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PBOT
PORTLAND BUREAU OF TRANSPORTATION

NORTHWEST IN
MOTION

EARLY REVIEW DRAFT | Oct 2019

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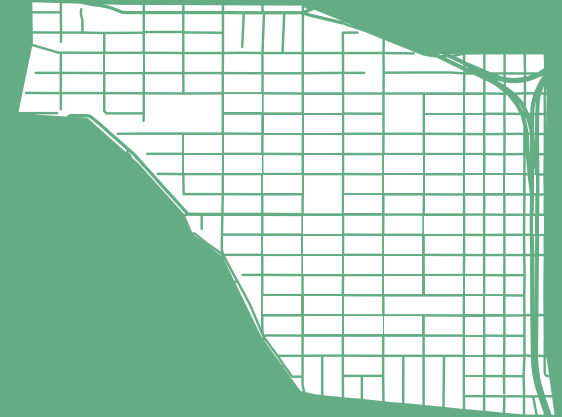
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Northwest in Motion

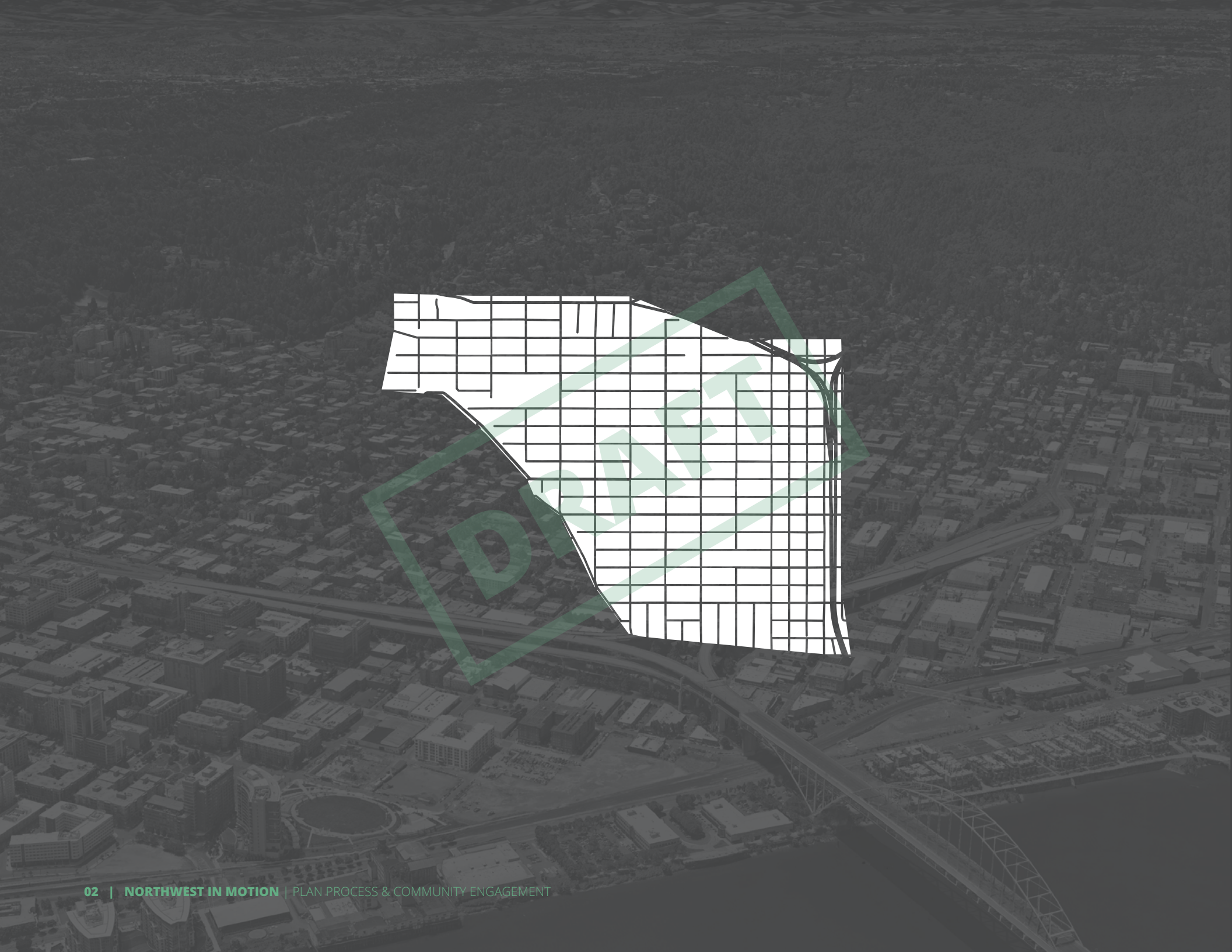
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04 Program & Policy Recommendations	04
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06 Funding & Implementation Strategy	06
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NORTHWEST PORTLAND TODAY & TOMORROW

[SECTION UNDER DEVELOPEMENT]

What is *Northwest in Motion*, what are the plan's goals, and why is this plan needed? Also, a snapshot of transportation patterns and issues that exist today and a vision of how people will get around in the future.



PLAN PROCESS & COMMUNITY ENGAGEMENT

[SECTION UNDER DEVELOPEMENT]

An overview of how this plan was made, including a look at who was consulted along the way and how community input shaped *Northwest in Motion*.



PROJECT RECOMMENDATIONS

During the *Northwest in Motion* planning process, projects were identified and then prioritized using a set of evaluation criteria to divide them into Tier 1 and Tier 2 projects.

Tier 1 projects are considered the highest priorities for funding and implementation in the next five years, and are the projects that have been developed to a higher level of readiness through the Northwest in Motion Plan.

Tier 2 projects are still recognized as needs, but are lower priorities and will not be actively developed or targeted for funding in the next five years unless there is a significant financial leverage opportunity. These projects are not detailed in this chapter.

Northwest in Motion Projects are divided into two project types:



Neighborhood Greenways

Low-stress neighborhood streets that are great places to walk, bike, roll, play, and just be.



Corridor Improvements

Safer crossings, bikeway, transit and streetscape improvements on Northwest's busiest streets.

SMALL CHANGES, BIG IMPACTS

Northwest in Motion takes an approach of maximizing impact with a limited resources. The guiding principles below helped to share our project development strategy:

Lower Cost Interventions

Emphasize the use of small, low-cost improvements that have high benefits for the cost, rather than more expensive projects.

Strategic Investments

Targeted, strategic improvements rather than broad-brush, which saves resources for where they are most needed.

Interim Phasing

Initial implementation using temporary materials to inform final design and make sure long-term investments are in the right locations.

TIER 1 PROJECTS



Neighborhood Greenways

NG.1 NW Johnson St

Retrofit existing neighborhood greenway to meet established guidelines for traffic speed and volume.

NG.2 NW Marshall St

Retrofit existing neighborhood greenway from NW 9th to NW 16th to meet established guidelines for traffic speed and volume. Extend neighborhood greenway west to NW 20th Ave.

NG.3 NW Pettygrove / NW Overton St

Design and implement a new neighborhood greenway on NW Pettygrove St that meets established guidelines for traffic speed and volume. Add a bikeway connection to NW 9th Ave via NW 11th Ave and NW Overton St.

NG.4 NW Savier St

Design and implement a new neighborhood greenway that meets established guidelines for traffic speed and volume, with connections north to Vaughn and Nicolai employment areas.

NG.5 NW 24th Ave

Retrofit existing neighborhood greenway to meet established guidelines for traffic speed and volume. Extend bikeway to NW Flanders St Neighborhood Greenway.



Corridor Improvements

CI.1 NW 25th Ave / Westover Rd

Calm traffic along NW 25th Ave and NW Westover Rd by adding traffic slowing devices and enhanced pedestrian/bicycle crossings.

CI.2 NW 23rd Ave

Improve the safety and asset condition of the northern section of NW 23rd Ave by reconstructing the roadway, rebuilding an aging signal, improving pedestrian crossings, and enhancing transit stops.

CI.3 NW 18th / 19th Ave

Provide improved crossings, transit islands and reduce bike/bus conflicts on NW 18th/19th to serve the Line 24 Extension.

CI.4 NW Everett / Glisan St

Improve safety along the NW Everett/Glisan couplet by adding crossing improvements and reducing traffic speeds. Improve bus stop accessibility and reduce transit delay on the Line 77 from NW District to the Pearl District and Old Town / Chinatown.

CI.5 NW Vaughn St

Improve safety along NW Vaughn St and NW Wardway by adding improved crossings and bikeway safety enhancements.

TIER 2 PROJECTS (see page XX for descriptions)

NG.6 NW Couch St

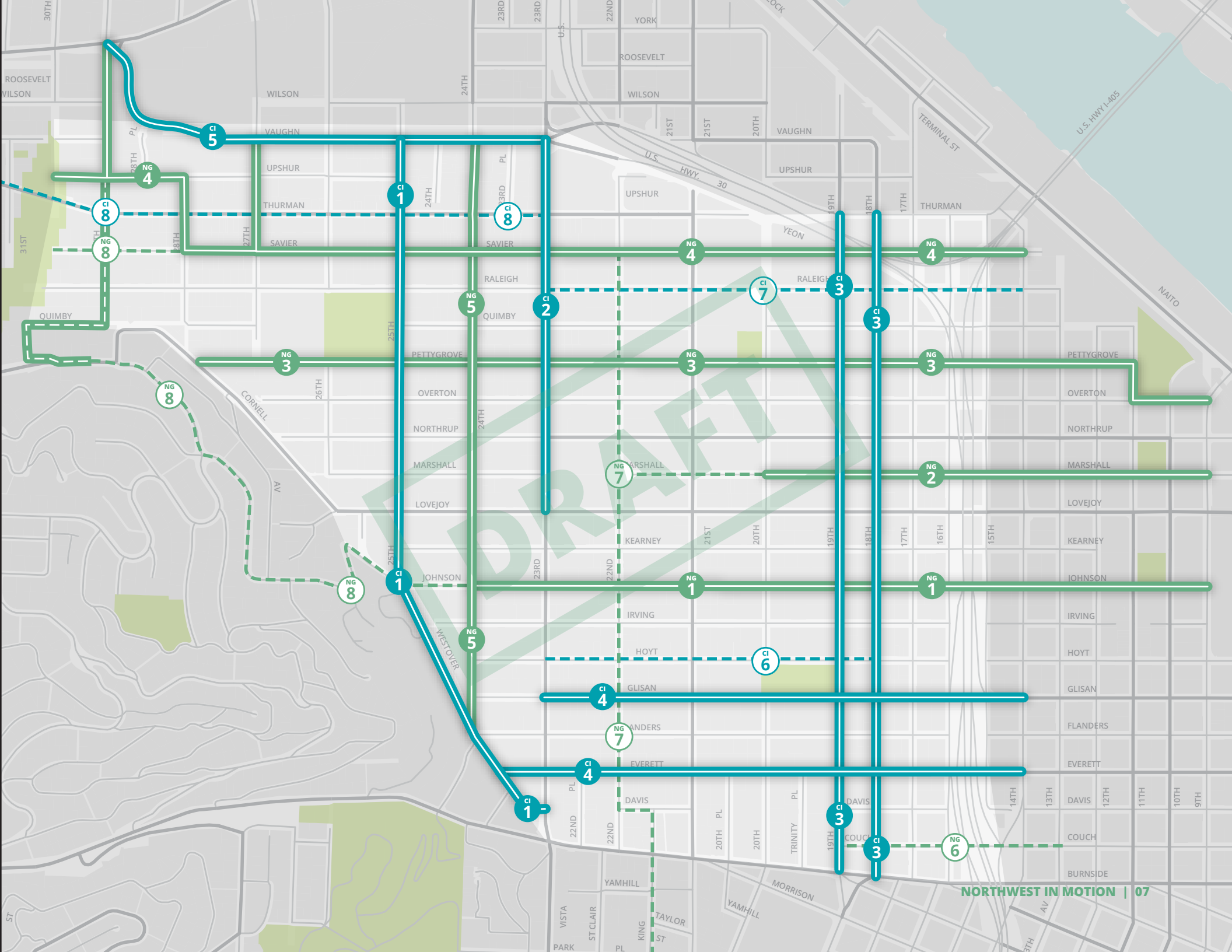
NG.7 NW 22nd Ave / Marshall Extension

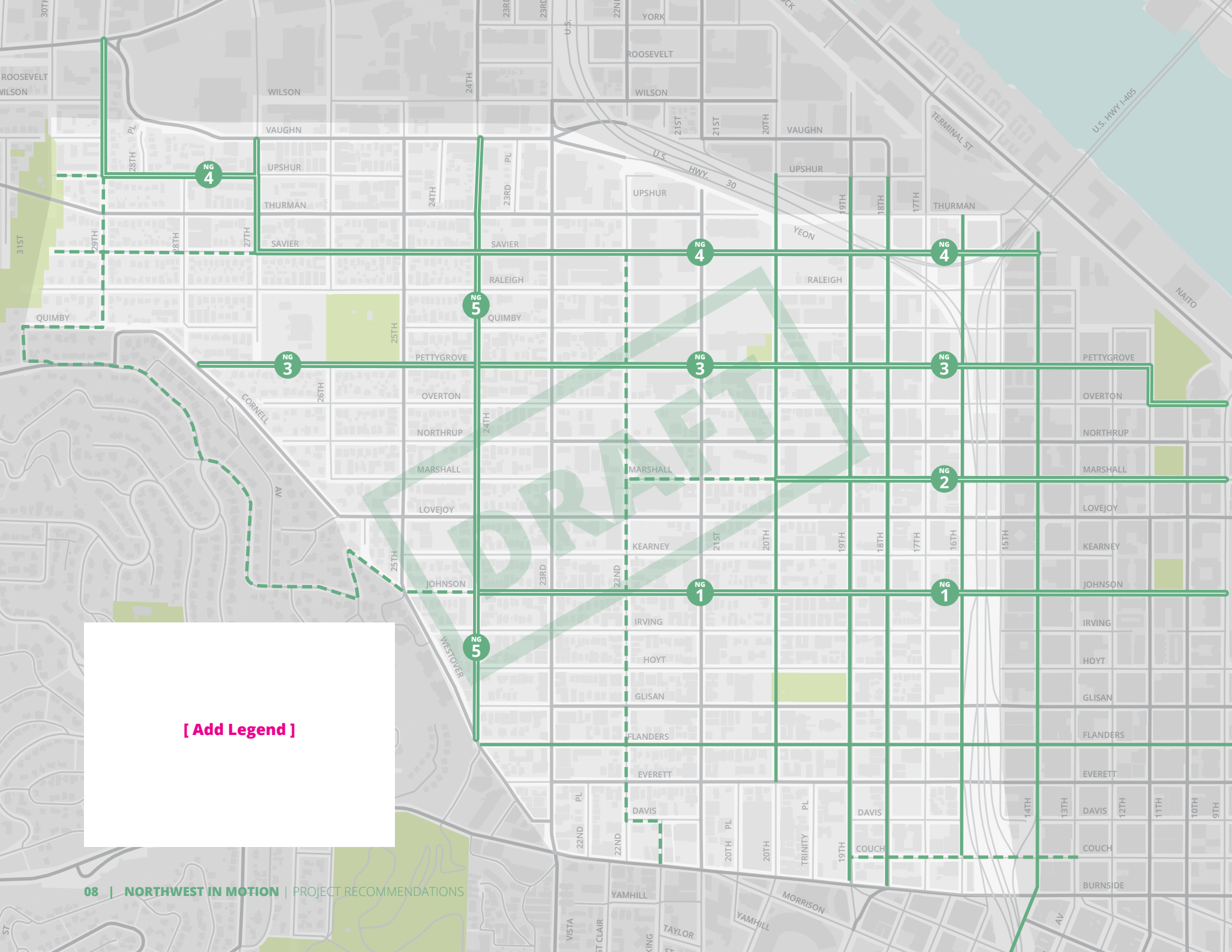
NG.8 NW Westover Rd / Macleay Park Circulation

CI.6 NW Hoyt St

CI.7 NW Raleigh St

CI.8 NW Thurman St





[Add Legend]

TIER 1 PROJECTS DETAIL

Neighborhood Greenways

Northwest in Motion's Tier 1 Neighborhood Greenways expand and upgrade the low-stress network to a district-wide low-stress walking and biking network.

Once fully implemented, these projects will have a transformational effect on Northwest Portland allowing people of all ages and abilities access to safe and comfortable routes to get around the neighborhood.

WHAT ARE NEIGHBORHOOD GREENWAYS?

Neighborhood greenways are calm streets designed to create a safe and comfortable biking and walking experience. They allow people of all ages and abilities to use low-volume, low-speed neighborhood streets rather than busy arterials.

Neighborhood Greenways typically feature a shared street environment rather than separated bike lanes, and use elements such as speed bumps, traffic diverters, enhanced crossings, and way-finding to ensure that the street is clearly prioritized for people walking and biking while preserving local motor vehicle access. Neighborhood greenways are great walking routes, providing an alternative to walking along traffic-heavy streets.

KEY DESIGN ELEMENTS

Neighborhood Greenways are intentionally designed to be low-stress streets that are great places for walking, biking, and rolling.

Slow Speeds

Traffic calming tools including speed bumps, curb extensions, and median islands help keep vehicles moving at slow speeds.

Low Vehicle Volumes

Some streets require traffic pattern changes to discourage cut-through traffic and keep traffic volumes low. These changes can be achieved through physical barriers (diverters) or through signage.

Placemaking & Wayfinding

Neighborhood Greenways often connect key neighborhood destinations like parks and schools. Our designs look for opportunities to create new great places in Northwest Portland.



Neighborhood Greenways Strategy in Northwest Portland

Northwest in Motion recommends a context-sensitive, phased approach to Neighborhood Greenway implementation in Northwest Portland.

Neighborhood Greenways use a variety of design tools to achieve a low-stress environment for walking and biking. Some of these tools include interventions like speed bumps to keep speeds slow so that people can comfortably use the full lane when biking or scooting. **Traffic calming tools can be used to reduce illegal speeding and keep speeds at or below 20mph.** When a street becomes too busy with vehicle traffic it is necessary to **strategically change traffic patterns to limit vehicle volumes.** PBOT's guidelines recommend that Neighborhood Greenways are designed to carry **less than 1,000 vehicles per day, with a maximum acceptable limit of 2,000 vehicles.**

Northwest in Motion recommends a **phased implementation approach including a defined traffic and impacts monitoring period.** This incremental approach allows for accountability by assessing whether the project meets its intended targets for speeds and traffic volume. If during the monitoring period, the project is shown to not be meeting established guidelines, additional traffic calming and traffic pattern changes would be recommended. However, if the project is successful in sufficiently addressing vehicles speeds and volumes, no further changes would be recommended. **This approach allows PBOT to minimize impacts to neighborhood circulation without compromising the Neighborhood Greenway network.**

NW IN MOTION NEIGHBORHOOD GREENWAY IMPLEMENTATION STRATEGY

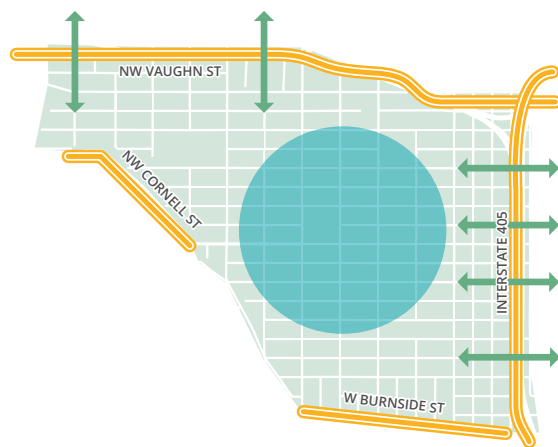
IMPLEMENT "PHASE 1" DIVERSION

- ↳ **Measure traffic volumes & speeds.**
Does the neighborhood greenway meet standards for traffic speeds and volumes?
- **Yes.** Enjoy your new low-stress walking and biking route and continue to monitor.

- ↘ ● **No. Proceed to "Phase #2"**

ENGAGE NEIGHBORS TO DEVELOP AND IMPLEMENT "PHASE 2" DIVERSION

- ↳ **Measure traffic volumes & speeds.**
Does the neighborhood greenway meet standards for traffic speeds and volumes?
- **Yes.** Enjoy your new low-stress walking and biking route and continue to monitor.
 - **No.** Consider additional diversion as required to meet Neighborhood Greenway performance guidelines.



Northwest is a dense, mixed use district of small streets bounded by busy regional corridors.

These boundaries serve as ‘edges’ that define the scale, character, and urban form of the interior neighborhood streets. The *Northwest in Motion Neighborhood Greenways Strategy* considers these natural edges and utilizes a consistent, district-wide approach to building out a network of low-stress walking and biking streets.

These connections provide comfortable options for moving to important destinations within the neighborhood without using a car. Crossing improvements at the edges provide safe points of access when traveling to other neighborhoods.

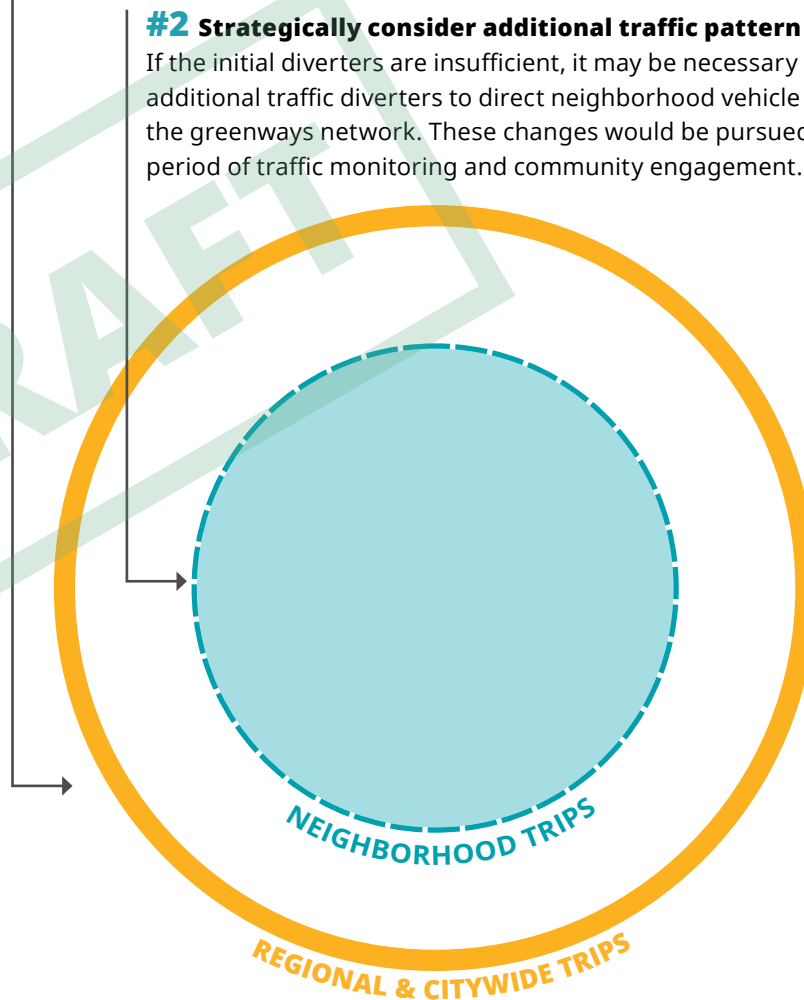
This approach seeks to ‘reinforce existing edges’ by focusing interventions at the periphery of the neighborhood. The intention is to discourage cut-through traffic and direct longer trips onto busier streets that are designed to handle larger volumes of vehicles as a first step before considering circulation changes internal to the neighborhood.

#1 Reinforce existing edges.

I-405, W Burnside, NW Vaughn St, and NW Cornell Rd & NW Westover Rd define the edges of Northwest. These natural edges can be strengthened to redirect through traffic to collectors, traffic calm the neighborhood as a whole, and support the neighborhood greenway network.

#2 Strategically consider additional traffic pattern changes.

If the initial diverters are insufficient, it may be necessary to implement additional traffic diverters to direct neighborhood vehicle trips away from the greenways network. These changes would be pursued after a clear period of traffic monitoring and community engagement.

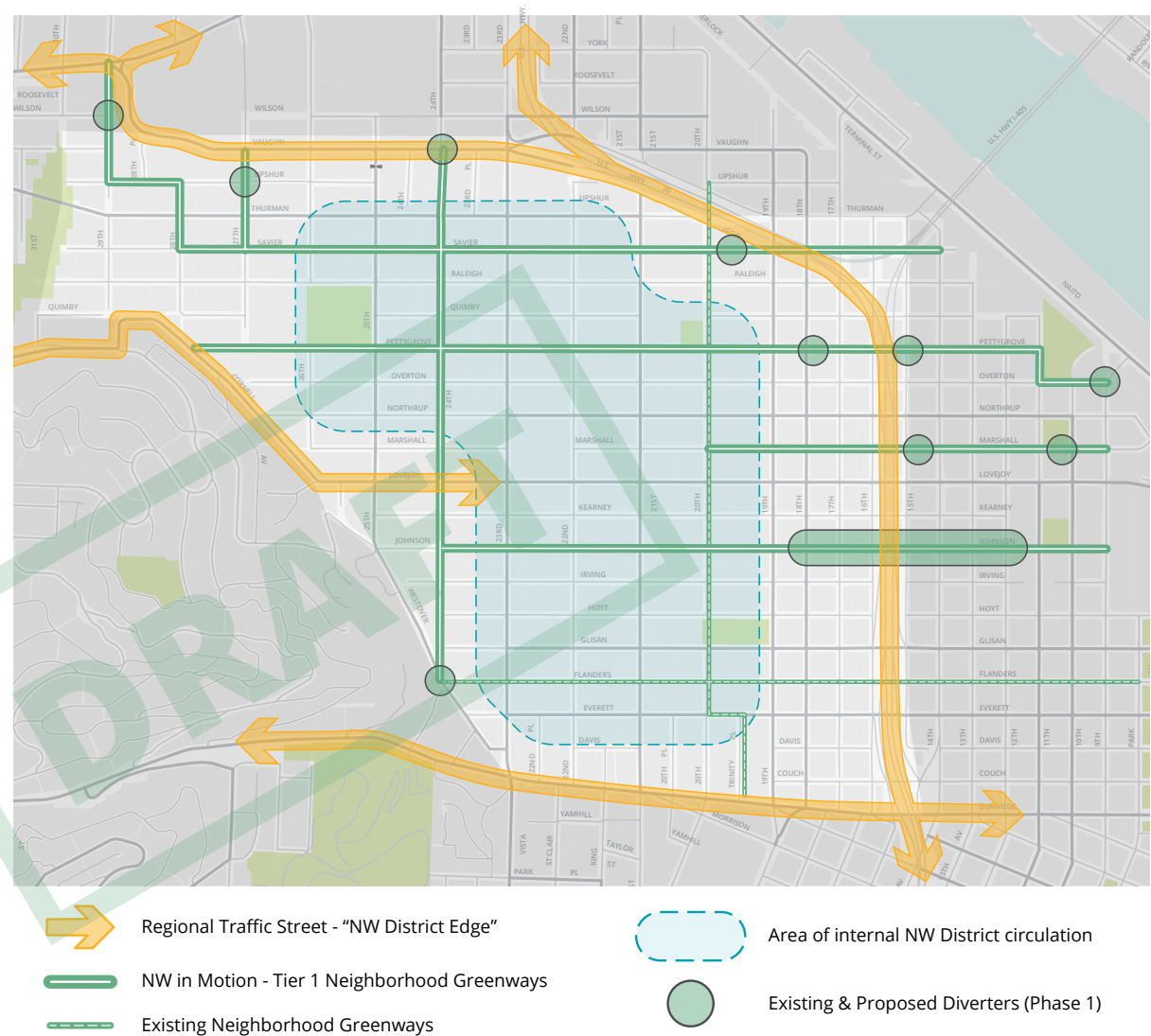


Nighborhood Greenway Phase 1 Implementation

Northwest in Motion recommends a context-sensitive, phased approach to Neighborhood Greenway implementation in Northwest Portland.

To reduce traffic volumes on existing and proposed neighborhood greenways in the NW in Motion project area to meet our guidelines, we propose to start with diverters using temporary materials around the edges of the neighborhood to address longer-distance cut-through trips.

Once implemented, PBOT will monitor the changes in traffic volumes approximately one year later, to give adequate time for traffic patterns to adjust. If traffic volumes at that point have fallen to acceptable levels, the temporary diverters will be replaced with permanent diverters and no additional diverters will be added. However, if traffic volumes remain at unacceptable levels or if the diverter locations have resulted in unacceptable impacts on other streets, PBOT will reassess the locations and number of diverters and will develop a new diversion plan for the neighborhood greenways.

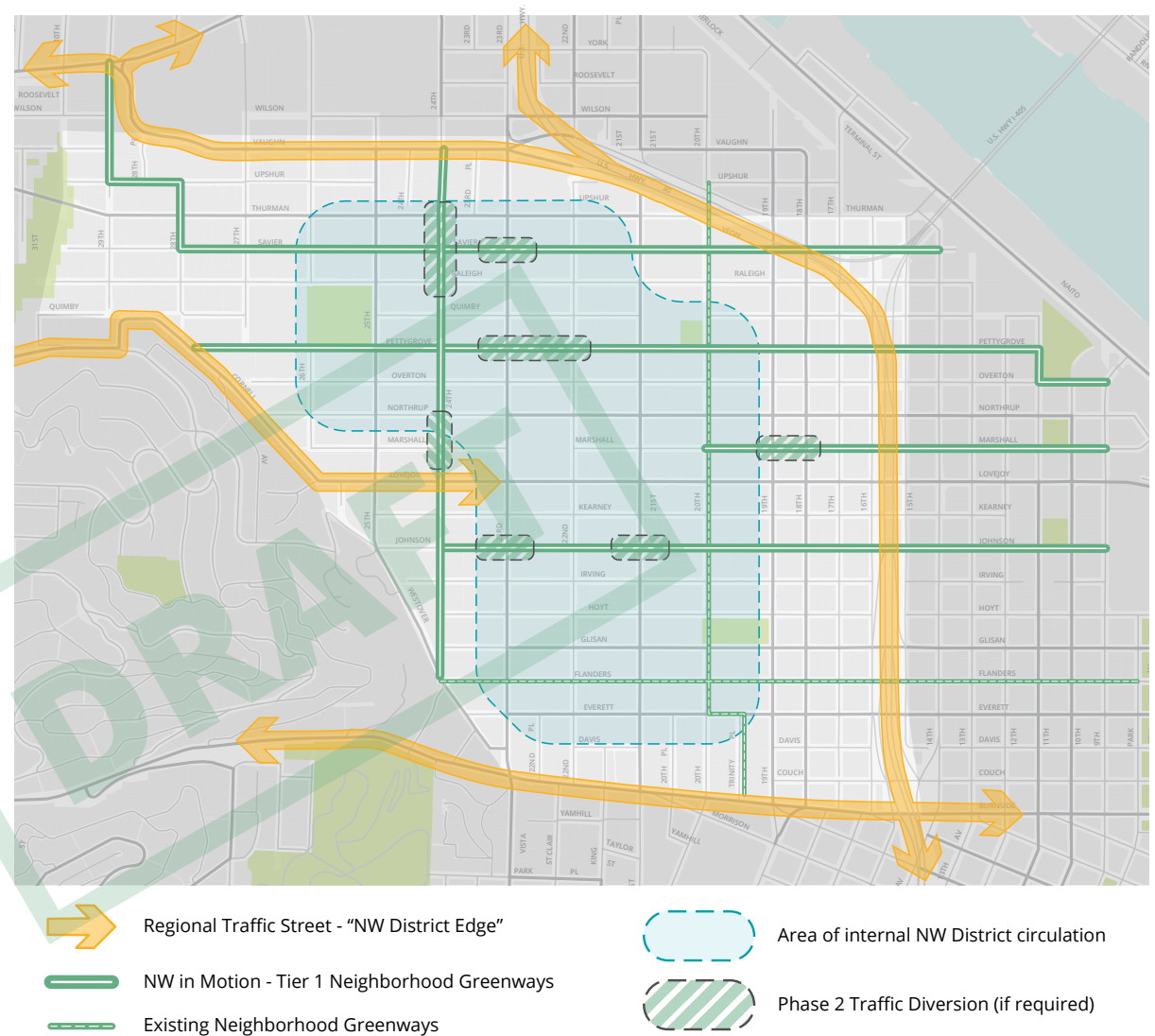


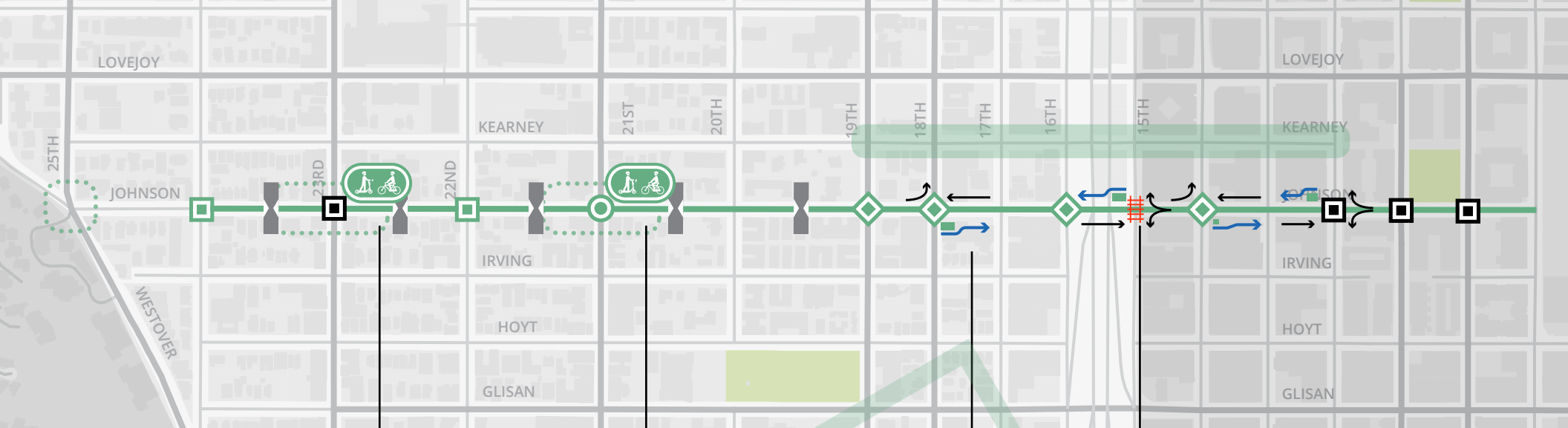
Neighborhood Greenway Phase 2 Strategy

Northwest in Motion recommends a context-sensitive, phased approach to Neighborhood Greenway implementation in Northwest Portland.

If Phase 1 implementation is unsuccessful in achieving acceptable traffic volumes on the proposed neighborhood greenways, PBOT will undertake a phase 2 diversion strategy, focusing additional diversion in the center of the neighborhood to reduce vehicle trips within the neighborhood using these streets.

These phase 2 diverters will also use temporary materials to allow for a period of monitoring to ensure the locations and number of diverters are optimal. If the phase 2 diverters are successful after a period of monitoring, they will be upgraded to permanent materials.





Scooter and bike parking hubs at the intersection of NW 21st Ave and NW 23rd Ave

Between NW 17th Ave and NW 18th Ave, eastbound vehicle movements are restricted, while allowing bikes to travel in both directions.

Alternating one-way streets with contraflow bike lane between NW 12th Ave and NW 18th Ave (see detail on next page).

NG.1 NW Johnson Neighborhood Greenway

Project Description

Add speed bumps, turn stop signs, and update signage on NW Johnson St from 9th to 25th. Incorporate diverters or other circulation changes as needed to reduce traffic volumes to acceptable levels. Improve crossings at busy streets. Remove rails at 15th & Johnson intersection, and repave segments of Johnson that have a poor riding surface.

Project Goal:

- Provide a low-stress walking and biking connection on NW Johnson St.
- Address poor riding surface issues along the route.

Key Considerations:

- Diversion strategy between NW 11th and 18th Ave may require out of direction travel for people driving. Diverters may increase traffic volumes on parallel local streets like NW Kearney St.

- Enhanced crossing
- New and existing striped crosswalks
- Median refuge between bike and auto lane
- Permitted auto movements at intersection with restrictions
- New and existing diverters
- Area of potential future traffic diversion (if required)
- Contraflow bike lane (no auto traffic in this direction)
- Permitted auto movements (one-way street)
- Scooter & bike parking hub
- Remove old rail tracks



One-way westbound vehicle traffic with contraflow eastbound bike lane.

One-way eastbound vehicle traffic with contraflow westbound bike lane.

Eastbound vehicles are required to turn left at NW 14th Ave.

DESIGN CONCEPT DETAIL:

NW Johnson | NW 14th to NW 17th

NW Johnson St near I-405 carries the highest traffic volumes along the entire neighborhood greenway route. The crossings at 14th and 16th are also difficult for pedestrians and bicyclists. This concept design addresses these issues by making certain blocks of Johnson from 12th to 18th one-way for cars but two-way for bikes, and adding median islands to shorten crossing distance and improve visibility. These improvements also help to protect the bike lanes on 14th and 16th.

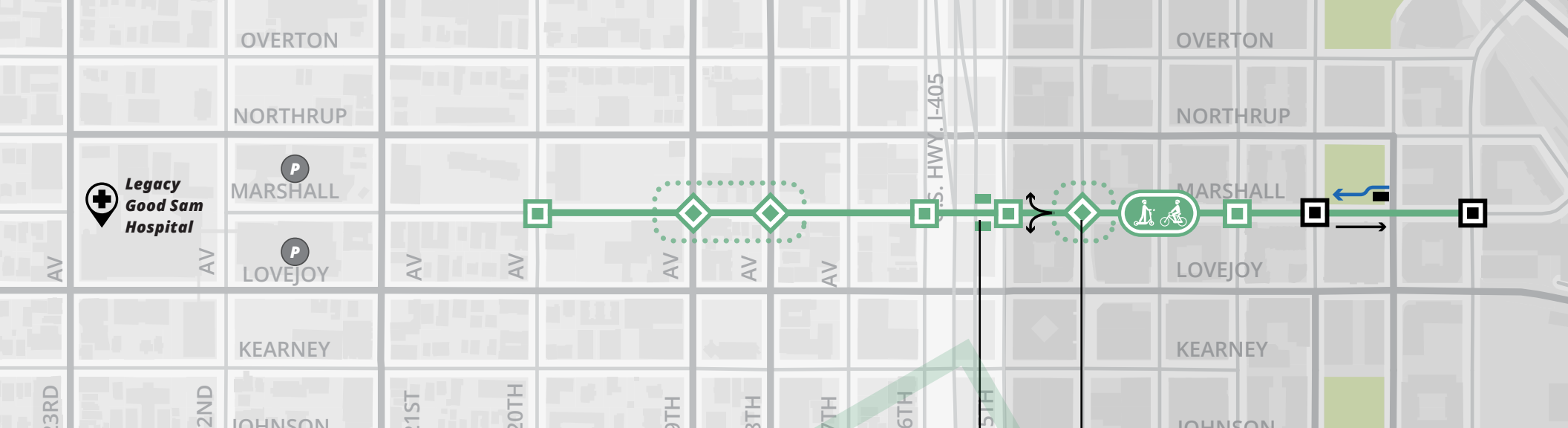
DESIGN CONCEPT DETAIL:

NW Johnson | NW 14th Ave

This rendering shows how the proposed crossing of 14th Ave at Johnson St would improve safety and comfort for bicyclists riding along both 14th Ave and Johnson St. Pedestrians would also benefit by being able to cross the bike lane first, then the motor vehicle travel lane.

PRELIMINARY DESIGN: NW JOHNSON AT NW 14TH AVE





Full diverter at west side of NW Marshall St and NW 15th Ave allows full access for people walking and biking. (see detail on next page)

Bikes behind crossing island and improved curb extension at northeast corner.

NG.2 NW Marshall Neighborhood Greenway

Project Description

Add sharrows and update signage on NW Marshall St from NW 9th Ave to NW 20th Ave. Incorporate diverters or other circulation changes as needed to reduce traffic volumes to acceptable levels. Improve crossings at busy streets.

Project Goal:

- Extend and improve the existing NW Marshall Neighborhood Greenway to provide a direct connection to the NW 20th Ave Neighborhood Greenway.

Key Considerations:

- Diversion strategy will likely increase traffic volumes on NW Lovejoy St and NW Northrup St.
- Upcoming intersection improvement at 23rd & Vaughn will likely encourage some hospital traffic to use Hwy 30 rather than 16th Ave to access I-405.

- Enhanced crossing
- New and existing striped crosswalks
- Median refuge between bike and auto lane
- Permitted auto movements at intersection with restrictions
- New and existing diverters
- Area of potential future traffic diversion (if required)
- Contraflow bike lane (no auto traffic in this direction)
- Permitted auto movements (one-way street)
- Scooter & bike parking hub

DESIGN CONCEPT DETAIL:

Scooter Parking Hub

Designated scooter parking hubs are recommended at the intersection of neighborhood greenways and major commercial nodes and main streets throughout Northwest Portland. Analysis of scooter riding data suggests that users prefer to use low-stress routes when riding, such as neighborhood greenways or bikeways to access these popular destinations.



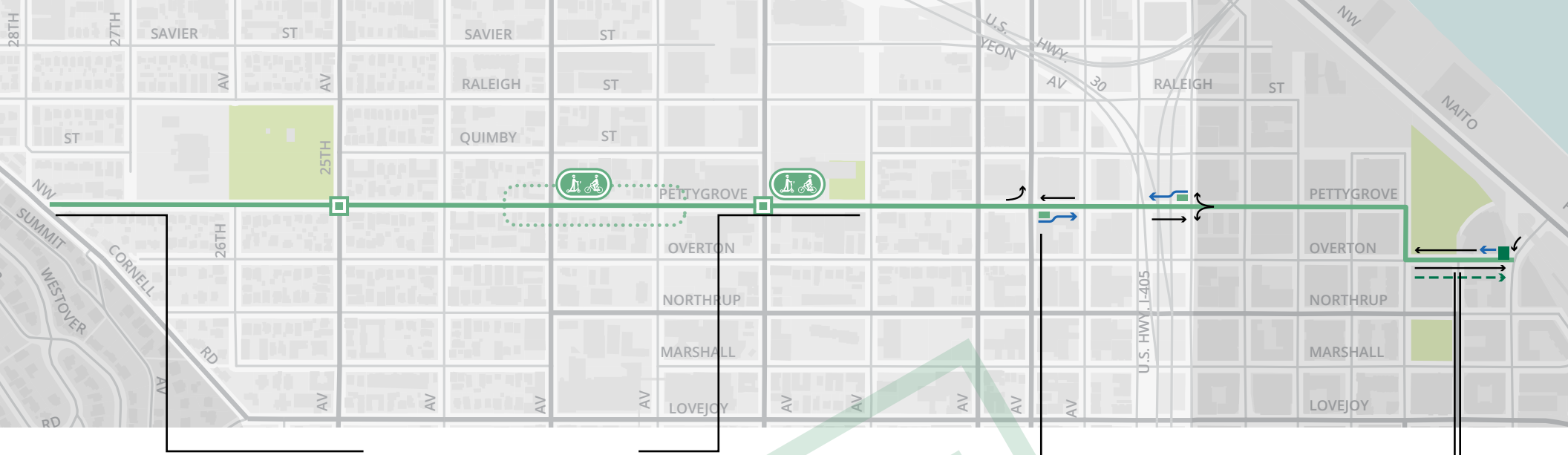
PROPOSED SCOOTER & BIKE PARKING AT GREENWAYS & COMMERCIAL STREETS

DESIGN CONCEPT DETAIL:

NW Marshall | NW 15th Ave

The Pearl District Access and Circulation Plan, adopted in 2012, recognized that the diverter at 10th & Marshall might not be sufficient to address cut-through traffic issues on the Marshall Neighborhood Greenway, and recommended consideration of an additional diverter at 15th & Marshall to prevent through traffic under I-405. Recent traffic counts confirm that NW Marshall St currently has traffic volumes that greatly exceed the recommended guidelines for a neighborhood greenway, so it would be appropriate to implement this. Portland Streetcar has also indicated that closing this segment of Marshall to through car traffic at 15th Ave, while maintaining employee access from 16th Ave, would improve their maintenance operations.





Existing public stairway connection to Cornell Rd

Proposed "green street" urban design treatments when new park develops at NW 20th Ave

Between NW 17th Ave and NW 18th Ave, eastbound vehicle movements are restricted, while allowing bikes to travel in both directions.

The north side of NW Overton would allow for loading and short term parking, accessed by making a turnaround at adjacent driveway.

Westbound vehicle movements at NW 9th and Overton are restricted, while still providing a bikeway connection. (see detail on next page).

NG.3 NW Pettygrove Neighborhood Greenway

Project Description

Add speed bumps and sharrows, turn stop signs, and install signage on NW Pettygrove St from 11th Ave to the bottom of the staircase to Cornell (add bike-rail to staircase if feasible). Incorporate diverters or other circulation changes on Pettygrove as needed to reduce traffic volumes to acceptable levels. Improve crossings at busy streets. Remove rails from 15th & Pettygrove intersection. Add a bikeway connection to 9th Ave at the east end via 11th Ave and Overton St. After implementation, remove sharrows from Overton St west of 14th Ave.

Project Goal:

- Provide a low-stress walking and biking connection through NW Portland, connecting Wallace Park to NW Naito / NW 9th Ave.

Key Considerations:

- On-street parking removed from one side of Overton St from 9th Ave to 11th Ave, and adjacent to new park at NW Pettygrove & NW 20th Ave

- Enhanced crossing
- New and existing striped crosswalks
- Median refuge between bike and auto lane
- Permitted auto movements at intersection with restrictions
- New and existing diverters
- Area of potential future traffic diversion (if required)
- Contraflow bike lane (no auto traffic in this direction)
- Permitted auto movements (one-way street)
- Scooter & bike parking hub

PRELIMINARY DESIGN: NW OVERTON

Eastbound protected bike lane.

On-street parking on the north side of NW Overton accessible via parking garage driveway.

Eastbound vehicle turning movements from NW 9th Ave to NW Overton St would not be permitted.

DESIGN CONCEPT DETAIL:

NW Overton | NW 9th to NW 11th

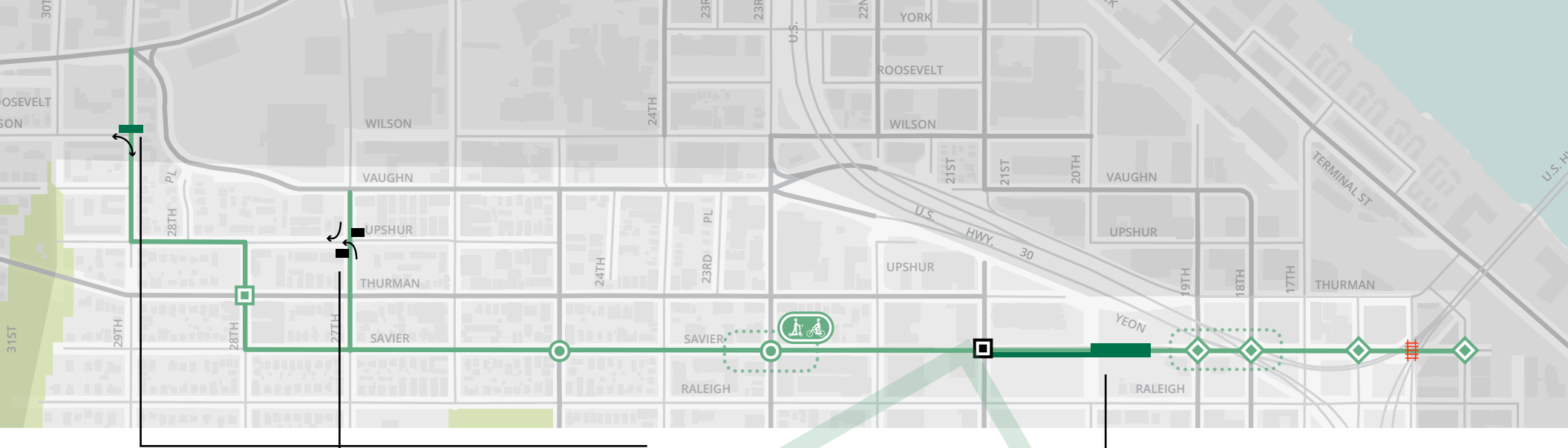
NW Overton St is meant to be a local access street, but it is also a major emergency response route and is one of the few ways to access Naito Pkwy from the west. This design concept preserves eastbound through traffic and provides a protected bike lane. In the westbound direction, a diverter would allow only bike access from 9th Ave, with a shared street environment west of the diverter. This concept preserves on-street parking and loading zones on the north side of Overton St, and adds turn pockets approaching 9th Ave to give traffic more options in case of train blockages.

DESIGN CONCEPT DETAIL:

NW Pettygrove Green Street Treatments

The River District Right-of-way Standards were amended in 2012 to add an innovative “green street” design for NW Pettygrove St from 11th Ave to 15th Ave. This standard requires new developments to provide an expanded planting strip, with optional parking bays, to provide more space for wide-canopy trees and other greenery. This design also helps to calm traffic by narrowing the roadway. The upcoming new park at 20th & Pettygrove offers a clear opportunity to apply this green street design further west, at the intersection of two neighborhood greenways. This concept shows how this could look applied to the new park site.

PRELIMINARY DESIGN: NW PETTYGROVE AT NW 20TH



Improvements to existing diverters at
NW Upshur St / NW 27th Ave &
NW Wilson St / NW 29th Ave

Striped interim two-way bikeway on
existing half street (see detail on next page).

NG.4 NW Xavier Neighborhood Greenway

Project Description

Add speed bumps and sharrows, turn stop signs, and install signage on NW Savier St from 14th Ave to 28th Ave, a connection on NW 27th Ave from Savier St to Vaughn St, and a connection to NW Nicolai St via 28th Ave, Upshur St, and 29th Ave. Incorporate diverters or other circulation changes as needed to reduce traffic volumes to acceptable levels. Improve crossings at major streets. Remove rails from Savier St & 15th Ave intersection. Convert one-way half-street sections to bike-only as an interim measure until streets are widened with redevelopment. After implementation, remove sharrows from Raleigh.

Project Goals:

- Create a low-stress walking and biking connection, taking advantage of an existing lower-volume streets.

Key Consideration:

- The interim two-way connection between NW 19th and NW 20th Ave should be made permanent with adjacent redevelopment.

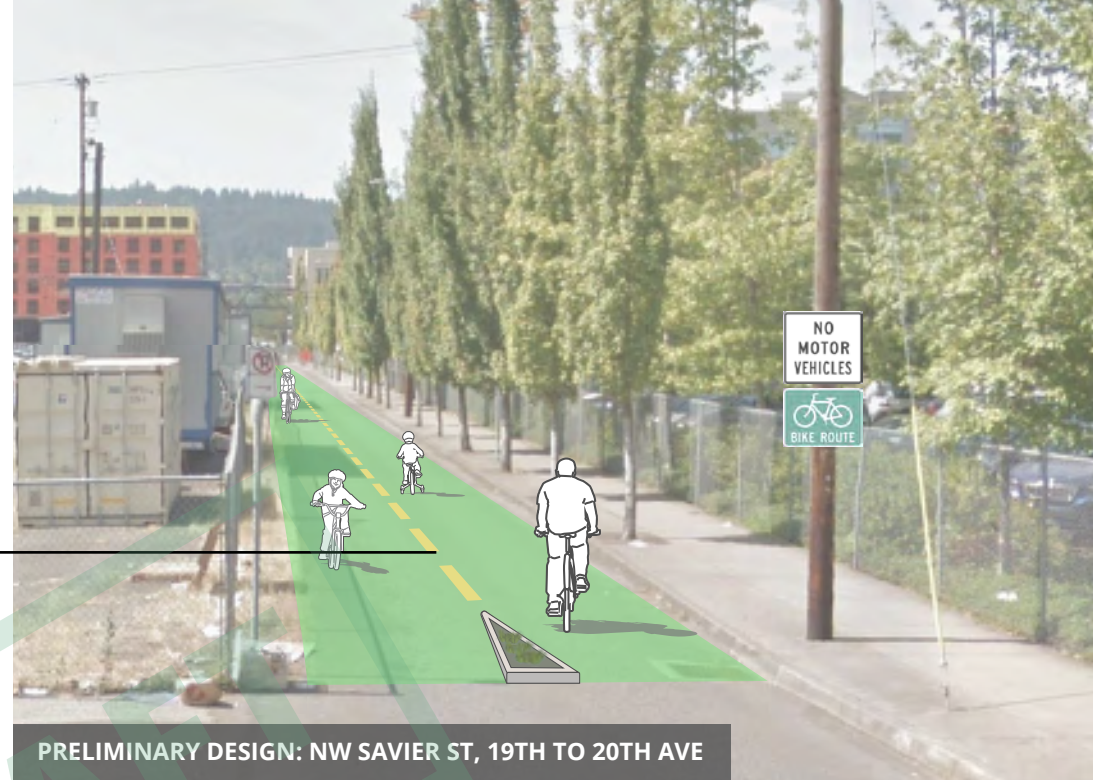
- Enhanced crossing
- New and existing striped crosswalks
- Median refuge between bike and auto lane
- Permitted auto movements at intersection with restrictions
- New and existing diverters
- Area of potential future traffic diversion (if required)
- Permitted auto movements (one-way street)
- Scooter & bike parking hub
- Remove old rail tracks

DESIGN CONCEPT DETAIL:

NW Savier | 19th Ave to 20th Ave

A portion of NW Savier St in the Slabtown area has a limited public right-of-way that only contains a single westbound travel lane and a sidewalk on the north side. Where the rest of the street should be on the south side, the space is currently private property, mostly used for parking. As properties redevelop, they will be required to dedicate this space as public right-of-way and build the rest of the street and sidewalk, but the pace of development is slowing and it may be many years before all of Savier is dedicated and constructed. This design concept shows a potential “interim” design for the narrow section of Savier with no driveways between 19th and 20th, turning the single travel lane into a two-way bike path.

*Two way cycle
interim cycle track.*



DESIGN CONCEPT DETAIL:

NW Wilson and NW 29th Ave

The existing diverter at Wilson & 29th is effective at eliminating cut-through traffic from Nicolai to Thurman, but the design is not ideal for bike travel. It has a single opening for bikes, off to one side, that is obscured by vegetation. This concept design shows a improved bicycle path through the diverter to make this an attractive route for bicyclists who want to travel between the residential and industrial areas of NW Portland.

*A path through the
diverter allows an
easy connection for
people biking.*



DESIGN CONCEPT DETAIL:

NW Savier Phasing

Currently NW Savier St has a limited right-of-way from 21st to 20th, and for a portion of the block from 20th to 19th, with a sidewalk on the north side and only enough roadway space for a single westbound travel lane. There is one driveway access on this segment of Savier St, on the western half of the block from 21st to 20th.

As redevelopment of adjacent parcels occurs, the Conway Master Plan requires that the property owners dedicate enough space for a standard 60-foot right-of-way, which would be typically built out with a 36-foot-wide roadway (two lanes with parking on both sides) and two 12-foot sidewalk corridors. Based on redevelopment permits that have been submitted, we anticipate that the properties will redevelop over time from west to east along the south side of Savier St.

In Phase 1, the property on west half of the block from 21st to 20th will redevelop and a full two-way street will be constructed for that half-block. At this point, the driveway will be able to be accessed from the 21st Ave side, and PBOT will be able to turn the remaining one-way segments of Savier St into the proposed interim two-way bike path.

In Phase 2, the property on the east half of the block from 21st to 20th will redevelop, and the rest of that block will be constructed as a typical two-way street. This portion will be converted to a neighborhood greenway, while the interim two-way bike path will remain on the block east of 20th Ave.

In Phase 3, the final property will redevelop on the block east of 20th Ave. When this property is redeveloped, they will still be required to dedicate enough property for a 60-foot right-of-way, but PBOT will work through the development process to ensure that the space is constructed as a pedestrian and bicycle street with no motor vehicle access (except emergency vehicles). This redesign could also include place-making elements.





Northwest in Motion imagines a long-term vision of multi-use path connection on NW Savier St between NW 19th Ave and NW 20th Ave. This trail-like connection would leverage a high level of urban design and include elements to strengthen the social element of the street such as small plazas, seating, and lush greenery.

NG.5

NW 24th Ave Neighborhood Greenway

Project Description

Add speed bumps, turn stop signs, and update signage on NW 24th Ave from Glisan to Vaughn. Incorporate diverters or other circulation changes as needed to reduce traffic volumes to acceptable levels. Mark crosswalks at Johnson St and Thurman St, and provide an enhanced crossing of Vaughn St. Extend bikeway connection from Glisan St to Flanders St.

Project Goals:

- Upgrade an existing Neighborhood Greenway to meet traffic volume and speed guidelines.
- Provide a low-stress option for people accessing destinations on NW 23rd Ave and NW 25th Ave.

Key Considerations:

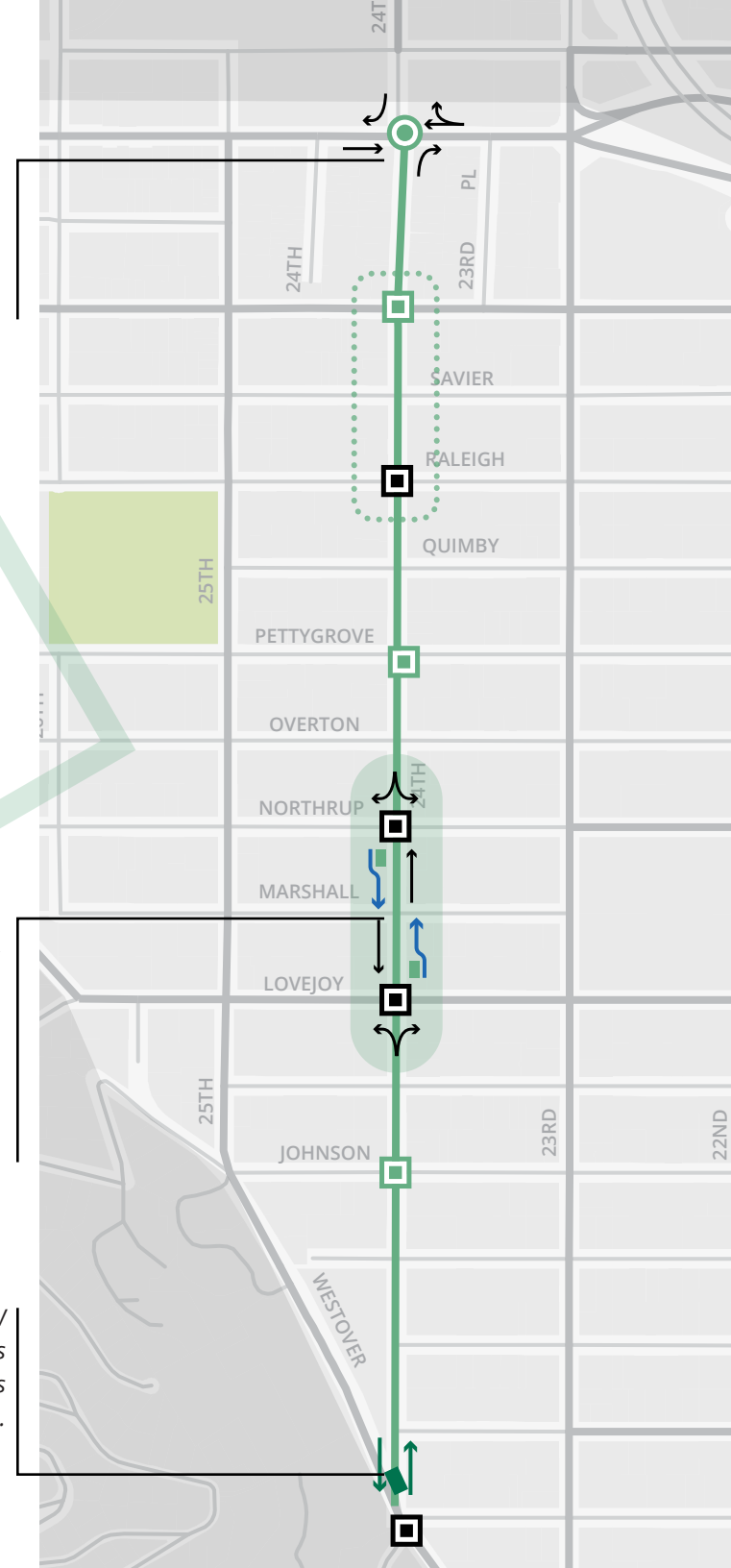
- Traffic diverter and crossing improvement at NW Vaughn will redirect through traffic to other parallel routes.
- Proposed traffic pattern changes will address cut-through traffic but will also require out of direction travel for local residents.

- Enhanced crossing
- New and existing striped crosswalks
- Median refuge between bike and auto lane
- Permitted auto movements at intersection with restrictions
- Contraflow bike lane (no auto traffic in this direction)
- Permitted auto movements (one-way street)
- New and existing diverters

A proposed traffic diverter and crossing improvement limits access to NW 24th Ave from NW Vaughn. (see design concept at the TS.5 NW Vaughn project)

Potential traffic diversion may be required on NW 24th Ave north of NW Lovejoy St to meet Neighborhood Greenway standards. In response to public feedback, a final decision will be made after additional traffic counts are conducted in 2020 once the 20th Ave LID project is completed.

Full closure of NW 24th Ave at NW Westover Rd / Flanders St preserves local access and creates a low-stress connection between two great bikeways.

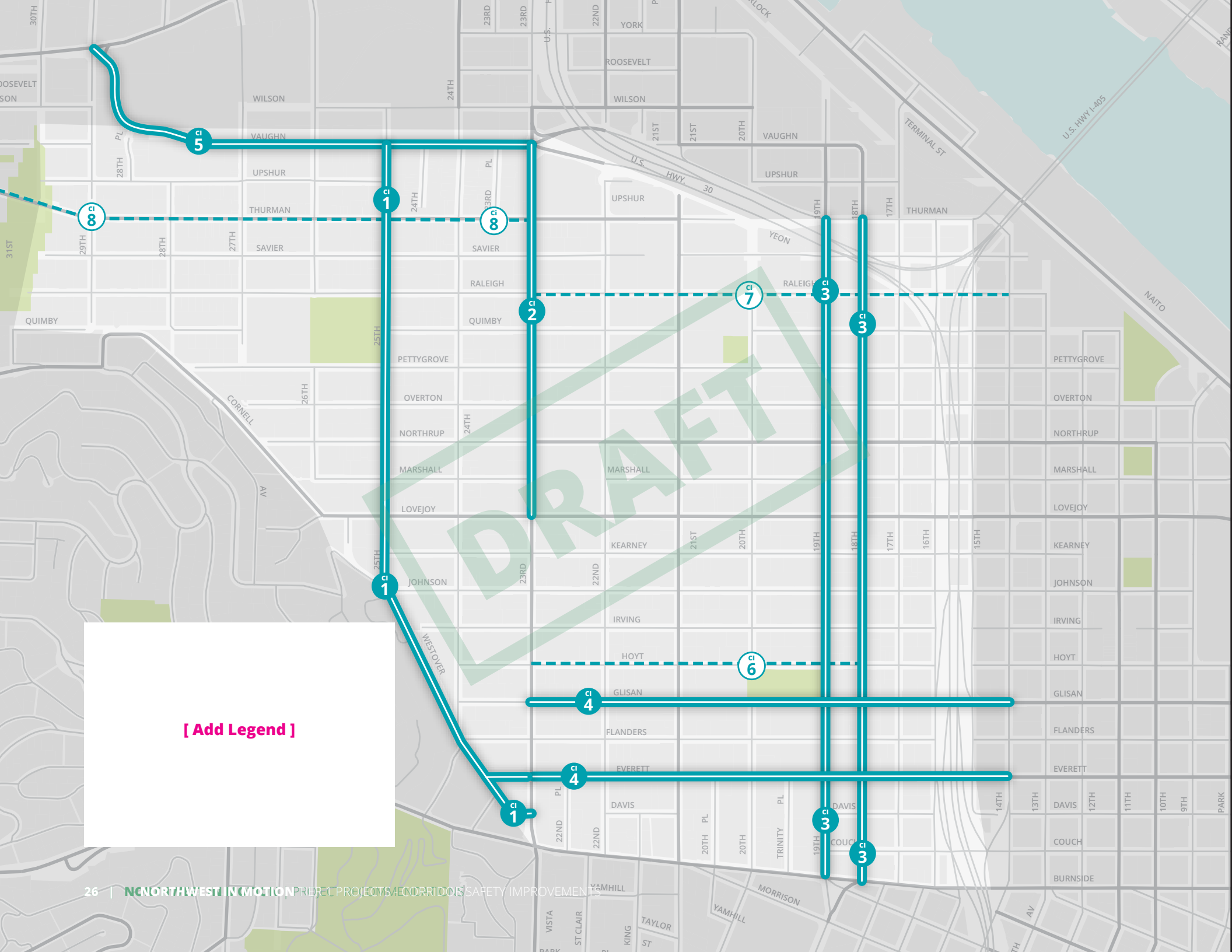


DESIGN CONCEPT DETAIL:

NW 24th Ave at Westover Rd / Flanders St

Even with a diverter north of Lovejoy St to address north-south cut-through traffic on 24th Ave, there would still be high volumes of peak-hour traffic using 24th Ave northbound from Westover to access Lovejoy St. The intersection of 24th Ave, Westover Rd, and Flanders St is also confusing and complex, with safety issues because it is hard to tell whether drivers are going to continue north on Westover Rd or veer onto 24th Ave. This would become even more of a safety issue with the introduction of bikes in both directions on 24th Ave from Flanders to Glisan. To address these concerns, we propose closing this block of 24th Ave to through traffic with a diverter at Westover, and adding bike lanes in both directions. Access to the single driveway on the block would be maintained via Glisan St, but on-street parking on one side would be removed. This design concept shows an example of how this improvement could enhance the streetscape environment.





TIER 1 PROJECTS DETAIL

Corridor Improvements

Busy traffic streets are the places where crossing improvements and other roadway improvement projects can have the biggest benefit for the safety and comfort of people walking, biking, or accessing transit.

Corridor Improvements are mainly focused on providing safe crossings of busy streets at regular intervals, but also includes improvements such as traffic calming, signal upgrades, pavement reconstruction, transit improvements, and bike lane enhancements.

KEY DESIGN ELEMENTS

Corridor Improvement Projects are located on Northwest Portland's busiest streets. While these streets carry higher volumes of vehicles, these projects use design tools to address conflicts between roadway users and improve transit.

Enhanced Crossings

These design elements help shorten the crossing distance or allow people walking to only have to navigate one lane of traffic at a time.

Curb Extensions

Curb extensions help improve the visibility of people walking and can help improve yielding compliance by people driving. They can also be used to provide accessible, in-lane transit stops.

Transit Improvements

Unsignalized left turns on busy streets pose a safety risk and can increase transit delay. Separate signal phases can help reduce conflicts and improve transit speed and reliability.

Cl.1

NW 25th Ave / Westover

Project Description






Add speed bumps and enhanced crossings from NW Everett to NW Lovejoy, and realign intersection and mark crosswalks at Westover/Johnson/25th. Add fire-friendly speed cushions on NW 25th Ave from NW Lovejoy to NW Vaughn to address speeding issues. Remove traffic circle at NW Quimby and replace with median islands to reduce conflicts and enhance visibility for people walking to Wallace Park & Chapman Elementary. Mark crosswalks at the Lovejoy four-way stop, add enhanced crossing at Northrup, add missing crosswalk at Pettygrove, and add enhanced crossing at Savier.

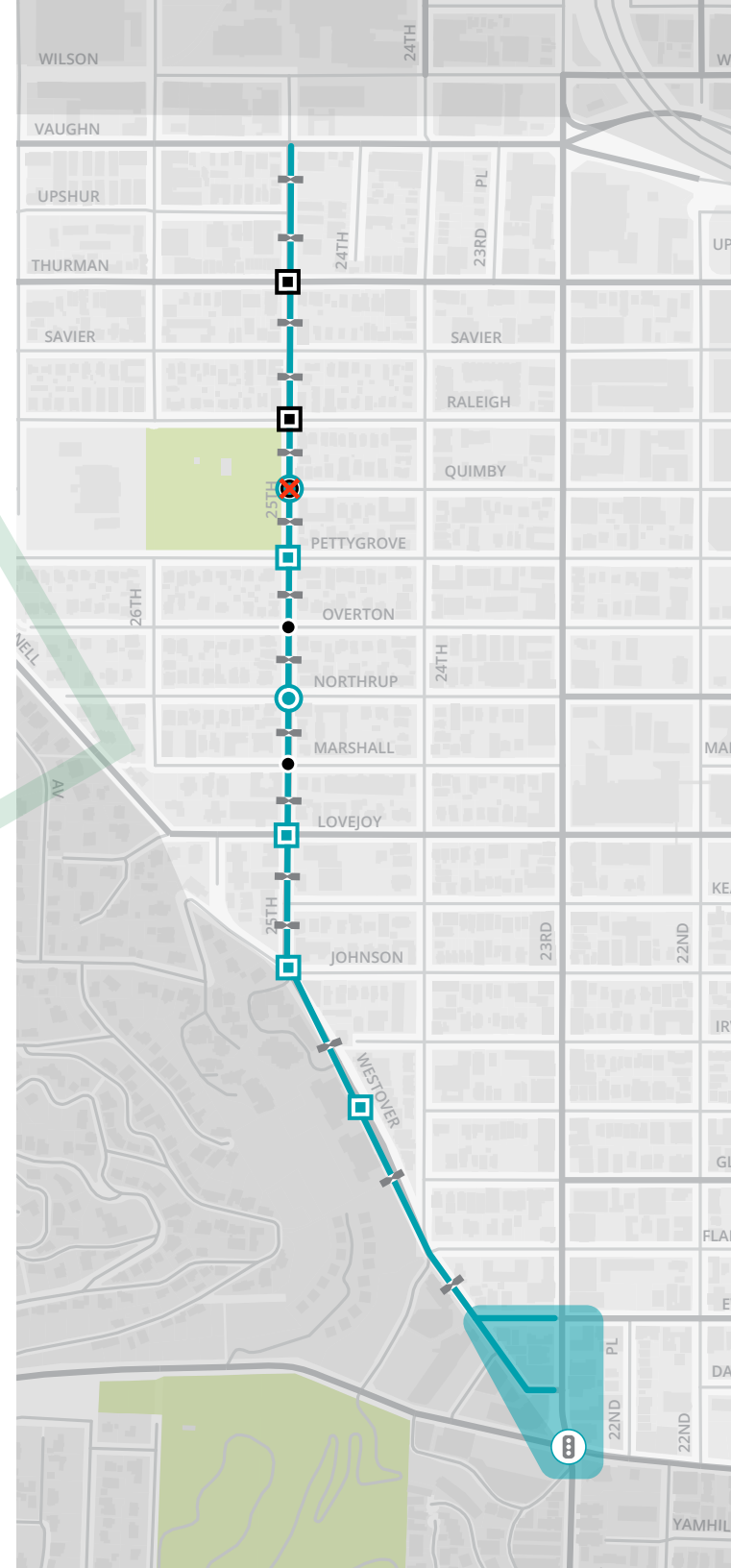
Project Goals:

- Eliminate conflicts between different roadway users and improve visibility for people crossing NW 25th Ave and Westover Rd.
- Reduce traffic speeds along NW 25th Ave to make it easier for people of all ages and abilities to cross the street.

Key Considerations:

- One traffic circle to be removed and replaced with median islands.
- Median islands will have a small impact on on-street parking, and may present challenges for larger vehicles while turning.

-  Enhanced crossing
-   New and existing striped crosswalks
-  Speed bump
-  Replace traffic circle with crossig improvement



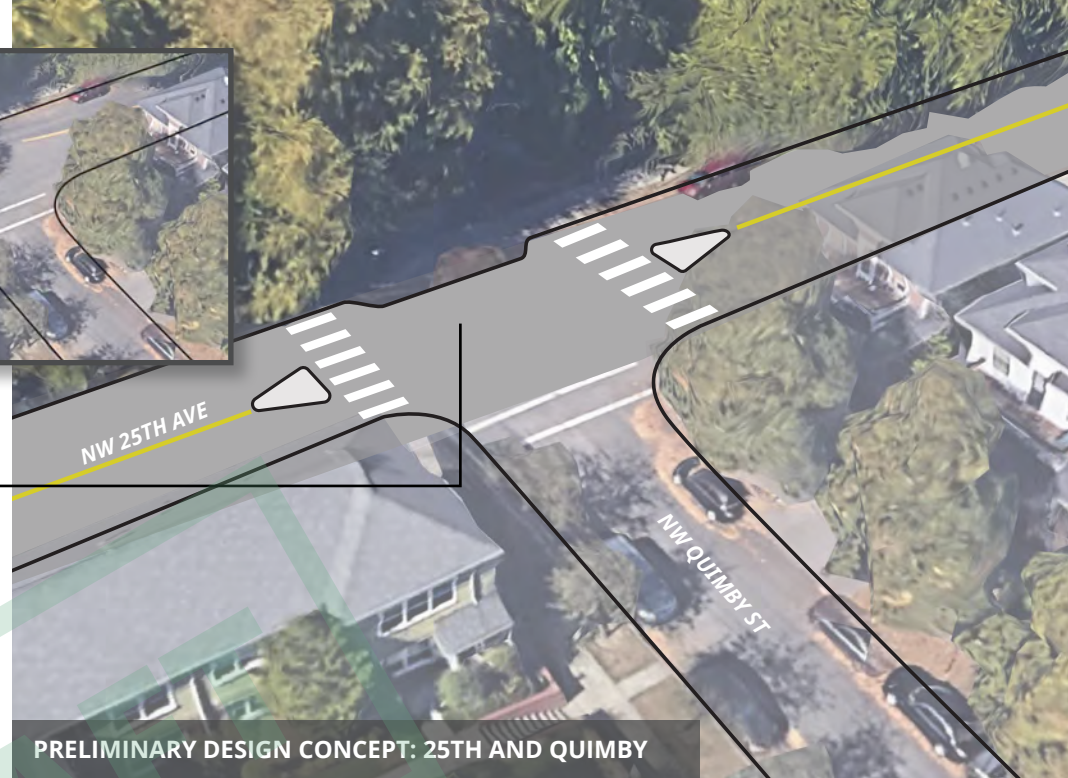
DESIGN CONCEPT DETAIL:

NW 25th Ave at NW Quimby St

Community stakeholders have brought up concerns about pedestrian safety at the traffic circle at 25th & Quimby. This is a popular pedestrian entrance to Wallace Park, and is also on a designated Safe Routes to School route to Chapman Elementary. This concept would remove the traffic circle and replace it with median refuge islands and marked crosswalks. The islands would achieve a similar traffic calming effect as the traffic circle, but with this design people will be much more visible as they cross the street and will only have to cross one lane at a time, and drivers will more intuitively yield to people with crosswalks present.



Replace existing traffic circle with median island crossings.



PRELIMINARY DESIGN CONCEPT: 25TH AND QUIMBY

DESIGN CONCEPT DETAIL:

Westover Speed Table Crosswalk

Residents of the buildings on either side of Westover between Flanders and Johnson have brought up concerns about pedestrian safety crossing the street, primarily due to speeding traffic and failure to yield to people using the marked mid-block crosswalk. This is especially concerning for elderly residents who may not be able to cross very quickly. This concept shows a raised speed table with a marked crosswalk, improving visibility and encouraging drivers to slow down as they approach.

Raised speed table across NW Westover Rd



PRELIMINARY DESIGN CONCEPT: NW WESTOVER

DESIGN CONCEPT DETAIL

NW Westover & NW Everett Circulation

TriMet data analysis shows a high amount of delay for the Line 15 bus southbound on 23rd Ave approaching Westover and Burnside, especially in the morning peak hours. Much of this delay is due to significant traffic on Westover Rd in the morning that fills up the left turn lanes from 23rd to Burnside. Because Westover is stop-controlled, this flow of traffic arrives randomly and negatively impacts transit reliability.

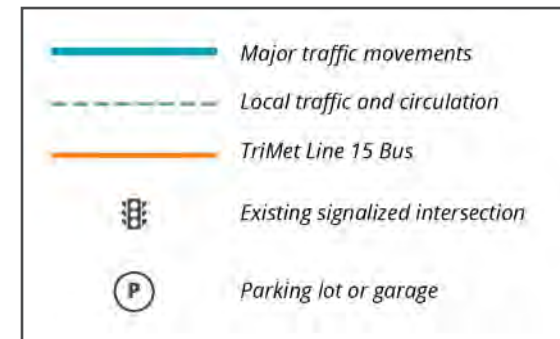
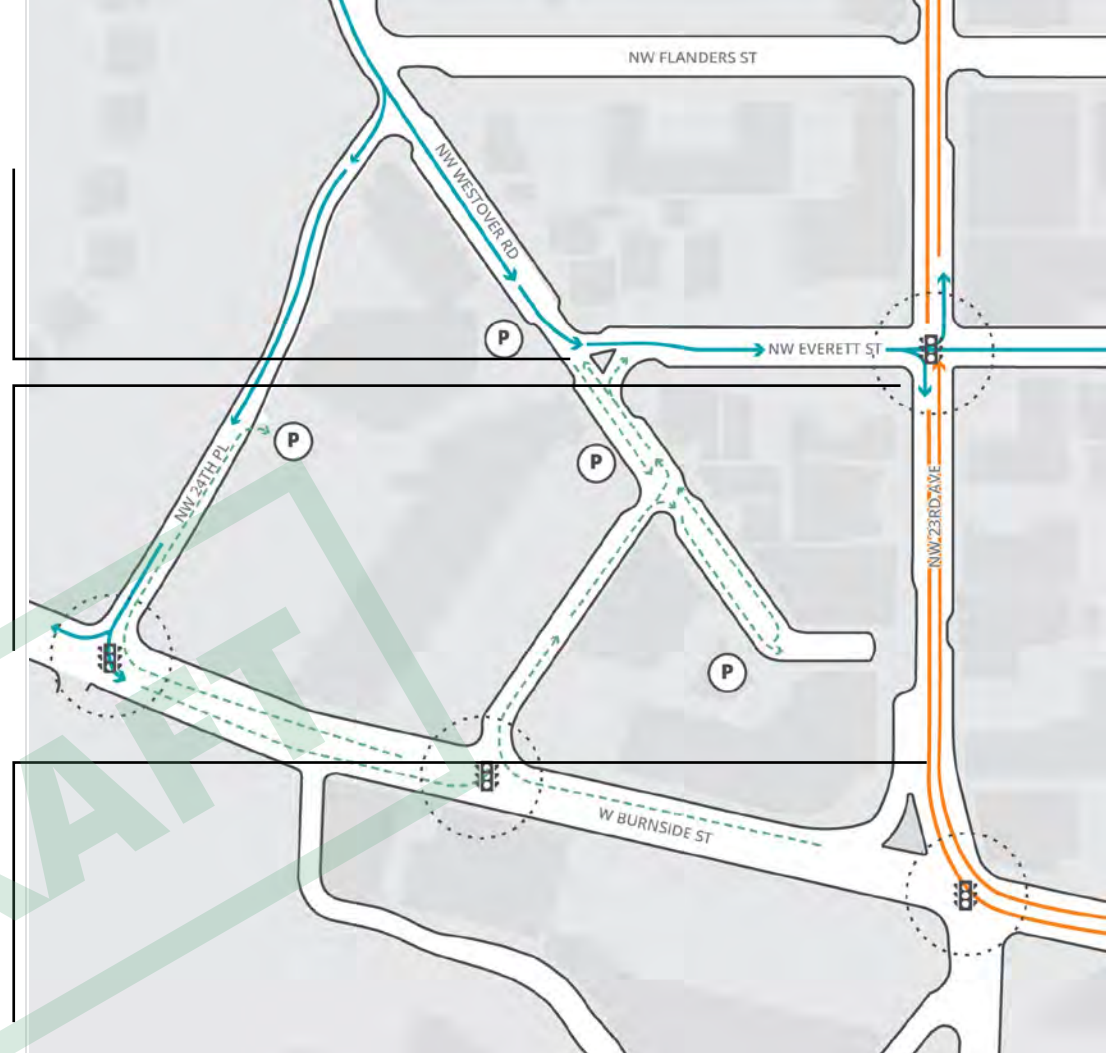
This proposal would close off traffic access on the section of Westover Rd just west of 23rd Ave, completely addressing the transit delay and pedestrian safety issues at that intersection. Through traffic would use Everett St to 23rd Ave or 24th Place to access Burnside, while drivers could still access the shopping center via Westover Rd from the north or 23rd Place from the south. To mitigate the impact of additional traffic on Everett, we propose adding a right-turn pocket to Everett approaching 23rd.

By closing off a short segment of Westover Rd to car traffic, this option provides a great opportunity to create an attractive pedestrian entrance to the shopping center that would also enhance the main street feel of 23rd Ave. Because the street is sloped, this area could have a stairway with terraced plantings to go along with the ramped sidewalks on each side.

Full local access is maintained at NW Westover Rd and NW Everett St.

New right-turn pocket located at NW Everett St and NW 23rd Ave is intended to absorb additional vehicles redirected to this intersection.

Full closure of NW Westover St and NW 23rd Ave to create a pedestrian only connection to Uptown Shopping Center (see concept on opposite page).



A full closure of NW Westover Rd at NW 23rd Ave would provide an opportunity to re-imagine the space as a pedestrian plaza and gateway to the Uptown Shopping Center.



As a first step towards implementation, PBOT can create a simple, yet inviting plaza using temporary interim materials. To better support these first steps, Northwest in Motion recommends adding new strategies and materials to our existing tools for temporary installations (see page xx)

Cl.2

NW 23rd Ave

Project Description

Full pavement reconstruction from Lovejoy to Vaughn (including concrete bus pads), curb extensions with marked crosswalks at Marshall, Overton, Quimby, Pettygrove, and Savier. Address sidewalk accessibility issue at Raleigh signal. Adjust location of Thurman & 23rd bus shelter to move it out of the pedestrian through zone. Upgrade signal and add protected left turns at 23rd & Thurman to address transit delay and improve safety.

Project Goals:

- Improve the pedestrian realm by upgrading and providing new curb extensions throughout the corridor.

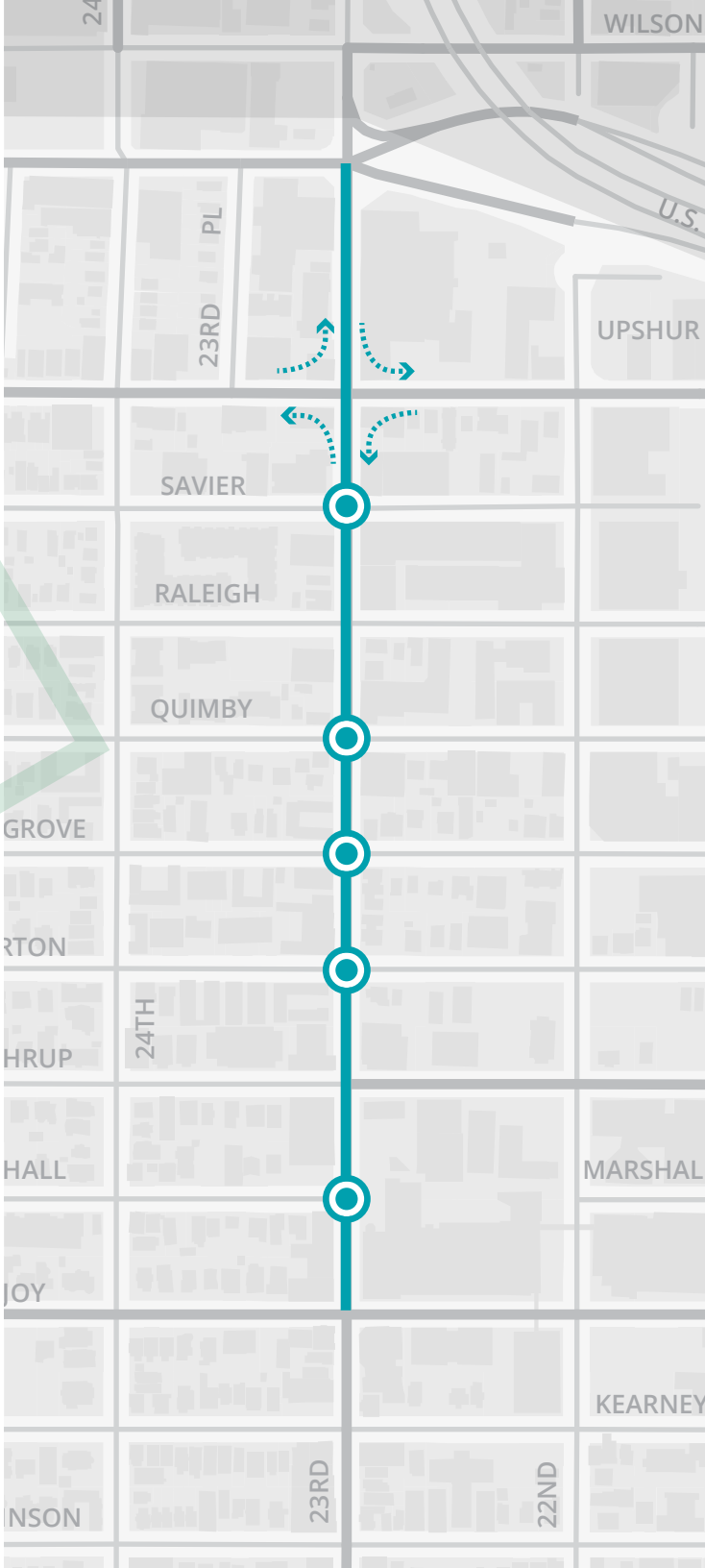
Key Considerations:

- Some on-street parking spaces might be impacted to provide space for new crossing improvements.

Enhanced crossing

New signal or signal upgrades

New protected left at signal



DESIGN CONCEPT DETAIL:

NW 23rd Ave at NW Marshall St

At “T” intersections, there is an opportunity to provide longer curb extensions with more greenery along the length of the intersection. This prioritizes pedestrians, provides a nicer place to be, and lowers traffic speeds by narrowing the roadway temporarily. 23rd & Marshall is one example in NW Portland where this kind of design treatment could be deployed.



WIDE CURB EXTENSION AT T-INTERSECTION

DESIGN CONCEPT DETAIL:

Protected Left Turn Signal Phase

By adding a protected signal phase, vehicles turning left are given a dedicated time to make the otherwise difficult left turn. The signal phase would be coordinated with the pedestrian walk signal to eliminate ‘permissive’ left turns and reduce/eliminate conflicts between people walking and people driving.

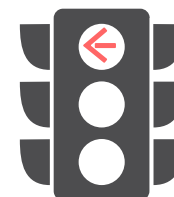
SIGNAL PHASE A:

While left hand vehicle movements are permitted, pedestrians are not permitted to cross the street.



SIGNAL PHASE B:

While the pedestrian crossing phase is activated, vehicles are prohibited from turning left.



Cl.3

NW 18th Ave & NW 19th Ave

Project Description

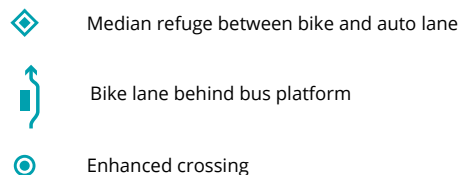



Install transit platforms with bikes behind at 18th & Marshall, 19th & Marshall, 18th & Flanders, and 19th & Flanders to reduce bus/bike conflicts. At other stops, establish bus zones to provide accessible transit boarding areas. Install marked pedestrian crosswalks at all bus stops.

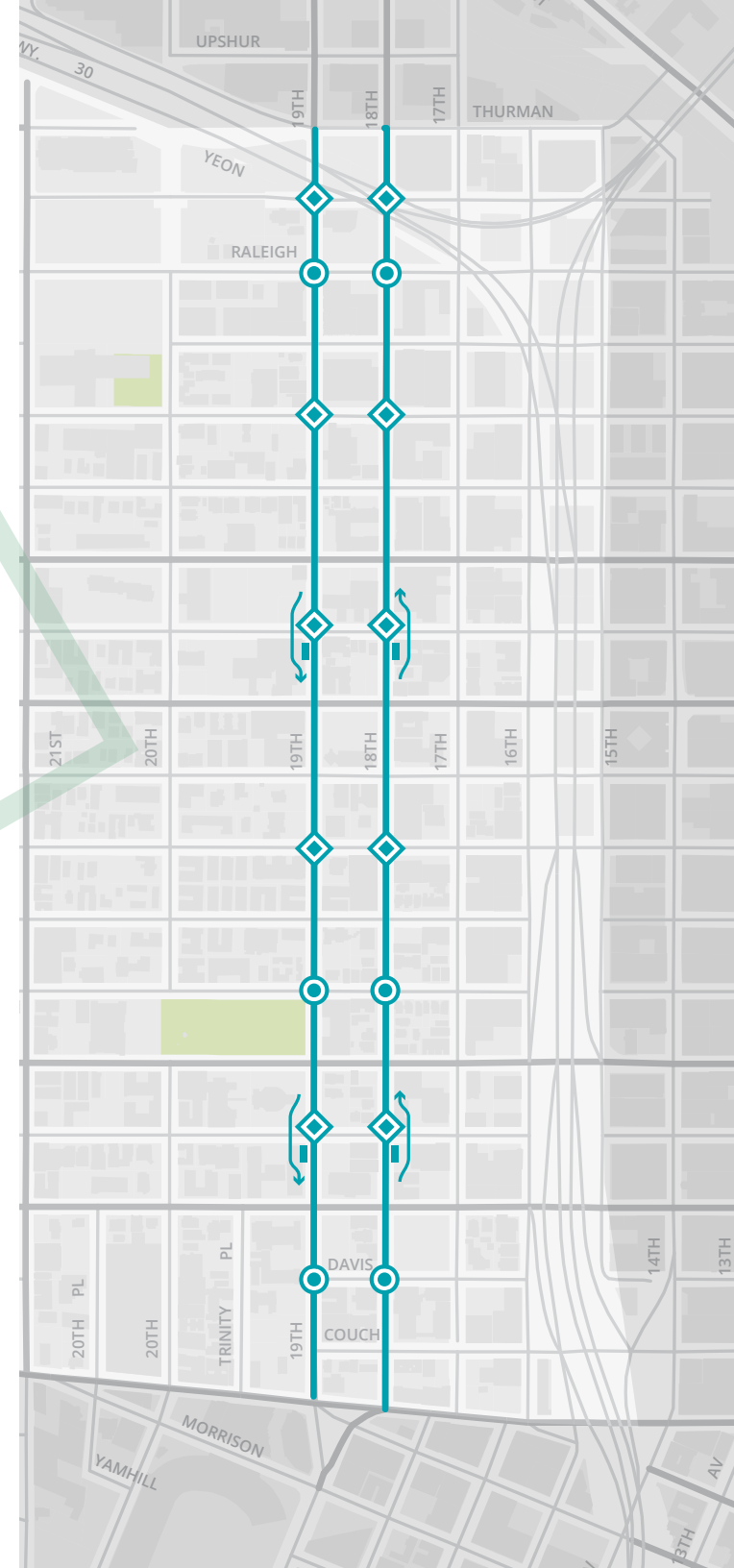
Project Goals:

- Minimize bus and bike conflicts on NW 18th and 19th Ave (Line 24).
- Improve bus service by allowing the bus to serve stops in the travel lane without having to pull over to the curb.

Key Considerations:

- Some parking may need to be shifted where transit platforms are installed.
- Interim modular transit platforms could be installed as a near-term improvement, and could be replaced with permanent concrete islands at a later time.

- 
-  Median refuge between bike and auto lane
 -  Bike lane behind bus platform
 -  Enhanced crossing



DESIGN CONCEPT DETAIL:

Bus Behind Transit Platform

TriMet recently extended the Line 24 bus from NE Portland across the Fremont Bridge and down the 18th and 19th Ave couplet to Providence Park. While this new bus line provides a great new transit connection for people traveling to and from NW Portland, the combination of curb-side bus stops and bike lanes result in bus/bike conflicts and transit delay, as buses have to cross over the bike lane twice whenever serving a stop. To address this issue, this design concept shows floating transit platforms with the bike lane shifting to curb-side temporarily to go around the platform. In this design, the bus would stop in the travel lane, which is preferred because it reduces the transit delay associated with pulling in and out of traffic and across bike lanes. There would be no conflict between bikes and buses at these stops, and the transit platforms will also provide pedestrians with a refuge that shortens the crossing distance and improves visibility.

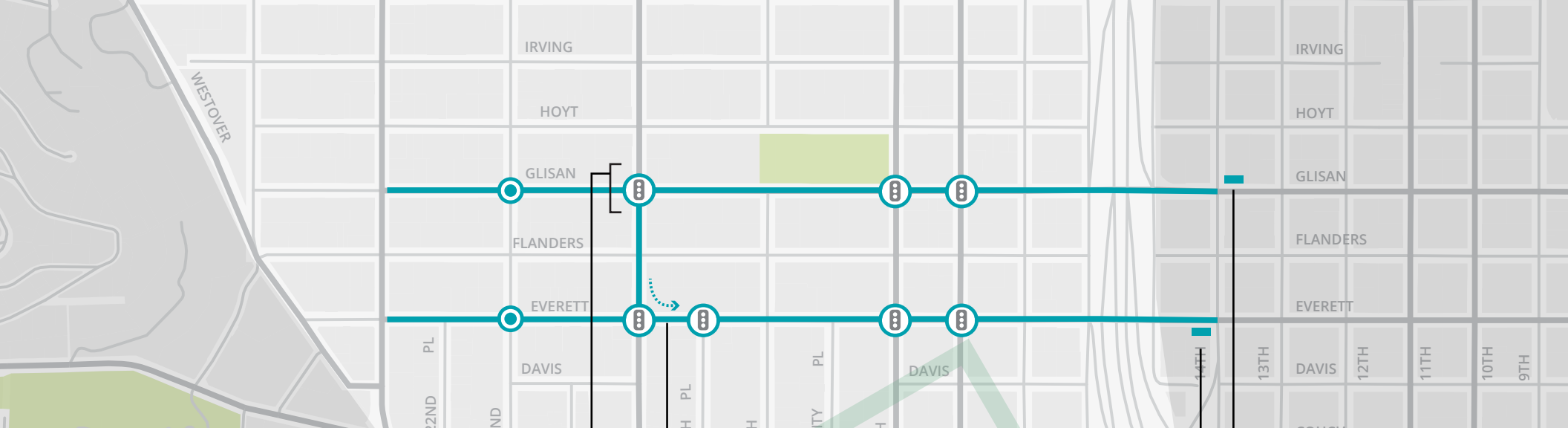
Transit platform minimizes conflicts between bicyclists and transit users.



LONG TERM VISION: PERMANENT ENHANCED BUS ISLANDS

IMAGE SOURCE: NACTO





Curb extensions, bus stop improvements, changes to on-street parking to facilitate better bus turning movements, and accessibility improvements

Signal modification adding protected left turn to improve transit reliability.

Curb extensions with improved bus stops to facilitate boarding and slow right turns.

CI.4

NW Glisan / Everett St

Project Description






Construct enhanced crossings at Everett & 22nd Ave and Glisan & 22nd Ave. Place half-signal to shorten crossing distance and improve pedestrian visibility. Improve safety at existing signals. Improve transit performance and accessibility of bus stops.

Project Goals:

- Address safety concerns by upgrading and establishing new pedestrian crossings on two busy corridors.
- Reduce transit delay & accessibility issues through spot improvements

Key Considerations:

- Parking will have to be removed at curb extensions and near NW 21st and Glisan to facilitate better bus turning movements.

-  Enhanced crossing
-  New and existing striped crosswalks
-  Permitted auto movements at intersection with restrictions
-  New protected left at signal
-  Improvement to signalized intersection (see page x) for details

DESIGN CONCEPT DETAIL:

NW Glisan St at NW 22nd Ave

This concept shows curb extensions that improve safety for pedestrians by shortening the crossing distance, improving visibility, and slowing down traffic. A similar treatment could be applied to other unsignalized crossings of Everett St and Glisan St.

Pedestrian scale lighting at marked crosswalk helps improve visibility.

Curb extensions shorten the distance for people crossing busy streets.



DESIGN CONCEPT DETAIL:

NW 21st Ave at NW Everett St

TriMet data analysis shows a high amount of delay for the Line 77 bus turning left from 21st Ave southbound to Everett St eastbound. Because this is a permissive left turn at a traffic signal, bus drivers must yield to oncoming traffic on 21st Ave and have a difficult time finding a gap to make the turn. This issue could be solved using a “protected-permissive” signal that would provide a protected left turn after a period of time if there are cars or buses still waiting to make the turn. This is an especially good solution where a two-lane street intersects with a one-lane street, since there are no left turns in the opposite direction. Another advantage of this design is that it does not require removal of on-street parking to install turn pockets. This type of signal can be found elsewhere in NW Portland, for example at 23rd & Everett and at 23rd & Raleigh.

LAGGING LEFT TURN SIGNAL



DESIGN CONCEPT DETAIL

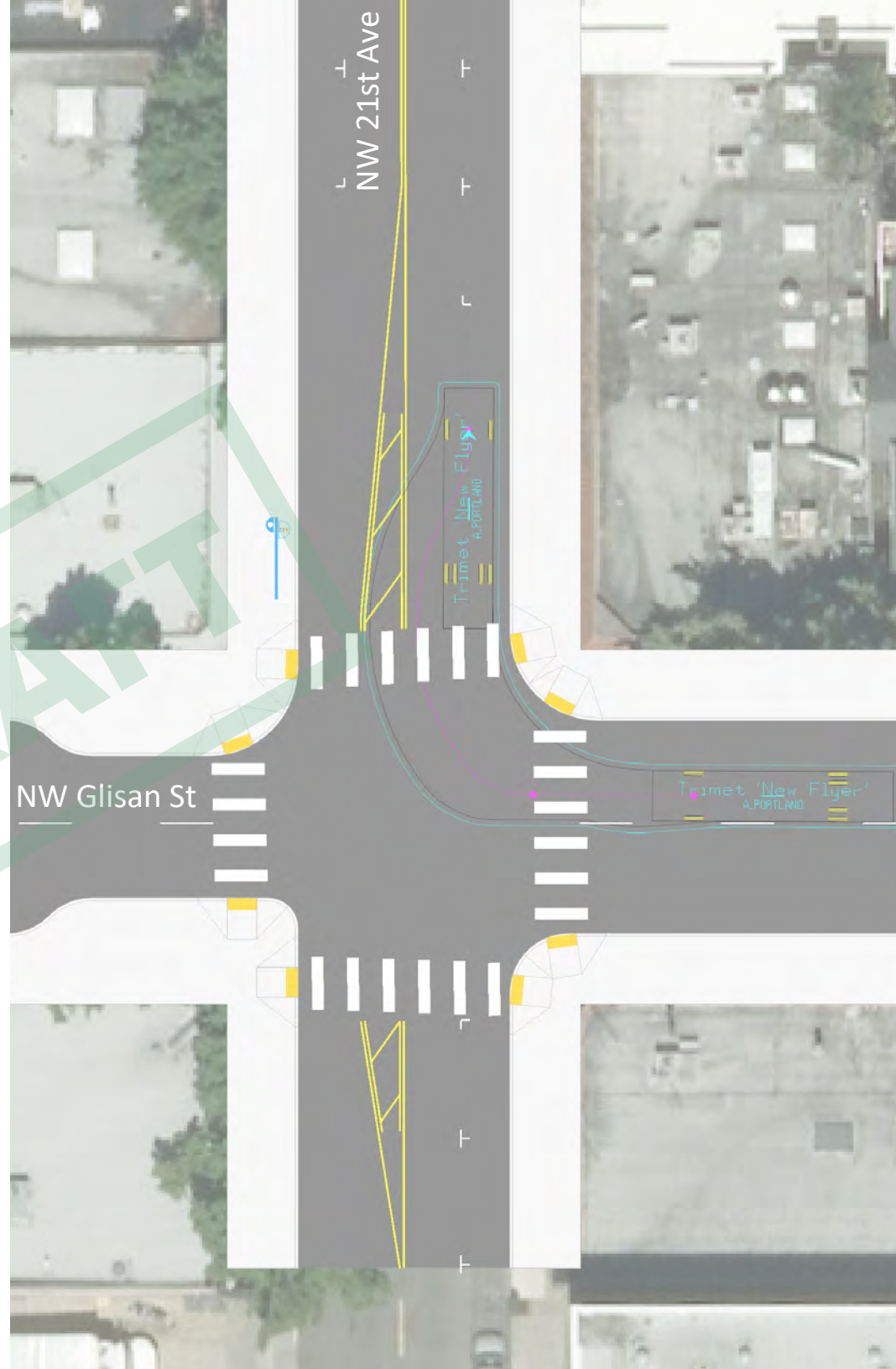
NW Glisan at NW 21st Ave

The intersection of NW 21st Ave & Glisan St is one of most active business nodes in the NW in Motion project area, with all four corners occupied by active ground-floor restaurant uses and high levels of pedestrian activity at all times of day. Other nearby businesses and destinations like Trader Joe's, Metropolitan Learning Center, Couch Park, and Cinema 21 all contribute to pedestrian volumes as well as motor vehicle traffic, on-street parking and loading, and bus ridership.

The Line 77 bus, planned for an upgrade to frequent service in the coming years, is well-used at this location but suffers from a lack of accessibility at the southbound bus stop due to on-street parking. It also has a very difficult turning radius for buses turning right from Glisan to 21st. This can lead to delay and general traffic issues at the intersection because the bus has to swing wide into adjacent and oncoming lanes to make the turn.

Community members have brought up these concerns, and have also called for curb extensions at this intersection to provide more space for people walking as well as amenities such as café seating, benches, lighting, trash cans, and wayfinding.

The NW in Motion Plan proposes curb extensions into Glisan at the west side of the intersection to provide more pedestrian-oriented space and slow down turning traffic where it will have the most benefit, and also proposes re-striping and some on-street parking removal to fully address the bus turning radius issue and provide an accessible bus stop at the northwest corner.



KEY CONSIDERATION

NW Everett St Bike Lanes

Many community stakeholders have expressed concerns about the Everett St bike lane, including concerns about long traffic queues in the peak hour, a perceived lack of use by bicyclists, and overall safety of mixing modes on such a busy street. There is an additional concern that the Everett bike lane will be used even less when the Flanders bridge over I-405 and associated bikeway to downtown is completed. At the same time, many bicyclists have said Everett is an important bike connection that will continue to be useful, and pedestrians find the lane reduction has made it easier to cross the street. PBOT proposes to resolve this question by measuring the bike lane usage before and after the Flanders Bikeway project is completed, and establishing an objective threshold to guide whether or not to keep the bike lane on Everett versus removing it. This process is described in more detail in the graphic to the right. A similar process could be applied to the bike lane on NW Glisan St if deemed necessary.

1 Establish a baseline of comparison, by measuring current traffic conditions

- Vehicle Traffic Volumes
- Transit Ridership & Delay
- Bicycle & E-Scooter Volumes
- Safety & Crash Data

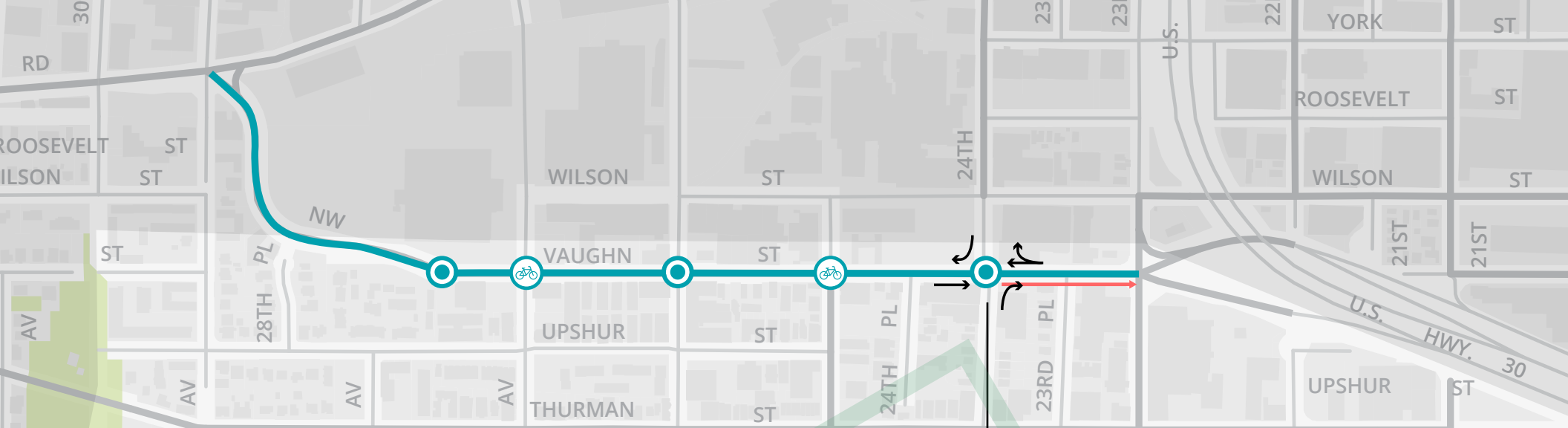
2 Fully implement planned neighborhood greenway on **NW Flanders** & pedestrian crossing improvements on **NW Everett & Glisan St.**

3 Wait for one year to allow traffic behavior to adjust to new conditions.

4 Measure and re-assess traffic conditions for all metrics listed in 'step 1'.

If new traffic measurements indicate major changes in travel behavior or significant increases in delay for any given mode, a new cross-section should be considered.

Engage the public and determine a **new cross section for NW Everett St.** A decision to repurpose space on this busy corridor should be based in **observable data, adopted policy, and reflect the demands placed** on the street by all roadway users.



CI.5

NW Vaughn St

Project Description

Improve existing school crosswalk roughly 200' west of 27th with ADA ramps and a median island. Provide enhanced crossings at 24th and 26th. Improve safety of existing bikeway along Vaughn by providing conflict markings through intersections.

Project Goals:

- Improve safety for people biking along and across NW Vaughn St.
- Improve the safety and comfort of people crossing at minor intersections.
- Reduce transit delay through spot improvements

Key Considerations:

- Restricted movements at NW 24th Ave may require people driving to use the nearest signal instead.

Crossing improvement with traffic pattern changes conditional upon compatibility with recommendations of ongoing Northwest Portland Streetcar Study. (see opposite page for detail)

- Enhanced crossing
- New and existing striped crosswalks
- New signal or signal upgrades
- Permitted auto movements at intersection with restrictions
- Bikeway intersection improvements
- Transit priority lane

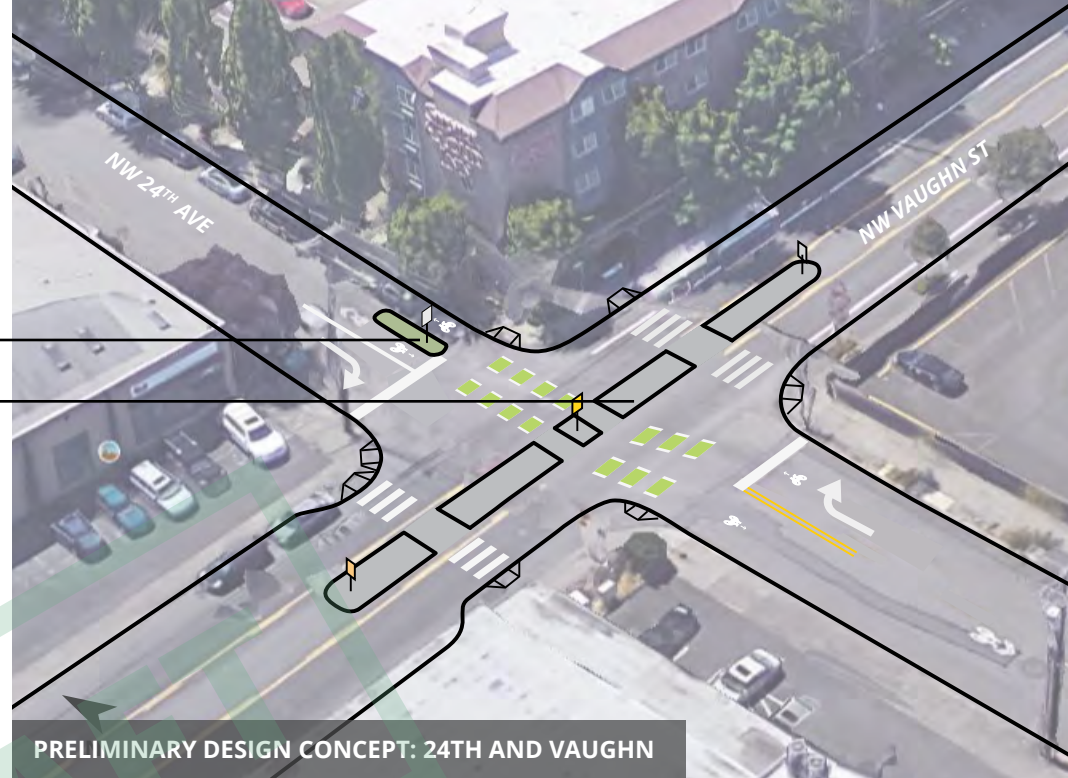
DESIGN CONCEPT DETAIL:

NW Vaughn St at NW 24th Ave

A combination median island and traffic diverter across NW Vaughn St provides a range of benefits for multiple roadway users. For people walking or biking, the median island shortens the crossing distance and allows them to only have to navigate one travel lane at time. For people driving, they are redirected to nearby signalized intersections which provide safer left turn opportunities. The median also acts as a diverter, reducing cut-through traffic on the NW 24th Ave Neighborhood Greenway.

Southbound turning vehicle movements from NW Vaughn St would be prohibited.

Median island makes crossing this busy street safer and more comfortable for people walking.

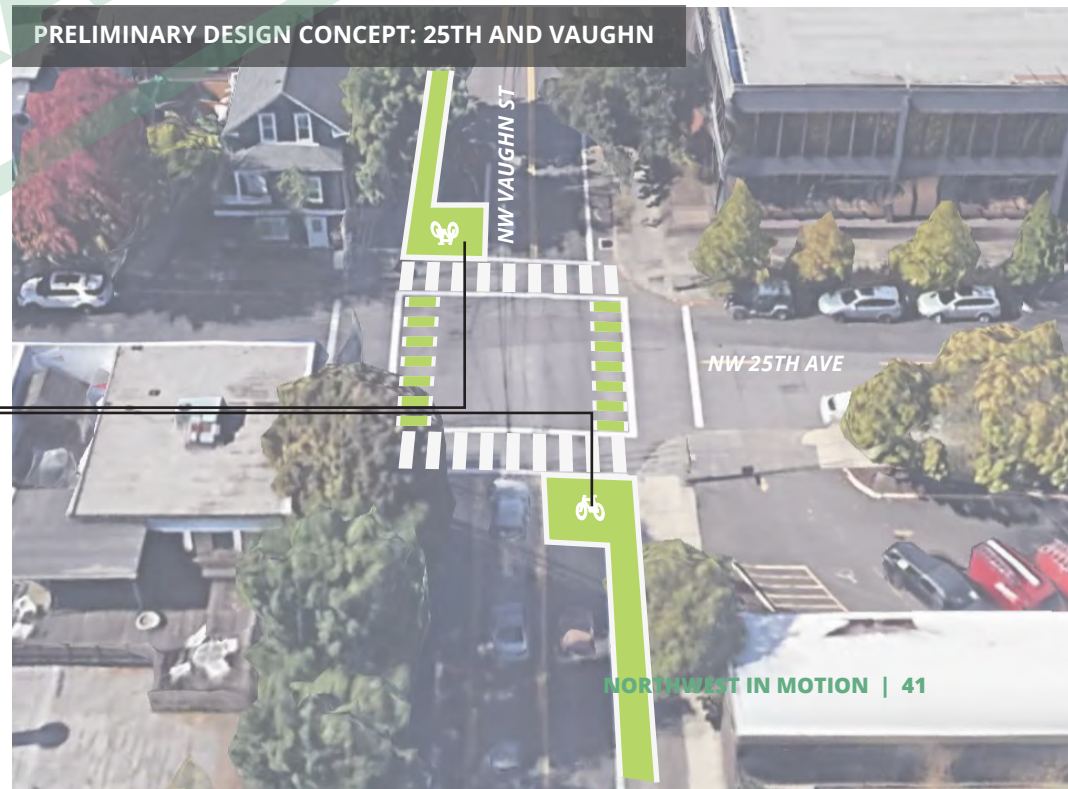


DESIGN CONCEPT DETAIL:

NW Vaughn St at NW 25th Ave

To address a documented safety issue of left-turning vehicles conflicting with oncoming bikes, this concept shows green bike boxes and conflict markings to better warn drivers to watch out for bikes and yield to them when turning. High-visibility crosswalks can also be added to improve pedestrian safety while crossing.

"Bike Boxes" improve visibility and safety for people bicycling.



TIER 2 PROJECTS DETAIL

Neighborhood Greenways

NG.6 | NW Couch St

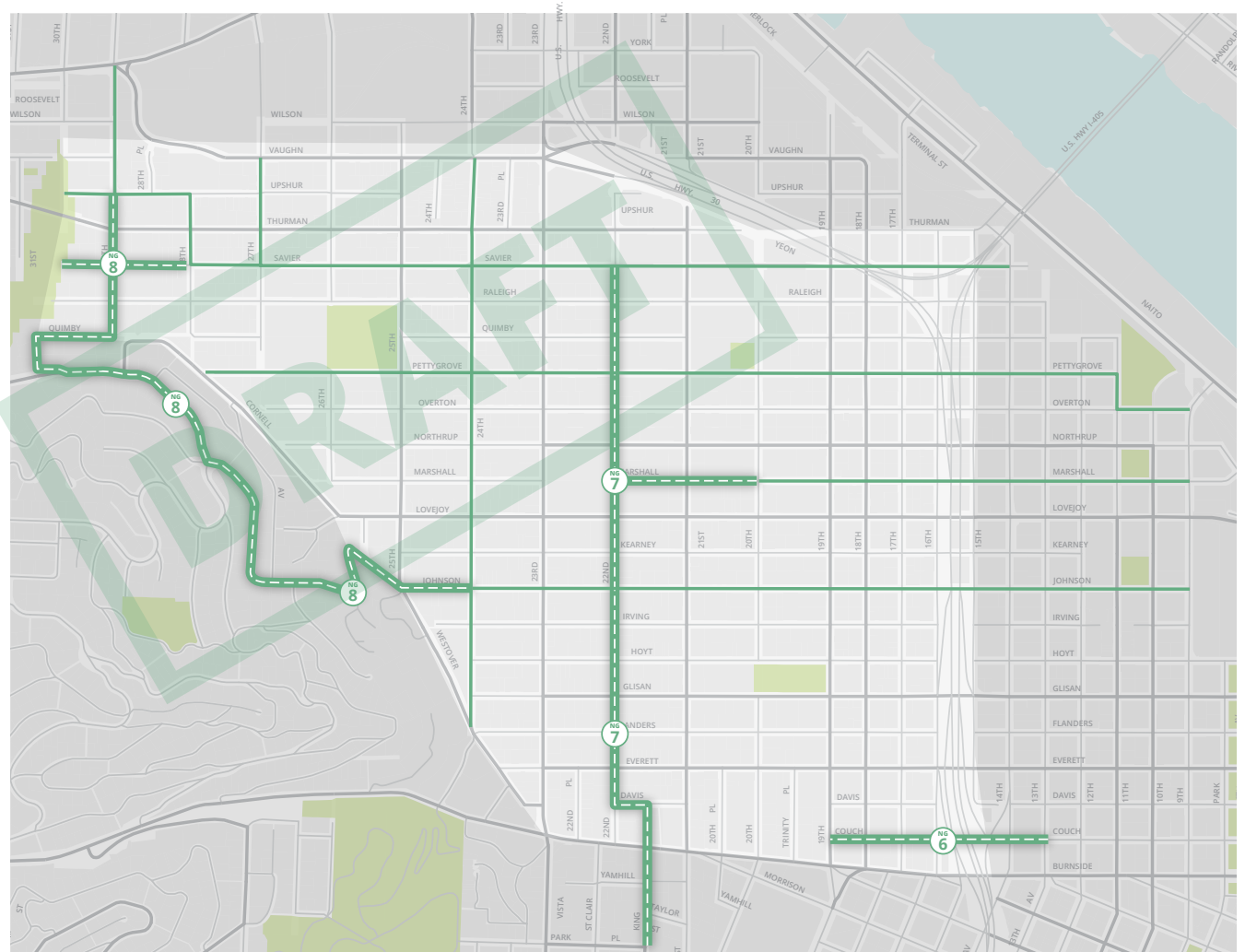
Bikeway connection over I-405 including enhanced crossings and a combination of bike lanes and shared roadway treatments.

NG.7 | NW 22nd Ave & NW Marshall St Extension

Closing a gap in the Neighborhood Greenway network and providing a connection to Legacy Good Samaritan Campus.

NG.8 | NW Westover Rd / Macleay Park Circulation

Speed bumps, shared lane markings and improvements to existing diverters to provide a connection between Hillside and Northwest neighborhoods.



TIER 2 PROJECTS DETAIL

Corridor Improvement Projects

CI.6 | NW Hoyt St

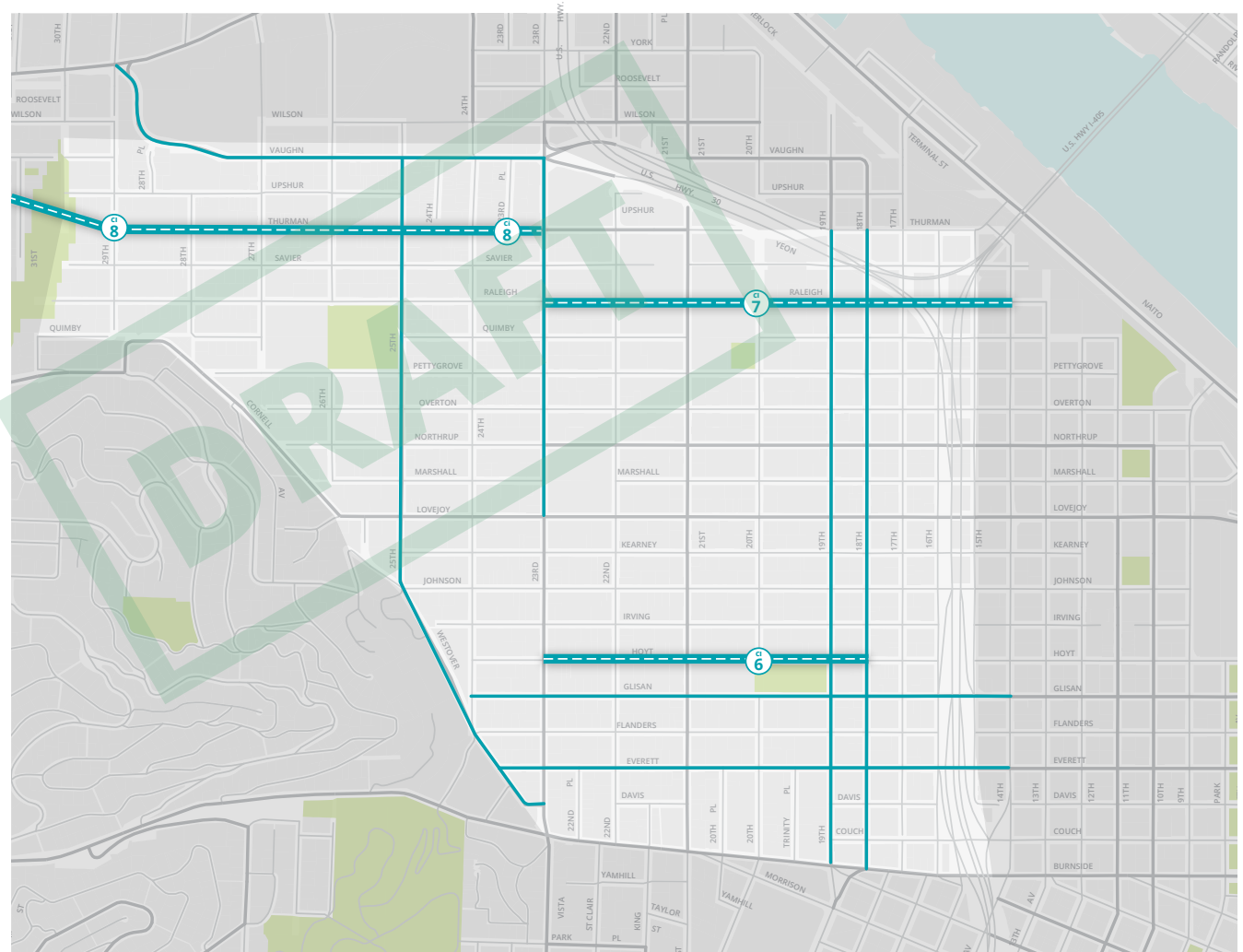
Add marked crosswalks and curb extensions at intersections with major streets.

CI.7 | NW Raleigh St

Improve pedestrian realm by adding curb extensions, adding marked crosswalks, and making improvements to support future transit service.


CI.8 | NW Thurman St

Improve pedestrian safety along main street portion of Thurman by adding curb extensions and marked crosswalks at all-way stops. Consider climbing bike lane from NW 28th Ave across the Thurman Street Bridge.





PROGRAM & POLICY RECOMMENDATIONS



In addition to projects, *Northwest in Motion* includes a series of programmatic and policy-based recommendations, including updates to the Transportation System Plan.

Program Recommendations

Northwest in Motion contains a series of programmatic recommendations that are distinct from individual projects. **These recommendations are intended to be applied throughout the district - both in places where recommended projects exist, but also more broadly and comprehensively.**

Distilled to ten key thematic elements, they are meant to synthesize key themes from our public engagement process, complement projects outlined in the previous chapter, and support the plans overall goals. Some of the ideas contained in this chapter draw on existing or recent planning efforts such as PedPDX, Portland's recently adopted Pedestrian Master Plan.

There are also some new ideas to consider - which draw on case studies from cities throughout North America and Europe. Some of these require collaboration with other transportation agencies such as TriMet while others will be best implemented local businesses, resident advocates, or through private development.

LIST OF PROGRAM RECOMMENDATIONS



Make Improvements to Street Lighting



Improve Visibility at Intersections



Explore Opportunities for Raised Sidewalk Crossings



Main St Improvements



Green Street Improvements



Invest in Transit Amenities



Improve ADA Access



Develop Better Tactical Urbanism Tools



Improve Safety at Signalized Intersections



Lower Speeds Throughout the District



PROGRAM RECOMMENDATION #1

Make Improvements to Street Lighting

During the NW in Motion planning process, community members consistently brought up concerns about inadequate street lighting throughout the district, especially for pedestrians who are not always visible to motor vehicle drivers. Streets and intersections are typically lit by cobra-head lights that mainly illuminate the roadway, rather than the sidewalks and corners where pedestrians are walking and trying to cross the street. The NW District area also features a dense tree canopy, which is generally praised as a great feature of the area but has a downside in terms of darker sidewalk corridors and intersections. These issues combine to make pedestrians more vulnerable to traffic-related crashes in low-light situations.

One way to address these issues is to include pedestrian-scaled lighting where needed as a part of capital projects like enhanced pedestrian crossings. PBOT now has a standard practice to evaluate pedestrian light levels at all new or upgraded enhanced pedestrian crossings (for example, curb extension or median island crossings), and add pedestrian-scale light poles at those locations. This practice has already led to more pedestrian-scale lighting in the NW area, and as NW in Motion projects are built out more will be added over time.

To address lighting concerns in other areas of the district that are not on the project list, the NW in Motion Plan recommends an additional proactive evaluation of lighting levels at existing intersections and crossings, to develop an inventory of lighting needs. PBOT should identify and allocate ongoing funding for infill lighting to address the needs found in the lighting evaluation, prioritizing first the designated main streets, neighborhood greenways, and safe routes to school in the area. The Plan also recommends incorporating needed pedestrian lighting into the required frontage improvements constructed by new developments, where feasible and appropriate, as is currently the practice in the Conway Master Plan area. Finally, the Plan recommends more proactive tree maintenance in the right-of-way to address the concerns of existing lighting being blocked by large trees.

Photo: Street Lighting



RECOMMENDED ACTIONS

- **Develop an inventory of lighting needs and deficiencies throughout the district.**
- **Identify a funding strategy to address a prioritized list of lighting needs.**
- **Incorporate lighting requirements into frontage requirements for new development.**
- **Develop a strategy to proactively maintain trees impacting street lighting levels.**



PROGRAM RECOMMENDATION #2

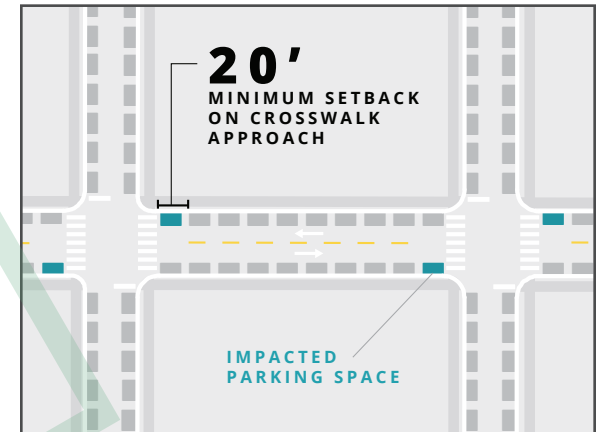
Improve Visibility at Intersections

Throughout the City of Portland, vehicles have historically been allowed to park right up to the edge of the street corner - encroaching on the pedestrian zone and limiting the field of vision for all roadway users. Notably, Oregon state law and the Oregon Driver Manual specifically states that one is prohibited from parking within 20 feet of a marked or unmarked crosswalk or intersection, unless a local jurisdictions dictate otherwise. In the past, the City of Portland has permitted parking right up to an intersection or crosswalk. This regulatory situation is uncommon in most major American cities and creates a stressful and unsafe condition for people walking, biking and driving - especially in denser areas of the city with more pedestrian activity.

During the summer of 2019, Portland City Council unanimously adopted PedPDX, the City of Portland's update to the 1998 Pedestrian Master Plan. In addition to a bold and robust inventory of needs and a prioritized framework for investing in sidewalks and crossings, PedPDX contains the "PedPDX Implementation Toolbox" which outlines a plethora of strategies and actions to improve walking in Portland. Key among these recommendations is to implement new 'vision clearance' guidelines with new PBOT capital projects, development review, and paving projects. As a default strategy for new projects,

this recommended action recommends creating a 20ft parking setback on the approaches of all marked and unmarked crosswalks to improve visibility at intersections. Further, the plan recommends the additional action of identifying key intersections for retroactive vision clearance implemented by programs such as Safe Routes to School, Neighborhood Greenways, Vision Zero and Pedestrian Network Completion Programs.

Northwest in Motion intends to build upon this prior planning work by recommending vision clearance guidelines be applied on: 1) all new and existing Neighborhood Greenways; 2) all Major City Walkways (the district's busiest commercial and transit streets); and 3) on all identified Safe Routes to School routes within Northwest Portland. Furthermore, Northwest in Motion recommends that a formal study be conducted by PBOT in collaboration with the Northwest Parking Stakeholder Advisory Committee to understand the benefits and impacts of district-wide application of vision clearance at all intersections.



PedPDX recommends a 20 ft setback approaching all marked crossings.



RECOMMENDED ACTIONS

- **Implement intersection daylighting on all new NWIM recommended projects.**
- **Identify funding to apply retroactive intersection daylighting on all neighborhood greenways, main streets, and safe routes to school.**
- **Conduct a study to assess the parking impacts of district-wide intersection daylighting.**



PROGRAM RECOMMENDATION #3

Explore Opportunities for Raised Sidewalk Crossings

Throughout the Northwest in Motion Plan process, we have heard a consistent theme that one of the best things about this neighborhood is how walkable it is overall, but we have also heard significant concerns about how the high volumes of both pedestrians and motor vehicle traffic can lead to conflicts along busy pedestrian corridors. At intersections, pedestrians typically have to leave the sidewalk to cross the street, even minor side streets, and people driving have a tendency to turn in front of pedestrians on and off these side streets.

One compelling tool used in many cities to emphasize pedestrian priority along main streets is the “raised sidewalk crossing.” This essentially consists of extending the sidewalk through the intersection along the main street and designing the side street entrance more like a driveway, with pedestrians staying at sidewalk level and cars traveling up and over the sidewalk to access the side street. This provides a clear design cue that cars are “guests” in this space and pedestrians have priority over motor vehicles. It slows down traffic making turns and encourages them to wait for pedestrians to clear before turning. This design also provides much better accessibility for people with disabilities, since it keeps the sidewalk level and does not require curb ramps.

PBOT is currently developing standard designs for side street crossings to ensure they work for various types of vehicles and hopes to begin deploying them where feasible and affordable as part of streetscape projects in the future. Because this treatment can be costly, requiring full reconstruction of a leg of an intersection and changes to stormwater management, the most common application would likely be in conjunction with major capital projects that already include a great deal of civil improvements. Given this, the most promising applications in the NW in Motion area are along NW 23rd Ave in conjunction with the future roadway reconstruction project, and in the Conway Master Plan area as new streets are constructed along with private redevelopment projects.



Continuous raised crossing in Seattle, WA



RECOMMENDED ACTIONS

- **Develop an approved design for a raised sidewalk crossing for consideration in future major paving projects on Portland’s commercial main streets, such as CI.2 - NW 23rd Ave Corridor Improvement project.**

PROGRAM RECOMMENDATION #4

Main Street Improvements

One common theme in both public outreach and staff analysis during the NW in Motion planning process was the need for main street improvements in the project area.

Our analysis found that main street commercial corridors such as NW 21st Ave, NW 23rd Ave, and NW Thurman St are often lacking in adequate pedestrian through zones and frontage zones, to the extent that large volumes of pedestrians can have difficulty navigating along these busy streets. Some of this is due to lack of right-of-way, as older buildings were constructed closer to the roadway. In these cases, the typical approach is to wait for properties to redevelop, at which time more right-of-way will be dedicated, and wider sidewalks will be constructed. However, given the high number of historic properties that are unlikely to redevelop anytime soon, the NW in Motion Plan recommends that PBOT partner with business and neighborhood organizations to identify opportunities to strategically expand the pedestrian realm into the roadway in places where it will make the most positive difference.

This could be done using street seats, where parking spaces are instead used for outdoor seating, through putting planters or trees between parked cars, or by replacing parking spaces with bike corrals. All these tools move certain functions into the curb zone and out of the limited pedestrian corridor where pedestrian movement should be prioritized.

In many cases, even where pedestrian corridors are considered adequate, they don't function as they should because of obstructions like A-boards, outdoor seating, and bus shelters intruding into the pedestrian through zones. To address this, the NW in Motion Plan recommends that PBOT undertake a more proactive effort to enforce A-board placement and outdoor seating permits, ensuring that minimum pedestrian through zones are maintained at all times. The Plan also recommends that TriMet re-evaluate bus shelter placement to address locations where bus shelters are located within the pedestrian through zone and move them to a more appropriate location where feasible.



Street seat with bicycle corral



RECOMMENDED ACTIONS

- **Develop partnerships between PBOT and local businesses to identify opportunities to expand the pedestrian through zone.**
- **Maintain adequate pedestrian through zones through better regulation of outdoor seating, A-boards, and other potential obstructions.**
- **Partner with TriMet to re-evaluate bus stop locations within the pedestrian through zone.**

PROGRAM RECOMMENDATION #5

Green Street Improvements

Another theme that came up during public outreach for NW in Motion was a general desire for more “green street” treatments along certain streets. A typical green street includes wider-than-usual planting strips to accommodate larger-canopy trees or bioswales that bump out into the roadway to manage stormwater. These elements give the street a “greener” feeling but also are more environmentally beneficial uses of the right-of-way.

NW Pettygrove Street is the most common candidate for this treatment, because it was identified as such in the NW District Plan, and has already mostly been implemented as a green street in the Pearl District segment. That portion was constructed as a green street as redevelopment occurred because of the 2012 amendment to the River District Right-of-way Standards document, which offered developers three options for their required frontage improvements, with varying amounts of on-street parking but always including wider planting strips with more space for trees and other vegetation.

To continue this treatment through the NW District, the NW in Motion Plan recommends future development of a similar right-of-way standard for NW Pettygrove Street west of I-405, or potentially for the entire district to incorporate other types of streets. The Plan also recommends coordination with BES to consider bioswale treatments in the NW District as part of capital projects, especially along neighborhood greenways and main streets.



NW Pettygrove Green Street, better picture with people.



RECOMMENDED ACTIONS

- **Develop a future green street right-of-way standard for NW Pettygrove and potentially other streets within Northwest.**
- **Coordinate with BES to consider bioswale or other stormwater treatments when developing capital projects.**

PROGRAM RECOMMENDATION #6

Invest in Transit Amenities

Throughout the Northwest in Motion planning process, PBOT staff received feedback from the public about the need for more and better bus stop amenities such as shelters, benches, and trash cans.

TriMet generally owns and maintains these amenities, though in some cases adjacent businesses or property owners agree to maintain some elements. TriMet has established objective criteria for placement of shelters and other amenities, and PBOT does not have the ability to mandate these amenities. All of this considered, Northwest in Motion recommends that TriMet evaluate the existing amenities in Northwest to see if there are locations that now meet the criteria for amenities to be added and if there are locations where amenities are deficient and could be improved to meet current guidelines. We also encourage TriMet and PBOT to coordinate with private developments and capital projects to incorporate improved transit stops with appropriate amenities into roadway changes whenever possible.

TRIMET GUIDELINES:

- Seating should be considered at locations with 10 or more boardings per day
- Shelters should be considered at locations with 50 or more boardings per day or at locations with significant lift usage
- Trashcans should be considered at locations with 100 or more boardings per day
- Lighting can be placed at locations, as needed to improve visibility
- All transit stops should be ADA compliant and have a safe deboarding area
- All stops should have adequate no parking zones to allow the bus to pull over to the curb



RECOMMENDED ACTIONS

- **Conduct an inventory of current station amenities at bus stations throughout Northwest.**
- **PBOT should work collaboratively with TriMet and private developers to maximize the opportunity for improved transit stops whenever capital projects are implemented in the district.**

PROGRAM RECOMMENDATION #7

Improve ADA Access

Throughout the NW in Motion process, community members have brought up concerns related to the accessibility of the transportation system for people with disabilities. The most common issues raised were the lack of ADA ramps at pedestrian crosswalks and the poor condition of the sidewalk in many areas.

The issue of corners missing ADA-standard ramps is being addressed in several ways. First, PBOT has an ongoing ADA program that proactively builds ADA curb ramps every year. Second, PBOT upgrades all corner ramps any time a street is being paved or otherwise upgraded. Third, PBOT has a “curb ramps by request” program in which community members can request specific routes to be upgraded. Finally, many capital improvement projects such as enhanced pedestrian crossings must include ADA curb ramp upgrades. Through these various programs and efforts, PBOT has committed to building at least 1500 curb ramps per year. The NW in Motion Plan does not recommend any changes to these programs, but it does include capital projects in the plan area that will include ADA upgrades.

The issue of sidewalks in poor enough condition to pose accessibility concerns is especially acute in areas of the NW District with mature trees whose roots lift the sidewalks on a regular basis. The typical practice is to wait for complaints, then send property owners notice that they must pay for sidewalk repair since they are responsible for maintenance of the sidewalk corridor. However, this practice sometimes leads to long delays in repairs being performed, because complaints may take some time to be sent to the City and property owners may not make the repairs right away. There are also equity concerns because some property owners may have a hard time paying for such repairs. The NW in Motion Plan recommends funding a small, ongoing program for proactive sidewalk repair, targeting locations where there have been persistent delays or where property owners have difficulty paying for the repairs.



RECOMMENDED ACTIONS

- **Develop a small, on-going program for sidewalk maintenance and repair.**
- **Continue seeking ADA improvements with new projects and through the ‘curb-ramps-by-request’ program.**

PROGRAM RECOMMENDATION #8

Develop Better Tactical Urbanism Tools

What is Tactical Urbanism?

Street Murals. Parklets & Street Seats. Painted Curb Extensions. Temporary Pedestrian Plazas. All of these are local examples of Tactical Urbanism at work within the City of Portland. In short, Tactical Urbanism can be defined as “an approach to neighborhood building and activation using short-term, low-cost, and scalable interventions and policies.” In many ways, a city’s streets are its most valuable public spaces as they are a place where neighbors interact, socialize, connect and build new bonds with one another. Tactical Urbanism is a strategy to strengthen these bonds and allow for new possibilities for place-making and social activity within the right-of-way.

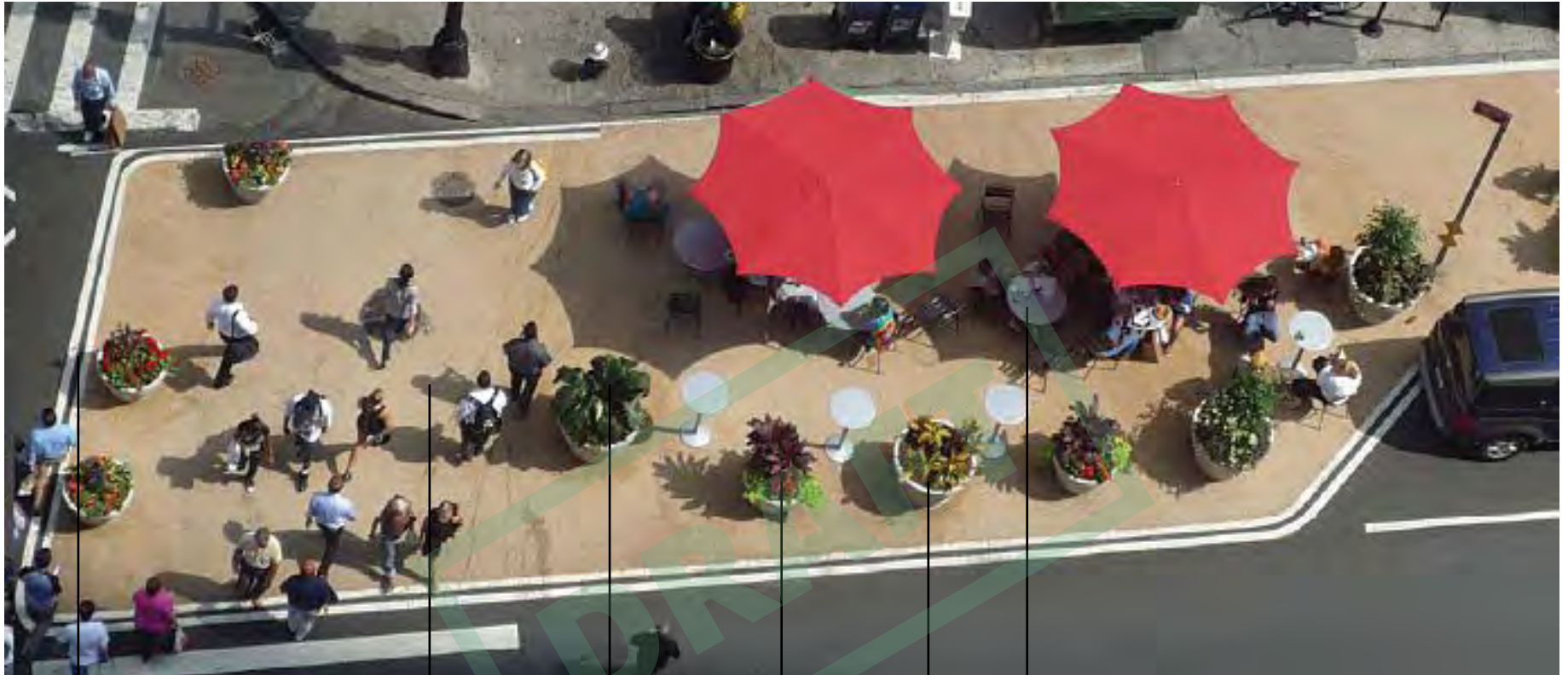
Within Northwest in Motion there are multiple projects that contain elements of placemaking and support the social life of the street. While this plan is limited by a short-term implementation window, there are a number of opportunities to invest in and create opportunities for great places to come to fruition later down the road. A core tenet of Tactical Urbanism centers on an iterative process of refinement and improvement. To get things started in the right direction, PBOT would like to leverage this opportunity to expand the current set of practices to quickly implement better placemaking projects with better tools at hand.

A scan of best practices reveal that most of the required elements of Tactical Urbanism are relatively inexpensive, simple, and common. Under the leadership of Commission Janet Sadik-Kahn, the New York City Department of Transportation undertook a number of transformational projects which fully reimaged auto-oriented spaces throughout New York City and created a series of adored pedestrian plazas and public spaces of all sizes. These big projects often started small. With the delineation of space with striping and posts, application of epoxy gravel or paint in the roadway, and a few movable planters and tables, Sadik-Kahn’s DOT could easily establish interim plazas which would create the opportunity for community-led refinement, programming, and implementation of more permanent investments.

PBOT’s Portland in the Streets program already possesses a range of program areas supportive of these goals. Northwest in Motion recommends that PBOT adopt new tools such as the use of epoxy gravel, planters, and moveable street furniture to support better implementation of interim public spaces and active transportation investments.



The evolution a plaza from interim design (above) to permanent investment (below) at Fowler Square in Brooklyn, NY.



Clearly delineated edgeline marking with traditional striping. These marking can be further reinforced with posts in higher conflict areas.

Sand-colored epoxy gravel helps create an attractive, durable and people-friendly surface.

Decorative planters help reinforce the edge of the pedestrian realm while improving the beauty and general aesthetics of the interim plaza.

Moveable street furniture and protection from the elements help activate this space and encourage people to use it.



RECOMMENDED ACTION

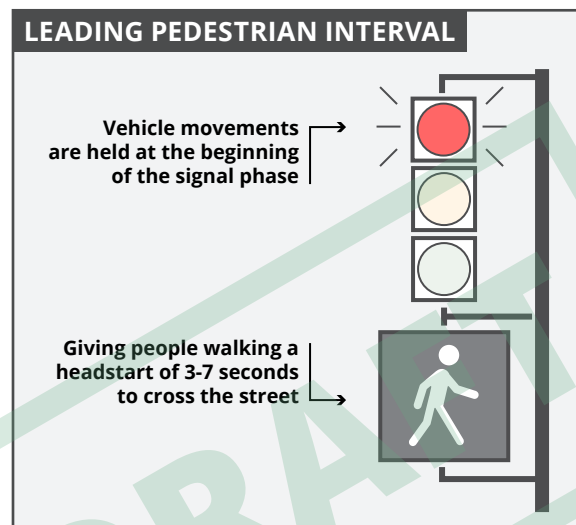
- **Expand the set of approved tools available for interim plazas and treatments in the right-of-way to include the use of epoxy gravel, street planters, and moveable street furniture.**

PROGRAM RECOMMENDATION #9

Make Safety Improvements at Signalized Intersections

Leading Pedestrian Interval

Conflicts between motor vehicles and pedestrians at signalized intersections have been a growing concern in the NW in Motion project area. The biggest issues are found where motor vehicle traffic is allowed to turn right or left concurrently with the pedestrian walk phase, which is the case at most traffic signals in the area. Drivers often turn as soon as the signal turns green, and do not always see pedestrians trying to cross at the same time. One effective tool in addressing this conflict is to provide a “leading pedestrian interval”, starting the walk phase 3 to 10 seconds before the signal turns green for motor vehicle traffic. This gives pedestrians a head start and they will often clear the intersection before traffic starts turning. PBOT is moving towards making these leading pedestrian intervals the normal practice at all signals citywide, but it will take time and funding to readjust the signals. The NW in Motion Plan recommends starting with Pedestrian Districts, including the ones in the NW in Motion area, to ensure this change is benefitting the areas with the most pedestrians.



Protected Turn Phasing

Another way to address conflicts between turning vehicles and pedestrians is to provide protected turn phasing. The PedPDX plan established new guidelines and practices for protected turn phasing, making it more of a typical practice at new or upgraded traffic signals on major roadways. In many cases, older traffic signals are unable to provide protected turn phasing, so this is more of a long-term series of improvements that will occur over time as aging signals are replaced. However, the NW in Motion Plan recommends that PBOT look for opportunities to retrofit existing signals where feasible to provide greater separation of phases to reduce conflicts.

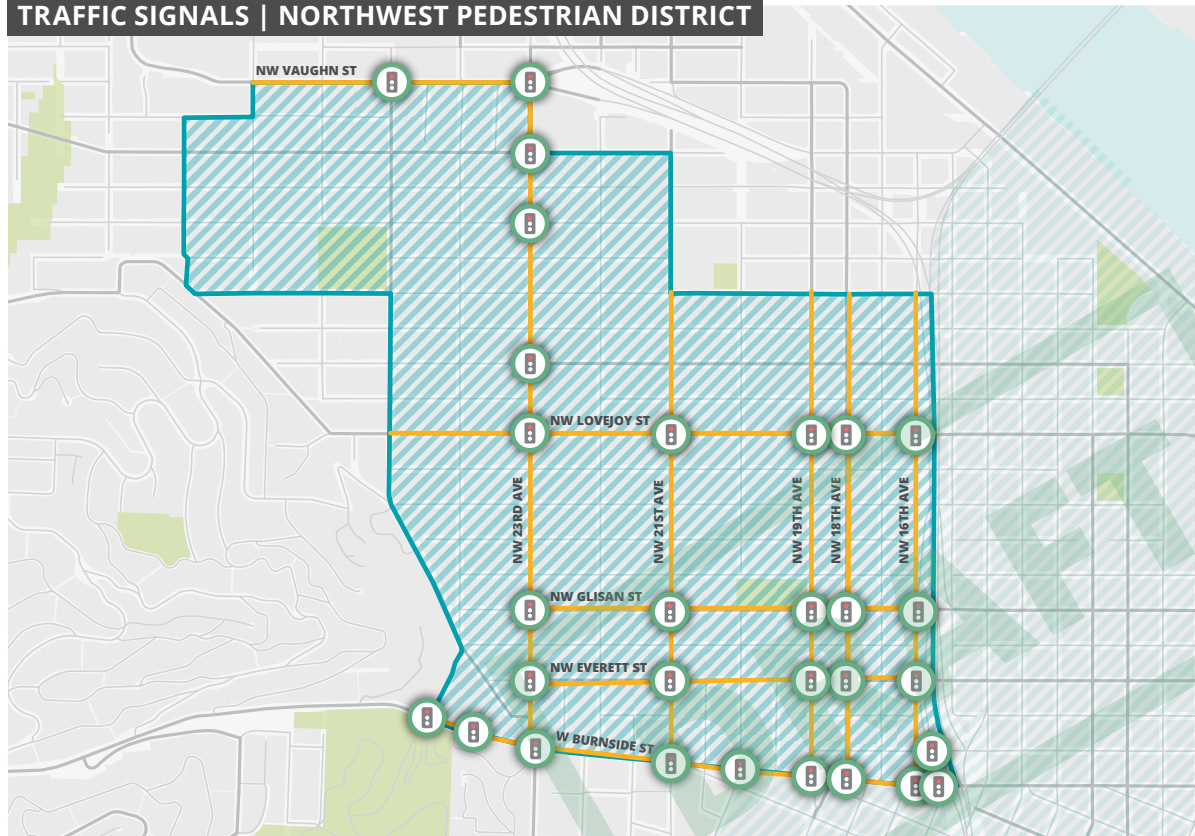


“Left-Turn” calming installed as part of a pilot project in Southeast Portland.

Turning Movement Traffic Calming

PBOT has recently begun piloting a series of low-cost intersection treatments designed to slow down traffic as they turn left or right at signalized intersections. These usually take the form of modular speed bumps or traffic separators that encourage slow turns and a narrower turning radius, which reduces the risk of a fatal or serious injury crash. Some of these have been installed along West Burnside within the NW in Motion project area. The initial results have been encouraging enough that PBOT plans to deploy these solutions in more locations and will continue to monitor their effectiveness in improving safety. The NW in Motion Plan recommends that these treatments be installed at signals in the NW in Motion area that show pedestrian crash history or risk factors.

TRAFFIC SIGNALS | NORTHWEST PEDESTRIAN DISTRICT



No Turn On Red

PBOT has received feedback from the public through multiple planning processes, including the Transportation System Plan (TSP), Vision Zero Action Plan, PedPDX (Pedestrian Master Plan update), and Northwest in Motion, that motor vehicle “right turns on red” have become a growing problem for pedestrian comfort and safety throughout the City and especially in high-volume pedestrian areas.

Additionally, research has shown that restricting right turns on red has a demonstrated crash reduction factor for all modes, but especially for vehicle/bicycle and vehicle/pedestrian crashes. Given these factors, we recommend a “no turn on red” pilot program in the NW Pedestrian District, which encompasses most of the NW in Motion project area, to test out the benefits and impacts of this operational change before making a decision on whether or not to continue the restriction and whether or not to expand to other areas.



RECOMMENDED ACTIONS

- **Develop and implement a ‘No-Turn-On-Red’ pilot program in the Northwest Pedestrian District.**
- **Seek opportunities for signal improvement and modifications to eliminate permissive left turns.**
- **Retrofit all existing signalized intersections within the Northwest Pedestrian District to have a leading pedestrian interval.**
- **Implement ‘left-turn-calming’ at intersections with safety concerns or a history of crashes.**

PROGRAM RECOMMENDATION #10

Lower Speeds Throughout the District

At the beginning of 2018, Portland City Council approved a local ordinance lowering the speed limit on all residential streets within the City of Portland to 20 miles per hour. This action was in support of the City's commitment to Vision Zero, an international movement of cities dedicated to eliminating all transportation related deaths and serious injuries. Speed is one of the most important factors determining the severity of a crash. As people in vehicles travel fast, the risk of death or serious injury rises dramatically. A person walking who is struck by a vehicle at 20mph an hour faces a 10% likelihood of death or serious injury. When speeds increase to 30mph, this likelihood increases to 40%. At 40mph, it doubles to 80%. Lower speeds are a crucial strategy in improving safety of all roadway users - especially those who are most vulnerable.

In the Northwest in Motion study area, only a handful of streets have their speed limit set above 20mphs. These include: NW Vaughn St, NW Lovejoy St, NW Glisan St, NW Everett St, W Burnside St, NW 19th Ave, NW 18th Ave, NW 16th Ave, and sections of NW Thurman St, NW Cornell Rd, and NW Westover Rd. Northwest in Motion recommends that, with the exception of W Burnside St and NW Vaughn St, all of these streets have their speed limit lowered to 20mph. Doing so would create a large continuous 20mph urban district in Northwest Portland, supportive of the areas dense pedestrian oriented development and busy social streetlife.

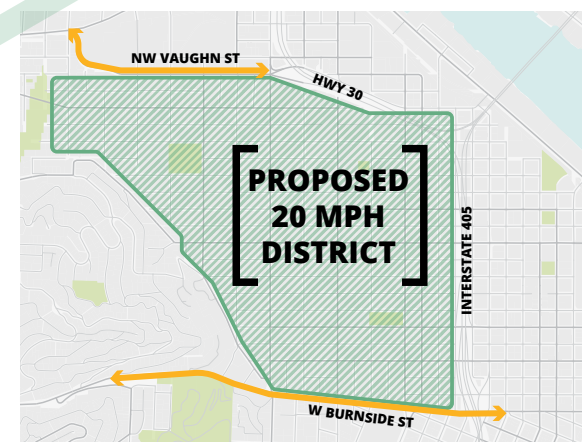
As a complementary future strategy, Northwest in Motion recommends that PBOT consider ways to further strengthen the district's identity as places with slow speeds and strong pedestrian and social activity.

One way of achieving this is through the adaptation of a "Home Zone" program to Northwest based on successful case studies of this applied strategy in the UK, Germany, and New York City. While implementation varies from city to city, a shared characteristic of Home Zones are intensely traffic calmed streets where the street is shared amongst all users. They are places where people walking, playing and engaging in social activity are prioritized above the speed and circulation of private vehicles.

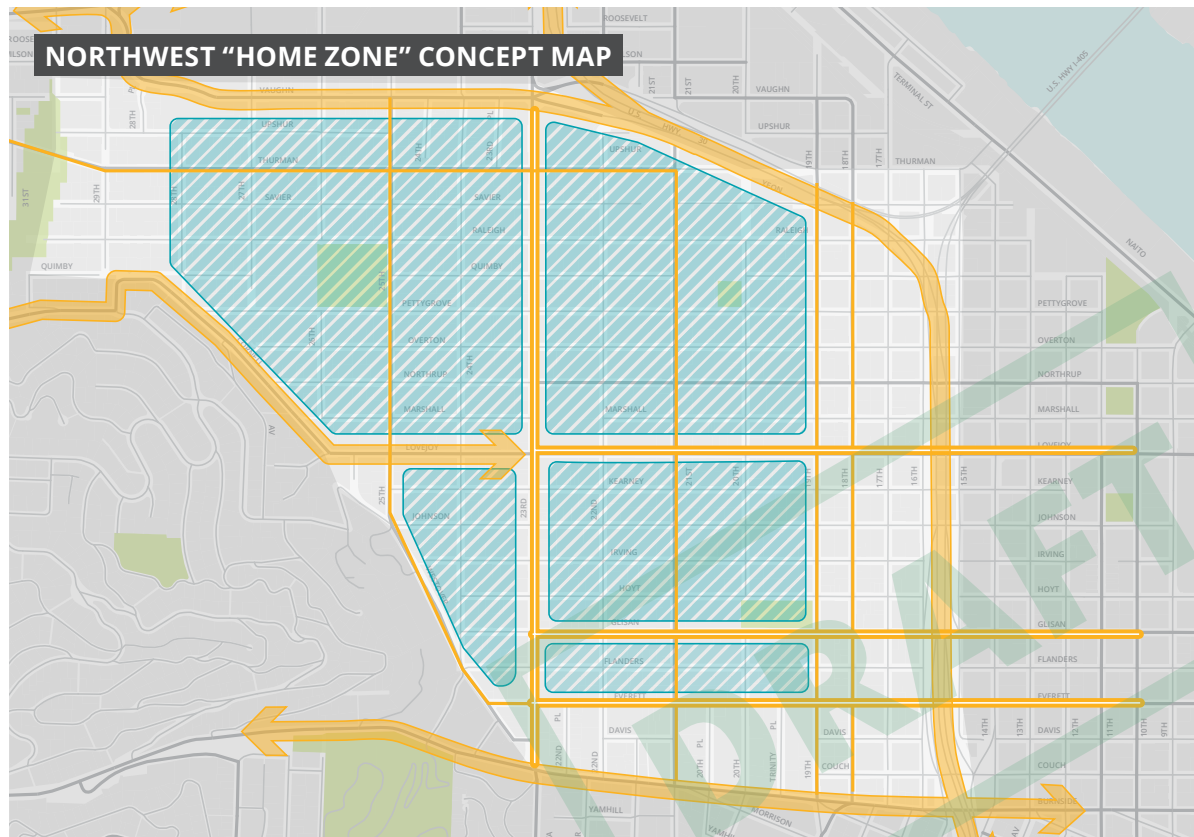
Custom signage and distinct sub-district home zone boundaries are initial steps the bureau can take for future refinement and exploration of this concept. Additional tools, such as further speed reductions, seasonal play and social infrastructure, or reallocation of street space can be useful tools for future consideration (see opposite page for more detail).



In 2018, the City of Portland lowered the speed limit to 20mph on all local streets.



Full extent of proposed district wide application of 20mph speed limit in Northwest Portland



Concept Level "Home Zones"

Home Zones are contiguous areas of traffic calmed neighborhood streets. The urban design of these streets are human scaled and designed for walking and biking speeds. Under this design standard, cars operate as guests in a shared roadway environment. Additional elements to support the social life of the street can include public benches and areas for play and recreation. These areas are scaled at roughly half-mile by half-mile areas and bounded by designated boundary streets. Signage and other elements are recommended at 'portals' into the 'home zone' area at boundary and access streets. In these environments, a further speed limit reduction to 15mph may be appropriate for future consideration.



District Edges

Busy regional traffic streets define the edge of the Northwest district.



Boundary Streets

Boundary streets are the main portals for vehicles traveling through and into the neighborhood.



Access Streets

Low-speed streets that are able to accommodate high vehicle volumes at low speeds.



Custom signage, such as the concept mock-up above, should be placed at the edges of the home zone, to inform people of the slow, shared characteristics of the street.



RECOMMENDED ACTIONS

- **Continue to lower speed limits in Northwest to create a continuous 20mph district in the area bounded by between I-405, NW Vaughn St, W Burnside St, and NW Cornell St.**
- **Explore the feasibility of implementing a 'home zone' traffic calmed neighborhood in Northwest Portland.**



Recommended Bicycle Classifications Updates

The NW in Motion Plan process included an analysis of bicycle classifications to see if updates were needed to support the plan's goals and recommended projects. This analysis primarily looked at the spacing of current and future bicycle priority streets (City Bikeways and Major City Bikeways), aiming for the Bicycle Plan for 2030 recommendation of a bikeway roughly every 800 feet. The analysis found that planned east-west bikeways are too closely-spaced, with so many parallel routes that they fail to give clear guidance on which streets should be prioritized for bikes. It found that north-south bikeways were well-spaced and did not require any changes. The project team also found that some classifications need to be adjusted based on the recommended project alignments.

To address these issues, the NW in Motion Plan recommends changes to bicycle classifications as displayed on the map on the opposite page. A full detailed list of recommended changes is included at the end of this chapter on page 66.

TSP | BICYCLE CLASSIFICATIONS HIERARCHY

**MAJOR CITY
BIKEWAY**

**CITY
BIKEWAY**

**LOCAL SERVICE
BIKEWAY**

BIKE CLASSIFICATION

- Major City Bikeway
- City Bikeway
- Local Service Bikeway
- Proposed change from Local Service to City Bikeway
- Proposed change from City Bikeway to Local Service



Recommended Transit Classifications Updates

The NW in Motion Plan process included an analysis of transit classifications to see if updates were needed to support the plan's goals and recommended projects. The analysis primarily focused on whether the classifications were consistent with TriMet's planned transit network and service levels, to ensure that PBOT appropriately prioritizes and designs streets for transit over time. The primary findings were that the Line 77 route should be changed to a higher classification to reflect the planned upgrade to Frequent Service levels in the coming years, and that the future Line 10 extension route in the north end of the Pearl needs to be adjusted to reflect the most up-to-date street plans for the area.

To address these issues, the NW in Motion Plan recommends changes to transit classifications as displayed on the map on the opposite page. A full detailed list of recommended changes is included at the end of this chapter on page 67.







TSP | TRANSIT
CLASSIFICATIONS HIERARCHY

**MAJOR TRANSIT
PRIORITY STREET**

**TRANSIT
ACCESS STREET**

**LOCAL SERVICE
TRANSIT STREET**

TRANSIT CLASSIFICATION

-  Major Transit Priority Street
-  Transit Access Street
-  Local Service
-  Proposed change to Major Transit Priority Street
-  Proposed change to Transit Access Street
-  Proposed change from Transit Access Street to Local Service



Recommended Traffic Classifications Updates

The NW in Motion Plan process included an analysis of traffic classifications to see if updates were needed to support the plan's goals and recommended projects. The analysis primarily focused on whether there was a sufficient number of neighborhood collector streets and spacing between them to address traffic distribution needs given that this plan recommends traffic diversion along neighborhood greenways throughout the area. The analysis found that two one-way couplets (Everett/Glisan and 18th/19th) in the plan area are clearly already functioning as collector streets and meet the typical criteria to be classified as collectors. By changing these streets to Neighborhood Collector we can offer clear guidance on modal priorities, and give traffic a clear alternative to using neighborhood greenways. The analysis also found that 25th and Westover, while currently functioning as collector streets, could feasibly be classified as Local Service in the TSP to reflect neighborhood desires for a long-term reduction in through traffic, because 23rd Ave provides a close alternative, and because these streets do not fully meet the criteria for collector streets in terms of length, design, and connectivity.

To address these issues, the NW in Motion Plan recommends changes to traffic classifications as displayed on the map on the opposite page. A full detailed list of recommended changes is included at the end of this chapter on page 77.

TSP | TRAFFIC CLASSIFICATIONS HIERARCHY



**MAJOR CITY
TRAFFIC STREET**

**NEIGHBORHOOD
COLLECTOR**

TRAFFIC ACCESS
(CENTRAL CITY ONLY)

LOCAL SERVICE

Further refinement of classifications in this area depend on findings from Montgomery Park to Hollywood Streetcar Study

TRAFFIC CLASSIFICATION

- Major City Traffic Street
- Neighborhood Collector
- Traffic Access
- Local Service
- Change from Local Service to Neighborhood Collector
- Change from Neighborhood Collector to Local Service

RECOMMENDED BICYCLE CLASSIFICATIONS UPDATES

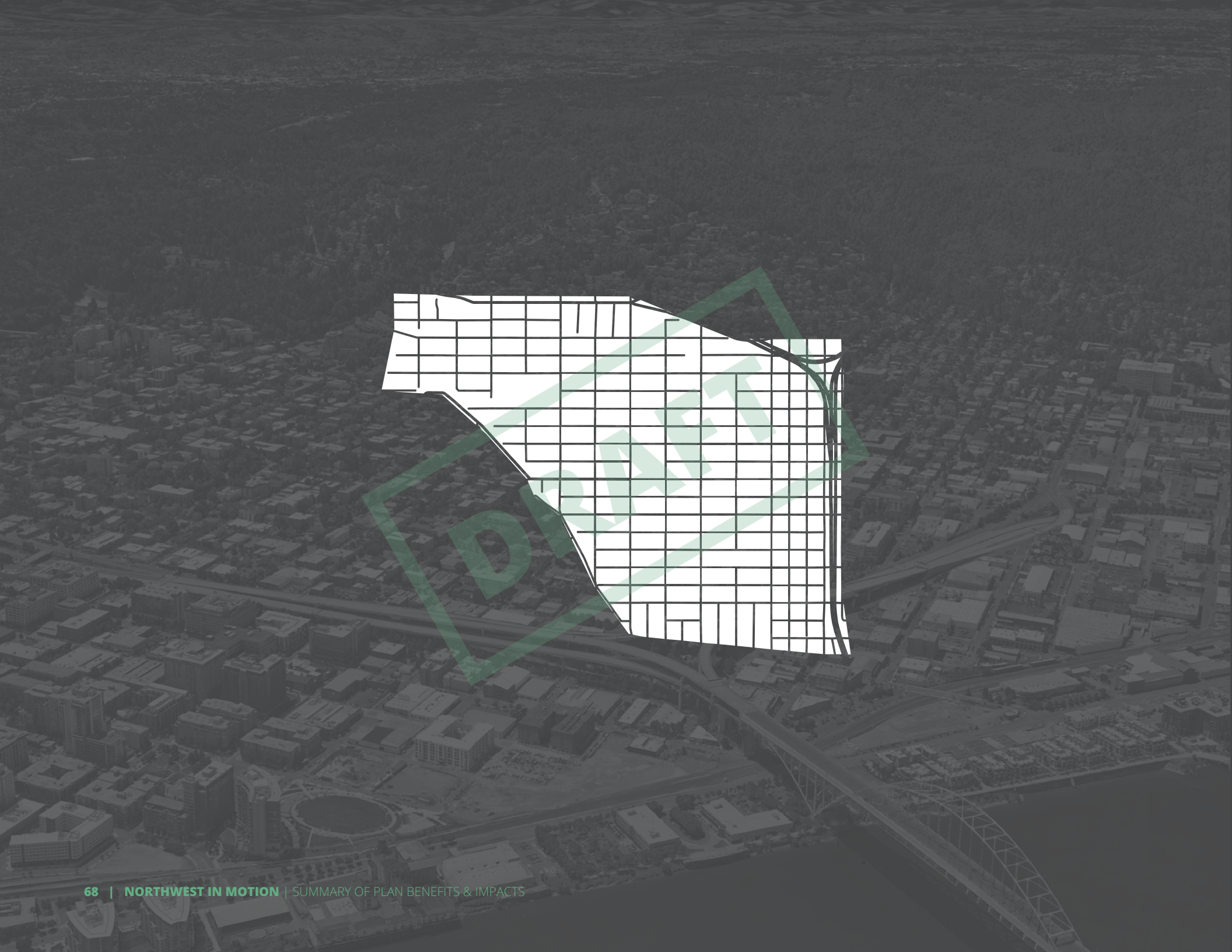
STREET NAME(S)	CURRENT CLASSIFICATION	UPDATED CLASSIFICATION	RATIONALE FOR CHANGE
NW 22nd Ave (Everett - Davis) NW Davis St (22nd - King) NW/SW King Ave (Davis - Park)	Local Service Bikeway	City Bikeway	Provides extension of planned 22nd Ave Neighborhood Greenway across W Burnside St to King's Hill area.
NW Davis St (13th - 14th)	Local Service Bikeway	City Bikeway	Provides a connection for northbound bicyclists on 14th to the planned Davis Neighborhood Greenway in the Central City.
"NW Johnson St (24th - 25th) NW Westover Rd (25th - Cornell)"	Local Service Bikeway	City Bikeway	Provides a low-stress parallel route to NW Cornell Rd and is needed to support the recommended Westover Neighborhood Greenway in the Hillside neighborhood.
"NW 28th Ave (Savier - Upshur) NW 27th Ave (Upshur - Vaughn)"	Local Service Bikeway	City Bikeway	Needed to support the recommended connections from the Savier Neighborhood Greenway to employment areas north of Vaughn and Nicolai.
"NW 29th Ave (Savier - Upshur) NW Upshur St (27th - 28th) NW 27th Ave (Raleigh - Savier)"	City Bikeway	Local Service Bikeway	Adjustments based on recommended connections from the Savier Neighborhood Greenway to employment areas north of Vaughn and Nicolai.
NW Lovejoy St (23rd - 24th)	City Bikeway	Local Service Bikeway	Low feasibility due to streetcar tracks at 23rd & Lovejoy, and lacks connectivity to surrounding bike network.
NW Westover Rd (23rd Ave - 23rd Place)	City Bikeway	Local Service Bikeway	Recommended closure of Westover Rd at 23rd Ave will make this a pedestrian priority zone rather than a main bike or traffic route.
NW Overton St (11th - Cornell)	City Bikeway	Local Service Bikeway	Reflects recommended replacement of existing Overton neighborhood greenway with a new Pettygrove neighborhood greenway. Connection on Overton from 11th to 9th is still maintained.
NW Raleigh St (13th - 29th)	City Bikeway	Local Service Bikeway	Reflects recommended replacement of existing Raleigh neighborhood greenway with a new Savier neighborhood greenway.
"NW Thurman St (20th - 28th) NW 22nd Ave (Savier - Thurman)"	City Bikeway	Local Service Bikeway	Reflects recommended Savier neighborhood providing parallel route to Thurman, and prioritizes curb access needs along main street portion of Thurman.

RECOMMENDED TRANSIT CLASSIFICATIONS UPDATES

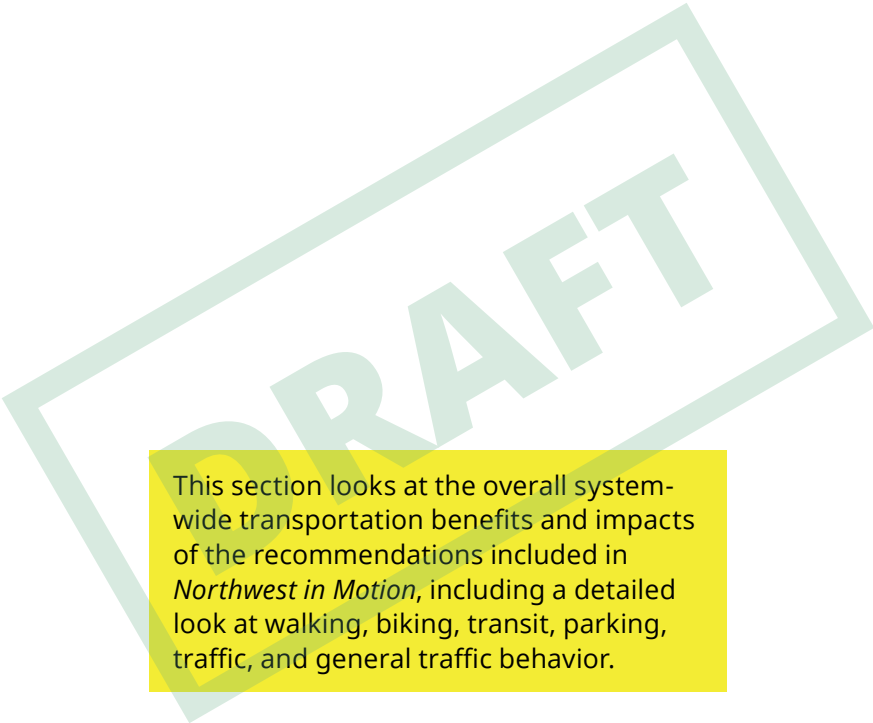
STREET NAME(S)	CURRENT CLASSIFICATION	UPDATED CLASSIFICATION	RATIONALE FOR CHANGE
"NW Thurman St (21st - 23rd) NW 21st Ave (Thurman - Everett) NW Everett St (6th - 21st) NW Glisan St (6th - 21st)"	Transit Access Street	Major Transit Priority Street	Reflects planned upgrade of Line 77 to Frequent Service levels in the coming years.
"NW Overton St (14th - 16th) NW 16th Ave (Raleigh - Overton)"	Local Service Transit Street	Transit Access Street	Serves recommended alignment for Line 10 extension due to recent changes in the street plan for the North Pearl.
"NW Raleigh St (12th - 14th) NW 12th Ave (Raleigh - Northrup) NW 9th Ave (Lovejoy - Northrup)"	Transit Access Street	Local Service Transit Street	Serves recommended alignment for Line 10 extension due to recent changes in the street plan for the North Pearl.
Hwy 30 Frontage Road (22nd - 20th)	Transit Access Street	Local Service Transit Street	Reflects recently constructed roadway realignment that closed frontage road.

RECOMMENDED TRAFFIC CLASSIFICATIONS UPDATES

STREET NAME(S)	CURRENT CLASSIFICATION	UPDATED CLASSIFICATION	RATIONALE FOR CHANGE
"NW 18th Ave (Burnside - Thurman) NW 19th Ave (Burnside - Thurman)"	Local Service Traffic Street	Neighborhood Collector	One-way couplet currently functions as a neighborhood collector and provides traffic an alternative to neighborhood greenways. Provides adequate spacing between collector streets.
"NW Glisan St (16th - 23rd) NW Everett St (16th - 23rd)"	Local Service Traffic Street	Neighborhood Collector	One-way couplet currently functions as a neighborhood collector and provides traffic an alternative to neighborhood greenways. Provides adequate spacing between collector streets.
NW 16th Ave (Burnside - Couch)	Local Service Traffic Street	Neighborhood Collector	Reflects upcoming roadway realignment that will keep traffic on 16th to Burnside rather than cutting over to 15th.
"NW 25th Ave (Lovejoy - Johnson) NW Westover Rd (Johnson - 23rd)"	Neighborhood Collector	Local Service Traffic Street	Functions as a collector currently but is largely redundant to 23rd Ave, is relatively short, and has limited connectivity to the north or south. Has long-term potential to transition to more of a local function.



PLAN BENEFITS & IMPACTS



This section looks at the overall system-wide transportation benefits and impacts of the recommendations included in *Northwest in Motion*, including a detailed look at walking, biking, transit, parking, traffic, and general traffic behavior.

Summary of benefits and impacts

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ICON

Pedestrian

7 crossing gaps filled

54 new curb ramps

ICON

Bicycle

5 new NGs

Twice as many households with access to low stress bikeways

ICON

Transit

3 Transit lines improved

6 minutes saved per bus trip

4 new enhanced bus stops

ICON

Parking

67 parking spaces impacted

40 intersections with clear, safer sightlines

ICON

Traffic

5 new volume-compliant NGs

Protected neighborhood circulation

Regional trips on regional roads

PLAN BENEFITS AND IMPACTS

Pedestrian network

In 2018, Portland City Council adopted PedPDX, Portland's Pedestrian Master Plan. PedPDX identified crossing gaps across the City, stretches of street network with more than 530 feet between crossings. In Northwest, there are several crossing gaps, centered largely on (list of streets).

The Tier 1 NWIM-recommended projects will fill **XX%** of the crossing gaps identified in the district.

Add additional info

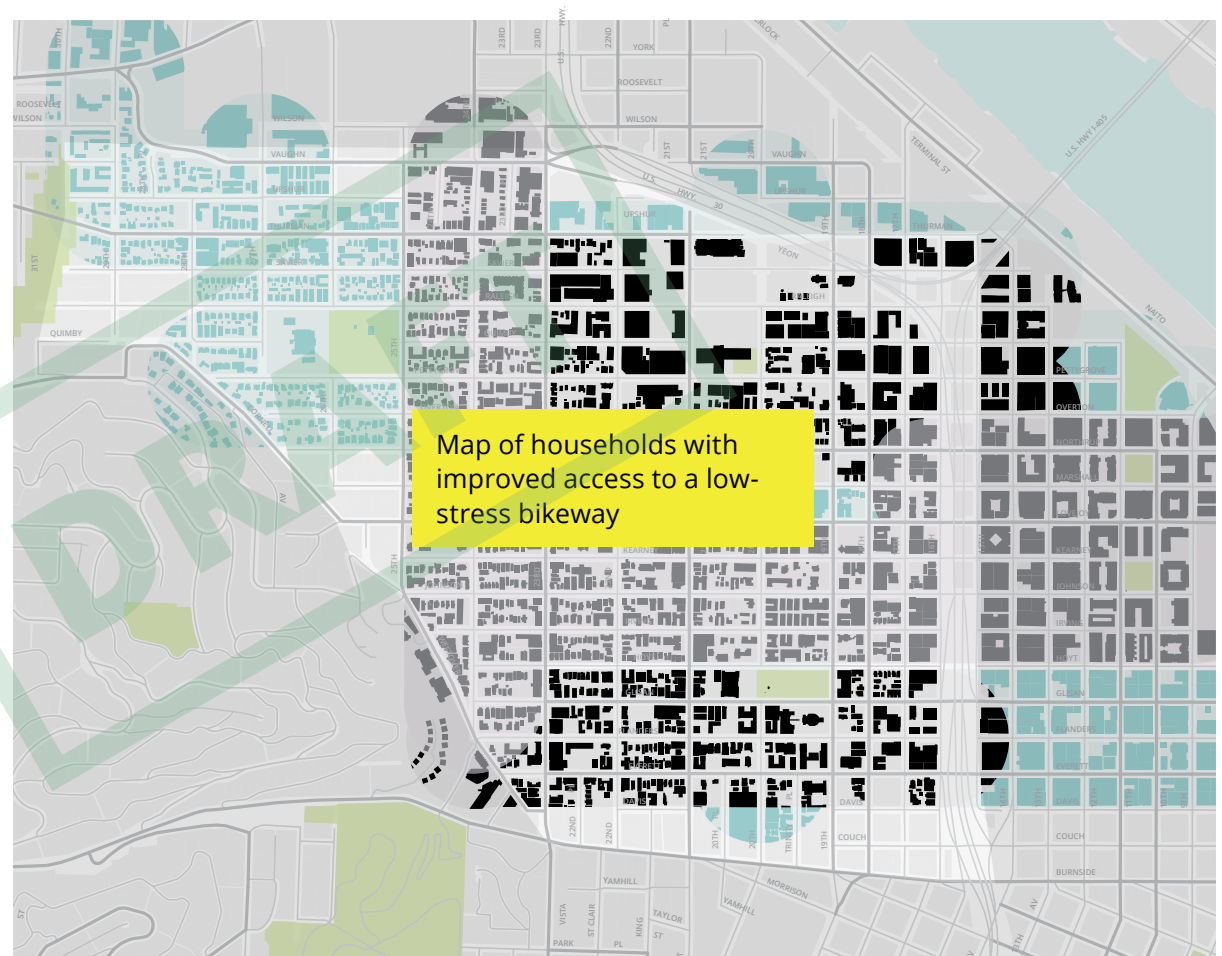
Map of pedestrian crossing gaps filled

PLAN BENEFITS AND IMPACTS

Bike network

NWIM Tier 1 bike network improvement projects are focused both on providing better active transportation connections from Northwest to other districts and expanding access to comfortable bike facilities within Northwest.

Today, __% of Northwest households have access to low-stress bicycling facilities. When the NWIM Tier 1 Neighborhood Greenway projects are completed, __% of households in the district will live within 500 feet of a low-stress bike facility.



Transit network

Line 15

Today, Line 15 is characterized by its high-quality stops on NW 23rd Ave and by some significant delays near Burnside and Thurman. NWIM Tier 1 projects will decrease peak hour transit delay by X%.

Line 24

Today, the Line 24 bus dips in and out of bike lanes on NW 18th/19th Ave to serve bus stops. New floating island bus stops along NW 18th/19th Ave will eliminate most bus-bike conflicts.

Line 77

Line 77 has minor delays approaching <offending intersections> and some stops with poor all ages and abilities accessibility. NWIM Tier 1 projects will improve accessibility at __ stops with curb extensions and stop consolidation and enhancements.

Map of transit benefits

PLAN BENEFITS AND IMPACTS

On Street Parking

The Northwest in Motion Plan is intended to complement the NW District Parking Management Plan by providing clear alternatives to driving to and from the district to reduce pressure on the parking supply. Because on-street parking supply is limited and is still needed to support businesses and other employers in the area, the Northwest in Motion Plan has been carefully crafted to reduce the impacts to parking supply as much as possible. This context-sensitive approach helps to balance the need for better walking, biking, and transit routes with the reality that some businesses and individuals will still rely on driving for at least some of their trips, for example people who live far from their jobs or businesses that rely on truck deliveries to serve their needs.

By focusing bikeway improvements on building out the neighborhood greenway network, we have reduced the impact on parking supply because most of this network consists of shared streets with on-street parking unaffected. We have only recommended conversion of on-street parking to other uses such as bike lanes in very short segments where a neighborhood greenway was not a feasible solution. Even on segments with diverters and contra-flow bike lanes, we generally keep on-street parking on both sides of the street.

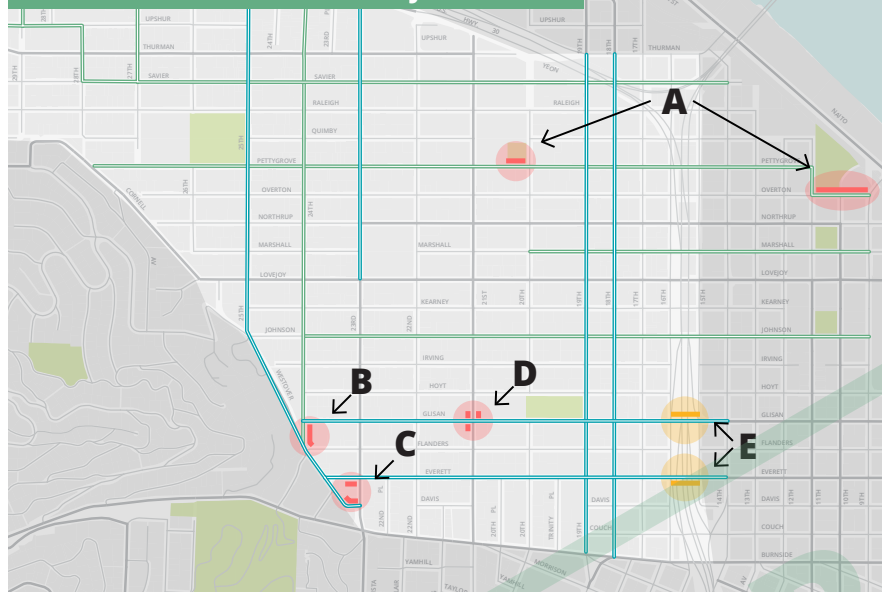
For corridor improvement projects we have limited the impact on parking by only converting parking in short segments where needed to address transit or traffic needs, for example to allow a bus turning movement or accessible bus stop, or providing a right-turn pocket in a location where more traffic is expected. We have also looked for opportunities to add parking where it is currently prohibited, as a way to mitigate for the parking that is proposed for removal. We believe there is some potential to do so on the Everett and Glisan structures over I-405, because on-street parking is provided on similar structures over I-405 south of Burnside.

TRADE OFFS: TRAFFIC DIVERSION OR PARKING REMOVAL?

We have received some feedback from public stakeholders that PBOT should avoid traffic diversion on neighborhood greenways and the resulting traffic impact by striping separated bike lanes on bikeway routes rather than using the neighborhood greenway design. Because nearly all the streets in the NW in Motion Plan area are 36 feet wide curb-to-curb, adding bike lanes and maintaining two-way automobile traffic would require removing all on-street parking from these routes. Since this feedback came up frequently in our outreach process, we decided to analyze the on-street parking impact of a scenario in which we replaced our proposed neighborhood greenways with bike lanes, to compare it with the parking impact of our recommended neighborhood greenway approach.

The results are quite dramatic, with a reduction of XX parking spaces in the NW District and XX parking spaces in the Pearl District. We believe this would have significant negative impact on residents and businesses in these areas by dramatically reducing the available parking supply. While PBOT is planning for a future that is less reliant on on-street parking than today, this change must be gradual to allow residents and businesses to adapt to these changes. Based on this analysis, the NW in Motion Plan recommends the neighborhood greenway approach because we predict the impact of our proposed traffic diversion to be much less than the impact would be to remove this many parking spaces.

PARKING IMPACTS BY INDIVIDUAL NORTHWEST IN MOTION PROJECT



ID	Project Name	# of Spaces	Details / Rationale
A	NW Pettygrove St Neighborhood Greenway	- 20	Remove some parking on NW Overton between NW 9th and NW 11th to facilitate a safe connection to the NW 9th Ave railroad crossing. Limit new parking stalls on NW Pettygrove just west of NW 20th as part of a 'green street' treatment.
B	NW 24 th Ave Neighborhood Greenway	- 6	Remove parking on NW 24th Ave between NW Flanders and NW Glisan to make a better bikeway connection between two neighborhood greenways.
C	NW 25 th Ave / Westover Rd Corridor Improvements	- 12	Remove parking on NW Westover at NW 23rd as part of an intersection simplification and new pedestrian walkway. Remove parking on NW Everett to permit space for a right turn pocket onto NW 23rd Ave.
D	NW Everett / Glisan St Corridor Improvements	- 8	Remove parking on NW 21st and NW Glisan to facilitate better bus turning movements.
E	NW Everett / Glisan St Corridor Improvements	+ 16	Ability to add back metered parking on the I-405 bridges on both NW Everett and NW Glisan
TOTAL PARKING IMPACT		- 30	

PLAN BENEFITS AND IMPACTS

Traffic Impacts

As the plan recommends traffic circulation changes to support the recommended projects, the Northwest in Motion planning team analyzed potential traffic impacts to better understand and communicate the level of change that people can expect on streets throughout the district.

The PBOT team developed a travel demand model to simulate a reduction in capacity on the street segments recommended for diverters and analyzed the predicted impacts on other streets in the network. Because the model we developed has limited accuracy when applied to a fine-grained local street network, the project team refined the results by looking at measured traffic volumes and traffic patterns to predict how people might intuitively change their routes based on these changes.

Overall, our findings were that even in a worst case scenario, in which 100% of the diverted traffic still travels by car and uses the nearest available routes, the traffic impact in most cases is predicted to be low and unlikely to cause significant traffic issues compared to how the system operates today.

The Northwest in Motion Plan area has a very good grid of both local and collector streets that can absorb the additional traffic without overly burdening any single street. Even the street with the highest predicted percent increase in volumes, NW Kearney St near I-405, is projected to still carry volumes in line with a typical local street in the project area.

Some percentage of people will travel by entirely different routes far from the diverter location or will switch mode of travel (to walking, biking, or transit) in response to these changes. To analyze the impact of potential mode shift, we ran the model again but shifted the bicycle mode commute mode share from 7% (the current mode share in northwest) to 14% (the average mode share of inner eastside neighborhoods with a robust bikeway network similar to what we recommend for northwest). We asked what the traffic impact would be if we are successful in our goal of increasing bicycle mode share in our project area. The results were very encouraging—the model predicted a peak hour reduction of about 1200 automobile trips, which could translate to a daily reduction of 12,000 vehicles. To put this in context, 1200 vehicles is roughly the amount of traffic driving westbound on W Burnside St during the PM peak.

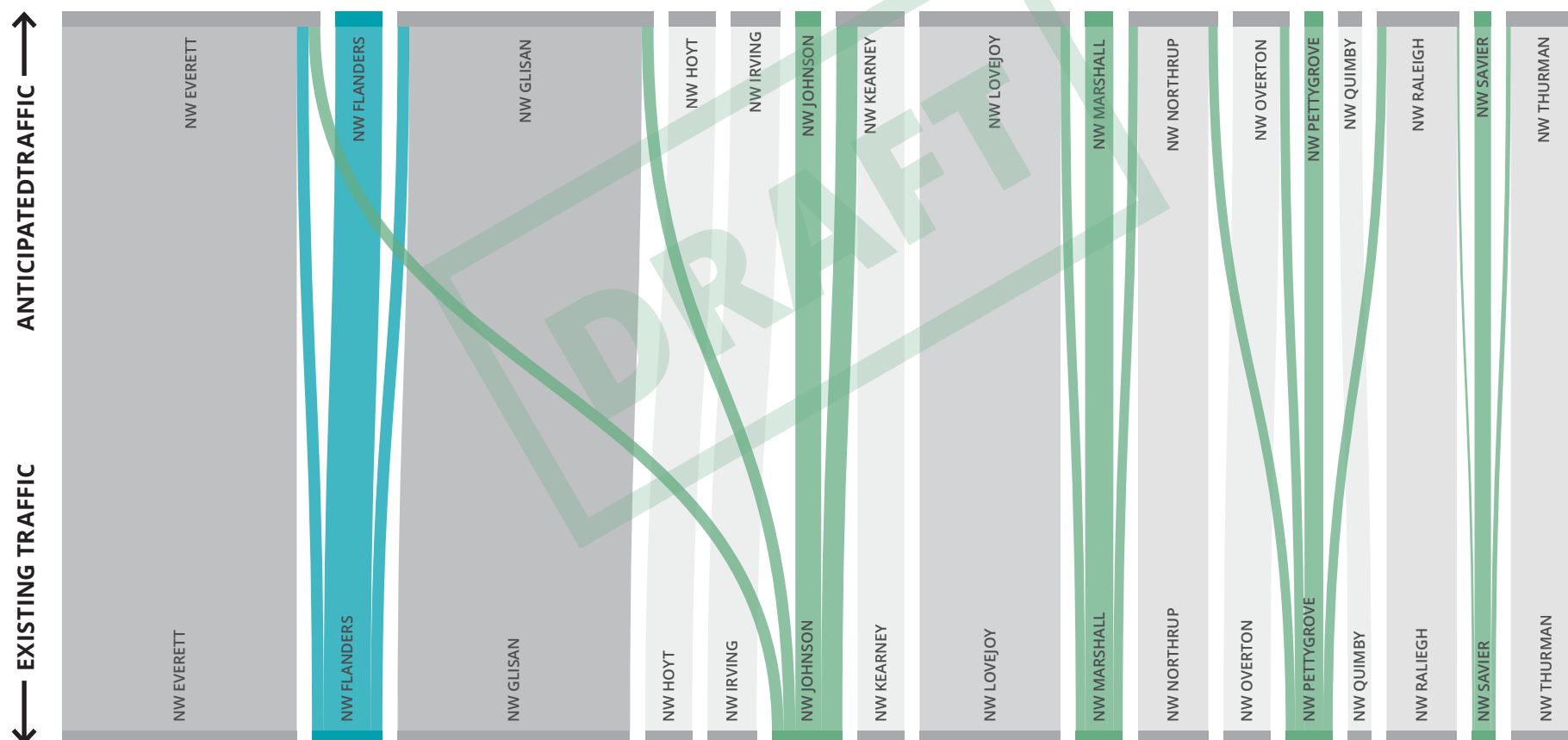
Graphic of NW 23rd / NW 24th / NW 25th Avenues

POTENTIAL TRAFFIC PATTERN CHANGES

NW Everett St & NW Glisan St will continue to be busy streets in the neighborhood and will absorb small marginal traffic increases from NW Flanders St and NW Johnson St Neighborhood Greenways.

Recommended diversion on NW Johnson St carries the risk of increased diversion onto NW Kearney St. While volumes are likely to increase, traffic on NW Kearney will be within normal range for a residential street in Northwest Portland.

NW Marshall, NW Pettygrove, and NW Xavier Neighborhood Greenways will only have slight impact on overall traffic patterns in Northwest. Some streets might experience small increases in traffic, but overall, the system will function more or less as it does today.



(Section prompt: What are the behavior change goals NW needs to achieve?)

The NWIM project area is part of the Inner Neighborhood Pattern area, as defined by Portland's Comprehensive Plan, the City's roadmap for managing a growing City and region. Among other goals and policies, the Comprehensive Plan sets a 70% non-drive alone daily mode share by 2035. Today, Northwest's non-drive alone modeshare for the commute hovers somewhere around 50%.

(Section prompt: What are we doing to change mode share?)

There are many things that can influence how someone chooses to travel, from how long a trip takes to how much it costs to how safe it feels. In NWIM, Tier 1 projects focus on changing just a few factors to make traveling by walking, biking, and transit more attractive choices.

When transit comes more often, more people use transit because their trips are shorter and the rest of the transit network becomes more accessible, expanding the range of places someone can go. Northwest in Motion supports increased transit use by supporting TriMet's efforts to make the bus come more often. For TriMet to increase transit service investment, it is important that people can get to and from bus stops safely and that more frequent buses won't just be caught in the same traffic jams that buses are caught in today. NWIM Tier 1 improvements support these aims by investing in safer, more accessible bus stops and transit priority spot improvements.

When access to high quality bike facilities increases, people tend to start biking for more trips. NWIM supports increased rates of biking by increasing the number of people who have access to a network of Neighborhood Greenways in the district.

When walking is safe and there are many things to walk to, there are high rates of people walking. Northwest is already fortunate enough to have these fundamentals in place for a successful, walkable district. NWIM supports the continued high rates of walking by adding a few more safe and well-located crossings and filling some of the crossing gaps identified in Portland's recent update to the Pedestrian Master Plan.

(Section prompt: What has happened in other areas where we've done these same types of interventions?)

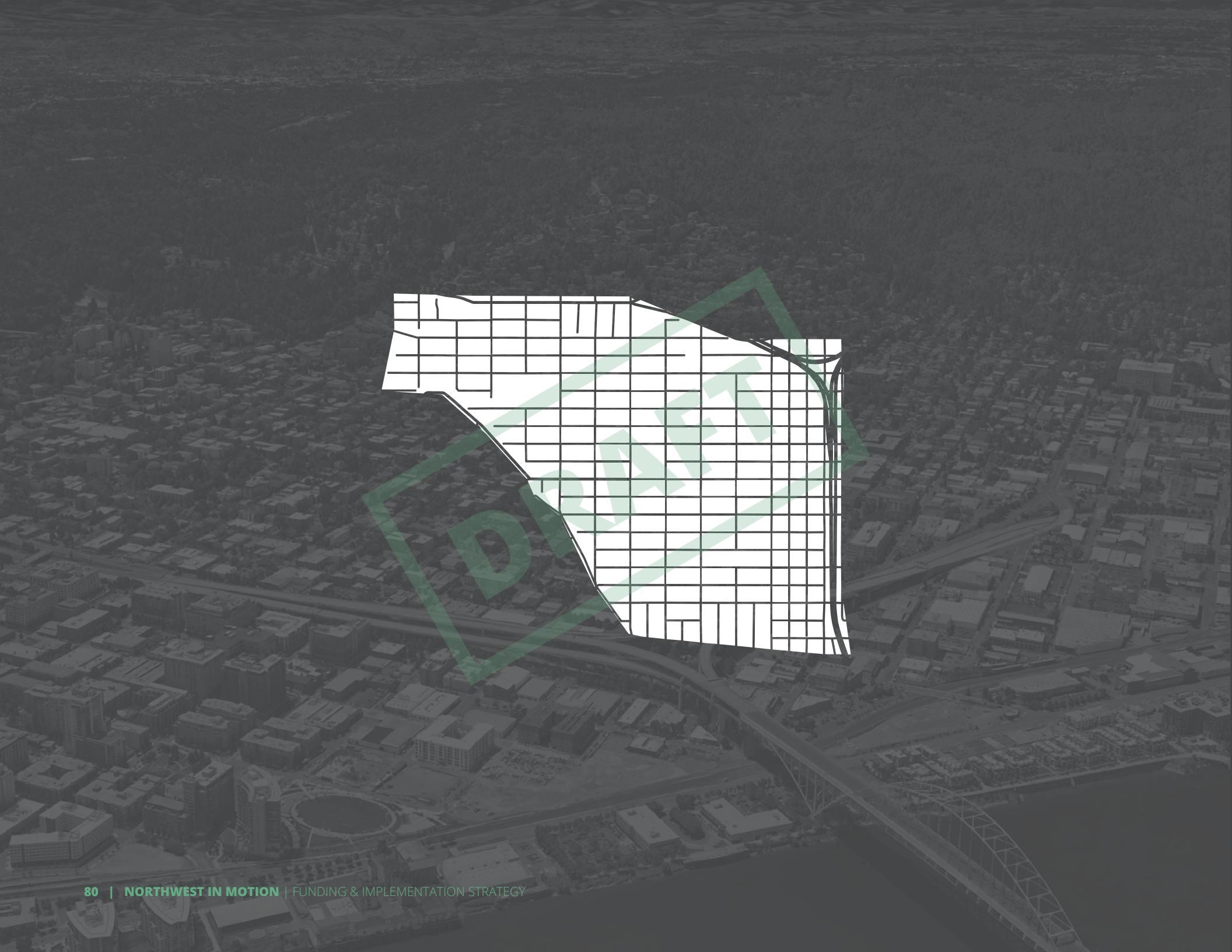
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Travel Behavior - Comparison

+miles of greenway per area by mode split

NW bike and walk commute are these two numbers, places where we have used these interventions, bike mode share has rise to such and such

Graphic/chart/table showing mode change in places with similar interventions



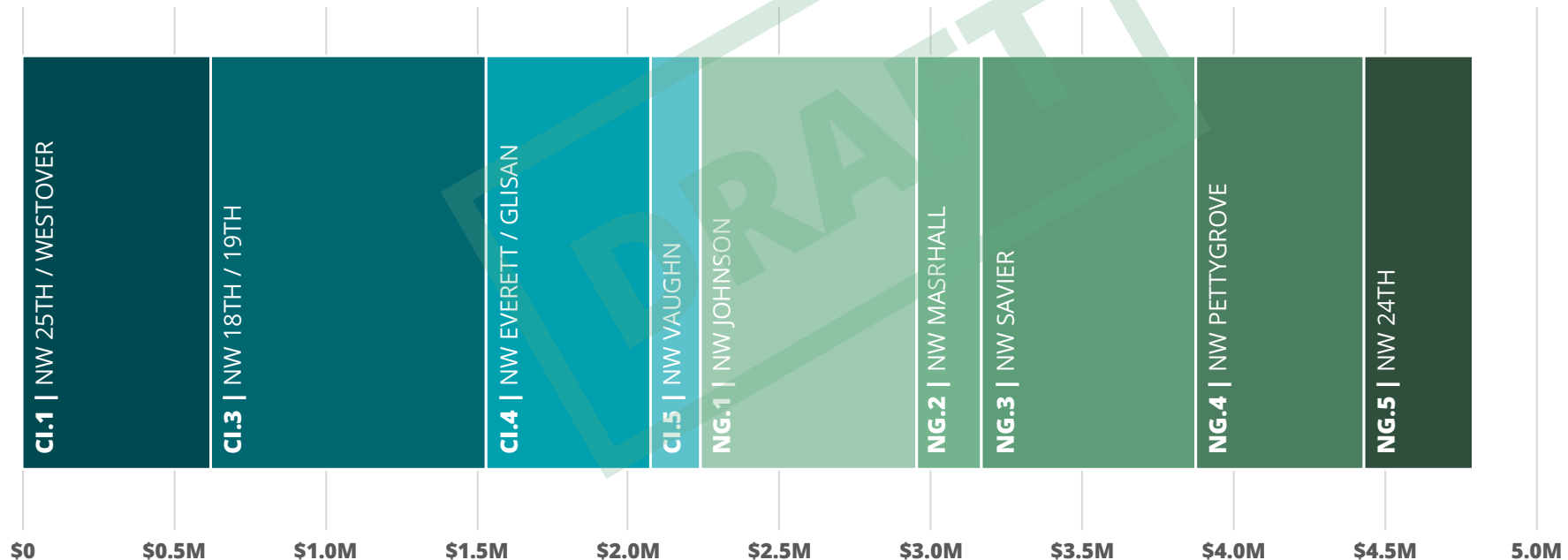
IMPLEMENTATION & FUNDING STRATEGY

In a previous phase of the *Northwest in Motion* planning process, projects were identified and then prioritized using a set of evaluation criteria to divide them into Tier 1 and Tier 2 projects.

An overview of the various funding sources supporting *Northwest in Motion*. Also included is a detailed breakdown of the plan's phased implementation strategy.

Near Term Project Costs

Nine out of the ten recommended Northwest in Motion Tier 1 Projects consist of relatively low-cost capital improvements such as signage and striping, speed bumps, curb extensions, median islands, and modifications to existing signals. We have prepared planning-level cost estimates for these projects using best available costs of similar past projects, and even with a 50% contingency added to the construction costs to cover soft costs and unanticipated costs, we anticipate these nine projects add up to less than \$5 million. Since Northwest in Motion is meant to be a five-year implementation strategy, this results in a funding need of roughly \$1,000,000 per year for these projects. We anticipate that a combination of parking revenue, system development charges, and general transportation revenue will be enough to fund this set of projects (see next page)



**The tenth project, on NW 23rd Ave, is a major capital project that includes full reconstruction of the roadway from Lovejoy to Vaughn as well as a signal replacement at Thurman, upgrades to all curb ramps, and a handful of curb extensions. This project alone is estimated to cost roughly \$10 million, so it will need to be considered for funding using other funding sources more appropriate for such a large project.*

Funding Sources for Near-term Implementation

Northwest in Motion pulls from a variety of funding sources to realize the project and program recommendations. The largest pool of funding comes from money generated within the district, specifically from NW District Parking revenue and contributions from developers. Some additional funding comes from ongoing citywide programs and a one-time state allocation.



Net Parking Meter Revenue

A portion of the net parking meter revenue from Zone M in the NW District Parking Management Plan area must be spent on projects and programs within the area that reduce demand for parking or expand parking supply. Some of that portion is expected to be dedicated to Northwest in Motion Plan implementation, primarily the Tier 1 capital projects but also for programmatic investments. Based on revenue projections and recent discussions with PBOT parking staff, we expect that roughly \$2.5 million of parking revenue may be available for Northwest in Motion. PBOT would match this with other funding at a one-to-one level. This funding has not yet been formally requested or allocated, but for planning purposes we are expecting this level of revenue would be available.

Funding Available:

\$2.5m; additional funding potentially available.

Additional information about a funding strategy for NW 23rd Ave under development.



Ongoing Quick Build Network Completion funding:

Northwest in Motion draws on three Quick Build Network completion programs for project implementation funding. These programs include Neighborhood Greenways; Bikeway Network Completion; and Transit Spot Improvement program.

Funding Available:

Approximately \$425,000 - potentially renewable annually.



Transportation System Development Charges

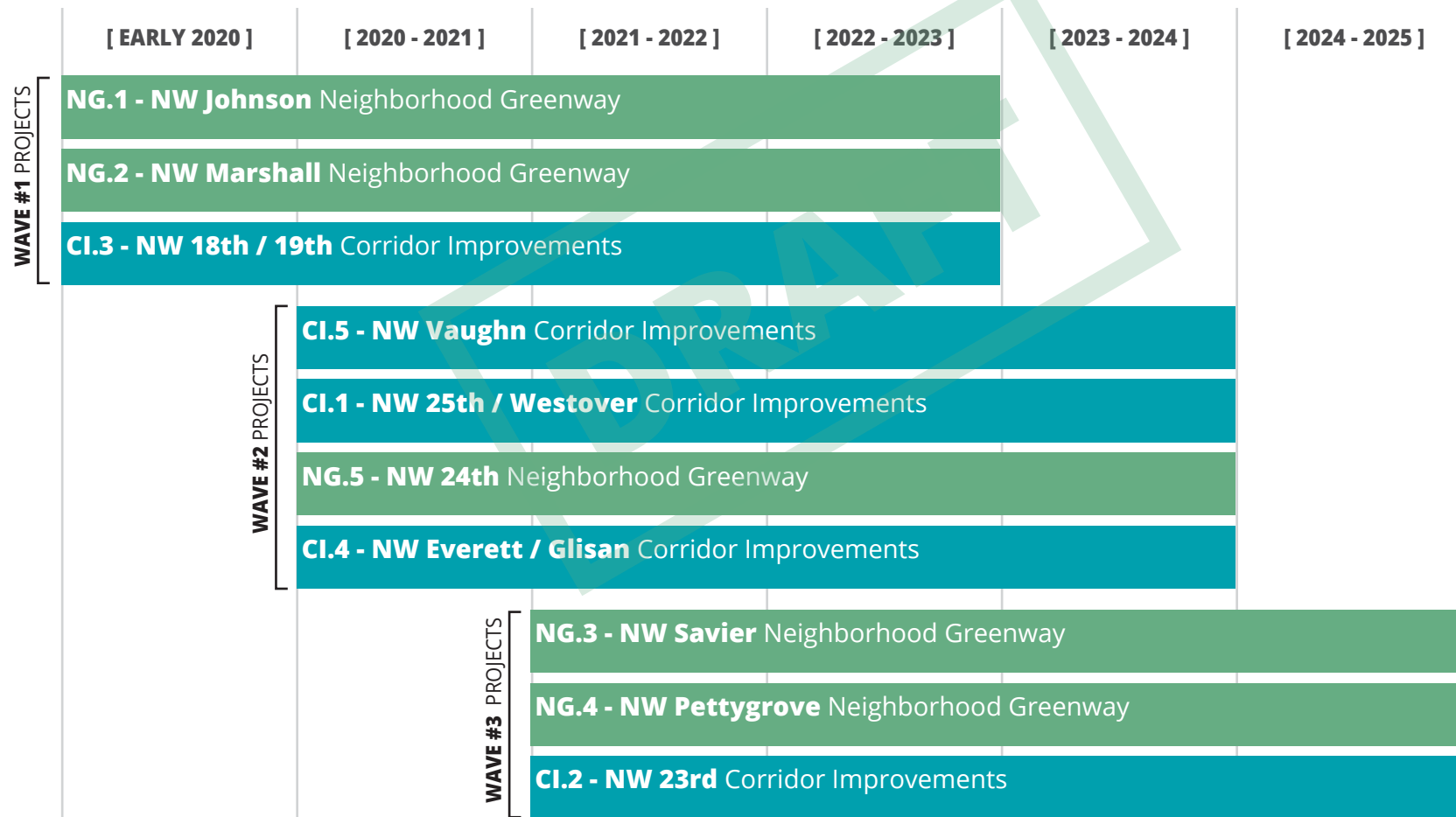
Whenever a new building is constructed in Portland, including a home, store, office, etc., the developer pays Transportation System Development Charges (TSDC). The fee covers part of the cost of building transportation facilities to serve development—things like roads, sidewalks and other facilities that get people to where they need to go.

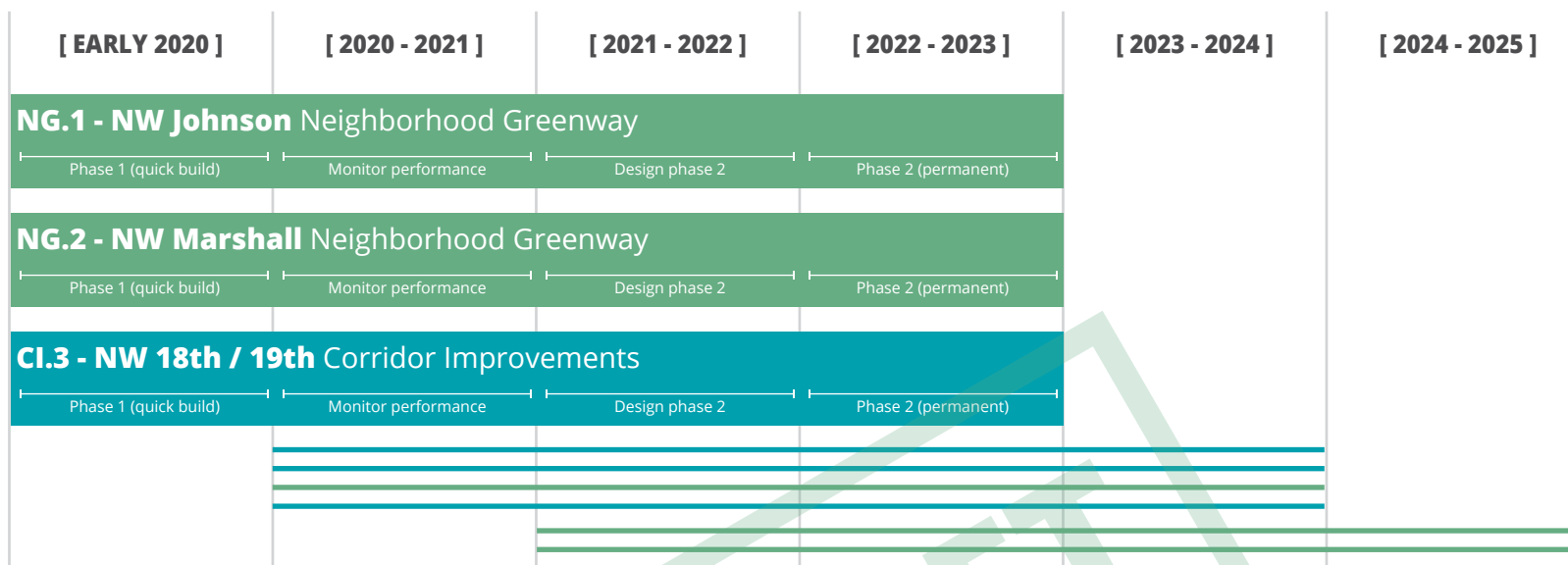
Eligible Funding:

\$1.5m confirmed (eligibility up to \$5m upon request)

Project Implementation

Northwest in Motion outlines a phased implementation strategy for the 10 Tier 1 Projects only. Projects are generally implemented in a four-year 'wave', which allows for quick interim implementation, a period of monitoring and additional outreach before permanent materials are used. This plan recommends three overlapping implementation phases which are detailed in the following pages.





WAVE ONE PROJECTS

These three projects were chosen as part of the first implementation wave as they share a few notable characteristics including project goals, funding sources, and implementation strategy.

First, each of these projects strengthen existing bikeways in Northwest. NW Marshall and NW Johnson Neighborhood Greenways expand and upgrade existing biking routes in Northwest by reducing speeds and volumes on these routes. NW 18th & 19th Corridor Improvements reduces bike and bus conflicts through the use of floating transit islands on the newly established Line 24 bus route.

Secondly, all three of these projects are funded through PBOT’s Quick Build Program which received an infusion of funds through the HB 2017 legislative measure.

Lastly, these three projects are easily implementable with the use of interim materials. This allows crossing, bikeway and transit improvements to be made quickly and efficiently using less expensive interim materials. These interim versions allow PBOT traffic engineers and planners to assess the effectiveness of these interventions in meeting the project goals before investing in more costly, permanent civil construction.

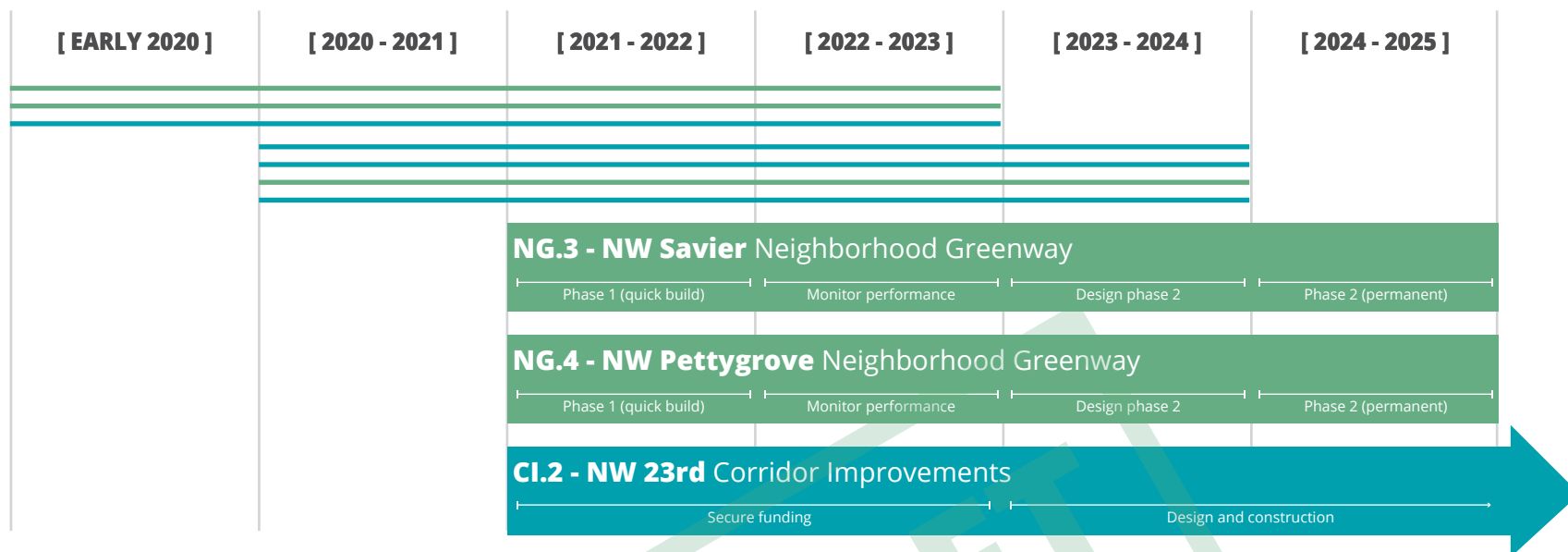


WAVE TWO PROJECTS

This collection of projects were chosen to be a part of the second implementation wave as they are designed to reinforce one another and mitigate traffic impacts caused by circulation changes caused by upcoming or ongoing projects in Northwest.

Before implementing the NW 24th Ave Neighborhood Greenway, PBOT would like to evaluate the impacts of improved traffic flow due to a rebuilt signal at NW 23rd Ave & NW Vaughn St. Traffic counts conducted after that signal rebuild is completed will help inform final decisions for the design of the traffic diversion strategy for this neighborhood greenway. Furthermore, specific elements contained in the NW 25th Ave / Westover Corridor Improvement project and NW Vaughn St Corridor Improvement project will both reinforce and mitigate any traffic diversion impacts.

Lastly, the NW Everett / Glisan Corridor Improvement project is included in this wave because key decisions about the future of NW Everett St are dependent on the observed bike, transit, and vehicle counts following completion of ongoing the NW Flanders Bikeway project and NW Flanders Bicycle & Pedestrian Bridge.



WAVE THREE PROJECTS

This final wave of projects was chosen because they either rely on development agreements for key elements of implementation, or, as is the case with NW 23rd Ave Corridor Improvement Project, do not at the time of this plan have a secure funding source for full implementation.

Both the NW Savier & NW Pettygrove Neighborhood Greenways are two new neighborhood greenways in Northwest and are the result of a change of bicycle classifications in the northern section of the district. The signature car-free connection on NW Savier between 19th and 20th Avenues relies on a development agreement following the redevelopment of an adjacent parking lot. Similarly, the Green Street features detailed in the NW Pettygrove project would be built alongside the development of a new public park at northwest corner of NW Pettygrove St and NW 20th Ave.

For the NW 23rd Ave Corridor Improvement project, initial cost estimates place the full cost of repaving and crossing improvements at more than \$8,000,000 – a figure which far exceeds the entire budget of all other projects included in Northwest in Motion. In order for this project to be successfully implemented in Northwest in Motion’s short-term implementation window, additional funding would need to be secured from a new revenue source such as through the Fixing Our Streets program.

Program Implementation

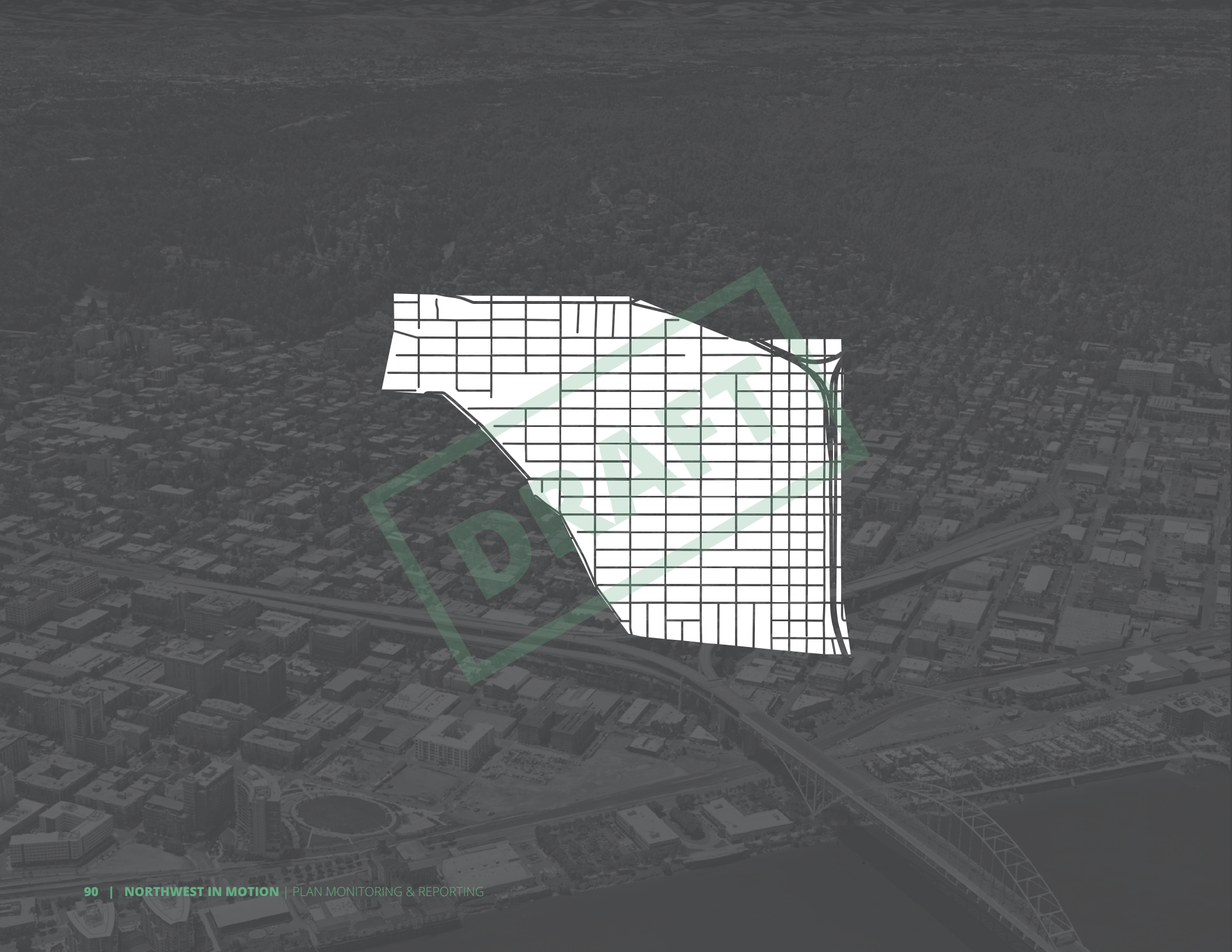
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PROGRAM RECOMMENDATIONS	IMPLEMENTING AGENCY	PRIORITY	TIME-FRAME	ADDITIONAL NOTES

Fill in with program recommendations once those are refined

PROGRAM RECOMMENDATIONS	IMPLEMENTING AGENCY	PRIORITY	TIME-FRAME	ADDITIONAL NOTES

Fill in with program recommendations
once those are refined



PLAN MONITORING & REPORTING

In a previous phase of the *Northwest in Motion* planning process, projects were identified and then prioritized using a set of evaluation criteria to divide them into Tier 1 and Tier 2 projects.

A detailed action plan for monitoring both overall plan progress and individual project implementation, including a list of what will be measured, when and how that information will be communicated back to community stakeholders.

MONITORING AND REPORTING

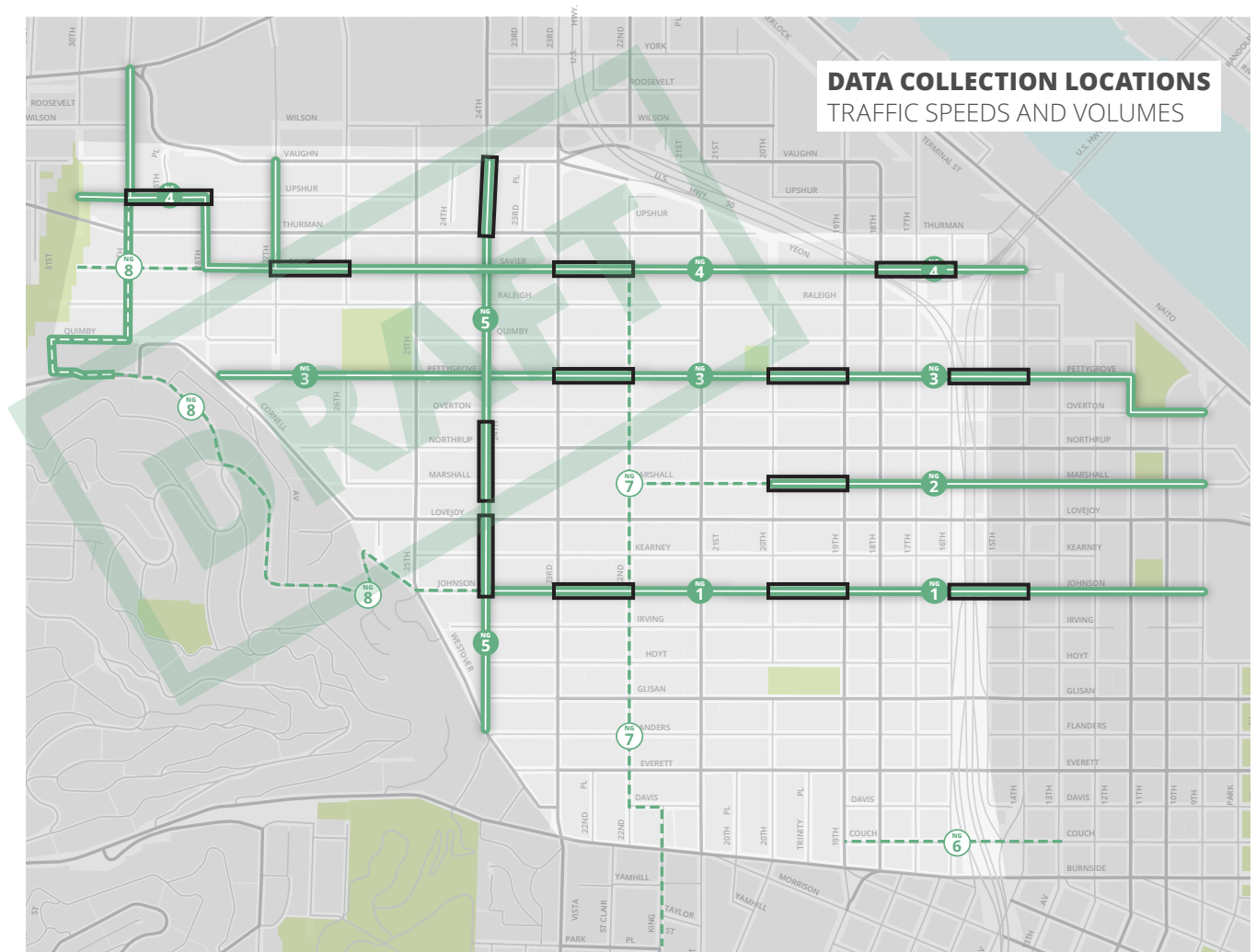
Neighborhood Greenways

To understand if new Neighborhood Greenways in Northwest Portland are performing as intended, PBOT needs to collect traffic data before and after the NWIM Neighborhood Greenway interventions.

PBOT's Neighborhood Greenway Assessment Report provides the following guidelines for Neighborhood Greenway performance:

- **Volumes of 1000 to 2000 cars per day;**
- **85th percentile speeds at or under 20 mph**

At right are the locations for pre- and post-project data collection. PBOT selected segments of the proposed Neighborhood Greenways network where there are known car speed and volume concerns today or anticipated fluctuations in the future.



MONITORING AND REPORTING

Corridor Improvements

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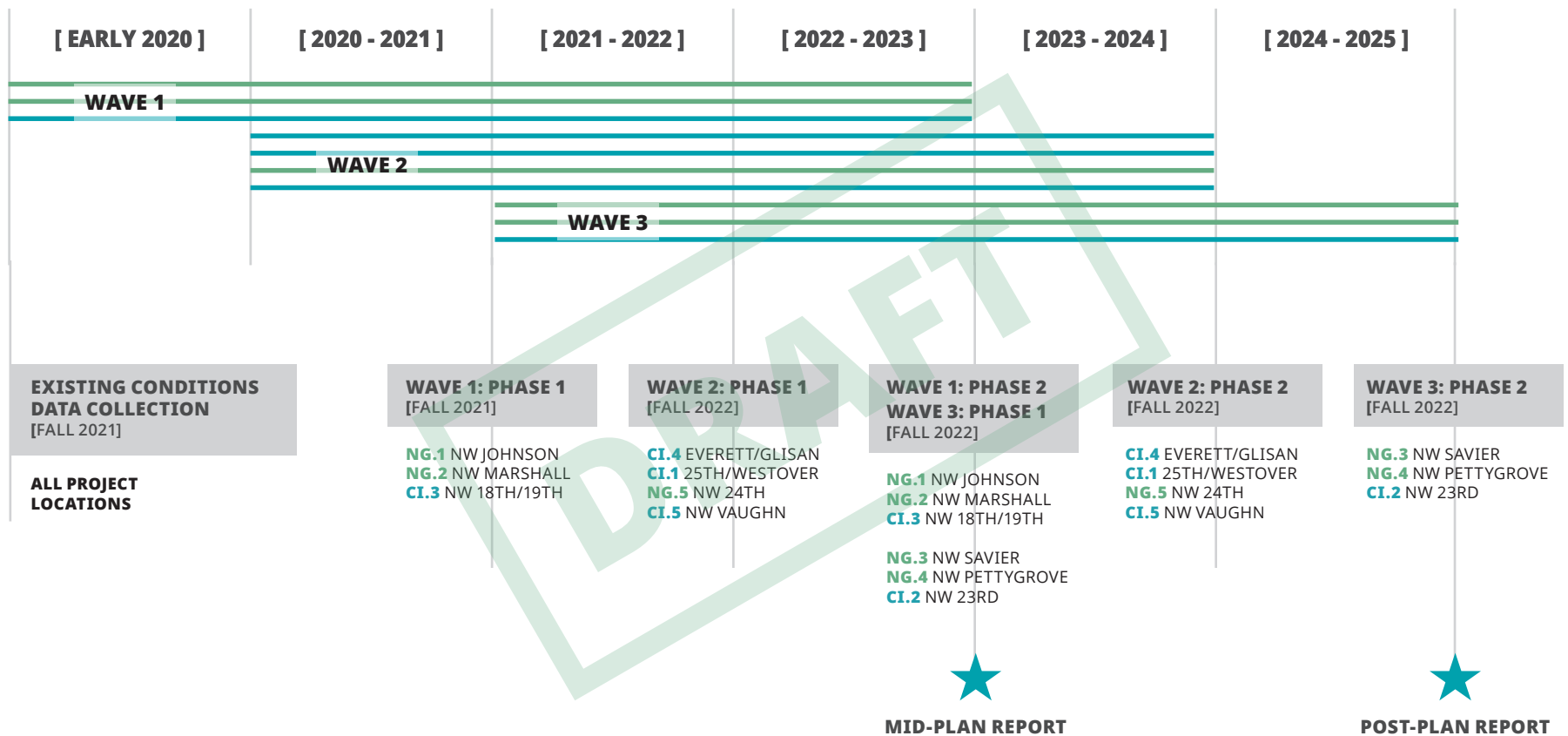
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Project monitoring schedule



OTHER ELEMENTS TO POTENTIALLY INCLUDE IN THIS SECTION:

- Explainer: Why monitor & report?
- Connection to Implementaiton and Public Engagement Strategy
- Mid Point Plan Reporting Outline
- Post Plan Reporting Outline
- Project by Porject Reporting Plan

