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MEMORANDUM

To: Gabe Graff, City of Portland Bureau of Transportation

From: Katie Mangle, Alta Planning and Design

Through: Catherine Ciarlo, CH2M

Date: October 27, 2017

Re: Central City in Motion Crash Risk Analysis

Approach to Mapping Crash Risk Factors

The purpose of this analysis is to identify and locate crash indicators other than speed and roadway width, which are the dominant features of the Vision Zero High Crash Network but less present in the Central City than is typical in the rest of Portland. The product of this analysis is the Safety Analysis composite map. The intent is to demonstrate, at a planning level, whether there is value in avoiding or mitigating these locations.

To assess the locations of risk for crashes involving people walking and biking in the study area, Alta analyzed and mapped crash risk factors that fall into the following categories: **Crash History** that is not highlighted on the City's Vision Zero Network; **Roadway Characteristics** that are known to contribute to crashes involving people walking and biking; and operational and planning characteristics that could create **Exposure** to conflict for people walking and biking. While the Vision Zero map layers tell the story of locations where crashes have happened, the Risk Analysis map layers indicates the locations where there is heightened risk for crashes to occur.

Creating a Composite Risk Factor Score

For the purpose of summarizing the results on the Safety Analysis map, each street segment received a composite risk score based on the number of risk factors that are present along the segment. If a factor is located at an intersection, it was applied to all four legs of the intersection. Where a location received scores in multiple categories, it was identified and mapped as a High Risk Location.

Approach to Mapping Crash Risk Factors for People Walking and Biking in the Central City

	Item	Data Source	Notes
Crash History	Bike/Ped crash clusters not on Vision Zero High Crash Network	ODOT crash data 2011-2015 and Vision Zero high crash network	Clusters were identified as three or more bicycle or pedestrian crashes within 100 feet of each other
	Bicycle and pedestrian crashes involving trucks	ODOT crash data 2011-2015	
Roadway Characteristics	Light rail and streetcar track interactions with bike routes	Street/Rail data, bike network, and manual inventory	This analysis identified locations where bike routes cross light rail or streetcar tracks at acute angles.
	Double left turns/right turns	Pavement markings and manual inventory	
	Bike boxes with downhill approach	Pavement markings and manual inventory	
Exposure	Bike and freight network overlap	TSP Classifications: Priority Truck Street, Major Truck Street, Major City Bikeway, City Bikeway	This analysis identified streets that are classified for both bike and freight traffic.
	Controlled vs uncontrolled crossings	Traffic Signals and regulatory signs	This included the new signal locations identified within the CIP.
	Bike/Bus-related conflicts	Bike network, existing bus network, bus stop locations, and manual inventory.	This analysis looked at interactions along existing bike lanes to identify turning conflicts, weaving, and other issues.
	On/off ramps and slip lanes	Street data	

Key Findings

- There are more higher risk locations on the east side of the study area, than the west side. This is primarily due to the higher number of uncontrolled crossings and more frequent bike/freight interactions.
- Multiple risk factors are present at most bridgeheads within the study area.
- Corridors with the top risk scores:
 - SE 7th Ave between SE Stark St and SE Division St
 - NE Broadway St
 - NE Weidler St
 - N Interstate Ave
 - SE Morrison St and SE Belmont St, between SE 12th Ave and SE Grand Ave
 - SE 12th Ave. The highest risk section is located between I-84 and E Burnside St.

CRASH DATA (2011 - 2015)

CENTRAL CITY IN MOTION

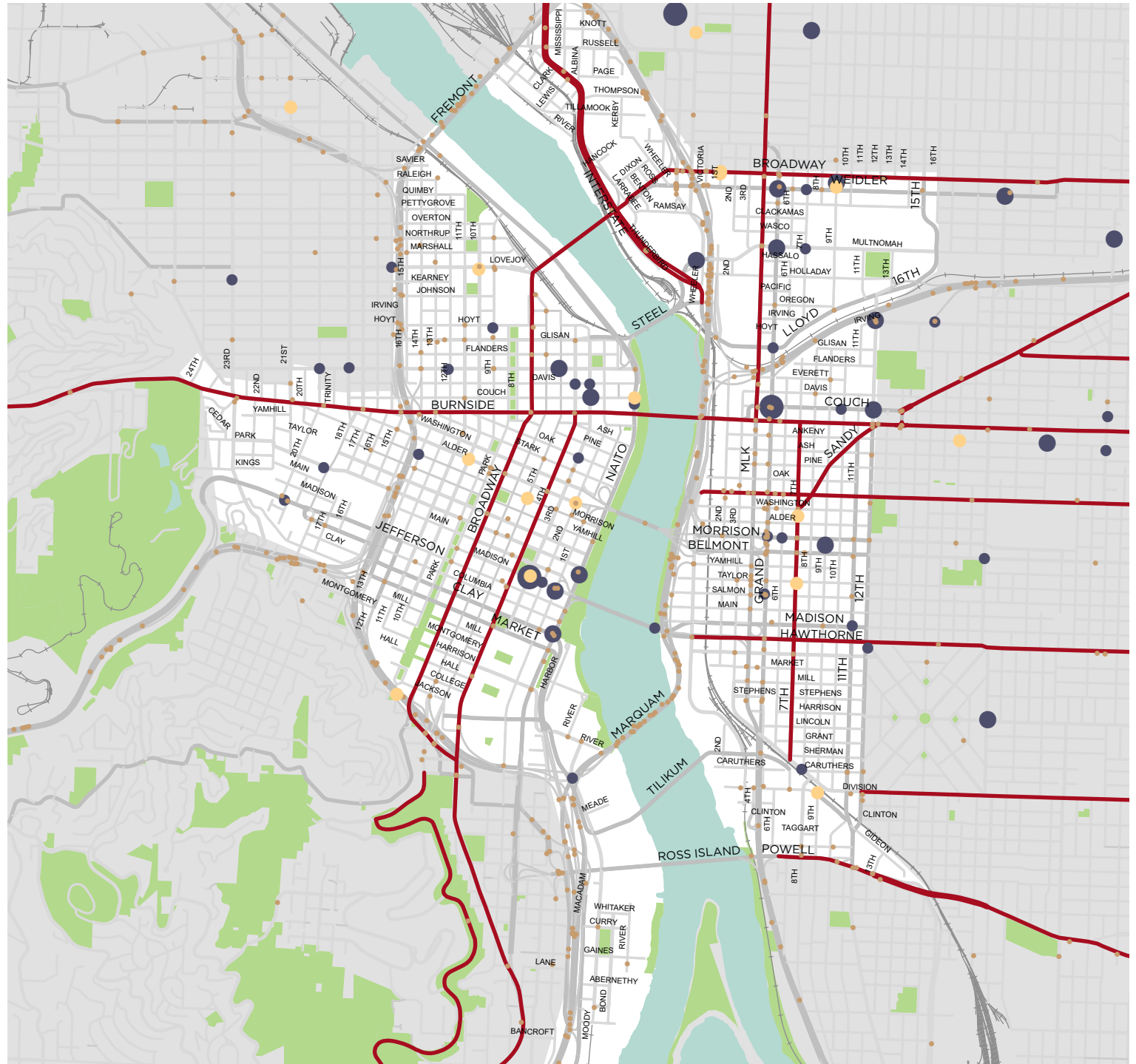
Bicycle and Pedestrian
Crash Clusters not on
the High Crash Network

- 3 Crashes
- 4 - 6 Crashes
- 7 - 10 Crashes
- High Crash Network
- Truck Crashes
 - Involving Bikes or Peds
 - All Other Crashes

0 1,300 2,600 FEET



Data provided by the
City of Portland and Metro.
Map produced September 2017.



MODAL INTERACTIONS

CENTRAL CITY IN MOTION

Proposed Street Classifications:

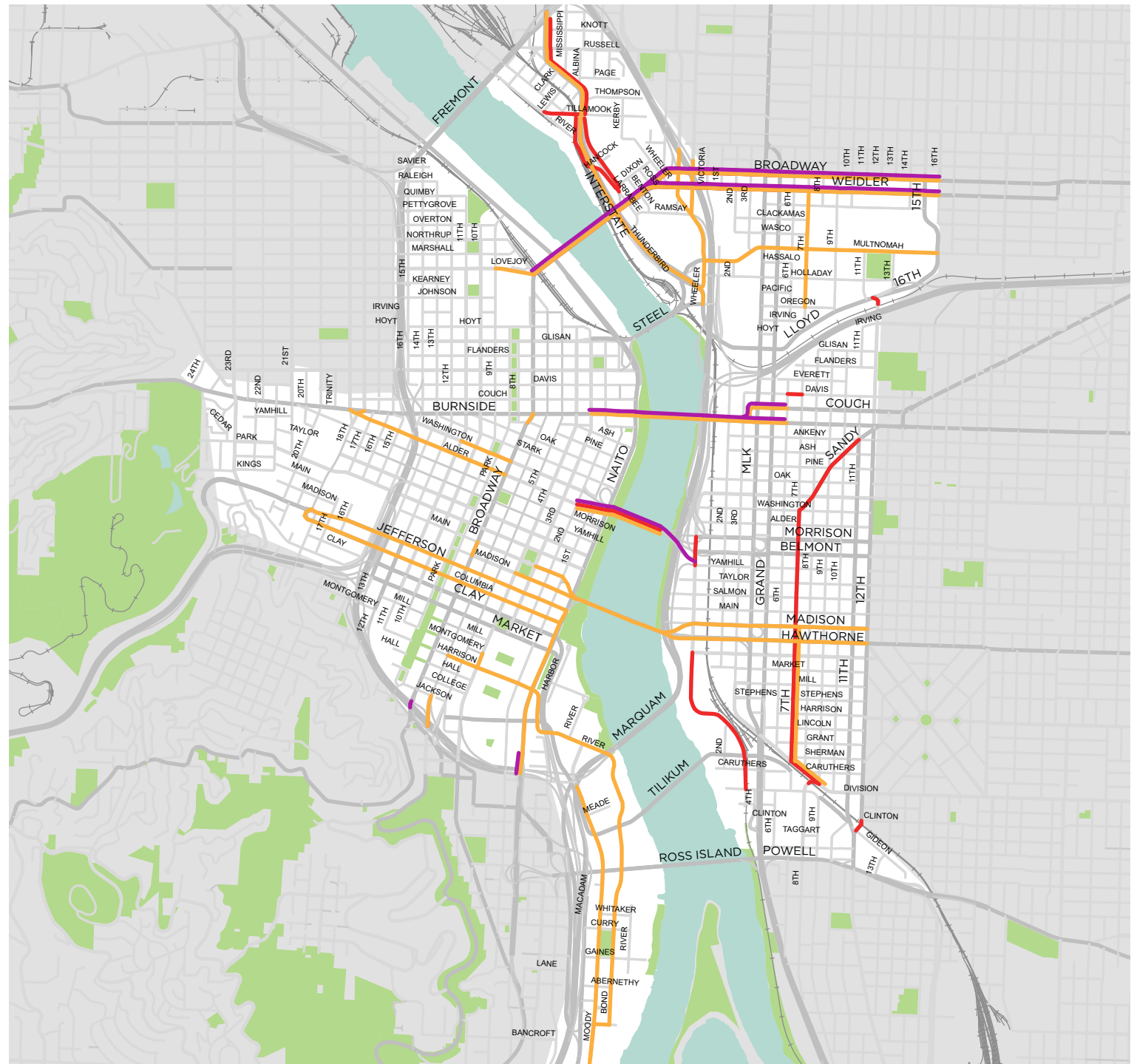
Overlap with
Major City Bikeways

- Major City Traffic Street
- Regional Transit /
Major Transit Priority
- Priority Truck Street /
Major Truck Street

0 1,300 2,600 FEET



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RAILROAD TRACK CONFLICTS

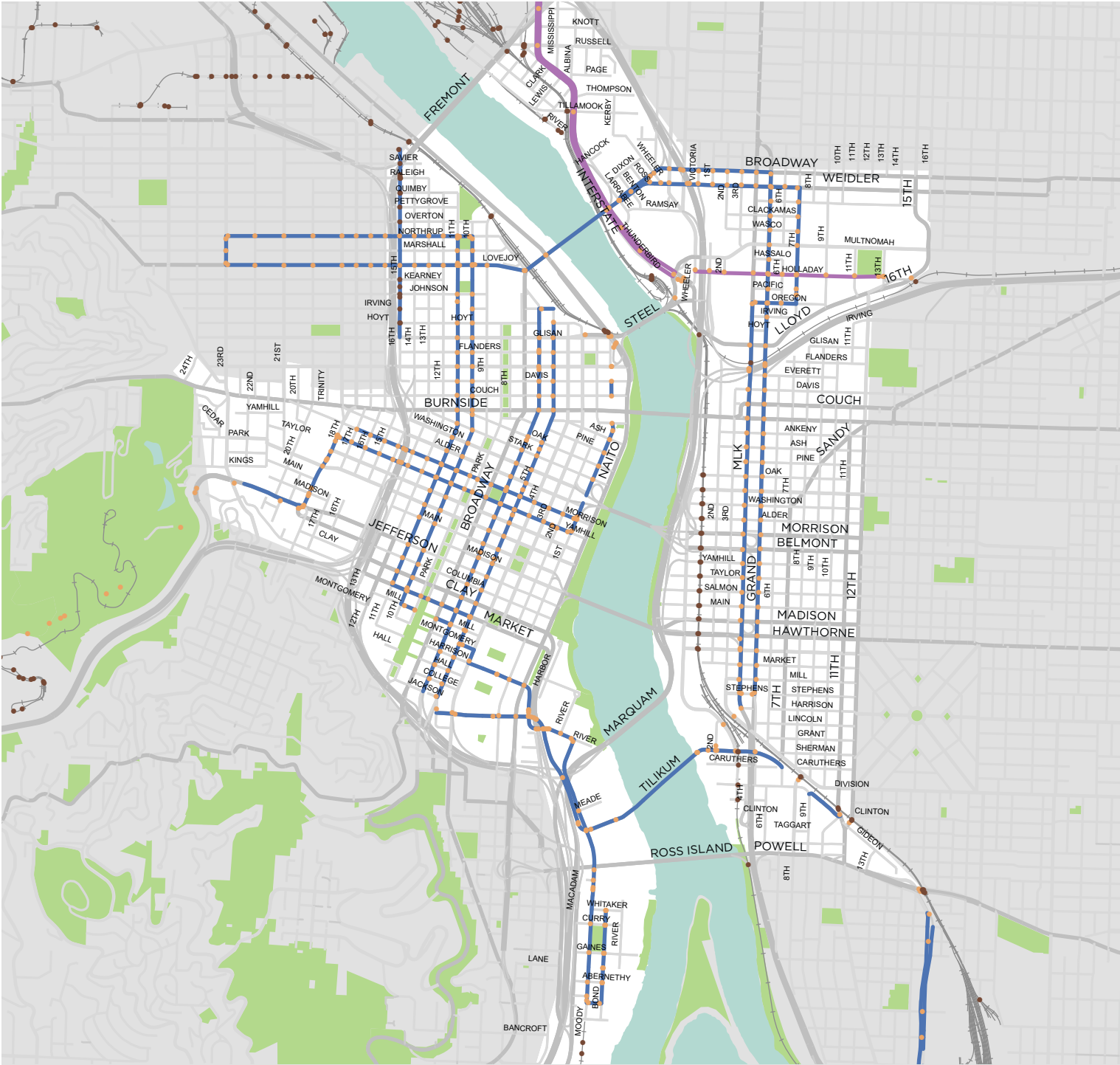
CENTRAL CITY IN MOTION

Track Crossings

- Heavy Rail
- Light Rail/Streetcar

Track on Roadway

- Mixed Traffic Lane
- Separated Lane



0 1,300 2,600 FEET

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PBOT
PORTLAND BUREAU OF TRANSPORTATION

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