potential alternatives.

Existing Operations: King County Metro currently uses the Triangle to terminate a number of its transit routes, to turn vehicles around, load and drop-off passengers and for bus layover parking. Pedestrians cross the Triangle between the UW Campus and the UW Medical Center and Husky Stadium facilities. The Triangle is part of the Rainier Vista view corridor from the University of Washington.

Sound Transit Plans: As part of the Husky Stadium Station, Sound Transit has proposed a pedestrian overpass that would cross Montlake Boulevard, the Triangle and Pacific Place to provide a direct connect to the UW campus along the Rainier Vista and the Burke-Gilman Trail. This alternative would separate vehicles from pedestrian while retaining transit operation of the Triangle.

Depressed Pacific Place: This alternative would lower Pacific Place to separate vehicles from pedestrians. Pedestrians would cross Pacific Place "at grade" with a pedestrian bridge or lid

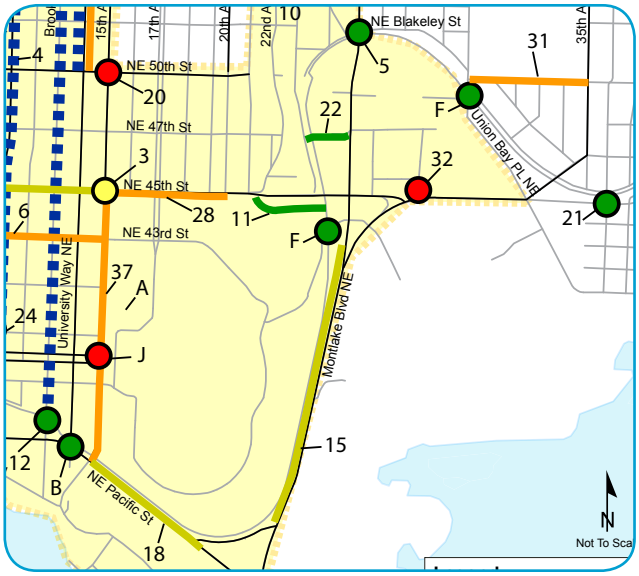
In addition to the unknown configuration and location of the SR 520 Bridge Replacement Project, there are still numerous design issues to be worked out related to Sound Transit's Husky Stadium Station and connections to the University of Washington campus. This graphic shows the concept of a grade-separated pedestrian bridge over Montlake Blvd and Pacific Place as part of Sound Transit's 30% station design. The final configuration of the bridge, and whether there are other alternatives that might better accommodate transit riders, pedestrians, and bicyclists, is still to be determined.

over the depressed Pacific Place. This concept has a number of engineering issues that would require additional analysis to fully explore the feasibility of this concept. A transit-only lane would be created along Pacific Place to bypass vehicle queues from the Montlake Boulevard/Pacific Place intersection. The alternative would retain the current transit bus layover areas.

Proposed Action: The *Action Strategy* does not include any specific recommendations related to the Triangle area, and recommends further analysis of the alternatives. There are a number of unknowns related to this area that, once decided, should better clarify HOV, pedestrian and transit options and needs. Further analysis of the Triangle area should be conducted once the final locations and designs of the Sound Transit light rail station, the proposed Husky Stadium rebuild/restoration and the SR 520 Bridge Replacement Project are better known.

Burke Gilman Trail

The Burke-Gilman trail is the centerpiece of the non-motorized transportation system in the University District. The trail connects to Ballard and Fremont to the west, and to northeast Seattle and the communities along Lake Washington to the east. Heavy bicycle and pedestrian use is particularly prevalent along sections that run near and through the University of Washington campus. The *Action Strategy* recommends developing new connections to the trail and improving trail crossings of roads.



Traffic controls give the right-of-way to drivers at trail crossings, but general practice is for drivers to yield to bicyclists and pedestrians.

Issues

Visibility of bicyclists at certain trail crossings is poor because of brush and shrubs. There were 4 crashes in three years at the trail crossing of University Way.

The Burke-Gilman crossing at NE Blakeley Street/25th Ave NE has had a high number of bicycle-vehicle collisions. The Bicycle Master Plan identified this intersection as needing additional study to address crossing issues.

There is no direct connection between the University of Washington Campus, the Burke-Gilman Trail and the University Village Shopping Center. University students must travel out of their way or use a steep, overgrown informal trail through a ravine to access the Burke-Gilman Trail, or cut through private property to directly access University Village.

The Ship Canal Trail, running along the east portion of the University's property, lacks a bicycle connection to the Burke-Gilman Trail near 36th Avenue NE.

Project Recommendations

B: Clear or trim trees and shrubs and add a more visible textured and colored crosswalk to better define where the Burke-Gilman Trail crosses University Way NE.

F: Coordinate with the University of Washington and the SDOT Traffic Management Division to develop a consistent set of the controls and signs at the Burke-Gilman Trail cross-

ing at Pend Oreille Road, Brooklyn Avenue NE and Ne Blakely St (east of the University Village Shopping Center) that promotes pedestrian and bicycle movements and reflects driver behavior. At Brooklyn Ave NE, complete a traffic study to ensure that changes at the trail crossing would not impact adjacent intersections.

#5: Provide a bicycle and pedestrian "lead phase" and improve the visibility of the Burke-Gilman Trail crossing 25th Ave NE.

#11: Develop a pedestrian and bicycle path from the University of Washington campus to the Burke-Gilman Trail underneath the NE 45th St Viaduct.

#12: Realign the Burke-Gilman Trail crossing at Brooklyn Ave NE and add a raised, colored crosswalk to improve bicycle and pedestrian visibility at this location.

#21: Improve the bicycle connection between the Burke-Gilman Trail and the Portage Bay Trail/east campus area by constructing a ramp at the 36th Ave NE that connects to NE 45th St.

#22: Develop a pedestrian connection between 22nd Ave NE, the Burke-Gilman Trail, and 25th Ave NE at NE 47th Street. This would provide an east-west access from the trail along NE 47th St through the University of Washington property. The eastern portion would be designed to accommodate bicycles and would require coordination with the University to minimize conflicts with service vehicle operations.

Targeted Improvements

There are two project recommendations that fall outside the main geographic areas identified: one targets pedestrian safety improvements in a residential area just northeast of University Village, while the other would affect the entire University Community Urban Center.

Issues

Push button signals create unnecessary delay for pedestrians at intersections within the University Urban Center. Some signals require a pedestrian to push a pedestrian crossing button rather than providing a WALK phase for every signal cycle, particularly at night. Other pedestrian push buttons are inactive, but their presence creates unncessary confusion and frustration for pedestrians.

There is not a continuous sidewalk on NE 50th St between 30th Ave NE and 35th Ave NE. Cut-through traffic trying to bypass the signal at NE 45th St and Union Bay Place often exceed the desired speed limit for this residential street and contributes to pedestrian safety concerns.

Project Recommendations

A: Change the signal controls to add a pedestrian "WALK" phase at all intersections within the Urban Center at all times, eliminating the need for pedestrians to trigger a push button.

#31: Complete the sidewalk along the south side of NE 50th Street and introduces traffic calming devices to reduce vehicle speeds and improve pedestrian safety.

Finance & Implementation

A major challenge in moving forward with the *University Area Transportation Action Strategy* is to work to ensure that the recommended projects can be implemented by 2030. The *Action Strategy* requires approximately $20.5 million to complete all of the Early Implementation, High and Medium Priority projects; and an additional $16.5 million to complete the Montlake Blvd and Pacific St HOV Partnership projects. These figures do not include the costs of the recommended improvements to I-5, as these projects will have to be led and principally funded by WSDOT.

Prioritization & Funding

To successfully meet this financial challenge, SDOT must have a mechanism in place for moving the *Action Strategy* recommendations from the early planning stage, through project design development, and finally towards construction. This process involves two critical steps.

First, individual projects must be prioritized either within the SDOT **Capital Improvement Program (CIP)** – which typically includes the larger, more complex and costly projects - or within an individual **SDOT annual operational program** such as:

- Pedestrian and Bicycle
- Neighborhood Traffic Calming
- Arterial Streets Traffic Operations
- Parking Management

Second, funding needs to be secured for each project. Funding can come from multiple sources such as the City's General Fund, partner agencies, private development, and/or external grants. Funds from various sources may be combined to meet total project costs. For larger projects, funding may be dedicated to a project over a period of several years. Smaller, less expensive projects are often built within a one- to two-year timeframe.

To be credible, a funding strategy must: identify fiscal resources; forecast the potential and feasible funding levels available for City transportation projects; and be based on accurate project cost estimates.

Existing & Potential Funding Sources

The City of Seattle has historically funded transportation programs through gas tax revenues dedicated to transportation purposes, other local funds, grants, loans, and developer contributions. Some previous funding sources, including a Street Utility Tax and Vehicle License fees, are no longer available to the City as a funding source. **Figure 10** shows historic transportation funding sources since 1995.

Local Funds

Local revenues make up the largest part of Seattle's transportation budget and include the City's general fund, which includes sales and property taxes, the cumulative reserve fund, the City's share of the state gas tax and the recently implemented commercial parking and employee hours taxes.

Bridging the Gap Funds

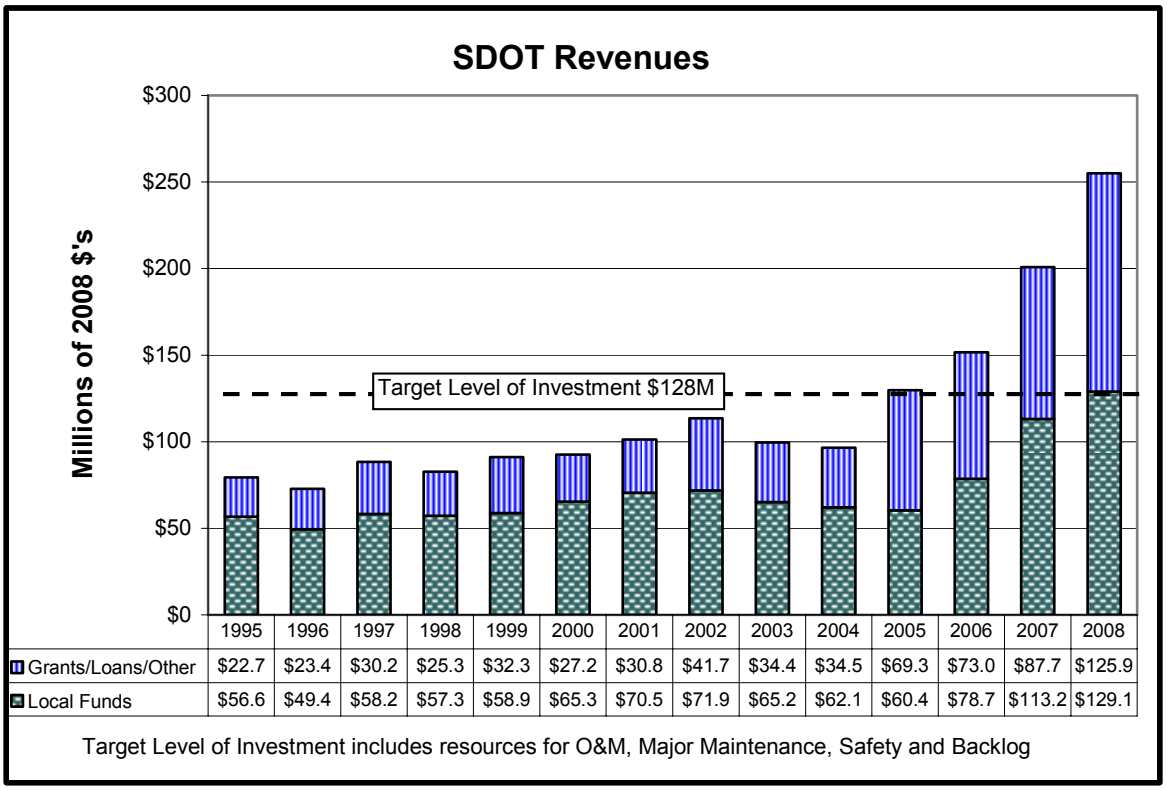
Bridging the Gap is a voter-approved nine-year funding plan for transportation maintenance, pedestrian, transit and bicycle projects. A total of over half a billion dollars will be raised through an increase in the property tax levy lid, a commercial parking tax, and a business transportation tax. Although these funds are considered to be local funds, there is a list of specific projects and programs the voters expect to be funded by the plan. In large part, Bridging the Gap makes up for the vehicle licensing fees and street utility tax revenues that are no longer collected. **Figure 11** shows the level of local transportation funds since 1995 and the effect of Bridging the Gap funds in 2007, the first year of the program.

Other Funding Sources

Grant funds are available from the Federal and State governments for the construction and maintenance of roadways. Historically, Seattle has secured between $20 million and $40 million in grant funds annually. SDOT maintains a grant match reserve fund to provide a local match for potential new grants and partnership opportunities. Projects that are candidates for grant funds must be competitive against the granting agency's criteria, which have specific areas of emphasis, such as accident reduction, pedestrian safety, etc.

Partnership funds could be used for projects that will be coordinated and partially funded through cooperation with a partnering agency. The proposed SR 520 Bridge Replacement Project may provide an opportunity to integrate the *Action Strategy*'s recommendations with the State's bridge replacement program. Projects such as the Montlake or Pacific HOV lanes could have significant benefits to the operation of transit or carpool lane on the SR 520 Bridge, which may create an opportunity for moving forward as partnership projects.

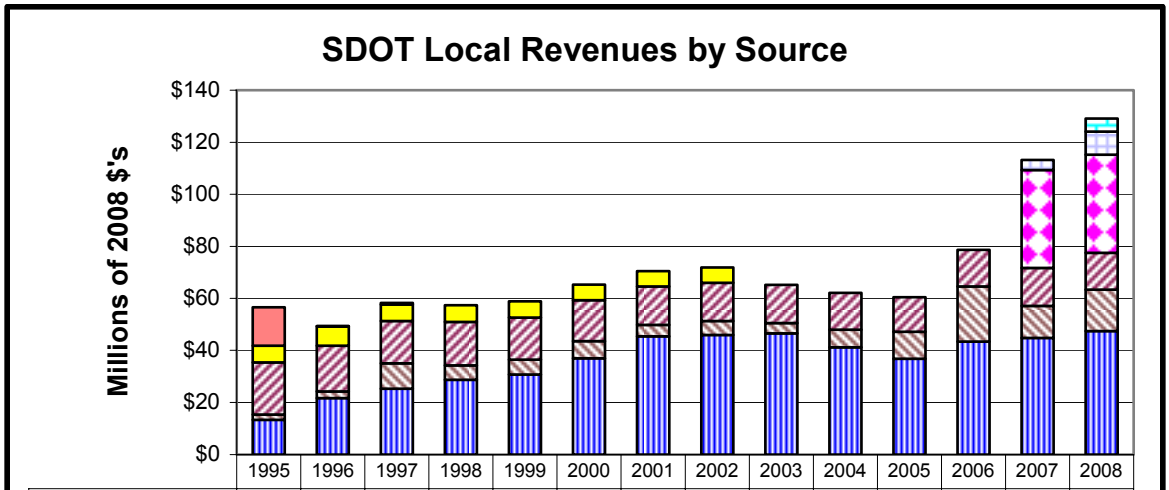
Figure 10. Local and Grant Funds



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Grants/Loans/Other	$22.7	$23.4	$30.2	$25.3	$32.3	$27.2	$30.8	$41.7	$34.4	$34.5	$69.3	$73.0	$87.7	$125.9
Local Funds	$56.6	$49.4	$58.2	$57.3	$58.9	$65.3	$70.5	$71.9	$65.2	$62.1	$60.4	$78.7	$113.2	$129.1

Target Level of Investment includes resources for O&M, Major Maintenance, Safety and Backlog

Figure 11. Local Funding Sources



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Employee Head Tax													$0.0	$5.0
Comm'l Parking Tax													$3.8	$8.9
Levy Lid Lift													$37.7	$37.7
Street Utility	$14.8	$0.1	$0.6	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Veh Lic Fee	$6.4	$7.4	$6.3	$6.4	$6.2	$6.1	$5.9	$5.9	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Gas Tax	$20.0	$17.6	$16.3	$16.8	$16.2	$15.6	$14.8	$14.7	$14.7	$14.1	$13.2	$14.1	$14.6	$14.2
Cum Rsrv Fund	$2.0	$2.6	$9.8	$5.4	$5.6	$6.6	$4.3	$5.4	$3.9	$6.8	$10.4	$21.3	$12.4	$15.9
General Fund	$13.4	$21.7	$25.3	$28.8	$30.8	$37.0	$45.5	$46.0	$46.6	$41.2	$36.8	$43.3	$44.7	$47.4

Private Development

The *Action Strategy* includes sufficient analysis to create a voluntary **Transportation Mitigation Payment Program**. This program would give developers an option to contribute towards the construction of a set of University Area projects, in lieu of directly funding off-site improvements mitigation as part of the State Environmental Protection Act (SEPA) requirements. The Mitigation Payment Program may be attractive to developers because of its potential to simplify the permitting and mitigation process. Developers, however, would still be required to mitigate the on-site impacts of their projects by such actions as building frontage improvements (e.g. new sidewalks).

Other Potential Sources

The Washington State Legislature has approved a number of revenue sources that, with voter approval, can be used to fund transportation improvements. These revenue sources vary with regards to whether they are available on a regional, countywide or citywide basis.

Regional Transportation Improvement District funding can be a combination of sales tax, fuel tax, licensing fee or a motor vehicle excise tax that can be used to fund new projects that benefit regional mobility. It can be implemented only at a regional level. To qualify, projects of regional significance would be competitively placed into a ballot measure and submitted to the voters for approval. Of the *Action Strategy* recommendations, the partnership projects would be the most likely to be funded with this type of funding.

Local Option Fuel Tax can be implemented on a county level only and would be restricted to roadway projects. With voter approval, up to 10% of the state fuel tax could be collected.

Local Option Vehicle License Fees can be set up within a citywide or countywide Transportation Benefit District. Funds may be used for a variety of transportation projects. With voter approval, up to $100 per vehicle can be collected annually under this fee.

Transportation Impact Fees can be applied to an entire city or targeted sub-area to address the traffic impacts related to development activities.

SDOT Project Selection Process

Each year, the City updates its six-year capital budget (CIP) to identify likely funding sources for the highest priority projects and programs within forecasted revenue. While the CIP identifies potential funding over a six-year period, funding is only committed

when the City Council adopts the annual budget.

Capital Improvement Program (CIP)

Within the CIP, a significant amount of funding is dedicated to annual operational programs which in turn fund the majority of small-scale projects, such as bicycle improvements or traffic calming measures. The remainder of the CIP funding is targeted to individual large-scale capital projects. SDOT uses the following multi-step process to prioritize projects for inclusion in the CIP:

Step 1. **Identification of Transportation Needs**. The *Action Strategy* will be one of many sources that identifies projects (and programs) to address existing and future transportation needs in Seattle. Other sources include SDOT's existing backlog of major maintenance and replacement projects, projects in the current CIP that require additional funding, projects from other planning studies, projects identified by operational program managers, and those developed in coordination with partner agencies such as WSDOT, Sound Transit, and King County Metro.

Step 2. **Initial Rating of Projects**. Each project is evaluated and rated on its merits using criteria that reflect the City's Comprehensive Plan goals:

- Safety
- Preserving and maintaining infrastructure
- Cost effectiveness or cost avoidance
- Mobility improvement
- Economic development
- Comprehensive Plan/Urban Village land use strategy
- Improving the environment

Action Strategy projects were evaluated using these categories to help determine how well each of the projects for the University Area meet these criteria.

Step 3. **Prioritizing Projects for Implementation**. After projects are rated based on their ability to further City goals, the projects' overall priority ranking is established using the following considerations:

- Funding availability
- Interagency coordination
- Geographic balance
- Constituent support

Other SDOT Programs

While the above discussion describes how individual projects are prioritized within the six-year CIP, other SDOT programs such as the Pedestrian and Bicycle Program, Traffic Signals, Neighborhood Traffic Calming, Arterial Traffic Operations, and Parking Management have also designed their own criteria and prioritization system for ranking and implementing small-scale improvements. The prioritization systems parallel the one used for the CIP in that after needs identification, they are rated on their ability to meet various City goals and then are prioritized based on a second set of considerations to maximize leveraging opportunities and ensure equity across the City. These programs will utilize appropriate project recommendations from the *Action Strategy* to develop their annual work programs.

Modal Plans

The City's **Bicycle Master Plan** will guide funding for bicycle projects throughout Seattle. The *Action Strategy* further defines recommendations from the Bicycle Master Plan and completes the analysis of projects and areas where additional analysis was called for. Bicycle elements of the *Action Strategy* will be implemented through funding opportunities identified in the Master Plan, including:

- General Fund
- Bridging the Gap funding
- Bicycle Grant Matching funds
- Bicycle Spot Improvement Program

Similarly, the Seattle **Pedestrian Master Plan** will be prepared in 2008 and will likely prioritize and set aside funding for implementing pedestrian projects throughout the city. The *Action Strategy* includes a number of pedestrian improvements which can be rolled into the plan's project recommendations.

In addition, there may be opportunities where SDOT can leverage City resources by collaborating with other area projects. For example, Seattle Public Utilities stormwater management projects or Seattle City Light's spot utility work may provide opportunities to also help complete an *Action Strategy* project.

In order to implement the full range of recommendations in the *University Area Transportation Action Strategy*, projects must be prioritized within the CIP and various City programs and a host of funding sources must be explored to move each project towards implementation.

Summary

As this section describes, there is a range of potential SDOT transportation revenues that may be available for the next 23 years. A total of $2.2 billion to $3.1 billion (2008 dollars) is projected to be available over the 2008-2030 period for constructing, operating and maintaining the City's transportation system.

Key assumptions for this analysis include:

- Full implementation of Bridging the Gap funds over the next nine years. The analysis presents one scenario where Bridging the Gap is discontinued after the initial nine years ($2.2 billion) and a scenario that assumes the continuation of funding for another nine years ($3.1 billion)
- Existing funding levels for SDOT programs based on the City's 2007-2012 Capital Improvement Plan
- Continuation of grant funding and appropriations at $20 million per year
- Funding for major projects, such as the Alaskan Way Viaduct, is not included

The funding analysis included in the preceding pages estimates future revenues that are potentially available for *Action Strategy* project implementation, while at the same time acknowledging the uncertainty involved in predicting future funding levels. Revenue streams are dependent on the health of the national and local economies, renewal of current local levies such as Bridging the Gap, and national and state policy as it directs grant programs. These variables all determine the amount of funding that will ultimately be available to implement the projects recommended in the *University Area Transportation Action Strategy*.