2013 Astoria Transportation System Plan: Volume 2

Acknowledgements

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Acknowledgements

The 2013 Astoria Transportation System Plan was a collaborative process among various public agencies, key stakeholders and the community. Input, assistance and outreach by the following helped make the Plan possible:

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Project Advisory Committee Members

A list of PAC members is included in Volume 2 of the TSP.

A special acknowledgement goes out to all the Astoria residents, business owners, and visitors who attended community meetings or submitted comments on the project. Your input helped make this Plan possible.

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Likely Funded and Aspirational Transportation System Plan

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Project #	Project Description	Project Extent	Project Elements	Priority	Estimated Cost
Driving Solutions					
D1	7th Street Road Diet	Niagara Avenue to OR 202	Re-purpose the existing street width to include one travel lane in each direction, on-street parking and bike lanes	Short-term Likely Funded Plan	$103,000
D2	US 101-US 30 Coordinated Signal Timing Plans	US 101-US 30 from Portway Street to Columbia Avenue-Bond Street	Optimize the existing traffic signals by implementing coordinated signal timing plans, upgrading traffic signal controllers or communication infrastructure or cabinets.	Medium-term Likely Funded Plan	$75,000
D3	Marine Drive Coordinated Signal Timing Plans	Marine Drive from 30th Street to 33rd Street		Medium-term Likely Funded Plan	$50,000
D4	US 30 Speed Warning System	US 30 east of 50th Street	Install a speed warning system that activates when a motorist approaches at a high speed.	Long-Term Phase 4 Aspirational Plan	$25,000
D5	Downtown Traffic Signal Upgrade	Downtown Astoria	Upgrade traffic signal controllers or communication infrastructure or cabinets in downtown Astoria.	Long-Term Phase 2 Aspirational Plan	$1,492,000
D6	US 30/Exchange Street/23rd Street Safety Enhancement	US 30/Exchange Street/23rd Street	Realign 23rd Street to intersect with Exchange Street at US 30; install a single-lane roundabout or a traffic signal.	Long-Term Phase 4 Aspirational Plan	$1,547,000
D7	US 30/45th Street Safety Enhancement	US 30/45th Street	Install eastbound and westbound left-turn pockets on US 30	Long-Term Phase 3 Aspirational Plan	$323,000
D8	US 30/54th Street Safety Enhancement	US 30/54th Street	Provide an eastbound left turn pocket on US 30	Long-Term Phase 2 Aspirational Plan	$297,000
D9	US 30/Nimitz-Maritime Road Safety Enhancement	US 30/Nimitz-Maritime Road	Realignment and striping to include northbound and southbound left, and right-turn lanes at US 30, and a westbound right-turn deceleration lane	Long-Term Phase 2 Aspirational Plan	$242,000
D10*	US 30/Liberty Lane Safety Enhancement	US 30/Liberty Lane	Realign intersection and provide a southbound left turn pocket on US 30***	Long-Term Phase 2 Aspirational Plan	$362,000
D11	OR 202/US 101 Business Safety Enhancement	OR 202/US 101 Business	Install a single-lane roundabout; close the 4th Street approach to OR 202	Long-Term Phase 3 Aspirational Plan	$5,291,000
D12	OR 202/7th Street	OR 202/7th Street	Modify the traffic control at the intersection to make the	Long-Term Phase 1	$160,000

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Project #	Project Description	Project Extent	Project Elements	Priority	Estimated Cost
	Safety Enhancement		OR 202 east/west through movements free and the southbound 7th Street approach stop controlled. Restripe 7th Street to include a southbound left, and right-turn lane at OR 202. The vertical profile on the westbound approach of OR 202 to 7th Street may need to be modified to provide adequate sight distance.	Likely Funded Plan	
D13	OR 202/Williamsport Road Safety Enhancement	OR 202/Williamsport Road	Provide an eastbound left turn pocket on US 30	Long-Term Phase 4 Aspirational Plan	$117,000
D14	Niagara Avenue Road Diet	7th Street to 15th Street; 3rd Street to 7th Street Optional.	Re-purpose the existing street width to include one travel lane in each direction, on-street parking and bike lanes. The segment from 3rd Street to 7th Street is optional.	Short-term Likely Funded Plan	$275,000
D15	Irving Avenue/15th Street Safety Enhancement	Irving Avenue/15th Street	Install a stop sign on the southbound 15th Street approach to Irving Avenue.	Long-Term Phase 1 Likely Funded Plan	$2,000
D16	Niagara Avenue/7th Street Safety Enhancement	Niagara Avenue/7th Street	Improve intersection control and guidance through signing, striping, or channelization. Consider installation of a mini-roundabout. Coordinate improvements with the Road Diet Concept on Niagara Avenue.	Long-Term Phase 4 Aspirational Plan	$238,000
D17	Niagara Avenue/8th Street Safety Enhancement	Niagara Avenue/8th Street	Improve intersection control and guidance through signing, striping, or channelization. Consider installation of a mini-roundabout. Coordinate improvements with the Road Diet Concept on Niagara Avenue.	Long-Term Phase 4 Aspirational Plan	$238,000
D18	Harrison Avenue/34th Street Safety Enhancement	Harrison Avenue/34th Street	Install a stop sign on 34th Street at Harrison Avenue.	Long-Term Phase 1 Likely Funded Plan	$2,000
D19	US 101/Hamburg Avenue Capacity Enhancement	US 101/Hamburg Avenue	Restrict access to left-in, right-in, right-out only or install a traffic signal and allow full access.	Long-Term Phase 3 Aspirational Plan	$26,000

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Project #	Project Description	Project Extent	Project Elements	Priority	Estimated Cost
D20	US 30/16th Street Capacity Enhancement	US 30/ 16th Street	Install a traffic signal	Long-Term Phase 3 Aspirational Plan	$319,000
D21**	Marine Drive- Columbia to 9th Circulation Option	Marine Drive from Columbia Avenue to 9th Street	Reconfigure Marine Drive to three lanes. Relocate the traffic signal from Commercial/9th Street to Commercial/10th Street	Short-term Likely Funded Plan	$446,000
D22	OR 202/Denver Street Capacity Enhancement	OR 202/Denver Street	Restripe Denver Street to include a southbound left, and right-turn lane at OR 202-US 101 Business	Long-Term Phase 1 Likely Funded Plan	$1,000
D23	Bond Street Two-Way	Hume Avenue to 7th Street	Re-open Bond Street to two-way travel and implement traffic calming	Long-Term Phase 1 Likely Funded Plan	$702,000
D24	Industry Street Extension	Basin Street to Bay Street Extension	Extend Industry Street from Basin Street to the Bay Street extension as an Mixed-use local street	Long-Term Phase 1 Likely Funded Plan	$1,057,000
D25	Bay Street Extension	North of US 30 to Industry Street Extension	Extend Bay Street to the Industry Street extension as an Mixed-use local street	Long-Term Phase 1 Likely Funded Plan	$293,000
D26	Williamsport Road/ James Street Realignment	Williamsport Road/ James Street	Realign Willamsport Road at James Street to smooth out the curve	Long-Term Phase 2 Aspirational Plan	$270,000
D27	Log Bronc Way Extension	30th Street to 32nd Street	Extend Log Bronc Way from 30th Street to 32nd Street as a Commercial/Industrial local street	Long-Term Phase 3 Aspirational Plan	$977,000
D28	Abbey Lane Extension	36th Street to 39th Street	Extend Abbey Lane from 36th Street to 39th Street as a Commercial/Industrial local street	Long-Term Phase 3 Aspirational Plan	$974,000
D29	Maritime Road Extension	Old US Highway 30 to Railroad	Extend Maritime Road to Railroad Avenue as a Commercial/Industrial local street	Long-Term Phase 2 Aspirational Plan	$876,000
D30*	Irving Avenue Extension	38th Street to Nimitz Drive-Spruance Road	Extend Irving Avenue to Nimitz Drive-Spruance Road as a Residential collector street	Long-Term Phase 4 Aspirational Plan	$6,941,000
D31	US 30 Safety Enhancement	US 30 from 27th Street to Franklin Avenue	Add a center turn lane/median; will require removal of some on-street parking	Long-Term Phase 4 Aspirational Plan	$267,000
D32	OR 202 Safety Enhancement	OR 202 from 8th Street to SE 2nd Street	Add a center turn lane/median. Combine SE 2nd Street and Kearney Street into one access to OR 202	Long-Term Phase 2 Aspirational Plan	$592,000
D33*	US 101 Business	US 101 Business from OR	Widen to a three lane, 62' cross-section, with two 12'	Long-Term Phase 3	$5,470,000

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Project #	Project Description	Project Extent	Project Elements	Priority	Estimated Cost
	Capacity Enhancement	202 south to Miles Crossing	travel lanes, a 14' center turn lanes, and 6' sidewalks and bike-lanes on both sides. Would require widening of the bridge structure***	Aspirational Plan	
D34	Portway Street Capacity Enhancement	Portway Street from US 101 to Industry Street	Improve to a Commercial/Industrial collector street cross-section. Move Portway Street centerline to the west to accommodate trucks making westbound right turns; requires right-of-way acquisition from parcel at northwest corner of intersection. Modify the approach to US 101 to include separate left and right turn lanes	Long-Term Phase 3 Aspirational Plan	$424,000
D35	Bay Street Upgrade	US 30 to northern terminus	Improve to a Mixed-use local street cross-section	Long-Term Phase 3 Aspirational Plan	$68,000
D36	Tongue Point Road Upgrade	Old US Highway 30 to Pier Street	Improve to a Commercial/Industrial local street cross-section	Long-Term Phase 2 Aspirational Plan	$1,119,000
D37	54th Street-Old US Highway 30 Upgrade	US 30 to Tongue Point Road	Improve to a Commercial/Industrial collector street cross-section	Long-Term Phase 2 Aspirational Plan	$2,328,000
D38	Maritime Road-Old US Highway 30 Upgrade	Tongue Point Road to US 30	Improve to a Commercial/Industrial collector street cross-section	Long-Term Phase 2 Aspirational Plan	$893,000
D39	Downtown Circulation Feasibility Study	Downtown Astoria	Feasibility study to determine if streets in downtown Astoria should be converted to two-way travel	Medium-term Likely Funded Plan	$100,000
Pedestrian Solutions					
P1	15th Street Sidewalk Infill	Jerome Avenue to Niagara Avenue	Complete sidewalk gaps on west side of the street.	Medium-term Likely Funded Plan	$204,000
P2	16th Street Sidewalk Infill	Niagara Avenue to Williamsport Road	Complete sidewalk gaps on east of the street.	Long-Term Phase 3 Aspirational Plan	$130,000
P3	1st Street Sidewalk Infill	W Lexington Avenue to 2nd Street	Complete sidewalk gaps on both sides of the street.	Long-Term Phase 4 Aspirational Plan	$54,000
P4	2nd Street Sidewalk Infill	Grand Avenue to Franklin Avenue	Complete sidewalk gaps on both sides of the street.	Long-Term Phase 4 Aspirational Plan	$49,000
P5	8th Street (South)	Kensington Avenue to	Complete sidewalk gaps on east side of the street.	Short-term Likely	$99,000

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Project #	Project Description	Project Extent	Project Elements	Priority	Estimated Cost
	Sidewalk Infill	Madison Avenue		Funded Plan	
P6	Alameda Avenue Community Based Solution	West of Melbourne Avenue to Grand Avenue	Develop a Community Based Solution	Long-Term Phase 4 Aspirational Plan	$23,000
P7	Bond Street Sidewalk Infill	Hume Avenue to West of 2nd Street	Complete sidewalk gaps on both sides of the street. Complete sidewalk on north side to the west of 1st Street and on the south side of to the east of 1st Street.	Long-Term Phase 1 Likely Funded Plan	$195,000
P8	Florence Avenue Sidewalk Infill	Rivington Street to Oregon Street	Complete sidewalk gaps on south of the street.	Medium-term Likely Funded Plan	$168,000
P9	Franklin Avenue Sidewalk Infill	7th Street to 8th Street	Complete sidewalk gaps on south of the street.	Medium-term Likely Funded Plan	$46,000
P10	Grand Avenue Sidewalk Infill	W Lexington Avenue to 2nd Street	Complete sidewalk gaps on both sides of the street.	Long-Term Phase 4 Aspirational Plan	$44,000
P12	Irving Avenue Community Based Solution	13th Street to 35th Street	Develop a Community Based Solution	Long-Term Phase 4 Aspirational Plan	$829,000
P13	Leif Erickson Drive (West) Sidewalk Infill	38th Street to 500' west of 43rd Street	Complete sidewalk gaps on south of the street.	Long-Term Phase 4 Aspirational Plan	$265,000
P14	Leif Erickson Drive (East) Sidewalk Infill	46th Street to 54th Street	Complete sidewalk gaps on north side of the street from 46th to 50th and both sides from 50th to 54th.	Long-Term Phase 4 Aspirational Plan	$488,000
P17	Niagara Avenue Traffic Calming	7th Street to 16th Street	Traffic calming (i.e., speed humps) to enhance comfort for pedestrians in vicinity of Astoria Middle School.	Included with another project D0	
P19	Olney Avenue Sidewalk Infill	4th Street to 7th Street	Complete sidewalk gaps on both sides of the street.	Long-Term Phase 3 Aspirational Plan	$2,315,000
P20	Oregon Street Sidewalk Infill	Florence Avenue to Alameda Avenue	Complete sidewalk on east side of the street.	Medium-term Likely Funded Plan	$75,000
P21	S Denver Street Community Based Solution	Clatsop Avenue to Glasgow Avenue	Develop a Community Based Solution	Long-Term Phase 2 Aspirational Plan	$49,000

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Project #	Project Description	Project Extent	Project Elements	Priority	Estimated Cost
P22	Sonora Avenue Community Based Solution	W Lexington Avenue to W Niagara Avenue	Develop a Community Based Solution	Long-Term Phase 3 Aspirational Plan	$25,000
P23	Vista Drive Sidewalk Infill	Alameda Avenue to W Marine Drive	Complete sidewalk gaps on northwest side of the street.	Medium-term Likely Funded Plan	$133,000
P24	W Grand Avenue Community Based Solution	W Lexington Avenue to 2nd Street	Develop a Community Based Solution	Long-Term Phase 4 Aspirational Plan	$136,000
P25	W Lexington Avenue Community Based Solution	Alameda Avenue to 2nd Street	Develop a Community Based Solution	Long-Term Phase 4 Aspirational Plan	$195,000
P27a	W Marine Drive Sidewalk Infill	Florence Avenue to 4th Street	Complete sidewalk gaps on north side of the street.	Long-Term Phase 2 Aspirational Plan	$3,700,000
P27b	W Marine Drive Sidewalk Infill	Florence Avenue to 4th Street	Complete sidewalks on south side of street.	Long-Term Phase 4 Aspirational Plan	$1,000,000
P28	W Niagara Avenue Sidewalk Infill	Glasgow Avenue to East of Alameda Avenue	Complete sidewalk gaps on both sides of the street. Add sidewalks to the south side of W Niagara Ave between Glasgow and Alameda. East of Alameda, complete sidewalks on the north side.	Medium-term Likely Funded Plan	$126,000
P29	W Niagara Avenue Community Based Solution	W Clatsop Avenue to Sonora Avenue	Develop a Community Based solution	Long-Term Phase 2 Aspirational Plan	$191,000
P30	Williamsport Road Sidewalk Infill	16th Street to SE Front Street	Complete sidewalk gaps on west side of the street. Due to topographical constraints, this corridor can be served by sidewalks on one side.	Long-Term Phase 4 Aspirational Plan	$1,724,000
P31	Alameda Avenue Sidewalk Infill	Existing shared use path to Bridgeview Court	Complete sidewalk gaps on both sides of the street.	Medium-term Likely Funded Plan	$392,000
Biking Solutions					
B1	11th Street (South)	Exchange Street to Irving	Add wayfinding and shared lane markings.	Short-term Likely	$6,000

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Project #	Project Description	Project Extent	Project Elements	Priority	Estimated Cost
	Shared Roadway Enhancements	Street		Funded Plan	
B2	11th Street (North) Shared Roadway Enhancements	Astoria River Trail to Exchange Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$6,000
B3	15th Avenue Shared Roadway Enhancements	Commercial Street to Irving Avenue	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$8,000
B4	7th Street Bike Lane / Shared Roadway Enhancements	Niagara Avenue to OR 202	Add uphill bike lane and downhill shared lane markings.	Long-Term Phase 1 Likely Funded Plan	$29,000
B5	29th Street Shared Roadway Enhancements	Mill Pond Lane to Marine Drive	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$4,000
B6	33rd Street Shared Roadway Enhancements	Leif Erickson Drive to Harrison Avenue	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$5,000
B7	35th Street Shared Roadway Enhancements	Irving Avenue to Harrison Avenue	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$2,000
B8	36th Street Shared Roadway Enhancements	Duane Street to Franklin Avenue	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$2,000
B9	37th Street Shared Roadway Enhancements	Leif Erikson Drive to Duane Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$2,000
B10	45th Street Shared Roadway Enhancements	Cedar Street to Leif Erikson Drive	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$1,000
B11	51st Street Shared Roadway Enhancements	Birch Street to Cedar Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$2,000
B12	6th Street Shared Roadway Enhancements	Astoria River Trail to Duane Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$5,000
B13	8th Street Bike Lane / Shared Roadway Enhancements	Niagara Avenue to Irving Avenue	Add uphill bike lane and downhill shared lane markings.	Long-Term Phase 1 Likely Funded Plan	$13,000

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Project #	Project Description	Project Extent	Project Elements	Priority	Estimated Cost
B14	Alameda Avenue (North) Shared Roadway Enhancements	W Marine Drive to Oregon Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$33,000
B15	Alameda Avenue (South) Shared Roadway Enhancements	Oregon Street to W Klaskanine Avenue. Route utilizes the existing paved trail west of S Denver Street.	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$14,000
B16	Birch Street Shared Roadway Enhancements	51st Street to 53rd Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$5,000
B17	Bond Street Shared Roadway Enhancements	Entire length	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$17,000
B18	Cedar Street Shared Roadway Enhancements	45th Street to 51st Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$13,000
B20	Denver Street Shared Roadway Enhancements	Glasgow Avenue to OR 202	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$8,000
B21	Duane Street (West of 8th) Shared Roadway Enhancements	6th Street to 8th Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$3,000
B22	Duane Street (East of 8th) Shared Roadway Enhancements	8th Street to 17th Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$14,000
B23	Florence Avenue Shared Roadway Enhancements	Oregon Street to Denver Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$9,000
B33	Duane Street (East) Shared Roadway Enhancements	36th Street to 37th Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$2,000
B34	Exchange Street Shared Roadway Enhancements	16th Street to Marine Drive	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$23,000
B35	7th Street/Exchange	Duane Street to 16th Street	Add wayfinding and shared lane markings.	Short-term Likely	$15,000

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	Street Shared Roadway Enhancements			Funded Plan	
B36	Florence Avenue/Oregon Street Shared Roadway Enhancements	W Marine Drive to Alameda Avenue	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$9,000
B37	Franklin Avenue (East) Shared Roadway Enhancements	33rd Street to 36th Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$6,000
B38	Franklin Avenue (West) Shared Roadway Enhancements	2nd Street to 11th Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$12,000
B39	Glasgow Avenue Shared Roadway Enhancements	Alameda Avenue to Denver Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$7,000
B40	Harrison Avenue Shared Roadway Enhancements	33rd Street to 35th Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$4,000
B41	OR 202/W Marine Drive Bike Lanes	High School to Williamsport Road	Re-stripe roadway to include bike lanes.	Medium-term Likely Funded Plan	$44,000
B42	US 30 Bike Lanes	From the eastern extent of the existing bike lane between 39th and 43rd to the eastern City Limits (near Old Hwy 30)	Re-stripe roadway to include bike lanes.	Medium-term Likely Funded Plan	$89,000
B43	Irving Avenue (East) Shared Roadway Enhancements	17th Street to 35th Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$27,000
B44	Irving Avenue (West) Shared Roadway Enhancements	8th Street to 17th Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$9,000

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Project #	Project Description	Project Extent	Project Elements	Priority	Estimated Cost
B47	Klaskanine Avenue/W Klaskanine Avenue/Alameda Avenue/Vista Drive Shared Roadway Enhancements	7th Street to OR 202	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$22,000
B48	Leif Erikson Drive Bike Lanes	33rd Street to 39th Street	Re-stripe roadway to include bike lanes.	Medium-term Likely Funded Plan	$22,000
B49	Lexington Avenue/5th Street/Clatsop Avenue Shared Roadway Enhancements	8th Street to 7th Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$15,000
B50	Marine Drive/W Marine Drive Bike Lanes	Bay Street to 6th Street	Re-stripe roadway to include bike lanes.	Short-term Likely Funded Plan	$32,000
B52	W Marine Drive Bike Lanes	Roundabout to Hamburg Avenue	Re-stripe roadway to include bike lanes.	Short-term Likely Funded Plan	$8,000
B53	Mill Pond Lane Shared Roadway Enhancements	23rd Street to 29th Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$11,000
B54	Niagara Avenue Bike Lanes	17th Street to 15th Street	Re-stripe roadway to include bike lanes.	Long term Likely Funded Plan	$23,000
B55	Taylor Avenue Shared Roadway Enhancements	Hamburg Avenue to Florence Avenue	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$5,000
Shared-Use Path Solutions					
S1	Middle School Connector Bicycle and Pedestrian Trail	James Street to Middle School	Develop Multi-use Trail	Long term Likely Funded Plan	$139,000
S2	Commercial Connection Bicycle and Pedestrian Trail	Commercial Street western terminus to Alameda Avenue	Develop Multi-use Trail	Long term Likely Funded Plan	$79,000

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Project #	Project Description	Project Extent	Project Elements	Priority	Estimated Cost
Street Crossing Solutions					
CR-01	US 30 and Bay Street Crossing Enhancements	US 30 and Bay Street	Upgrade existing crossing to the highest level pedestrian actuated beacon approved by ODOT. Consider restricting parking near crossing to improve visibility.	Long-Term Phase 1 Likely Funded Plan	$26,000
CR-02	US 30 and 45th Street Crossing Enhancements	US 30 and 45th Street	Upgrade existing crossing to the highest level pedestrian actuated beacon approved by ODOT.	Long-Term Phase 1 Likely Funded Plan	$26,000
CR-03	US 30 and 37th Street Crossing Enhancements	US 30 and 37th Street	Upgrade existing rectangular rapid flash beacon at crossing to the highest level pedestrian actuated beacon approved by ODOT.	Long-Term Phase 1 Likely Funded Plan	$26,000
CR-04	OR202 and 7th Street Intersection Enhancements	OR202 and 7th Street	Install signage to clarify behavior of all users at intersection that road users report as being confusing.	Long-Term Phase 1 Likely Funded Plan	$1,200
CR-05	Niagara between 8th and 9th Crossing Enhancements	Niagara between 8th and 9th	Re-install concrete median and pedestrian refuge crossing.	Long-Term Phase 1 Likely Funded Plan	$34,000
CR-06	OR202 and 4th St Crossing Enhancements	OR202 and 4th Street	Install high visibility crossing with pedestrian refuge.	Short-term Likely Funded Plan	$34,000
CR-07	OR202 just east of Hannover Street Crossing Enhancements	OR202 just east of Hannover Street	Install high visibility crossing with pedestrian refuge to serve planned housing development.	Long-Term Phase 1 Likely Funded Plan	$34,000
CR-08	US 30 and 6th Street Crossing Enhancements	US 30 and 6th Street	Enhanced pedestrian crossing. Crossing type to be determined as part of motor vehicle alternatives analysis.	Included with Project D21	$75,000
CR-09	US 30 and 8th Street Crossing Enhancements	US 30 and 8th Street	Enhanced pedestrian crossing. Crossing type to be determined as part of motor vehicle alternatives analysis.	Included with Project D21	$75,000
CR-10	Commercial and 8th Street Crossing Enhancements	Commercial and 8th Street	Pedestrian crossing improvements to be considered as part of motor vehicle alternatives analysis.	Included with Project D21	$100,000
CR-11	Exchange and 13th Street Crossing	Exchange and 13th Street	Extend curb on northeast corner to reduce roadway width and shorten crossing distance. Alternatively, install a	Medium-term Likely Funded Plan	$34,000

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	Enhancements		traffic diverter or refuge island between the two travel lanes.		
CR-12	US 30 and 17th Street Crossing Enhancements	US 30 and 17th Street	Enhance existing crosswalk with high visibility zebra striping. Consider restricting left turns onto 17th to allow for a pedestrian refuge island.	Long-Term Phase 1 Likely Funded Plan	$17,000
CR-13	US 30 and 16th Street Crossing Enhancements	US 30 and 16th Street	Enhance existing refuge crossing with high visibility zebra striping, widen refuge island and provide advance warning signage.	Short-term Likely Funded Plan	$21,000
CR-14	US 30 and 18th Street Crossing Enhancements	US 30 and 18th Street	Enhance existing crosswalk with high visibility zebra striping and adequate lighting.	Long-Term Phase 1 Likely Funded Plan	$17,000
CR-15	US 30 and 20th Street Crossing Enhancements	US 30 and 20th Street	Enhance existing crosswalk with high visibility zebra striping. Consider restricting left turns onto 20th to allow for a pedestrian refuge island.	Long-Term Phase 1 Likely Funded Plan	$17,000
CR-16	Commercial at 10th, 11th and 12th Crossing Enhancements	Commercial at 10th, 11th and 12th	Enhance pedestrian safety by improving visibility (exact solution to be determined through further coordination with the community).	Long-Term Phase 1 Likely Funded Plan	$100,000
CR-17	Roundabout Enhancements	Roundabout enhancements	Provide additional signage at roundabout to clarify expected behavior for bicyclists or consider alternate route using Taylor Avenue.	Long-Term Phase 1 Likely Funded Plan	$1,200
CR-18	Niagara and 15th Street	Niagara and 15th Street	Enhance existing crosswalk with high visibility zebra striping and adequate lighting.	Long-Term Phase 1 Likely Funded Plan	$17,000
Transit Solutions					
T1	Bus Stop Amenity Enhancement	Citywide	Add amenities at bus stops as needed, including bus shelters, landing pads, benches, trash/recycling receptacles and lighting	Medium-term Likely Funded Plan	$100,000
T2	OR 202/US 101 Business Transit Pullout	OR 202/US 101 Business	Provide a transit pullout at the west leg of the OR 202/US 101 Business intersection	Long-Term Phase 3 Aspirational Plan	$75,000

Red text indicates the project is included in the Likely Funded Transportation System Plan

* Projects located outside the Urban Growth Boundary (UGB) are conceptual only. They are either new facilities, or improvements to existing facilities, that may be needed to

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Project #	Project Description	Project Extent	Project Elements	Priority	Estimated Cost

(1) accommodate traffic volumes anticipated beyond the 20-year planning horizon, or (2) provide some other safety or connectivity benefit. They are not needed to accommodate traffic volumes forecasted within the planning horizon, nor has a funding source been identified. Consequently they are not considered planned facilities as referred to in OAR 660-012 and cannot be constructed without additional analysis, public review, and approval (from local and state agencies). This TSP would need to be amended. It may also be necessary to obtain an exception to statewide planning goals or expand the UGB.

** Planning concept potentially reduces vehicle-carrying capacity of the highway; further evaluation of the project design will be required at the time of implementation to ensure compliance with ORS 366.215.

***Projects are located outside the Urban Growth Boundary (UGB) and are recommended to be included in the Clatsop County TSP.

Section B: Memo 1- Public Involvement Plan

Section B: Memo 1- Public Involvement Plan

DRAFT MEMORANDUM

DATE: April 4, 2011

TO: Chris Maciejewski, DKS
Kevin Chewuk, DKS

FROM: Frank Angelo, Angelo Planning Group
Shayna Rehberg, Angelo Planning Group

SUBJECT: **Astoria Transportation System Plan Update**
Draft Public Involvement Plan

Project Purpose and Overview

The City of Astoria is embarking on an effort to update its Transportation System Plan (TSP). The TSP provides guidance for the City and its partners – public agencies, local businesses, community groups and citizens – about current and future transportation-related needs, conditions and proposed facility improvements. The City of Astoria adopted its first TSP in 1999. The Plan is now over 10 years old and is quickly approaching the end of its original planning period of 2016. The updated TSP will address current conditions and future transportation needs through the year 2030.

Key transportation planning objectives and issues identified to date include:

- *Reflect planning efforts completed since last TSP including area and neighborhood transportation plans such as the East Gateway Plan, Port/Uniontown Refinement Plan, Astoria Gateway Transportation Growth Management Plan, Regional Transportation Refinement Plan, Miles Crossing/Jeffers Garden Refinement Plan, and the Riverfront Vision Plan.*

- *Analyze concepts from the Riverfront Vision Plan that were developed to address transportation issues.*

- *Update the regional traffic model from Regional Refinement Plan for use in the TSP Update. Use findings from City Buildable Lands Inventory (estimated completion: Summer 2011) to update regional traffic model for TSP Update.*

- *Address issue of an alternative route around Astoria as a policy issue in the TSP Update.*

- *Address compliance with new and amended federal, state, and local plans, policies, and regulations including the Oregon Transportation Plan (OTP), the state Transportation Planning Rule (TPR),*

the Oregon Highway Plan (OHP), and the Oregon Greenhouse Gas Reduction Initiative.

Listening to and engaging the residents and businesses in Astoria on these key issues and others they may identify during the TSP process will be vitally important to the success of the process. The purpose of the Astoria TSP Update Public Involvement Plan (PIP) is to provide a process that will result in a community-supported plan update by doing the following:

- Inform and educate stakeholders and the public about the TSP process so they can understand the project process and regulatory framework and provide constructive input throughout the update process.
- Form a Project Advisory Committee (PAC) to directly engage a broad range of community and governmental stakeholders, including key technical, resident, and business interests and perspectives.
- Hold PAC meetings at key points in the project to provide information and opportunity for input that will guide the TSP update.
- Conduct a series of stakeholder interviews with a variety of local community groups and stakeholders to identify specific transportation issues, needs, and possible solutions and to evaluate solution alternatives once they have been developed.
- Hold community briefings with key business, neighborhood, and interest groups to address specific transportation issues such as downtown parking and circulation, neighborhood connectivity, and bicycle and pedestrian transportation.
- Engage the broader community by holding up to three community events to provide information and gather input during the alternatives analysis and to review and comment on the draft TSP update.
- Develop a project Website and use it, along with monthly updates to provide meeting and project information to the general public and local media.

Project Advisory Committee (PAC)

This group will be charged with helping the Project Management Team (PMT) and local decision makers to identify and address community issues throughout the planning effort. At major milestones they will be asked to review the technical work and seek consensus-based recommendations that balance the various community interests and accomplish the objectives of this planning project. They also will be asked to act as liaisons to the community to help inform their constituents about the TSP update process and encourage their participation in community outreach events and meetings. In addition, technical agency representatives will be asked to provide oversight and assist with agency coordination to assure consistency between overlapping agency plans.

The PAC is expected to represent a range of interest groups, potentially including but not limited to the Oregon Department of Transportation (ODOT), ODOT Rail, City of Astoria, Clatsop County, Port of Astoria, Astoria School District, emergency service providers, the Downtown Business Association, and other key community groups and stakeholders. There will be up to 20 PAC members. It is expected that the group will meet six times over the course of the project. The City will coordinate formation of the PAC.

Community Meetings

The following tools are intended to provide greater access to the general public and will bring a larger and more inclusive set of participants into the planning process. They include three community events and a series of community group briefings.

Stakeholder Interviews

The consultant will hold stakeholder interviews with up to ten (10) stakeholders or stakeholder groups identified by the City. The interviews will be conducted in two phases both during Task 5 to identify transportation planning issues and to review and discuss alternatives for solutions to these transportation issues. These groups are likely to include the Downtown Business Association and neighborhood groups among others. Stakeholders or groups also should include any organized groups that represent low-income, minority or other potentially disadvantaged populations, consistent with Oregon Title VI Outreach requirements. Other stakeholders could include local developers, a representative from Clatsop Community College, historic preservation advocates, bike/pedestrian advocates, etc. This list could be expanded to include other potential stakeholders based on early input from City staff and consultant team.

Community Events

Up to three community events will be conducted for this project. An open house format will be used for each event. Objectives for the three events are as follows:

Community Event #1:

Present overview of the project's purpose and the results of Technical Memoranda #1-6, including existing and future conditions, and preliminary land use and transportation alternatives. Use a combination of written materials, display boards, and other media (e.g., a PowerPoint presentation).

Seek feedback on initial analysis as well as suggestions for transportation system alternatives to be considered when evaluating alternatives and solutions in subsequent technical memoranda and the TSP.

Community Event #2:

Present an overview of the Alternatives Evaluation and potential recommendations for

system improvements using a combination of written materials, display boards, and other media (e.g., a PowerPoint presentation that repeats itself in a loop throughout the meeting).

Seek feedback using a variety of interactive exercises, comment forms, and other means.

Community Event #3:

Present an overview of the Draft TSP using a combination of written materials, display boards, and other media (e.g., a PowerPoint presentation) and seek feedback for the recommended TSP.

Community Outreach

In addition to facilitating the three larger Community Events, City staff will facilitate a series of smaller-scale community meetings at local gathering places and with local community groups throughout the process. This approach was very useful in the City's Astoria Riverfront Vision planning process, allowing a broader range of people to participate and allowing the City to focus on specific planning issues and topics of interest to people in specific neighborhood and/or other constituencies. The consultant shall assist the City with these meetings when they are focused on "hot topic" issues such as parking and are held on days when the consultant is leading or supporting other meetings and public involvement events outlined in the scope.

Each outreach meeting or event will generally include distribution of project materials, some type of project display, and opportunities for individual or small group discussions with staff about specific transportation issues, ideas, or concerns. Comment forms or questionnaires also may be used to solicit opinions and ideas at these meetings. These events will include meeting with any groups that represent low-income or minority residents in Astoria, consistent with meeting Title VI public outreach requirements.

Public Information

Website

The consultant team will develop and maintain a project Website dedicated to the TSP update. It will include key project information, including a brief overview of the project, meeting dates and summaries, other public involvement opportunities, and project materials. The Website also will provide an opportunity for the public to provide comments and questions. The Website will be updated on a monthly basis on to include new project materials, as well as responses to frequently asked questions.

News Releases and Articles

News releases will be drafted by the consultant team and issued at key points in the process (e.g. project kick-off, prior to community workshops). Staff will provide these releases to the local media. Staff and consultants will also respond to questions and requests from local

media representatives for comments or information, as needed.

Mailings/Flyers

Meeting information mailers will be developed prior to each public event. City staff will develop and distribute the mailers with input from the consultant. In addition, staff will develop flyers to be distributed at several locations within the city and planning area.

Tasks and Responsibilities

Task	Description	PI Lead
Public Involvement Plan	Prepare a detailed plan outlining stakeholder outreach methods, advertisement of meetings, distribution of work products, workshop format, and roles and responsibilities. Comment on and suggest refinements to Plan.	APG City
Project Web Site	Prepare Website content, graphics, layout and information. Initial content should include a planning process description, schedule, opportunities for involvement and contact information. Monthly updates will include answers to frequently-asked questions and current technical and process information, including meeting notices, summaries, maps, and memos. Provide link from project Website to City Website. Review content before posting to Website.	DKS with APG support City and ODOT
PAC Meetings	Develop PAC roster. Form PAC. Provide meeting logistics and notification. Distribute meeting materials. Review PAC roster. Facilitate meetings. Lead presentations. Prepare information and display materials, agendas, summaries, and graphics.	City DKS
Stakeholder Interviews	Identify up to 10 stakeholders or stakeholder groups to be interviewed during two sets of stakeholder interviews during the project (Task 5). Coordinate interviews with stakeholders and/or stakeholder groups. Work with consultant to schedule meetings and provide any needed materials to interviewees in advance. Review stakeholder interview roster. Conduct interviews. Prepare written summaries of individual interviews as well as an overall summary.	City City DKS

Task	Description	PI Lead
Community Events	Coordinate meeting logistics and set-up. Provide staff. Distribute/mail meeting notification information and leave-behinds. Co-facilitate meeting discussions. Prepare meeting notification materials for distribution. Develop meeting format strategy. Prepare handouts, PowerPoint presentation, and content for display materials. Prepare sign-in sheets and comment cards. Provide staff. Co-facilitate meeting discussions. Lead presentations. Prepare information and display materials, agendas, summaries, and graphics.	City DKS/APG APG/DKS
Community Outreach	Coordinate and facilitate individual meetings at local gathering places and/or with community groups. Distribute project materials. Respond to questions during meetings. Prepare brief summary of results. The consultant will assist with meetings focused on a single topic or "hot topic" (e.g. parking) when these meetings can be scheduled the same day as other public involvement events in which the consultant is participating (e.g. PAC meetings, Community Events, stakeholder interviews).	City DKS/APG support
Media Updates	Draft and issue media releases approximately monthly. Distribute media updates and act as project contact to the media.	APG/DKS City

Compliance with Title VI Outreach Requirements

Implementation of this Public Involvement Plan will meet requirements and guidance found in ODOT Title VI (1964 Civil Rights Act) Plan. Specifically, the Title VI Plan identifies measures to reach and solicit comments from disadvantaged populations within a community. Although the city has relatively limited concentrations of minorities and low-income residents, these populations are present throughout the city.

Based on 2000 census data, the racial makeup of the city was about 91% Caucasian, with 6% of the population classified as Hispanic and less than 2% of the population as part of any other ethnic or minority group. This translates to a higher percentage of Caucasian population and lower percentages of nearly all ethnic groups compared to the state as a whole.

Approximately 11.6% of families and 15% of individuals within the population were below the poverty line in 2000, compared to 7.6% and 11.6%, respectively for the state as a whole. Though a decade old, these figures are still considered relatively accurate except poverty is assumed to have increased as a result of the recession during the last few years.

Outreach to low-income and minority populations will be addressed through the following means:

- Identify low-income and/or minority community members to include on the Project Advisory Committee (PAC).
- Use a variety of methods of communication as described the sections above, most of which are accessible to minority and low-income residents.
- Notify agencies that work with low-income and minority populations about opportunities for public involvement. These organizations include the Clatsop County Department of Housing Services, Astoria Senior Center, Clatsop Community Action, the Lower Columbia Hispanic Council, and others.
- Post meeting flyers in and solicit feedback specifically from residents of the Emerald Heights development and any other locations recommended by the agencies listed above.
- In addition, notify representatives from Native American tribes in the region such as the Confederated Tribes of the Grand Ronde, Confederated Tribes of Siletz Indians, Confederated Tribes of Warm Springs, Clatsop-Nehalem Confederated Tribes, and the Chinook Indian Nation.
- Hold meetings in places that are accessible by transit, walking, or bicycling.
- The City will offer ADA assistance (e.g. accessibility, hearing assistance) and translation services as needed at meetings, given prior notice.

Section C: Memo 2- Background Document Review

Section C: Memo 2- Background Document Review

MEMORANDUM #2

DATE: May 19, 2011

TO: Astoria TSP Update Project Management Team

FROM: Chris Maciejewski, P.E., P.T.O.E., DKS Associates
Kevin Chewuk, DKS Associates
Shayna Rehberg, Angelo Planning Group
Mathew Berkow, Alta Planning + Design

SUBJECT: **Astoria Transportation System Plan Update**
Background Document Review

The purpose of this memorandum is to summarize a review of planning documents, policies, and regulations applicable to the Astoria Transportation System Plan (TSP) update. The City's current TSP will serve as the foundation for the update process, upon which new information obtained from system analysis and stakeholder input will be applied to address changing transportation needs through the year 2035. As new strategies for addressing transportation needs are proposed, compliance and coordination with the plans, policies, and regulations described herein will be required.

Summary of Key Issues

Key Issue(s)
Capacity constraints near Smith Point (Highway 101 at Highway 202), Highway 30 east of the existing one-way couplet (16th Street) to Franklin Street, and in the Port of Astoria/Uniontown area.
Motor vehicle safety concerns at the west end of the existing one-way couplet on Marine Drive (Highway 30), in the Gateway Development Area east of the existing one-way couplet, near the Smith Point intersection, and at the 16th Street/Exchange Street intersection.
Pedestrian safety across Highway 30, Highway 101, and Highway 202 from the developed areas to the waterfronts on the Columbia River and Youngs Bay
Truck circulation and motor vehicle capacity constraints at the 8th Street/Commercial Street intersection

City/Local Plans, Policies, and Regulations

The following sections summarize local plans, policies, and regulations.

City of Astoria Transportation System Plan – 1999

The current City of Astoria Transportation System Plan (TSP) was adopted in 1999. The plan discusses key transportation issues being faced by the city, establishes evaluation criteria to determine a preferred alternative, and identifies additional improvements needed. The plan assumed that the city would grow from its 1996 population of approximately 10,000 residents to over 13,000 residents by the year 2016. The goals of the TSP included the following:

- Improve traffic circulation and safety throughout the city
- Identify roadway system needs to accommodate future population, economic and tourism growth
- Promote the increased use of alternative modes
- Utilize access management measures to reduce traffic impacts on arterial and collector streets
- Identify improvements needed to address site-specific transportation issues
- Assess the impacts of building and not building the proposed Astoria Bypass on the city's transportation system

Key Issues

Some of the main issues raised in the previous TSP that are still outstanding or have only partially been addressed are listed below. The current TSP update will determine how to address these outstanding concerns:

- Traffic volume levels are near capacity during summer p.m. peak periods at Smith Point (Highway 101 at Highway 202) and Highway 30 east of the existing one-way couplet (16th Street) to Franklin Street
- Motor vehicle safety concerns in some of the areas that are either developing or expected to develop, such as at the west end of the existing one-way couplet on Marine Drive (Highway 30), in the proposed Gateway Development Area east of the existing one-way couplet, and the Smith Point intersection
- Bicycle safety on the Astoria-Megler and New Youngs Bay Bridges
- Pedestrian safety across Highway 30, Highway 101, and Highway 202 from the developed areas to the waterfronts on the Columbia River and Youngs Bay
- Additional right-of-way for improvements to the existing roadways will be difficult and expensive to obtain

Key Standards

- Access spacing guidelines in the TSP recommend minimum spacing between driveways, and between driveways and streets of 400 feet on arterials, 200 feet on one-way arterials, 100 feet on collectors, and no minimum on major local streets
- Signal spacing guidelines in the TSP recommend a minimum of 2,800 feet between signals on arterials, and 400 feet on all other roadway classifications
- The City does not have an adopted mobility standard for intersections under City jurisdiction

Recommended Improvements

Improvements were recommended to ensure acceptable future traffic operations through the 2016 planning horizon year. Note that the previous Astoria TSP included a US 30 Bypass project via Highway 202 through southern Astoria. The current TSP update will assume that the bypass will not be constructed within the planning horizon year of 2035 and will recommend improvements without the bypass. The current TSP update will, however, determine how to address other outstanding improvements recommended in the prior TSP, shown later in this document under the "Key Projects" section.

Clatsop County Transportation System Plan – 2003

The Clatsop County Transportation System Plan (TSP) was adopted in 2003. The plan discusses key transportation issues being faced by the county, establishes evaluation criteria to determine a preferred alternative, and identifies additional improvements needed.

The TSP included the following goals:

- Mobility
- Livability
- Coordination
- Pedestrian and Bicycle Facilities
- Environment
- System Preservation
- Capacity
- Transportation Funding

Recommended Improvements

The current Astoria TSP update will determine how to address the recommended Clatsop County improvements, shown later in this document under the "Key Projects" section.

16th Street and Exchange Street Traffic Safety Study – 1998

The 16th Street/Exchange Street intersection was evaluated in 1998 because of concerns that the intersection had a high frequency of collisions. The study found that the number of collisions occurring at the intersection was typical for the traffic volumes served. The study recommended short-term signing and pavement striping improvements. Long-term it recommends studying the intersection to see if traffic volumes would warrant all-way stop

control or installation of a traffic signal. The current TSP update will determine how to address the recommendations from the plan.

Astoria Gateway Transportation Growth Management Plan – 1999

The Astoria Gateway Transportation Growth Management Plan developed a concept plan for Marine Drive (Highway 30) between 16th Street and 33rd Street. The concept plan recommended improvements to the corridor in an attempt to balance transportation assets, business needs and pedestrian amenities with right-of-way widths. The current TSP update will determine how to address the recommendations from the plan, shown later in this document under the "Key Projects" section.

US 101 Condition Report – 2005

The US 101 Conditions Report provides physical and traffic operational information about the US 101 corridor, including the portion through Astoria, in graphical format. It covers material such as land use, traffic operations, facility inventory, safety, approach inventory, and geometrics data of the highway by mile-point. The report also provides a video log by mile-point for the north and southbound directions of the highway. The data from this plan will be used to compile existing conditions information for this TSP update.

Port of Astoria Uniontown Area Master Traffic Impact Study – 2005

The Port of Astoria/Uniontown Area Master Traffic Impact Study analyzed the impact of land use development in the Port by estimating future traffic generation in the study area. The study found that the Columbia Avenue/Bond Street and the Marine Drive/Hamburg Avenue intersections exceeded the mobility standards in 2005. It also found that the Marine Drive/Hamburg Avenue intersection had the highest total number of crashes, the highest crash rate, and was identified at the time by ODOT as a top 10 percent SPIS site (however, it is currently not on the SPIS). By 2008, it was forecasted that several intersections with Marine Drive (Hamburg Avenue, Basin Street and Columbia Avenue/West Bond Street) were expected to exceed the mobility standards. The safety and traffic operational deficiencies will be reviewed during this TSP update.

Astoria Port/Uniontown Transportation Refinement Plan – 2006

The Astoria Port/Uniontown Transportation Refinement Plan provided a set of multimodal transportation recommendations to address the circulation and access needs for the Port of Astoria/Uniontown areas through 2025. The current TSP update will determine how to address the recommendations from the plan, shown later in this document under the "Key Projects" section.

West Astoria Couplet Development Improvements – 2006

The West Astoria Couplet Development Improvements study evaluated improvement options for the west end of the US 30 couplet at the 8th Street/Commercial Street intersection. The result of the study was five alternatives for the intersection that were

further evaluated in the Greater Astoria – Warrenton Area Regional Transportation System Refinement Plan. The five alternatives include:

- Creating a Duane/Marine Couplet: Eastbound US 30 route would change from Commercial Street to Duane Street
- Decoupling Commercial Street and Marine Drive: Marine Drive would become a two-way, US 30 route
- Extending the couplet with New Alignment between 5th and 7th Streets: Eastbound US 30 would be extended to the west to provide a new road with sufficient geometry
- Acquiring Additional Right-of-Way at the 8th Street/Commercial Street Intersection: Building at the northeast corner of the intersection would be demolished to allow for the construction of a new intersection with adequate turning radius
- Maintaining Existing Conditions: "No-Build" Idea. No improvements would be made beyond updates to the existing signage at the 8th Street/Commercial Street intersection

The current TSP update will review the evaluation of the five alternatives (from the Greater Astoria – Warrenton Area Regional Transportation System Refinement Plan) and determine how to address them.

East Gateway Transportation Plan – 2007

The purpose of the East Gateway Transportation Plan was to identify and address short and long term transportation improvements along US 30 between 33rd Street and Liberty Lane in eastern Astoria. The improvements are intended to enhance transportation efficiency and encourage and promote development that meets the needs of citizens and creates new employment opportunities. The current TSP update will determine how to address the recommendations from the plan shown later in this document under the "Key Projects" section.

Greater Astoria – Warrenton Area Regional Transportation System Refinement Plan – 2007

The Greater Astoria-Warrenton Area Regional Transportation System Refinement Plan identifies future regional transportation needs in the City of Astoria, the City of Warrenton, and western Clatsop County and recommends a set of improvements to meet those needs over the short (0-10 years), medium (10-20 years), and long term (20+ years). This plan was not adopted into the 1999 Astoria Transportation System Plan, but incorporated several proposed projects that had been previously identified in the TSP, Astoria Gateway Transportation Growth Management Plan, East Gateway Transportation Plan, the Astoria Port/Uniontown Transportation Refinement Plan, and the West Astoria Couplet Development Improvements. The current TSP update will determine how to address the recommendations from the plan, shown later in this document under the "Key Projects" section.

Miles Crossing / Jeffers Garden Transportation Refinement Plan – 2009

The Miles Crossing/Jeffers Garden Transportation Refinement Plan identified ways to balance the needs of all transportation modes along US 101 Business through the unincorporated rural communities of Miles Crossing and Jeffers Garden, south of Astoria. The Plan recommended the following medium term (or built within 5 to 10 years) projects for US 101 Business in Astoria:

- Widen to a three lane, 62' cross-section from OR 202/5th Street south to Miles Crossing, with two 12' travel lanes, a 14' center turn lanes, and 6' sidewalks and bike-lanes on both sides
- Install a round-a-bout at the OR 202/US 101 Business intersection, with a separate pedestrian and bicycle path (Cost: $3.79 million)

The current TSP update will determine how to address the recommendations from the plan.

Astoria Riverfront Vision Plan – 2009

The Astoria Riverfront Vision Plan was developed in part due to citizen concerns related to changes in the built environment, including recent developments in downtown and along the riverfront, and how these may affect the local population and the future of the riverfront area. Key recommendations in the plan that relate to pedestrians are that development should maintain a sense of openness along the River Trail, that the City should continue to improve and expand the River Trail, and should create a park or open space on the City-owned property near the historic depot building. The plan is organized around four areas, which include the Bridge Vista, Urban Core, Civic Greenway and Neighborhood Greenway.

In describing the visioning process, the plan states that in responding to the draft Vision Report dated November 2008, Astorians expressed the following on the topic of 'Transportation and Other Public Improvements:'

- Improving pedestrian crossings along Highway 30
- Improvements to the River Trail, streetscapes and vehicular circulation
- In regards to more specific transportation changes, bicycle and pedestrian improvements on Highway 30 are top priorities
- Connecting the railroad trestle to the Alderbrook neighborhood with a bridge at 45th Street, streetscape improvements on Commercial Street and making pedestrian improvements across Highway 30 at 6th, 8th and 16th/17th Streets also are deemed important
- Improving the pedestrian crossing at 23rd Street and extending a local street between 29th and 32nd Streets are relatively lower priorities

In addition to the above, the plan contains numerous specific transportation improvements for each of the four areas (Bridge Vista, Urban Core, Civic Greenway and Neighborhood

Greenway). Next steps include updating the City's Comprehensive Plan and designing improvement projects identified in the plan. Potential comprehensive plan policy amendments/additions related to transportation and/or public facilities include:

- Continue to maintain, repair, extend and enhance the River Trail
- Develop and enhance safe pedestrian connections between the downtown and the riverfront
- Create amenities such as shelters, lighting and public restrooms in targeted locations along the River Trail
- Ensure long-term maintenance of public improvements

City of Astoria Bicycle Plan – 1992

The City of Astoria Bicycle Plan was adopted October 5, 1992. The plan was prepared in response to the Land Conservation and Development Commission (LCDC) rules adopted in 1991 which required communities to develop transportation systems plans that include bicycle and pedestrian routes. The plan served as the bicycle element of Astoria's transportation system plan.

The plan indicates that the majority of transportation in Astoria is on state run highways and that the highways also serve as important routes for bicycle travel. The bicycle plan focuses on city streets, which it says provides the most efficient and safest routes, though bicycle facilities are also identified on state highways. Many of the design considerations are drawn from the ODOT Oregon Bicycle Plan, which was adopted earlier in 1992. The Astoria Bicycle Plan identifies existing and future bicycle facilities on two maps which include proposed bike lanes, bike route (shoulder bikeway), bike route (shared roadway) and future bike route (shoulder bikeway). The plan also contains an implementation as well as education and encouragement section.

Astoria Trails Master Plan Report – 2006

The Astoria Trails Master Plan was developed to achieve the goal established by the Astoria City Council to pursue park/trail creation or enhance existing trails. The plan was adopted in March 2006. Key issues that the public had requested of city staff over the years include developing trail directional maps, installing trail signage, developing new trails, and improving trail maintenance. Much of the planning process was spent inventorying and mapping existing trails (there is a large amount of urban forest with many miles of trails) and meeting with landowners.

Through the planning process, 21.64 miles of trails were inventoried within the boundaries of the City of Astoria forest lands. Only two of the trails (Cathedral Tree Trail and Astoria Riverwalk) were officially recognized by the City, while the rest were unofficial, user-made trails (note that many of the unofficial trails are no longer recognizable after windstorm damage during recent years). The plan identified 12.37 miles of 'primary' trails that the

committee recommends to sign and better maintain.

While the plan appears to focus on recreational trail use, of the 50+ people that participated in a Trails Master Plan Questionnaire, 6 indicated that they currently use trails for transportation, work or school.

Another issue identified is neighborhood access, as the plan suggests that many Astoria residents will go to the trail closest to their homes rather than drive to a trailhead. Signage and other improvements may be required to connect residents to the trail system. The plan envisions enhancing trails by:

- Improving prioritized trails first
- Installing directional signage between neighborhoods, downtown, and the riverfront
- Developing a trail safety program
- Developing a maintenance plan (will require volunteer support)
- Managing conflicts between different user groups (hikers, bikers and motorized enthusiasts); this includes encouraging the Clatsop State Forest to develop trails for all users, but particularly for mountain bikers and motorized trail bikes on state land adjacent to the Astoria Urban Forest.
- Developing additional trails (will require volunteer support)

Astoria Downtown Parking Study Final Report – 2006

The Astoria Downtown Parking Study evaluated existing parking in Astoria's downtown area (bounded by 6th to 17th Streets, and Columbia River to Franklin Avenue) and identified potential improvements. The study determined there was adequate parking downtown, and that the perception of a parking problem was perhaps the larger issue. The study recommends better informing the citizens and visitors of the parking options downtown, and directing them (with signage and maps) to appropriate parking places.

City of Astoria Pre-Disaster Mitigation Plan – 2008

The Astoria Pre-Disaster Mitigation Plan was an addendum to the Clatsop County Multi-jurisdictional Natural Hazards Mitigation Plan. It was developed in an effort to increase the City's resilience to natural hazards. The plan identified locations of the City susceptible to natural disasters and detailed the associated risks such as coastal erosion, drought, earthquake, flood, landslide, tsunami, volcano, wildfire, windstorm, and winter storm.

City of Astoria Comprehensive Plan

The City of Astoria Comprehensive Plan, originally adopted in October 1979 and amended as recently as July 2010, provides policies, and implementation recommendations related to long-term development and growth management of the city. These policies and strategies are organized into plan elements according to goals. As an acknowledged plan, these goals, policies, and recommendations have been found to be consistent with County and State land

use planning goals and policies. Plan elements include:

- Land and Water Use
- Columbia River Estuary Land and Water Use
- General Development
- Urban Growth
- Economy
- Housing
- Historic Preservation
- Parks, Recreation, and Open Space
- Public Facilities
- Transportation
- Air, Water, and Land Quality
- Geological and Flood Hazards
- Energy Conservation
- Forest and Natural Resources
- Procedures and Participation.

The Columbia River Estuary Land Use and Water Element establishes special use regulations for the following Comprehensive Plan land use designations: natural aquatic, conservation aquatic, development aquatic, development shorelands, and water-dependent development shorelands. Special use regulations for these designations address marine industrial and transportation uses.

The Columbia River Estuary Land Use and Water Element also acknowledges subareas throughout the city and includes specific plans for some of these subareas. Policies in the Downtown Astoria Subarea Plan and South Astoria Subarea Plan address transportation-related issues including waterfront access, multi-use pathways, and potential highway modifications. In particular, the South Astoria Subarea Plan requires that, before approving a bypass or widening of the highway in that area, impacts on public access to the bay, aquatic resources in areas that would potentially be filled, and existing homes and businesses be analyzed.

Goals and policies called out in the Transportation Element of the Comprehensive Plan date from 1979 to 1991 and these are currently superseded by goals and policies established in the 1999 TSP. The goals and policies in the 1999 TSP will be reviewed and modified as needed during this TSP update process.

City of Astoria Development Code

Standards for Transportation Improvements

Article 13 (Subdivisions and Land Partitions) provides regulations and design standards for streets related to subdivisions and partitions. Sections 13.410 and 13.440 establish the standards for streets and blocks. Section 13.610 makes general statements of the street, sidewalk, railroad crossing, street lighting, street tree, and off-site street improvements that may be required of the applicant at the time of subdivision or major partition. Street and road standards for Planned Developments (Section 2.900) are established independently by

the City Engineer and Planning Commission.

Access and Circulation

Other than block standards in Article 13, there are not specific standards or guidelines in the Astoria Development Code for access and circulation. A general provision in Section 13.410 (Streets) requires that the "street system shall assure an adequate traffic circulation system." Access management standards are not included in the code. Related to access, however, are standards for clear-vision areas in Section 3.045 under Article 3 (Additional Use and Development Standards).

Parking

Standards for the number of motor vehicle parking spaces, parking space dimensions, and loading areas are provided in Article 7 (Parking & Loading). Article 7 does not include provisions for bicycle parking.

Traffic Impact Studies

Subsection 5 of Section 2.485 (Other Applicable Use Standards) for the General Industrial (GI) Zone refers to the Transportation Planning Rule (TPR) and to traffic impact studies that may be required given potential impacts on streets and state highways adjacent to a proposed use or development. Streets that are adequate to "support the anticipated traffic" must be shown in the preliminary plans for a Planned Development, pursuant to Subsection B6 of Section 2.905 (Procedure – Preliminary Development Plan) for the Planned Development Overlay Zone. This kind of language, however, does not appear elsewhere in a more global way in the Development Code; there is no additional language or guidance regarding traffic impact study requirements for development proposals outside of the GI zone.

Other Transportation-Related Issues

Other than access roads in the Land Reserve Zone, permitting of transportation facilities in city zoning districts is not specifically addressed in Article 2 (Zoning). Article 9 (Administrative Procedures) describes notice procedures for land use decisions. Notice requirements for applications to be decided by quasi-judicial and legislative procedures, however, specify only that notices will be sent to property owners. Notice requirements and review procedures do not specify notice to or coordination with potentially affected agencies such as the Oregon Department of Transportation (ODOT). Last, Subsection B of Section 10.070 (Amendment Criteria) does require that map amendments "meet transportation demands." Nevertheless, text and map amendment criteria do not yet fully reflect the requirements to address transportation needs as are set forth in the Section -0060 of the TPR.

City of Astoria Roadway Standards

The Astoria street standards are specified in the City's 1999 Transportation System Plan.

Table 1 summarizes the roadways standards for the City.

Table 1: City of Astoria Roadway Design Standards

Classification	Pavement Width	Right-of-way Width
US 30	48 to 70 feet	60 to 80 feet
US 101	76	100 feet
OR 202	58 to 82 feet	100 feet
Collector	40 feet	60 feet

Classification	Pavement Width	Right-of-way Width
Major Local	36 feet	60 feet
Minor Local	28 feet	40 feet
Local (Commercial)	38 feet	50 feet
Collector (Industrial)	36 feet	60 feet

City of Astoria Engineering Design Standards for In-fill Development

The engineering design standards for infill development apply to new infill developments within the Astoria urban growth boundary of three residential lots or fewer. For developments resulting in more than three lots, the City's full development standards shall apply. The infill standards require the following:

- Street improvements within the existing right-of-way shall not block access to existing homes or undeveloped property
- No on-street parking for paved roadway widths of 20 feet or less, parking on one side for widths between 20 and 28 feet, and parking on both sides for widths 28 feet or greater

The City will accept maintenance of new streets in dedicated public right-of-way if the roadway is constructed to City standards and includes:

- A minimum 20-foot wide paved surface, with curb on both sides and sidewalk on at least one side
- If the proposed access road is not located within an existing public right of way, a minimum 40-foot wide public right of way should be dedicated
- A cul-de-sac or hammerhead turnaround, with a 30-foot paved radius, is required at any dead end
- A maximum profile grade of 12%
- All street runoff must be captured and directed to appropriate storm sewers, combined sewers or existing natural drainage channels as approved by the City Engineer

In cases where the City determines the above standards are not feasible, the City Engineer

may approve a privately-maintained access road to serve an infill development that allows reduced pavement width, no sidewalks, and a 16% grade among other things.

City of Astoria Capital Improvement Plan

The City of Astoria does not have an adopted capital improvement plan, although several of the recent planning documents recommend work plans for the City. According to the City, only a few of the projects listed in the work program of the 1999 TSP have been completed. In addition, the Franklin Avenue bridge project is nearing completion and the Irving Avenue bridge project is expected to begin soon. The current TSP update will create a new work plan for the City based on updated transportation funding forecasts.

City of Astoria Goal 5 Inventory

The City of Astoria has several goal 5 resources that must be considered when updating the TSP. The City has the following goal 5 resources:

- Historic structures
- Parks and open spaces
- Scenic views and vistas
- Water bodies within the Urban Growth Boundary include: Columbia River, Youngs Bay, Craig Creek, Mill Creek, and the Mill Pond
- Fourteen wetland areas totaling about 256 acres: five in the Alderbrook Area, one at Tongue Point, five in Youngs Bay, one near the John Day River, one at Craig Creek and one surrounded by developed land uses near 7th Street

Recent Traffic Data

Recent traffic data was available for a few of the documents reviewed within this report. In addition, the City provided data from a traffic study at the US 30/32nd Street and the US 30/33rd Street intersections.

City transportation projects constructed since 2001

Major transportation projects constructed in the City since 2001 include the following:

- Riverwalk Trail Projects
- Smith Point Roundabout
- US 30/33rd Signal
- US 30/37th Intersection

Transportation Funding

The City has the current transportation funding mechanisms:

- Surface Transportation Program (STP)- the City received an average of $104,000 from this source over the past three years (2008 to 2010)

- State Gas Tax and License Fees: the City has projected a revenue of about $490,000 for FY 2010-2011 from this source
- Bikeway/Walkway (1% of State Gas Tax Fund): the City has projected a revenue of about $5,000 for FY 2010-2011 from this source
- Local Fuel Tax: the City has projected a revenue of $210,000 for FY 2010-2011 from this source
- Other grants must be applied for, and funding is not guaranteed

State Plans, Policies, and Regulations

The following sections summarize state plans, policies, and regulations.

Oregon Transportation System Plan Guidelines

ODOT's Transportation System Plan Guidelines is comprised of four chapters: an overview of transportation system planning (Chapter 1); guidance for the preparation of a jurisdiction's first TSP and of TSP updates (Chapters 2 and 3); and policy guidance on transportation and land use issues in a series of technical appendices (Chapter 4). The 2008 Guidelines differ from the 2001 Guidelines in that they focus more on TSP updates, make stronger connections between local transportation needs and the availability of transportation funding, and provide more guidance related to mobility standards, the OTP, and project financing in the technical appendices, in addition to new electronic links throughout the document for easy access to additional resources.

The chapter on TSP updates is divided into three steps: determining if an update is needed and scoping the update project; preparing an assessment; and addressing recent regulatory and policy changes, the latter two of which are most applicable to the Astoria TSP update.

The TSP Guidelines direct TSP updates to address recent policy and regulatory changes, and calls out recent changes to the OTP, OHP, and TPR. Since adoption of the 1999 Astoria TSP, the OTP was updated (2006) to emphasize maintaining assets in place, optimizing existing system performance through technology and better system integration, creating sustainable funding, and investing in strategic capacity enhancements. Policy 1F (Mobility Standards) of the OHP was amended to allow for the adoption of alternative mobility standards where "practical difficulties make conformance with the highway mobility standards infeasible," as was Appendix C (Access Management Spacing Standards) to be consistent with amendments to the Access Management Rule, OAR 734-051. Amendments to the TPR are described in the section of this memorandum that reviews the TPR.

Oregon Transportation Plan

An update of the Oregon Transportation Plan (OTP) was adopted by the Oregon Transportation Commission (OTC) in 2006. The OTP is a comprehensive plan that addresses the future transportation needs of the State of Oregon through the year 2030. It considers all modes of transportation, including airports, bicycle and pedestrian facilities, highways and roadways, pipelines, ports and waterway facilities, public transportation, and railroads.

The following seven goals with associated policies and strategies are provided in the plan to address the core challenges and opportunities facing transportation in Oregon:

- Goal 1 – Mobility and Accessibility
- Goal 2 – Management of the System

- Goal 3 – Economic Vitality
- Goal 4 – Sustainability
- Goal 5 – Safety and Security
- Goal 6 – Funding the Transportation System
- Goal 7 – Coordination, Communication and Cooperation.

There are also six key initiatives identified to reflect the desired direction of the plan and to frame the plan implementation. These initiatives are:

1. Maintain the existing transportation system to maximize the value of the assets. If funds are not available to maintain the system, develop a triage method for investing available funds.
2. Optimize system capacity and safety through information technology and other methods.
3. Integrate transportation, land use, economic development and the environment.
4. Integrate the transportation system across jurisdictions, ownerships and modes.
5. Create a sustainable funding plan for Oregon transportation.
6. Invest strategically in capacity enhancements.

The TSP update will be developed to be consistent with the goals and policies of the OTP. It will emphasize, as the updated OTP has, maintaining and building upon existing investments and using system management, technology, and transportation options to maximize the existing state highway system in the city.

Oregon Highway Plan

The Oregon Highway Plan (OHP) was originally adopted in 1999 and was reaffirmed as a modal element of the 2006 Oregon Transportation Plan (OTP). The OHP defines policies and investment strategies for Oregon's state highway system. The plan contains three elements: a vision element that describes the broad goal for how the highway system should look in 20 years; a policy element that contains goals, policies, and actions to be followed by state, regional, and local jurisdictions; and a system element that includes an analysis of needs, revenues, and performance measures.

The OHP addresses the following issues:

- Efficient management of the system to increase safety, preserve the system, and extend its capacity
- Increased partnerships, particularly with regional and local governments
- Links between land use and transportation
- Access management
- Links with other transportation modes
- Environmental and scenic resources

The policy element contains several policies and actions that are particularly relevant to the Astoria TSP, described in the following subsections.

Policy 1A (State Highway Classification System)

Action 1A.1 categorizes state highways for planning and management decisions. US 30 (No. 92) in Astoria is classified as a Statewide Highway, part of the National Highway System (NHS), a Freight Route, and a Truck Route. US 101 (No. 9) in Astoria is classified as a Statewide Highway, part of the National Highway System (NHS), a Truck Route, and a Scenic Byway. US 101 Business/OR 202 (No. 102) is classified as a Statewide Highway, with no other designations. OR 202, east of Williamsport Road, and US 101 Business (No. 105) are classified as District Highways with no other designations.

According to OHP policy, statewide highways are intended to provide inter-urban and inter-regional mobility and connections to larger urban areas, ports and major recreational areas not directly served by Interstate highways. District highways are intended to provide connections between small urbanized areas, rural centers, and also serve local access. Updates to the TSP will support the existing highway classifications and will enhance the ability of the highways in Astoria to serve in their defined functions.

Policy 1B (Land Use and Transportation)

Policy 1B, recognizes the need for coordination between state and local jurisdictions. Action 1B.7 gives special highway segment designations for specific types of land use patterns to foster compact development. The three segment designations available are Special Transportation Area, Commercial Center, and Urban Business Area.

Policy 1C (State Highway Freight System)

Policy 1C addresses the need to balance the movement of goods and services with other uses. In addition, Action 1C.4 states that the timeliness of freight movements should be considered when developing and implementing plans and projects on freight routes. US 30 and US 101 in Astoria are freight routes.

Policy 1F (Highway Mobility Standards)

Policy 1F sets mobility standards for ensuring a reliable and acceptable level of mobility on the highway system. Pursuant to Policy 1F, Table 6:

- Statewide highways inside Urban Growth Boundaries (UGBs) in non-MPO areas that are freight routes but do not have special OHP land use designations (US 30 and US 101 in Astoria) have a mobility standard requiring that the highway operate at or below a volume to capacity (v/c) ratio of 0.70-0.80 depending on the posted speed
- Statewide highways inside UGBs in non-MPO areas that are not freight routes or do not have special OHP land use designations (US 101 Business/OR 202 in Astoria)

have a mobility standard requiring that the highway operate at or below a volume to capacity (v/c) ratio of 0.75-0.85 depending on the posted speed

- District highways inside UGBs in non-MPO areas that are not freight routes or do not have special OHP land use designations (US 101 Business and OR 202) have a mobility standard requiring that the highway operate at or below a volume to capacity (v/c) ratio of 0.85-0.90 depending on the posted speed
- Unsignalized side street approaches to state highways are required to meet the district highway standards

Policy 1G (Major Improvements)

Policy 1G requires maintaining performance and improving safety by improving efficiency and management before adding capacity. The intent of policy 1G and Action 1G.2 is to ensure that major improvement projects to state highway facilities have been through a planning process that involves coordination between state, regional, and local stakeholders and the public, and that there is substantial support for the proposed improvement.

Policy 2B (Off–System Improvements)

Policy 2B establishes ODOT's interest in improvements on local roads that maintain or improve safety and mobility performance on state roadways, and supports local jurisdictions in adopting land use and access management policies. The TSP will include sections describing existing and future land use patterns, access management, and implementation measures.

Policy 2D (Public Involvement)

Public involvement in transportation and planning and project development will be a critical part of the TSP process.

Policy 2F (Traffic Safety)

Policy 2F identifies the need for projects in the state to improve safety for all users of the state highway system through engineering, education, enforcement, and emergency services. One component of the TSP is to identify existing crash patterns and rates and to develop strategies to address safety issues. Proposed improvements will aim to reduce the vehicle crash potential and/or improve bicycle and pedestrian safety by providing upgraded facilities that meet current standards.

Policy 3A (Classification and Spacing Standards)

Policy 3A sets access spacing standards for driveways and approaches to the state highway system. The TSP will address local access management policies and standards for inclusion in the City of Astoria Development Code and will identify recommended traffic signal spacing guidelines.

Policy 4B, Action 4B.4 (Alternative Passenger Modes)

Action 4B.4 requires that highway projects encourage the use of alternative passenger modes to reduce local trips. The TSP will develop ways to support and increase the use of alternative passenger modes to reduce trips on highways and other facilities. This will include improvement to bicycle and pedestrian facilities and consideration of transit movement along roadways.

Oregon Bike and Pedestrian Plan

The provision of safe and accessible bicycling and walking facilities in an effort to encourage increased levels of bicycling and walking is the goal of the Oregon Bicycle and Pedestrian Plan, which is an element of the Oregon Transportation Plan (OTP) that was most recently adopted in September 2006. The plan identifies actions that will assist local jurisdictions in understanding the principals and policies that ODOT follows in providing bike and walkways along state highways. In order to achieve the plan's objectives, the strategies for system design are outlined, including:

- Providing bikeway and walkway systems and integrating with other transportation systems
- Providing a safe and accessible biking and walking environment
- Developing educational programs that improve bicycle and pedestrian safety

The document includes the Policy & Action Plan and the Bikeway & Walkway Planning Design, Maintenance & Safety. The Policy & Action section contains background information, legal mandates and current conditions, goals, actions and implementation strategies ODOT proposes to improve bicycle and pedestrian transportation. The Bikeway & Walkway Planning Design, Maintenance & Safety section assists ODOT, cities and counties in designing, constructing and maintaining pedestrian and bicycle facilities. Design standards are recommended and information on safety is provided.

Oregon Public Transportation Plan

The Oregon Public Transportation Plan (OPTP) constitutes the transit modal plan of the Oregon Transportation Plan. The plan contains goals, policies, and strategies relating to the statewide public transportation system. The plan is intended to provide guidance for ODOT and public transportation agencies regarding the development of public transportation systems. The vision guiding the Public Transportation Plan is as follows:

- A comprehensive, interconnected and dependable public transportation system, with stable funding, that provides access and mobility in and between communities of Oregon in a convenient, reliable, and safe manner that encourages people to ride
- A public transportation system that provides appropriate service in each area of the state, including service in urban areas that is an attractive alternative to the single-

occupant vehicle, and high-quality, dependable service in suburban, rural, and frontier (remote) areas

- A system that enables those who do not drive to meet their daily needs
- A public transportation system that plays a critical role in improving the livability and economic prosperity for Oregonians.

The OPTP Implementation Plan directs ODOT investments towards commuter and mobility needs in larger communities and urban areas and also in smaller communities where warranted. It also directs investments towards intercity connections statewide. Long-term implementation and funding will support both modernization and preservation projects while, in the short term, funding will likely be available for preservation projects.

An assessment of existing transit conditions in Astoria and, potentially, proposed improvements will be included in the TSP update process, and will be guided by the vision and implementation plan set forth in the Oregon Public Transportation Plan.

Oregon Rail Plan

The Oregon Rail Plan, another modal plan within the OTP, addresses long-term freight and passenger rail planning in Oregon. The plan includes a freight element and passenger element that describes infrastructure and service conditions historically and at the time the plan was prepared. In terms of freight rail, a branch line – Portland & Western (P&W) – once provided freight rail service to Tongue Point in Astoria, however service is currently severed. In terms of passenger rail, Amtrak does not provide service to Astoria but there is state-supported bus service between Portland and Astoria, as well as established intercity bus service between Astoria and other cities in Northwest Oregon. During the Lewis and Clark Bicentennial Commemoration passenger train service was provided between Portland and Astoria, but that service ended in 2005.

Needs for rail renewal, bridge repair, cross tie renewal, and turnout renewal on the P&W short line, totaling about $46 million (2001$), are identified in the plan. However, the P&W line extends between Astoria and Portland and between Portland and other towns in Northwest Oregon, so repair and maintenance needs for the P&W line in or near Astoria could be assumed to be a fraction of the cost. Further, it is not known how outdated these needs and costs are at this time.

The Oregon Rail Plan also includes a chapter on rail policies and planning. General policy is set for passenger rail: "This system shall consist of an efficient operation, reliable service, access to all potential users, and compliance with state environmental and land use standards. Convenient connections with other modes should integrate passenger train service into a network linking all areas of the state, nation, and the world." Policies for freight rail include the following

- Increase economic opportunities for the State by having a viable and competitive rail

system.

- Strengthen the retention of local rail service where feasible.
- Protect abandoned rights-of-way for alternative or future use.
- Integrate rail freight considerations into the State's land use planning process.

Maintaining and improving connections between rail and other modes will be important in updating the Astoria TSP.

Transportation Planning Rule (OAR 660.012)

The Transportation Planning Rule (TPR) implements Oregon Statewide Planning Goal 12, which supports transportation facilities and systems that are safe, efficient, and cost-effective and are designed to reduce reliance on single-occupancy vehicles. The objective of the TPR is to reduce air pollution, congestion, and other livability problems, and to maximize investments made in the transportation system. The following subsections of the TPR are relevant to the Astoria TSP update.

660-012-0020 – Elements of Transportation System Plans

Section 0020 of the TPR specifies what is required in a TSP, including an inventory and assessment of existing conditions; forecasts of transportation needs; a road system plan; a public transportation plan; a bicycle and pedestrian plan; air, rail, water, and pipeline plans as applicable; transportation system and demand management plans; a financing program; and implementing policies and land use regulations.

660-012-0035 – Evaluation and Selection of Transportation System Alternatives

Section 0035 describes standards and alternatives available to agencies evaluating and selecting transportation projects, including benefits to different modes, land use alternatives, and environmental and economic impacts.

660-012-0045 – Implementation of the Transportation System Plan

The TPR requires local governments to adopt land use regulations consistent with state and federal requirements "to protect transportation facilities, corridors and sites for their identified functions." This policy is achieved through a variety of measures, including access control measures, standards to protect future operations of roads, expanded notice requirements and coordinated review procedures for land use applications, a process to apply conditions of approval to development proposals, and regulations assuring that amendments to land use designations, densities, and design standards are consistent with the functions, capacities, and performance standards of facilities identified in the TSP.

660-012-0050 – Transportation Project Development

Section 0050 requires that transportation projects be reviewed for compliance with local and regional plans and, when applicable, undergo a NEPA environmental review process.

Amendments to Section 0050 made since adoption of the 1999 Astoria TSP protect determinations of need, mode, function and general location for projects identified in TSPs.

660-012-0060 – Plan and Land Use Regulation Amendments

Amendments made to Section 0060 in 2005 are among the most significant changes that have been made to the TPR since adoption of the City's TSP in 1999. The amendments require local jurisdictions to balance the need for development with the need for transportation improvements, establish the end of the planning period as the measure for determining "significant effect", define the transportation improvements that a local government can consider in determining significant effect, and identify methods for local jurisdictions in determining whether a needed transportation facility is reasonably likely to be provided within the planning horizon.

State Transportation Improvement Program

Astoria projects included in the 2010-2013 State Transportation Improvement Program (STIP) are:

- Painting and repairing the Old Youngs Bay Bridge on US 101 Business (Key 16038)
- Painting of the Astoria-Megler Bridge (Key 14183)
- Replace the 19th Street Bridge on Irving Avenue (Key 16044)
- Streetscape and transit system improvements in Downtown Astoria (Key 17723)

Key Projects

The following sections summarize key projects recommended from the prior plans and studies.

City of Astoria Transportation System Plan

Motor Vehicle Improvements

- **Niagara Avenue/7th and 8th Street:** Channelization to improve sight distance for turning traffic (Cost: $5,000)
- **Jerome Avenue/16th Street**: Eliminate some parking to improve sight distance (Cost: $5,000)
- **Irving Street/19th Street Bridge**: This improvement involves repairing and repainting the bridge (Cost: $1,500,000)
- **US 30/45th Street:** Signing improvements and the construction of a left-turn lane (Cost: $700,000)
- **US 30/54th Street:** Channelization, signing, and striping (Cost:$500,000)
- **US 30/Nimitz Drive:** Realignment and striping including a westbound right-turn

deceleration lane (Cost: $100,000)

- **US 30/Liberty Lane:** New intersection approximately a half mile to the east of the US 30/Liberty Lane intersection (Cost: $200,000)
- **Duane Street and Exchange Street:** Remove the one-way designations, making Duane and Exchange streets two-way. This would involve restriping and resigning, reconfiguration of intersections, and signalization (Cost: $200,000)
- **8th Street between Duane Street and Commercial Street:**

  Convert Eighth Street between Duane and Commercial to one-way southbound segment and involve the restriping and resigning of the roadway (Cost: $50,000)
- **US 30 from 16th Street to Exchange Street:** Extend the one-way Couplet east from the downtown area, realign US 30/Exchange Street intersection, and add a signalized pedestrian crossing at US 30/17th Street (Cost: $1,400,000) or widen US 30 to five lanes from 16th Street to Exchange Street and signalize the US 30/Exchange Street intersection (Cost: $1,850,000)
- **US 30 one-way couplet (Marine Drive and Commercial Street):** New traffic signals at signalized intersections ($850,000)
- **US 30/7th Street:** Convert 7th Street to a one-way southbound roadway between US 30 and Bond Street and add a pedestrian island to US 30 ($55,000)
- **US 30 from 8th Street to 5th Street:** Add a center turn lane, and raised islands for pedestrians (Cost: $1,000,000)
- **OR 202/7th Street:** Realign 7th Street to intersect OR 202 at 5th Street (Cost: $350,000)

Pedestrian and Bicycle Improvements

- **US 101 New Youngs Bay Bridge**: Add sidewalks to the bridge (Cost: $1,000,000)
- **Highway 202 Bike Lanes**: Add bike lanes from Williamsport Road to Walluski Loop Road ($1,500,000)
- **Lexington and Grand Avenue Sidewalks**: Add sidewalks to Lexington Avenue and Grand Avenue (Cost: $250,000)
- **US 30 Pedestrian Improvements**: Add sidewalks to various locations along US 30, between milepoint 95 and Nimitz Road ($250,000)
- **Commercial Street Pedestrian Improvements:** Construct pedestrian bulbs at the 10th, 11th, and 12th Street intersections with Commercial Street ($250,000)
- **US 30/17th Street and US 30/20th Street Pedestrian Improvements:** Add pedestrian islands to US 30 at the 17th Street and 20th Street intersections (Cost: $300,000)

Transit, Sea, and Air Improvements

- **US 101 Astoria-Megler Bridge Shuttle:** Dial-a-ride shuttle service for pedestrians and bicyclists across the bridge instituted and managed by Pacific Transit (Cost: $100,000)
- **US 101 Astoria-Megler Bridge Bus Shelters:** Add bus shelters and kiosks at both ends of the bridge (Cost: $20,000)
- **US 30 Bus Shelters:** Provide bus shelters at 20th Street, 37th Street, 45th Street, and Nimitz Streets (Cost: $50,000)
- **Astoria Airport Runway:** Resurface and improve a runway at the Astoria Airport (Cost: $1,000,000)
- **US 30 Gateway District Transportation Center:** Construct a transportation center to be accessible and used by pedestrians, bicyclists, buses, taxi, and boat (Cost: $2,000,000)

Clatsop County Transportation System Plan

Recommended Improvements

The current Astoria TSP update will determine how to address the recommended Clatsop County improvements listed below:

- Passing lanes and realignment of curves on US 30
- Improvements to Astoria-Warrenton Parkway including Old Youngs Bay Bridge
- Astoria Bypass
- Improvements at the US 30/South Tongue Point intersection

Astoria Gateway Transportation Growth Management Plan

Motor Vehicle Recommendations

- Add a traffic signal at Marine Drive/17th Street and coordinate with other existing and future signals along Marine Drive
- Add medians at several unsignalized locations
- Add left turn lanes at all intersections, where feasible
- Extend one-way travel on Duane Street and Exchange Street to 17th Street
- Upgrade 17th Street to a collector street and downgrade 16th Street to a major local street between Marine Drive and Exchange Street.
- Reconstruct US 30/Commercial Street intersection to a "T" intersection
- Realign 23rd Street to connect opposite Exchange Street at Marine Drive and signalize the intersection.

- Construct a one-way, 12 foot wide westbound roadway along the south edge of the Riverwalk from 30th Street to 33rd Street, and construct a two-way 20 foot wide roadway between the north ends of 29th Street and 30th Street

Pedestrian and Bicycle Recommendations

- Add curb extensions where on-street parking is maintained to improve pedestrian visibility and safety when crossing Marine Drive
- Add mid-block curb extensions between 27th Street and 29th Street to increase visibility for pedestrians
- Replace bike lanes with shared travel lanes on Marine Drive

Transit Recommendations

- Add a transit stop at 18th Street/Exchange Street
- Add a transit stop at 18th Street/Marine Drive

Astoria Port/Uniontown Transportation Refinement Plan

US 30:

- Widen US 30 between Hamburg Avenue and Astoria-Megler Bridge to a 108' cross-section, with four travel lanes, center turn lane, bike lanes, parking and 10' sidewalks. A 90' cross-section, excluding parking and with 9' sidewalks is recommended in constrained areas (long-term)
- Widen US 30 between Astoria-Megler Bridge and Columbia/Bond to a 94' cross-section, with four travel lanes, bike lanes, parking and 10' sidewalks. A 82' cross-section, excluding parking from one side and with 11' travel lanes is recommended in constrained areas (long-term)

US 30/Hamburg Avenue:

- Restrict southbound left turn movement (short-term)
- Install traffic signal and allow all movements or add north leg to the Smith Point Roundabout (long-term)

Taylor Avenue:

- Close Hamburg Avenue end of Taylor Avenue, and allow two-way traffic (long-term)
- Allow right turn only from Taylor Avenue to OR 202 (long-term)

Portway Street:

- Install eastbound left turn lane on Marine Drive (short-term)
- Move Portway Street centerline to the west to accommodate trucks making westbound right turn; requires right-of-way acquisition from parcel at northwest

corner of intersection (short-term)

- Modify Portway Street to include a left-turn only and a shared left/right turn lane, with a 10' sidewalk on east side and no sidewalk on the west side of Portway Street (short-term)
- Improve Portway Street to City standards between Pier 1 and Marine Drive (short-term)

US 30/Astoria-Megler Bridge: Construct two-lane roundabout (long-term)

US 30/ Basin Street:

- Add signs to not block intersection (short-term)
- Remove traffic signal, and restrict left turns from Basin Street (long-term)

Bay Street:

- Improve Bay Street to connect with internal street system (short-term)
- Extend Bay Street north of the trolley tracks to a turnaround near the Columbia River (long-term)

East Gateway Transportation Plan

Motor Vehicle Recommendations

- Construct a parallel local roadway on the north side of US 30 between 36th Street and 39th Street in conjunction with new development
- Realign the US 30/Liberty Lane intersection and provide a left turn pocket
- Convert Old US 30 to a one-way westbound roadway and restrict to right-in only movements at the intersection with US 30 (to improve capacity and safety)
- Widen Tongue Point Job Corp Access Roadway to meet the City of Astoria's design standards for a major local street and accommodate projected traffic growth
- Extend the two-way left turn lane on US 30 from 39th Street to 46th Street
- Provide alignment, channelization, and striping improvements at the US 30/54th Street intersection
- Widen 54th Street north of US 30 to meet the City of Astoria's design standard for a minor local street and to accommodate projected traffic growth
- Extend Commercial Street to 43rd Street in conjunction with the Franklin Street extension to 43rd Street

Pedestrian and Bicycle Recommendations

- Address pedestrian safety issues at the US 30/45th Street and the US 30/37th Street intersections with one or more of the following improvements: intersection lighting, pedestrian warning signs, vehicle radar/speed signs, intersection bulb outs, and/or

median

- Construct continuous sidewalks along the north side of US 30 from 35th Street to 37th Street and on the south side of US 30 from 48th Street to Nimitz Drive
- Extend striped bike lanes where pavement width is available, specifically on US 30 from 33rd Street to 47th Street

Rail Freight Recommendations

- Extend the P&W rail service to Tongue Point to support maritime port terminals

Greater Astoria – Warrenton Area Regional Transportation System Refinement Plan

US 30:

- Install a turn lane and a raised pedestrian island at intersections along Marine Drive (US 30) between 5th Street and 8th Street (short-term)
- Construct pedestrian curb extensions at the 10th, 11th, and 12th Street intersections with Commercial Street within the downtown couplet (short-term)
- Add pedestrian curb extensions at the intersections of 16th, 17th, and 18th Streets and mid-block between 18th and 20th on the south side of US 30 (short-term)
- Install a center median between 18th and 20th Street (short-term)
- Construct new sidewalks on the north side of US 30 between 35th Street and 37th Street and on the south side of US 30 between 48th Street and Nimitz Drive (short-term)
- Extend on-street bicycle lanes on US 30 between 33rd Street and 47th Street, where pavement width allows (short-term)
- Shift the curve at the west end of the couplet east by traveling through portions of the block between 8th and 9th Streets, and between 9th and 10th Streets (short-term)
- Widen US 30 between 48th Street and 50th Street to include a continuous two-way left-turn lane and 4-foot shoulders (short-term
- Widen US 30 between Hamburg Avenue and Astoria-Megler Bridge to accommodate four travel lanes, a center-turn lane where possible, bicycle lanes, on street parking (where possible), and 10' sidewalks (medium-term)

US 30/Hamburg Avenue

- Restrict the southbound left and southbound through movements out of Hamburg Avenue (short-term)
- Installs a traffic signal, and allow all turning movements to and from Hamburg Avenue (long-term)

US 30/US 101 at Astoria-Megler Bridge

- Construct a two-lane roundabout (medium-term)

US 30 /Basin Street:

- Replace the traffic signal (in conjunction with the roundabout at US 30/US 101) with a flashing yellow light and restrict southbound left turns from Basin Street (medium-term)

US 30/Columbia Avenue/Bond Street:

- Redesign intersection to include two approach lanes from Bond Street by removing the existing floating island and approximately 150 feet of parking (4-5 parking stalls) on the north side of Bond Street near the throat of the intersection (short-term)

US 30/Commercial Street:

- Realign intersection to a three-legged "T" intersection (short-term)

US 30/Exchange Street/23rd Street:

- Install a traffic signal (short-term)
- Realign 23rd Street to intersect with Exchange Street at US 30 (short-term)

US 30/37th Street:

- Construct pedestrian bulb-outs, and improve lighting (short-term)

US 30/45th Street

- Install left-turn pockets in both the eastbound and westbound directions (short-term)

US 30/54th Street:

- Channelization, signing, and striping improvements (short-term)

US 30/Nimitz Road:

- Realignment and striping including a westbound right-turn deceleration lane (short-term)

US 30/Old US 30:

- Convert Old US 30 to a one-way westbound roadway and restrict to right-in only movements at the intersection with US 30 (short-term)

US 30/Liberty Lane:

- Realign intersection and provide a left turn pocket on US 30 (short-term)

OR 202:

- Install a center turn lane from 8th Street to Wall Street (short-term)

OR 202/Denver Street:

- Install left turn lane on Denver Street (short-term)

- Install westbound right deceleration lane on OR 202 (short-term)

OR 202/US 101 Business/5th Street:

- Realign 7th Street to intersect OR 202 at US 101 Business/5th Street and form a 4-legged intersection (medium-term)

OR 202/11th Street:

- Add a westbound right-turn deceleration lane (short-term)
- Widen 11th Street at intersection with OR 202 to improve large vehicle access (short-term)

OR 202/Kearney Street/2nd Street:

- Combine Kearney Street and 2nd Street into one access to OR 202 (short-term)
- Add eastbound left-turn lane on OR 202 (short-term)
- Convert the northbound right-turn from US 101 Business into a free movement that merges onto OR 202 (medium-term)
- Install a traffic signal (medium-term)

Portway Avenue:

- Move the centerline of Portway Street to the west to accommodate trucks making westbound right turns
- Modify the approach lanes on Portway Street to two lanes (one left-turn only, one left- or right turn)
- Add an eastbound left-turn lane on West Marine Drive
- Improve Portway Street to existing City of Astoria road standards between Pier 1 and West Marine Drive.

Taylor Avenue:

- Close Hamburg Avenue end of Taylor Avenue, and allow two-way traffic (short-term)
- Allow right turn only from Taylor Avenue to OR 202 (short-term)

7th Street:

- Modify 7th Street to one-way southbound from Marine Drive to Bond Street (short-term)

New Roadway from 29th Street to 32nd Street:

- Construct a new east to west roadway and alley along the RiverWalk Trail between 29th Street and 32nd Street (short-term)

Section D: Memo 3- Goals, Objectives, and Evaluation Criteria

Section D: Memo 3- Goals, Objectives, and Evaluation Criteria

MEMORANDUM #3

DATE: May 19, 2011

TO: Astoria TSP Update Project Management Team

FROM: Chris Maciejewski, P.E., P.T.O.E., DKS Associates
Kevin Chewuk, DKS Associates
Mathew Berkow, Alta Planning + Design

SUBJECT: **Astoria Transportation System Plan Update**
Goals, Objectives, & Evaluation Criteria

The purpose of this memorandum is to present the transportation-related goals, objectives and evaluation criteria for the City of Astoria. The goals are broad statements that describe the hopes of the community for its future. Each goal is developed around a topic area and may never be completely attainable, but is used as a point toward which to strive. Objectives are statements that provide a specific course of action moving the community toward the attainment of its goals. Each new capital improvement project, land use application, or implementation measure must be consistent with the objectives.

The goals and objectives will guide the development of the transportation system plan, while the evaluation criteria will be used to evaluate and prioritize future transportation programs and improvements against the goals and objectives. Once adopted, the goals, and objectives, as well as the project list, will become part of Astoria's Comprehensive Plan.

Goal 1: Health and Safety

Develop a transportation system that maintains and improves individual health and safety by maximizing active transportation options[1], public safety and service access, and safe and smooth connects for all modes.

Goal 1 Objectives

1. Maximize active transportation options

[1] Active transportation refers to any form of travel that is non-motorized and self-propelled, such as walking and biking.

2. Improve safety and provide safe connections for all modes and meet applicable City and Americans with Disabilities (ADA) standards
3. Increase public safety and service access
4. Increase the city's ability to handle natural disasters

Goal 1 Evaluation Criteria

- Increases active transportation options
- Improves intersection/ pedestrian/ bicycle/ railroad crossing safety
- Improves response times/evacuation efficiency

Goal 2: Travel Choices

Develop and maintain a well-connected transportation system that offers travel choices, reduces travel distance, improves reliability, and manages congestion for all modes.

Goal 2 Objectives

1. Reduce travel distance for all modes
2. Improve travel reliability for all modes
3. Manage congestion for all modes
4. Enhance connectivity, and integrate all modes and destinations
5. Increase access to the transportation system for all modes regardless of age, ability, income, and geographic location
6. Balance the desires of citizens with public agency requirements

Goal 2 Evaluation Criteria

- Improves roadway operations
- Increases connectivity
- Improves pedestrian/bicycle access to key destinations, including transit service (pedestrian/bicycle prioritization map)
- Citizen support/citizen survey

Goal 3: Economic Vitality

Support the development and revitalization efforts of the City, Region, and State economies and create a climate that encourages growth of existing and new businesses.

Goal 3 Objectives

1. Improve the freight system efficiency, access, and capacity
2. Integrate the Port needs for freight, and river terminal facilities
3. Manage parking efficiently and ensure that it supports downtown business needs and promotes new development
4. Balance local access with the need to serve regional traffic on state highways
5. Provide transportation facilities that support existing and planned land uses
6. Enhance the vitality of the Astoria downtown area by incorporating roadway design elements for all modes
7. Ensure that all new development contributes a fair share toward on-site and off-site transportation system improvements

Goal 3 Evaluation Criteria

- Minimizes negative impacts to existing land uses
- Improves freight access/connectivity

Goal 4: Livability

Customize transportation solutions to suit the local context while providing a system that supports active transportation, promotes public health, facilitates access to daily needs and services, and enhances the livability of the Astoria neighborhoods and business community.

Goal 4 Objectives

1. Protect residential neighborhoods from excessive through traffic and travel speeds
2. Enhance connections between community amenities
3. Balance downtown livability with the need to accommodate freight movement and seasonal congestion pressures
4. Design streets to serve the widest range of users, support adjacent land uses, and increase livability

5. Enhance the quality of life in commercial areas and in neighborhoods

Goal 4 Evaluation Criteria

- Reduces/discourages through travel in residential neighborhoods
- Increases connections/access to community amenities
- Enhances street aesthetics
- Reduces impacts from trucks downtown

Goal 5: Sustainability

Provide a sustainable transportation system that meets the needs of present and future generations and is environmentally, fiscally and socially sustainable.

Goal 5 Objectives

1. Support travel options that allow individuals to reduce single-occupant vehicle trips
2. Protect the health of the rivers and other natural areas or environments
3. Support the reduction of greenhouse gas emissions from transportation sources
4. Support and encourage transportation system management (TSM) and transportation demand management (TDM) solutions to congestion
5. Protect the historic character of the community

Goal 5 Evaluation Criteria

- Protects environmentally sensitive areas
- Reduces vehicle miles traveled
- Minimizes impacts to historic structures
- Increases alternatives to single-occupant vehicle travel

Goal 6: Fiscal Responsibility

Plan for an economically viable transportation system, that protects and improves existing transportation assets while cost-effectively enhancing the total system and pursuing additional transportation funding.

Goal 6 Objectives

1. Plan for an economically viable and cost-effective transportation system

2. Identify and develop diverse and stable funding sources to implement recommended projects in a timely fashion and ensure sustained funding for transportation projects and maintenance

3. Make maintenance and safety of the transportation system a priority

4. Maximize the cost effectiveness of transportation improvements by prioritizing operational enhancements and improvements that address key bottlenecks

5. Identify local street improvement projects that can be funded through ODOT grant programs

6. Provide funding for the local share (i.e. match) of capital projects jointly funded with other public partners

7. Prioritize funding of projects that are most effective at meeting the goals and policies of the Transportation System Plan

Goal 6 Evaluation Criteria

- Alternative measure to increasing capacity
- Provides significant increase in mobility/accessibility

Goal 7: Compatibility

Develop a transportation system that is consistent with the City's Comprehensive Plan and that is coordinated with County, State, and Regional plans.

Goal 7 Objectives

1. Coordinate and cooperate with adjacent jurisdictions and other transportation agencies to develop transportation projects that benefit the City, Region, and State as a whole

2. Work collaboratively with other jurisdictions and agencies to ensure the transportation system functions seamlessly

3. Coordinate with other jurisdictions and community organizations to develop and distribute transportation-related information

4. Review City transportation standards periodically to ensure consistency with Regional, State, and Federal standards

5. Coordinate with the County and State agencies to ensure that improvements to County and State highways within the City benefit all modes of transportation

6. Participate with ODOT, Clatsop County, and Warrenton in the revision of their transportation system plans, and coordinate land development outside of the Astoria area to ensure provision of a transportation system that serves the needs of all users

7. Participate in updates of the ODOT State Transportation Improvement Program (STIP) and Clatsop County Capital Improvement Program (CIP) to promote the inclusion of projects identified in the Astoria TSP

Goal 7 Evaluation Criteria

- Compatible with regulatory documents

Section E: Memo 4- Transportation System Inventories

Section E: Memo 4- Transportation System Inventories

MEMORANDUM #4

DATE: June 29, 2011

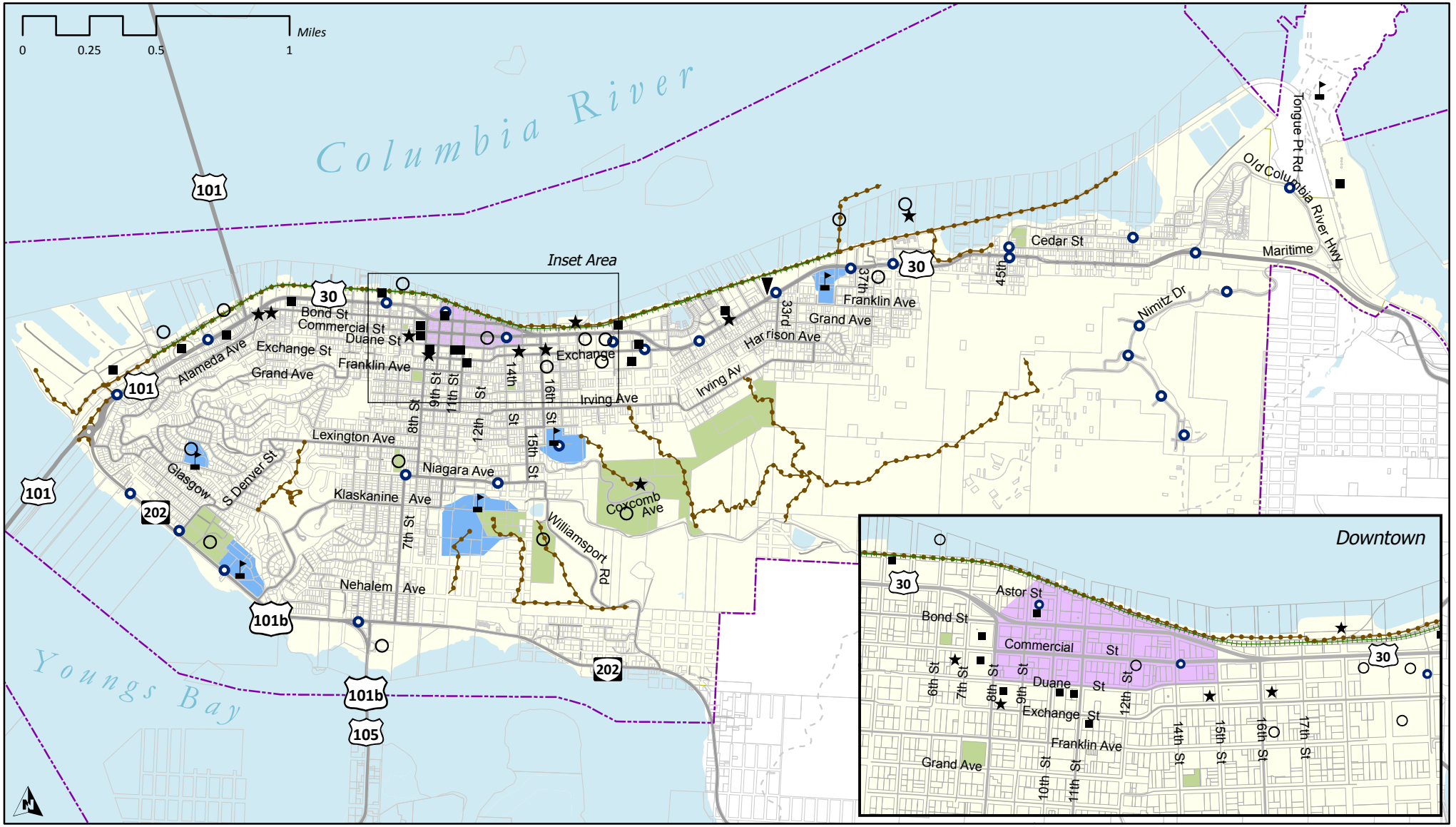
TO: Astoria TSP Update Project Management Team

FROM: Chris Maciejewski, P.E., P.T.O.E., DKS Associates
Kevin Chewuk, DKS Associates
Mathew Berkow, Alta Planning + Design

SUBJECT: **Astoria Transportation System Plan Update**
Transportation System Inventories

The purpose of this memorandum is to present a graphical review of the existing transportation system inventory for the City of Astoria. The following inventory data are summarized in figures attached to this memorandum:

- **Activity Generators** showing schools, parks, recreational, entertainment, professional, shopping, and other key destinations in the City.
- **Pedestrian Facilities** showing sidewalk locations, and multi-use trails.
- **Bicycle Facilities** showing bike-lane, shoulder and multi-use trail locations.
- **Pedestrian and Bicycle Count Data** showing study intersection count data.
- **Public Transportation** showing bus route and bus stop locations.
- **Motor Vehicle Facilities** showing functional classification, posted speed limits, and jurisdiction of roadways in Astoria.
- **Freight, Rail, and Water Transportation** showing railroad, pierhead lines, navigable ship channels, freight routes, and Port of Astoria locations.
- **Physical Constraints** showing lifeline routes, bridges, 100 foot contours and wetland locations.
- **Pedestrian Amenities** showing curb ramp and crosswalk locations.
- **Zoning** showing the zoning map.
- **Aerial** displaying the project aerial for the City of Astoria.



Activity Generators

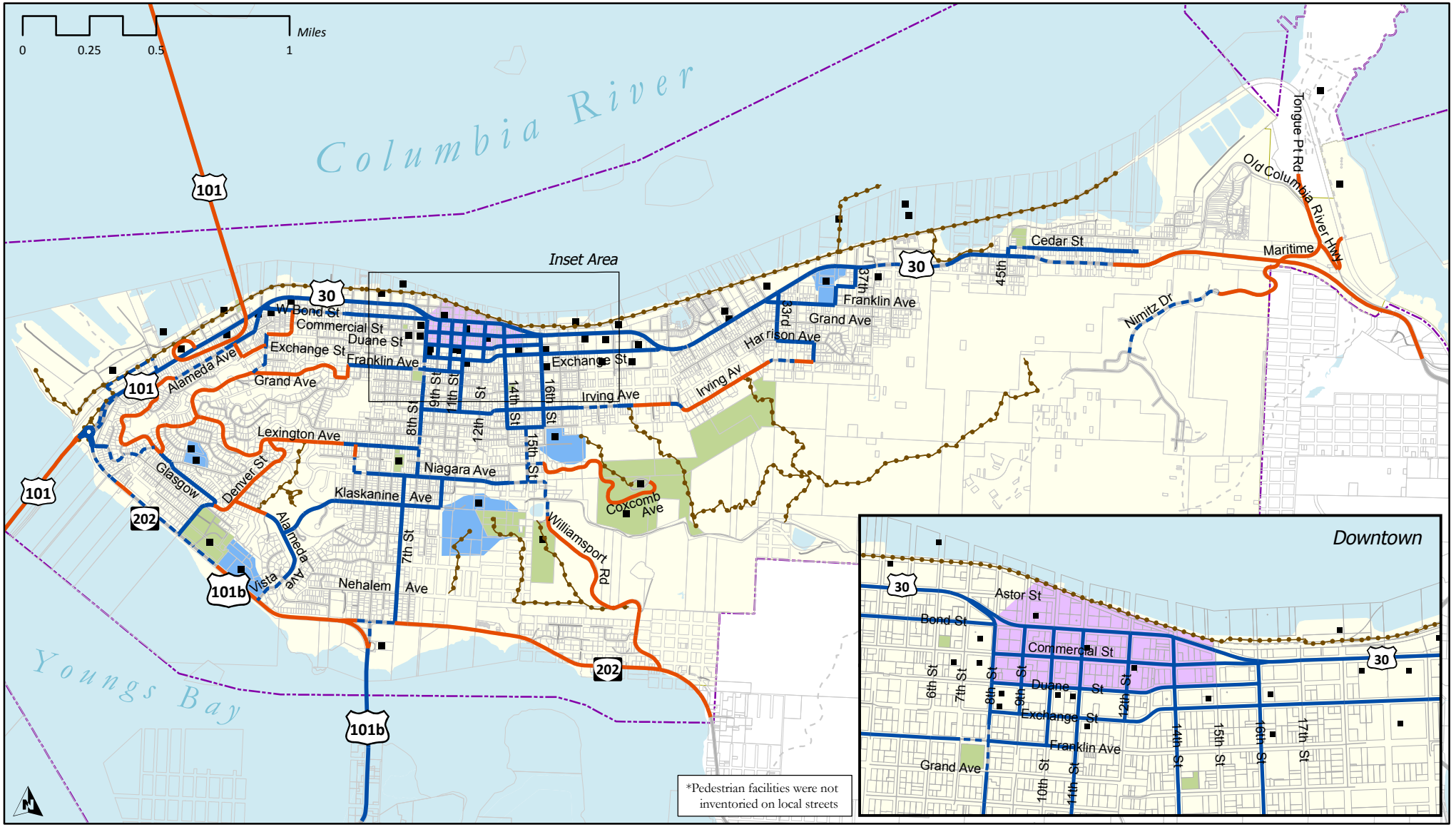
City of Astoria

Transportation System Plan

Legend

Landmarks

- Recreation/Entertainment
- Civic/Professional
- Educational
- Shopping
- Cultural
- Transit Stop
- Riverfront Trolley
- Multi-Use Trail
- Parcel
- Astoria City Limit
- Urban Growth Boundary
- Park
- School
- Water
- Downtown Shopping Area



Existing Pedestrian Facilities

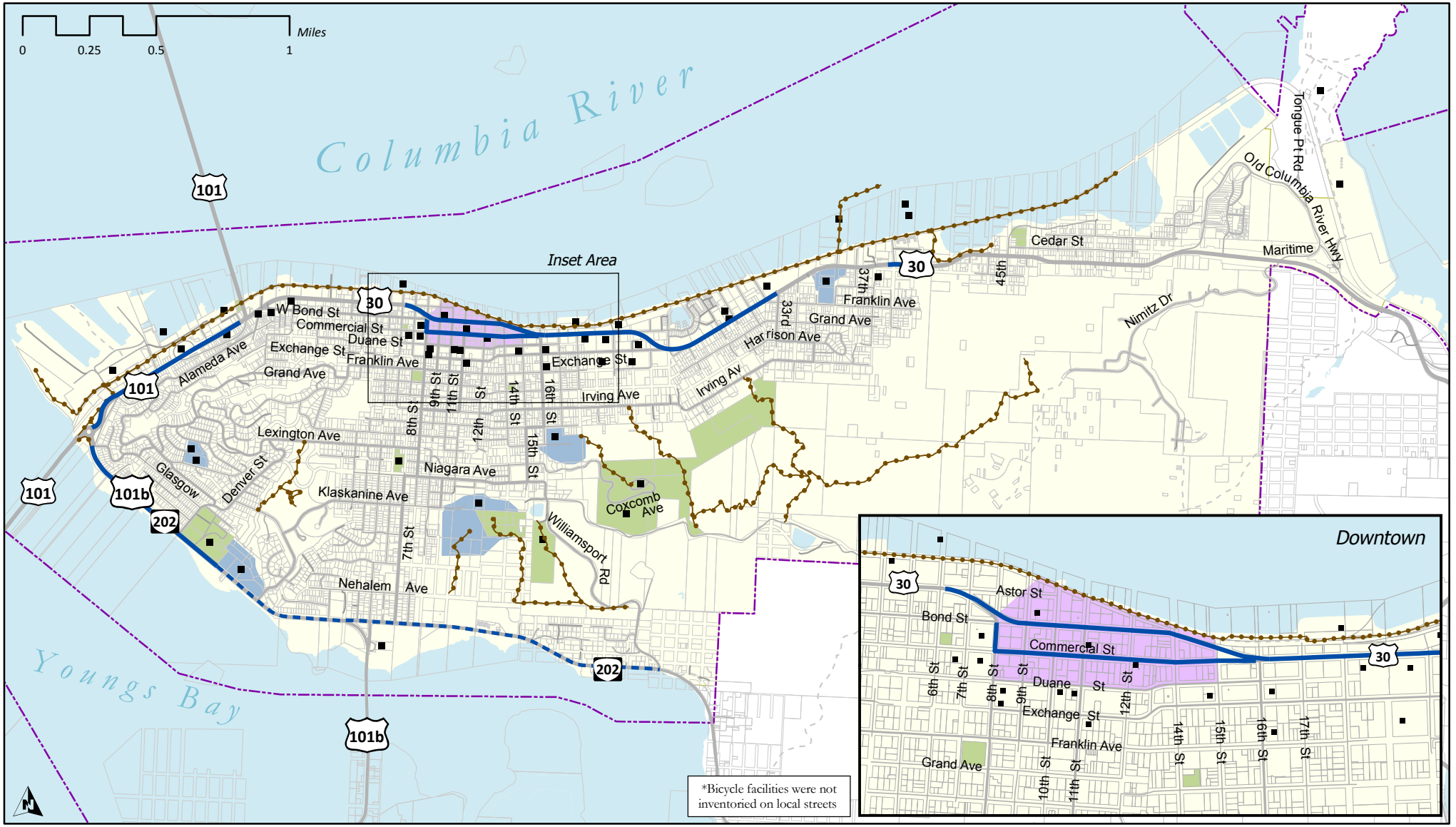
City of Astoria

Transportation System Plan

Legend

*Sidewalk**

- One Side
- Both Sides
- No Sidewalk
- Point of Interest
- Multi-Use Trail
- Parcel
- Astoria City Limit
- Urban Growth Boundary
- Park
- School
- Water
- Downtown Shopping Area



Existing Bicycle Facilities

City of Astoria

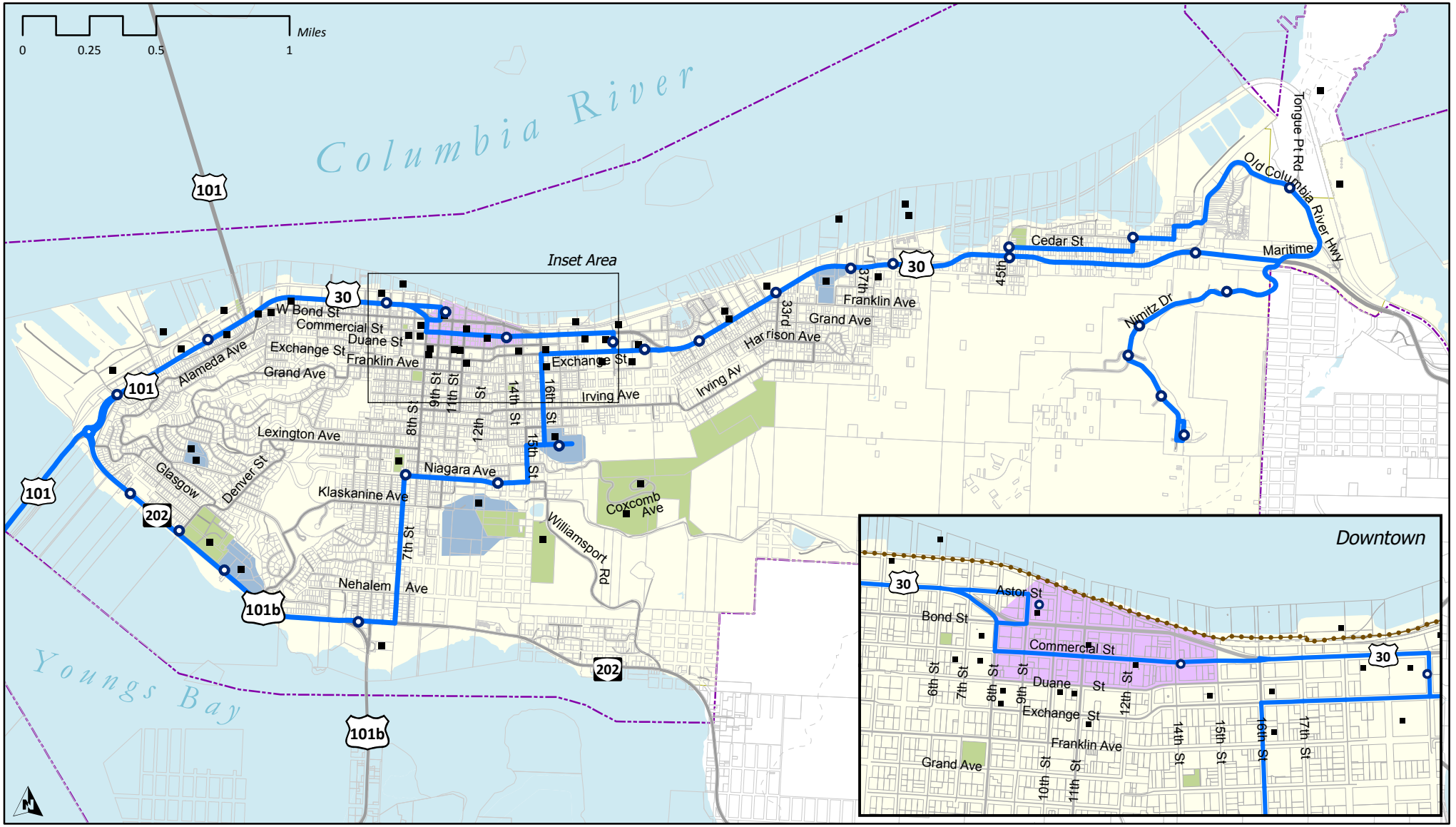
Transportation System Plan

Legend

*Bicycle Facilities**

- Bicycle Lane
- Shoulder Bikeway
- Point of Interest
- Multi-Use Trail

- Parcel
- Astoria City Limit
- Urban Growth Boundary
- Park
- School
- Water
- Downtown Shopping Area



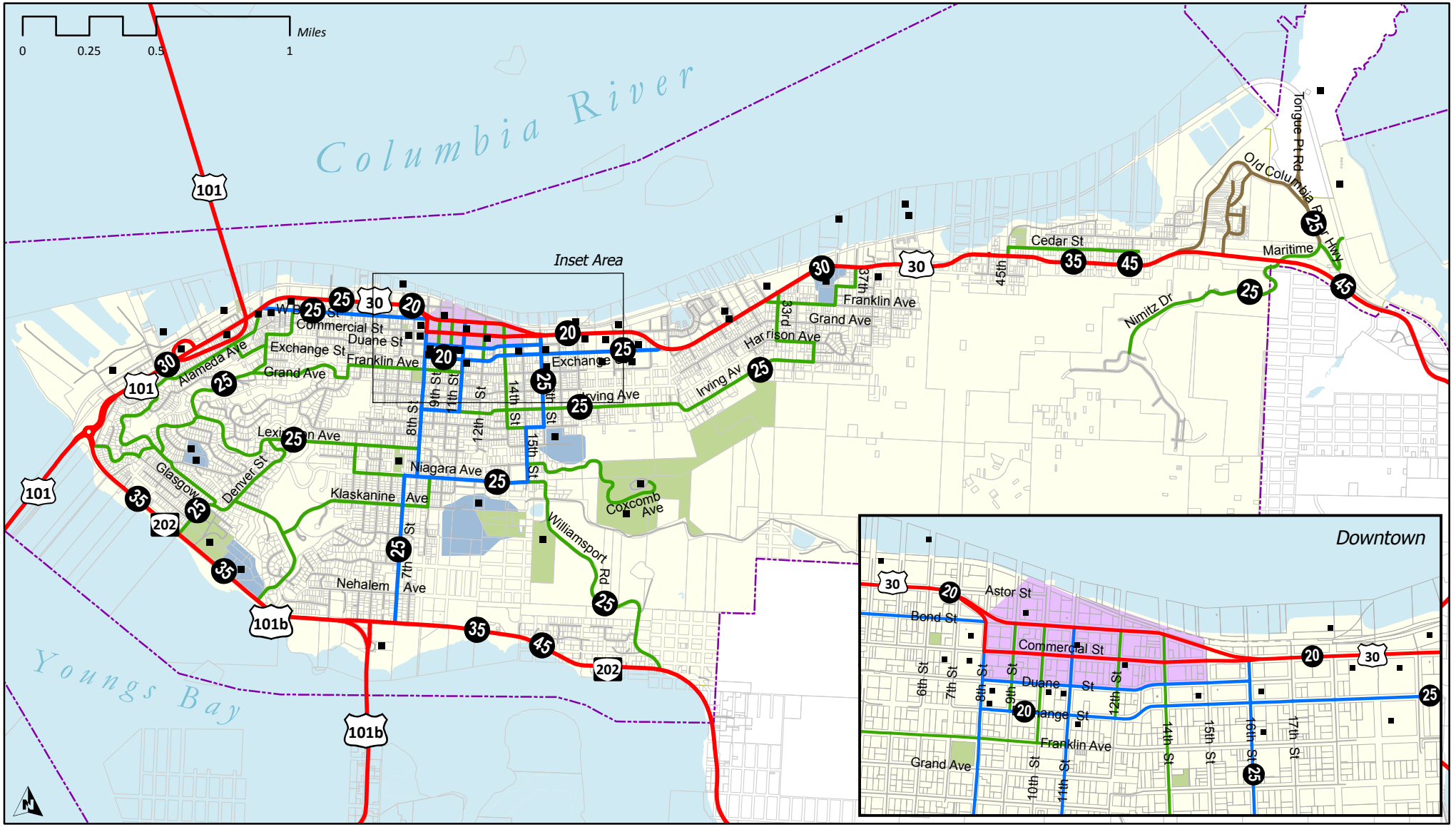
Existing Transit Routes

City of Astoria

Transportation System Plan

Legend

- Bus Stop
- Bus Route
- Point of Interest
- Parcel
- Astoria City Limit
- Urban Growth Boundary
- Park
- School
- Water
- Downtown Shopping Area



Existing Functional Classification, Roadway Jurisdictions, and Posted Speed Limits

City of Astoria

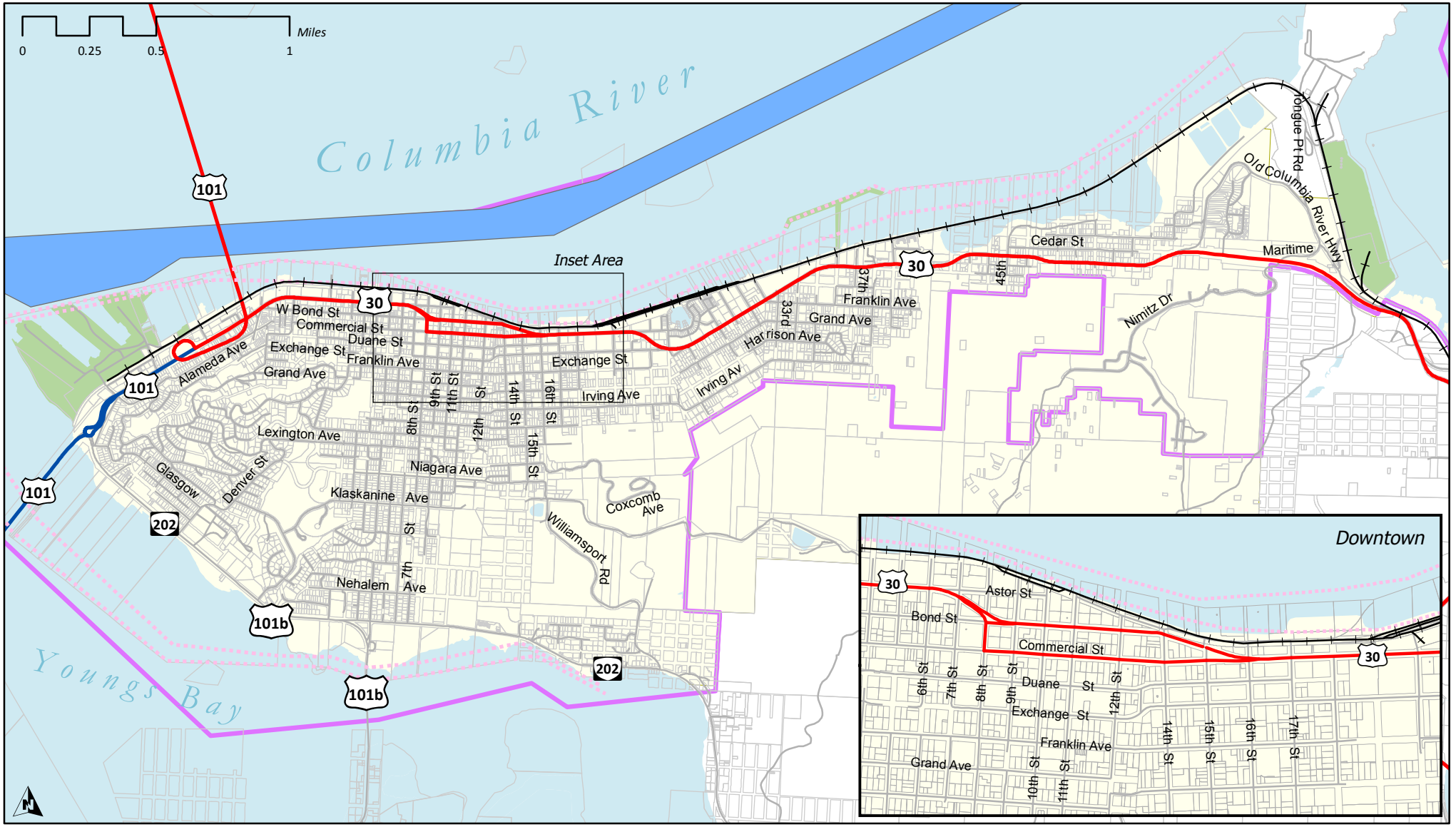
Transportation System Plan

Legend

Roadway Jurisdiction and Functional Classification

- ODOT
  - Principal Arterial
- City of Astoria
  - Collector
  - Major Local
  - Other Local
- Federal Government
  - Other Local

- Posted Speed Limit
- Point of Interest
- Parcel
- Astoria City Limit
- Urban Growth Boundary
- Park
- School
- Water
- Downtown Shopping Area



Freight and Water Transportation

City of Astoria

Transportation System Plan

Legend

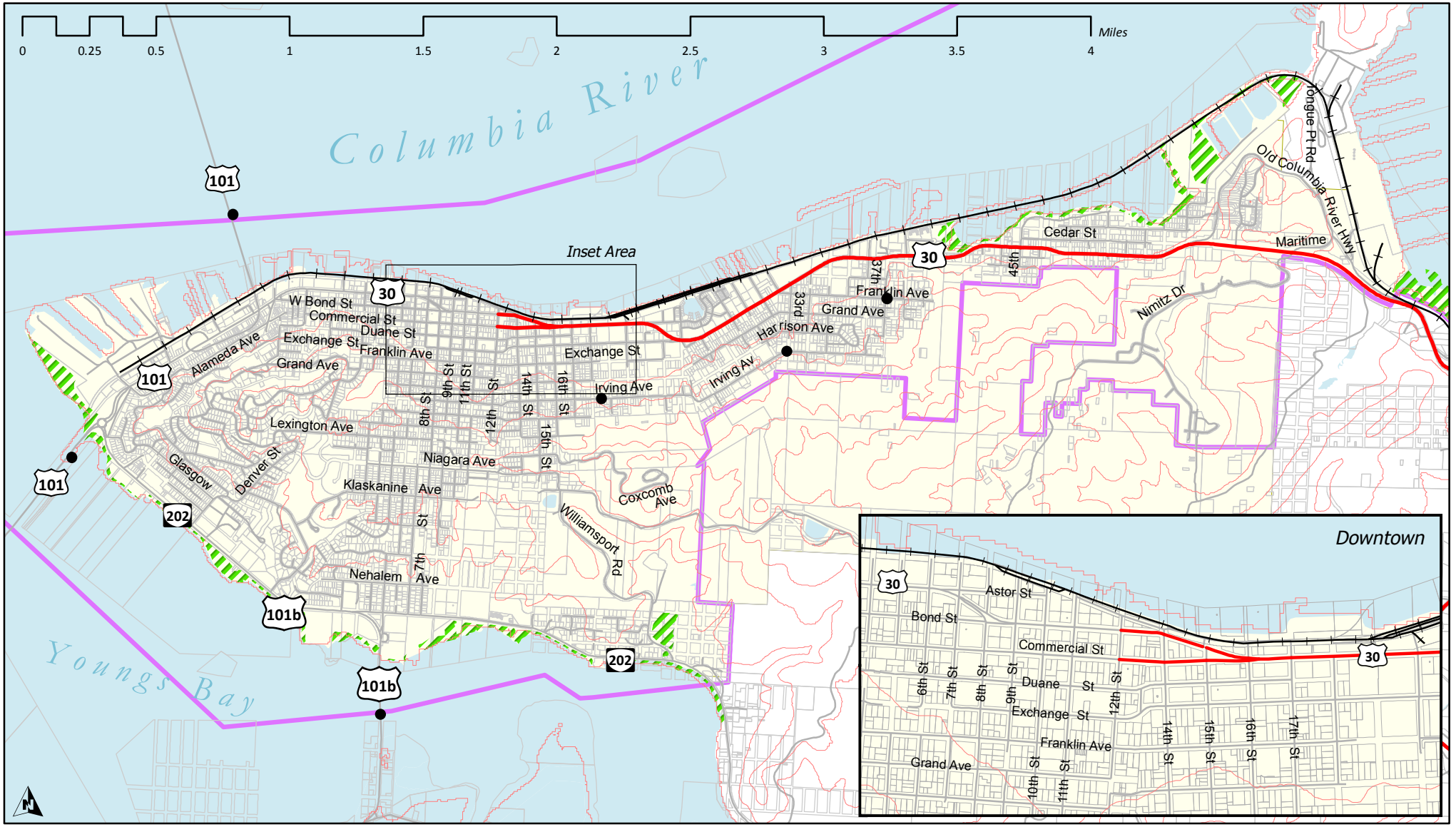
Freight

- ODOT Freight Route
- Federal Truck Route
- Port of Astoria

Water Transportation

- Pierhead Line
- Navigable Ship Channel

- Astoria City Limit
- Urban Growth Boundary
- Water
- Parcel
- Roadway
- Railroad Tracks



Transportation System Physical Constraints

City of Astoria

Transportation System Plan

Legend

Physical Constraints

- Bridges
- 100 Foot Contour
- Wetlands
- Priority 1 Lifeline Route
- Astoria City Limit
- Urban Growth Boundary
- Water
- Parcel
- Roadway
- Railroad Tracks

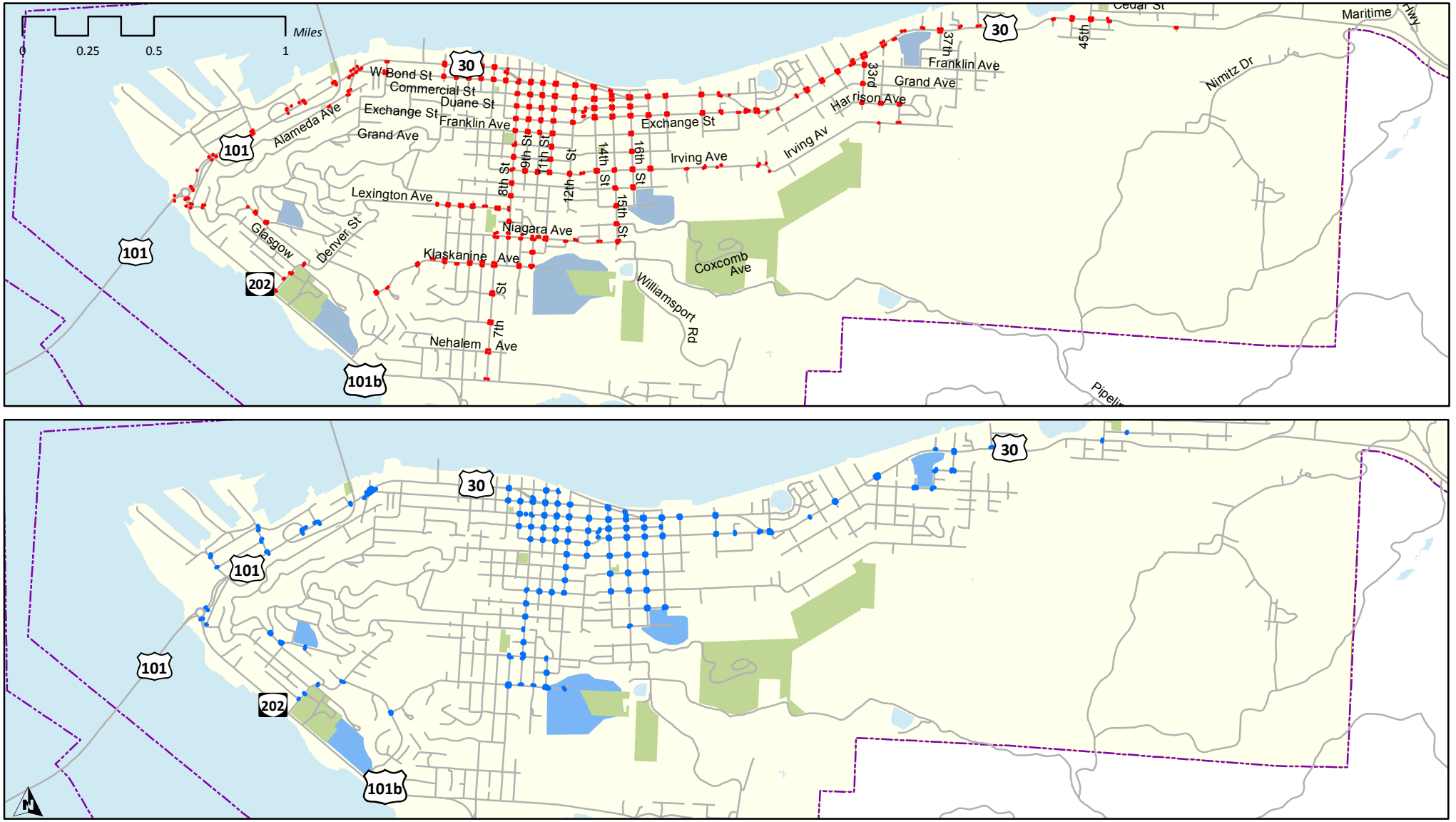


Figure 6: Existing Pedestrian Amentities

City of Astoria

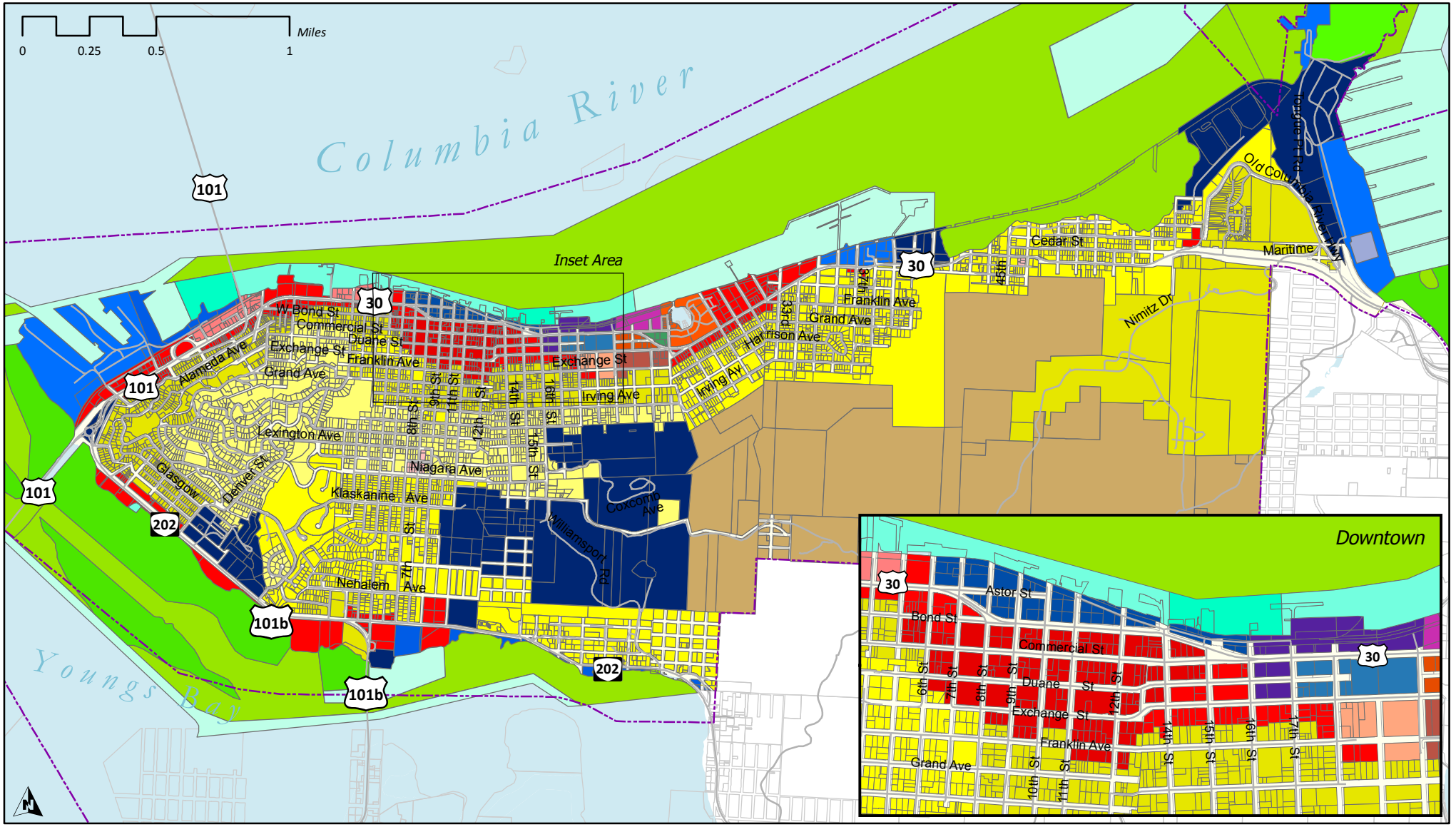
Transportation System Plan

Legend

Pedestrian Amentity

- Curb Ramps
- Crosswalks

- Astoria City Limit
- Urban Growth Boundary
- Park
- School
- Water



Zoning Map

City of Astoria

Transportation System Plan

Legend

- Water
- Parcel
- Urban Growth Boundary

Residential
- Low Density
- Medium Density
- High Density

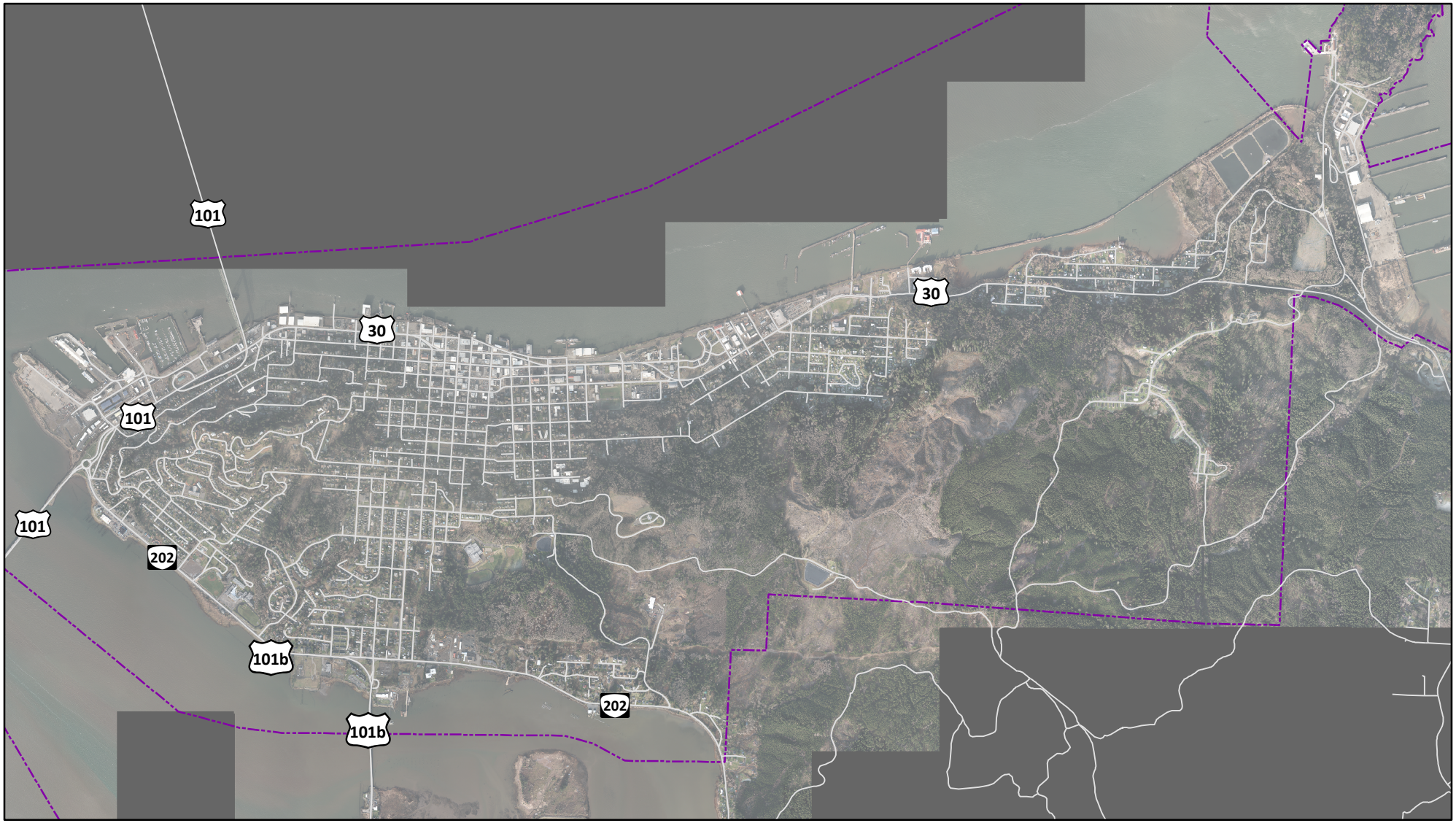
Commercial
- Neighborhood
- Tourist
- General
- Central

Shoreland
- Marine Industrial
- General Development
- Tourist Oriented
- Natural

Miscellaneous
- General Industrial
- Institutional
- Land Reserve
- Dredge Material Disposal

Aquatic
- Development
- Two Development
- Two A Development
- Conservation
- Natural

Gateway
- Attached Housing- Health Care
- Attached Housing- Mill Pond
- Campus
- Family Activity
- Health Care
- Local Service
- Maritime Heritage



Aerial

Legend

Urban Growth Boundary

City of Astoria

Transportation System Plan

Section F: Memo 5- Existing Transportation Conditions

Section F: Memo 5- Existing Transportation Conditions

Memorandum #5

Date:	November 03, 2011
To:	Astoria TSP Update Project Management Team
From:	Chris Maciejewski, P.E., P.T.O.E., DKS Associates Kevin Chewuk, DKS Associates Mathew Berkow and Drew Meisel, Alta Planning + Design
Subject:	**Astoria Transportation System Plan Update** **Existing Conditions**

The purpose of this memorandum is to introduce the existing transportation conditions for the City of Astoria. Questions to be answered in this document include:

- What makes Astoria unique?
- Where do people want to go?
- How do people get there?
- What transportation infrastructure is available?
- How is the transportation system managed?
- What conditions do people face?

What Makes Astoria Unique?

Located at the mouth of the Columbia River, Astoria is a historic coastal town and is the oldest American City west of the Rocky Mountains. With a population holding steady around 10,000 since the early 1950's, it is characterized by ground that rises sharply from the riverfront and downtown core to reach peaks of 500 feet, providing the setting for historic neighborhoods with Victorian homes and scenic views.

View from the Astoria hillside on 8th Street

Its downtown core was rebuilt following a catastrophic fire in 1922. Reconstruction efforts involved a chair-wall foundation system that allowed the roadway and sidewalks to be elevated. Once the chair-wall was constructed, sidewalks were placed on concrete joists and piers. The area between the chair-walls was then filled in with dredge sands and concrete was poured over the sand to create a roadway surface. This once modern system is now showing signs of settlement in areas and may be susceptible to natural disasters or failure from vibration and fatigue.

Exposed Chair-wall System at 10th and Duane

In recent years, the City has made great strides at reinventing itself as more than a fishing/logging community. Astoria is becoming a regional medical services, recreational and arts destination that blends its historic river identity with a revitalized downtown core that embraces the riverfront and provides premier walking and biking opportunities. These characteristics make Astoria unique, but also define the key transportation issues that the City seeks to address. Figure 1 shows the major roadways in Astoria, as well as various intersections that were reviewed for motor vehicle, pedestrian, bicycle, and freight activity.

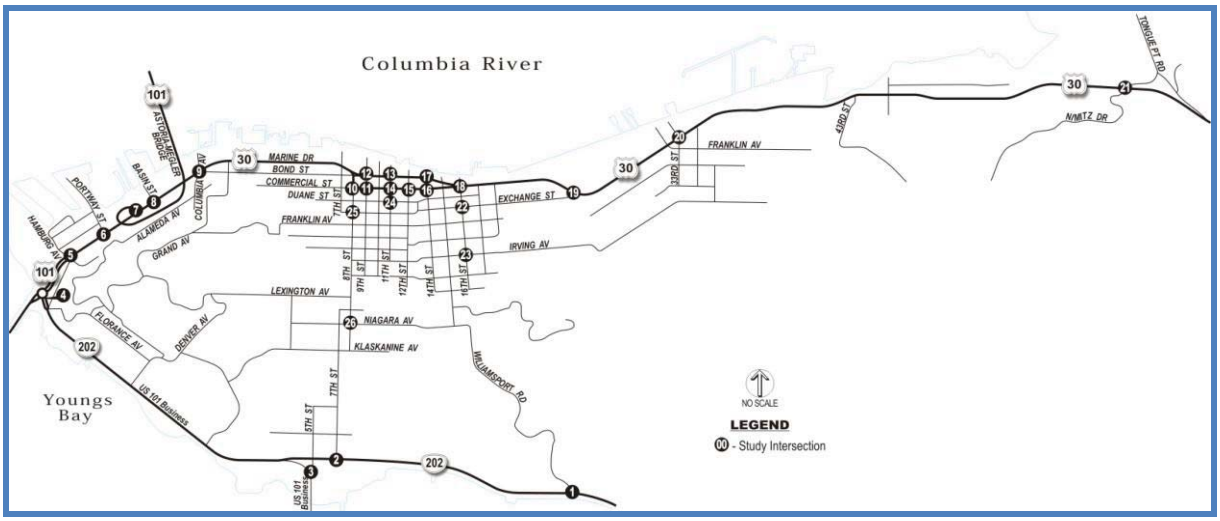


Figure 1: Astoria Roadways and Intersections

Where do People Want to Go?

One of the first steps in planning for an effective transportation system is gaining an understanding of the key destinations that people currently travel to throughout the City. These destination points are referred to as activity generators (or trip attractors).

As the setting for many popular movies filmed over past few decades, a growing cruise ship port-of-call, its location near the Oregon coast, and a burgeoning recreational and arts destination for the region, Astoria is home to several major cultural or recreational destinations that attract tourists and residents alike. Major destinations include the Columbia River Maritime Museum, Flavel House Museum, Oregon Film Museum, Astoria Column, and the Goonies House.

Astoria is also home to a regional educational institution, Clatsop Community College, in addition to several other major employment and shopping areas, including the historic downtown core. The most common categories of activity generators in the City include (see Figure 2 for the general locations of some of these activity generators):

- Recreational/Entertainment (e.g. Astoria Aquatic Center, Port of Play, Goonies House, Riverfront Trolley, River Trail)
- Schools (e.g. Clatsop Community College, Gray Elementary, Astor Elementary, Astoria Middle, Astoria High)
- Places of employment (e.g. business areas, industrial areas, offices)
- Shopping (e.g. downtown core, grocery stores, shopping centers, restaurants)
- Cultural (e.g. Columbia River Maritime Museum, Flavel House Museum, Oregon Film Museum, Astoria Column, Firefighters Museum, Heritage Museum)
- Public Transportation (e.g. Bus stops, trolley stops)

Each of these categories of activity generators represents important starting and ending points for travel and provides a good basis for planning ideal routes.

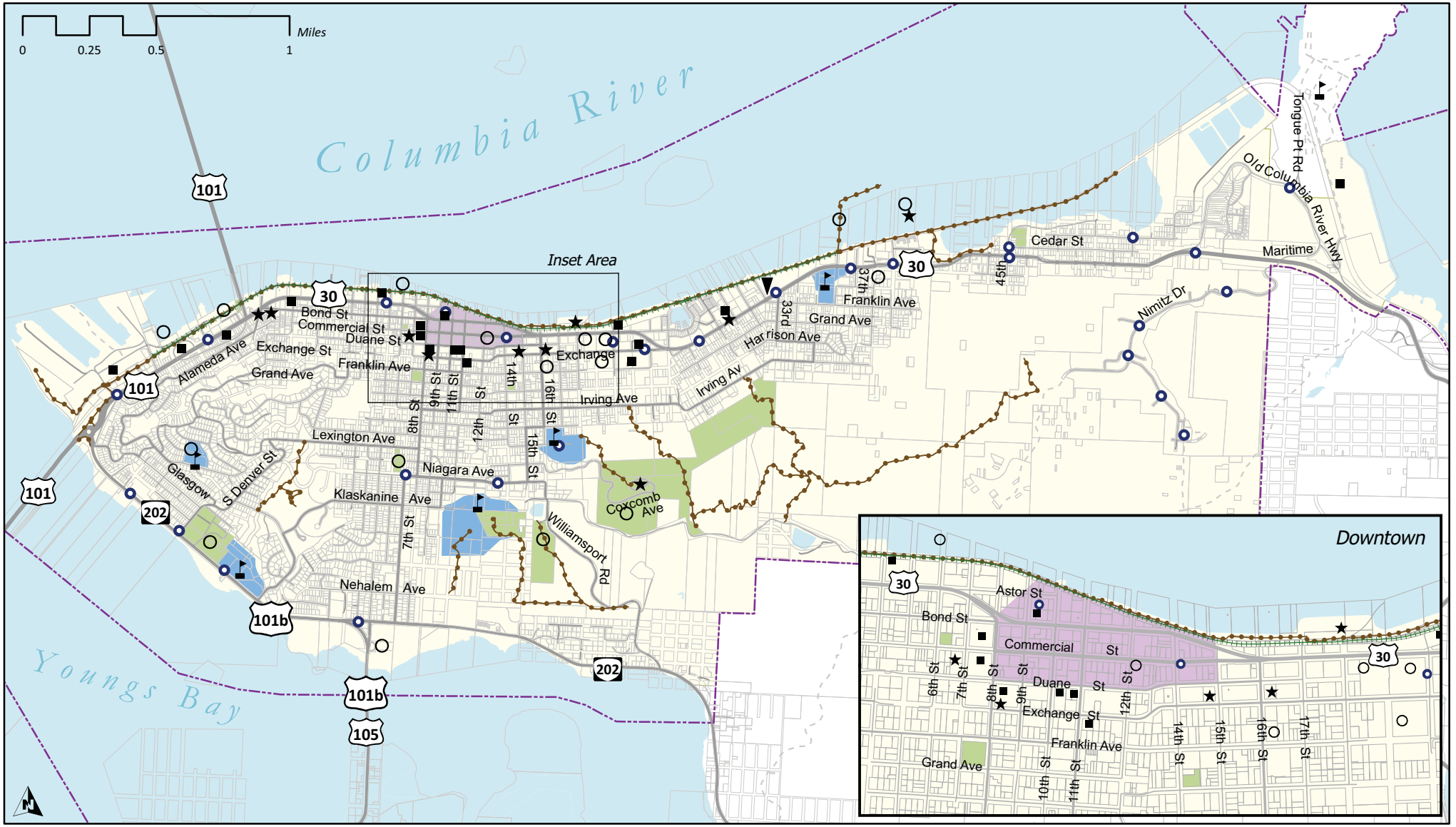


Figure 2 : Activity Generators

City of Astoria

Transportation System Plan

Legend

Landmarks

- Recreation/Entertainment
- Civic/Professional
- Educational
- Shopping
- Cultural
- Transit Stop
- Riverfront Trolley
- Multi-Use Trail
- Parcel
- Astoria City Limit
- Urban Growth Boundary
- Park
- School
- Water
- Downtown Shopping Area

How do People Get There?

Most Astoria residents commuted to work between the years 2005 and 2009 using single occupant motor vehicles (about 69 percent), or carpooling (about 14 percent)[1]. Approximately 10 percent of residents walked, 2 percent used public transportation, and 2 percent used other modes including biking, taxicab, motorcycle, or others mean of travel to work.

Table 1 compares Astoria residents' commute patterns to other Cities in the region. Fewer residents commuted to work in Astoria via single occupant motor vehicle (about 5 percent less than Seaside, and 7 percent less than Warrenton), while more walked (about 2 percent more than Seaside, and 7 percent more than Warrenton. Carpooling was fairly similar in Astoria and Warrenton (14 percent versus 15 percent), but accounted for 5 percent more of the trips in Astoria than Seaside (14 percent to 9 percent).

Table 1: Transportation Modes Used to Commute to Work

	Percent of Commuters		
Transportation Mode	**Astoria**	**Seaside**	**Warrenton**
Workers over 16 years	*4,377*	*3,173*	*2,136*
Motor Vehicle- Single Occupant	69%	74%	76%
Motor Vehicle- Carpool	14%	9%	15%
Walked	10%	8%	3%
Biked / Other	2%	4%	1%
Public Transportation	2%	1%	1%
Worked at Home	3%	4%	4%

Source: US Census Bureau, 2005-2009 American Community Survey

While the U.S. Census Bureau is a valuable source of information for work-related commute patterns in Astoria, it does not truly represent the transportation modes utilized to other activity generators like schools, recreation, shopping or access to transit. Non-motor vehicle transportation modes are likely higher in Astoria for these types of trips.

What are existing activity levels for transportation modes in Astoria? Pedestrian, bicycle, and motor vehicle activity at intersections throughout Astoria was reviewed during the evening peak period (3:30 p.m. to 6:30 p.m.) on a typical weekday in the late spring and early summer of 2011.[2] It was found that during the summer months, activity levels generally increase due to an influx of vacationers and visitors, and pleasant weather enticing residents of Astoria to venture outside. It should be noted that although weekend pedestrian and bicycle activity levels were not measured, they would generally be expected to be higher than the activity levels of a typical weekday in Astoria.

[1] 2005-2009 American Community Survey, US Census Bureau

[2] Based on counts conducted May 24th, May 25th, and June 15th, 2011

- **Pedestrian volumes** are highest in the downtown core of Astoria (from the riverfront to the north, Exchange Street to the south, 16th Street to the east, and 8th Street to the west. The highest hourly pedestrian activity during the evening peak occurred at the Commercial Street intersections with 11th Street and 12th Street, with over 300 pedestrian crossings at both intersections in the one-hour period between 3:30 p.m. and 4:30 p.m. The highest hourly pedestrian activity levels at the reviewed intersections during the evening peak period are displayed in Figure 3.
- **Bicycle volumes** are generally low during the evening peak period, with no more than three bicyclists traveling through any of the intersections reviewed during a single one-hour period. The highest volumes occurred on US 30 between 9th Street and 33rd Street, with hourly volumes ranging between one and three cyclists. The highest hourly bicycle activity levels at the reviewed intersections during the evening peak period are displayed in Figure 3.
- **Motor vehicle volumes** on the roadways in Astoria peak during the evening between 4:15 p.m. and 5:15 p.m., but generally vary depending on the time of year. During the summer months, traffic volumes increase due to an influx of vacationers and visitors to Astoria. For this reason, the traffic count data was adjusted to represent two separate conditions: peak seasonal and average weekday traffic conditions.

  The traffic count data collected in Astoria during the late spring and early summer generally represented the period between the peak seasonal and average weekday conditions, and required adjustment to reach the desired conditions using methodology from the ODOT Analysis Procedures Manual.[3] Using the seasonal coastal destination trend for US 101 and US 30, and the commuter trend for OR 202 and US 101 Business, various seasonal factors were developed and applied to the count data to represent peak seasonal (referred to as the 30th highest annual hour (30 HV) volume) and average weekday traffic volumes. The final p.m. peak seasonal and average weekday traffic volumes developed for the reviewed intersections are displayed in Figure 4a and Figure 4b.

  Peak Seasonal Volumes: The collected count data was factored upward to replicate the conditions when traffic volumes are typically highest (August). Using the coastal destination trend for intersections on US 101 and US 30, and a commuter trend for those on US 101 Business and OR 202, a seasonal factor was established. Peak seasonal motor vehicles volumes are highest on US 101 and US 30 between OR 202-US 101 Business and 16th Street, generally ranging between 900 and 1,000 vehicles in each direction during the evening peak hour. The total amount of motor vehicles traveling through intersections off US 101 or US 30 during the evening peak hour is generally less than 800 during the peak season.

[3] Analysis Procedures Manual, Oregon Department of Transportation, July 2009.

Average Weekday Volumes: The collected count data was factored to replicate average weekday traffic volumes for the year (typically in the spring or fall). Using the coastal destination trend for intersections on US 101 and US 30, and a commuter trend for those on US 101 Business and OR 202, a seasonal factor was established. During an average weekday, there are generally 400 fewer motor vehicles traveling through intersections on US 101 and US 30 intersections between OR 202-US 101 Business and Columbia Avenue-Bond Street. In the downtown core of Astoria, about 200 fewer vehicles travel through intersections on both Marine Drive and Commercial Street between 8th Street and 16th Street. East of 16th Street, around 300 fewer vehicles travel through intersections on US 30 during an average weekday. At most intersections reviewed off US 101 or US 30, volumes generally decrease less than 40 on an average weekday when compared to the peak season.

What Parts of the City do People Come From?

Nearly three quarters (75 percent) of the commuters in the western and eastern part and 60 percent in the central part of Astoria commute to work via single- occupant motor vehicle (see Table 2). The greatest percent of residents walking to their place of employment occurs in the west and central part of Astoria (8 and 17 percent of residents respectively). The highest use of public transportation for work trips occurs in the eastern part of Astoria (5 percent), possibly due to more transportation dependent populations in the Emerald Heights and Tongue Point Job Corps areas.

Table 2: Commute Mode by area of Astoria

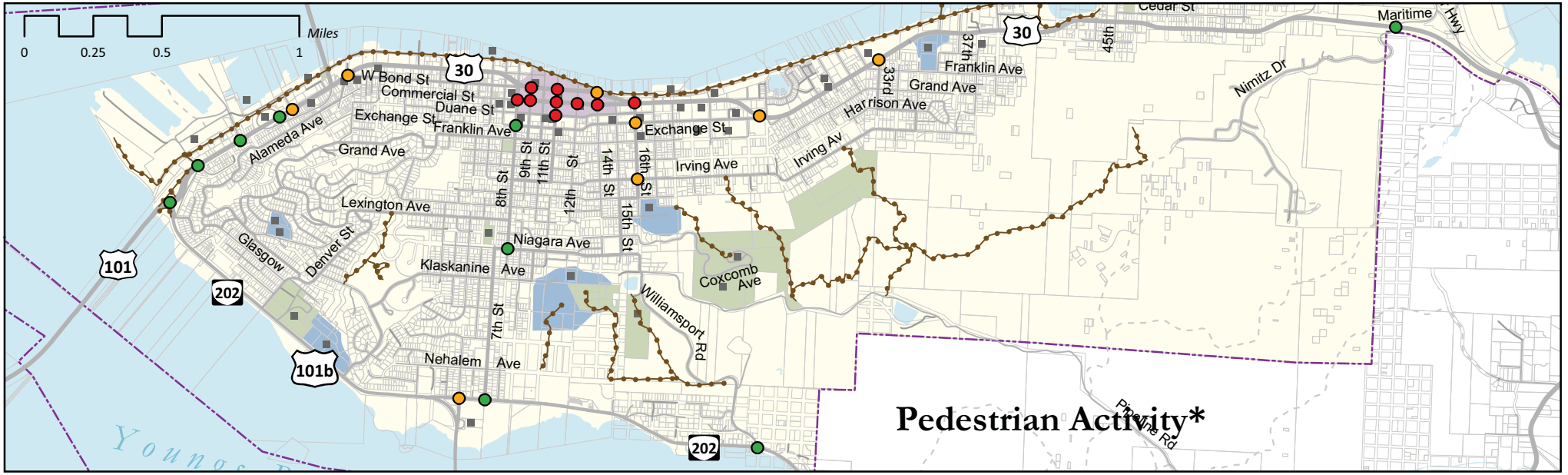
Transportation Mode	West Astoria	Central Astoria*	East Astoria
Motor Vehicle- Single Occupant	72%	61%	75%
Motor Vehicle- Carpool	18%	13%	12%
Walked	8%	17%	4%
Biked	0%	2%	2%
Public Transportation	1%	0%	5%
Worked at Home/Other	1%	7%	2%

Source: US Census Bureau, 2005-2009 American Community Survey
*Central Astoria includes Census Tract 9502, generally bounded by the Columbia River on the north, Youngs Bay to the south, 17th Street/Williamsport Road to the east and 7th Street/Columbia Avenue to the west.

What Factors Determine how People get there?

Travelers often weigh a variety of factors when deciding how to commute to their destination. Whether the trip will be via motor vehicle, walking, bicycle, or public transportation, the choice is often a balance between ease and convenience of travel, travel cost, and travel time.

Where are you going? Whether you are going to work, school, shopping, or to a park, your trip type (or your destination point) often determines your mode of transportation. If you are destined for a park or school you generally have a higher likelihood to walk or bicycle, as opposed to work or shopping in which travel via motor vehicle is generally more convenient.



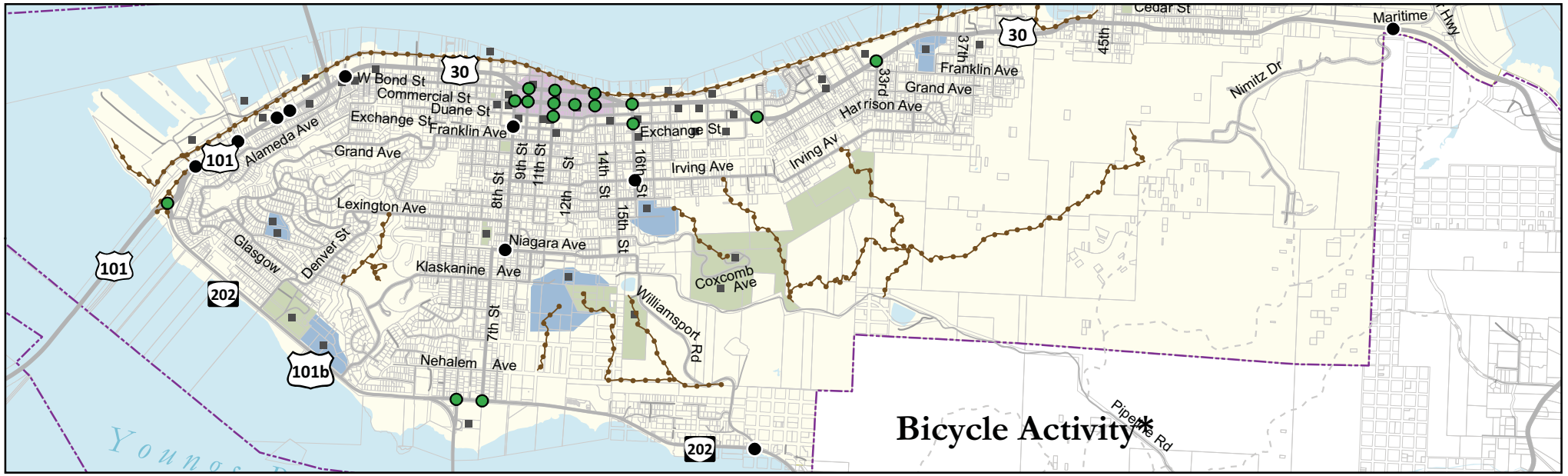


Figure 3 : Pedestrian and Bicycle Evening Peak Hour Activity

City of Astoria

Transportation System Plan

*Highest 1-hour activity between 3:30 PM and 6:30 PM.

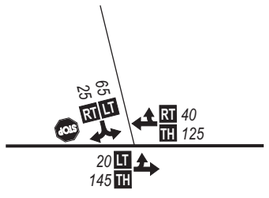
Legend

Study Intersection Pedestrian and Bicycle Counts

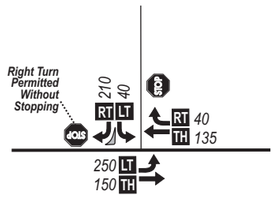
- None (0)
- Low (1 - 19)
- Moderate (20 - 49)
- High (50+)

- Point of Interest
- Multi-Use Trail
- Parcel
- Astoria City Limit
- Urban Growth Boundary
- Park
- School
- Water
- Downtown Shopping Area

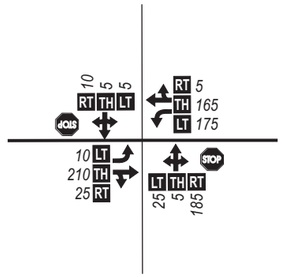
1. *OR 202/Williamsport Rd.*



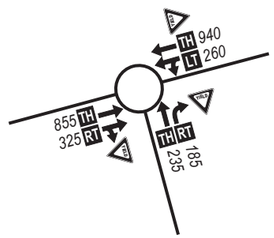
2. *OR 202/7th St.*



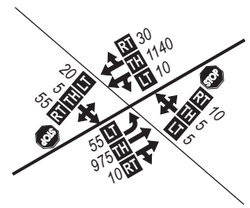
3. *OR 202/5th St.*



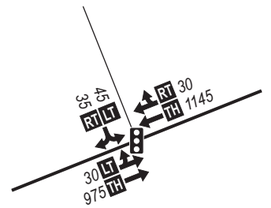
4. *US 101/OR 202-US 101 Business*



5. *US 101/Hamburg Ave.*

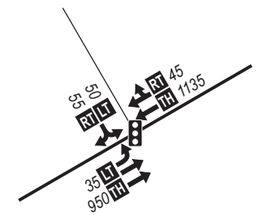


6. *US 101/Portway St.*

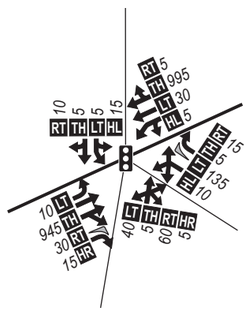


7. *US 101-30/Astoria-Megler Bridge*

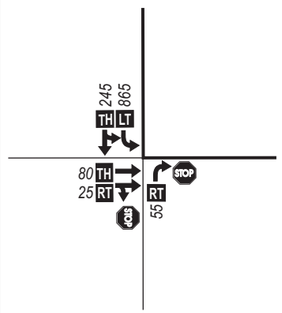
8. *US 30/Basin St.*



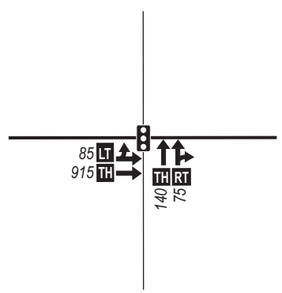
9. *US 30/Bond St-Columbia Ave.*



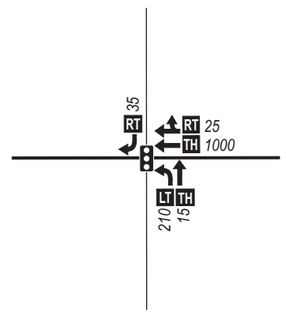
10. *US 30-Commercial St./8th St.*



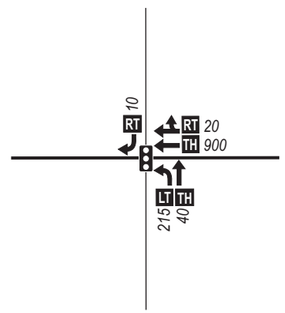
11. *US 30-Commercial St./9th St.*



12. *US 30-Marine Dr./9th St.*



13. *US 30-Marine Dr./11th St.*



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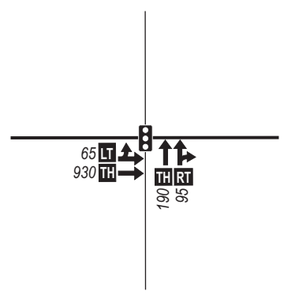
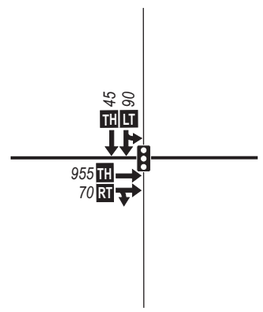
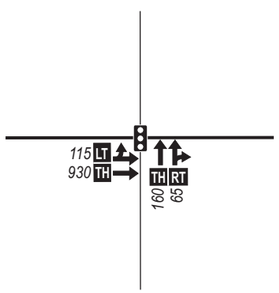


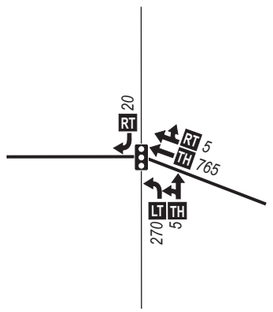
15. *US 30-Commercial St./12th St.*



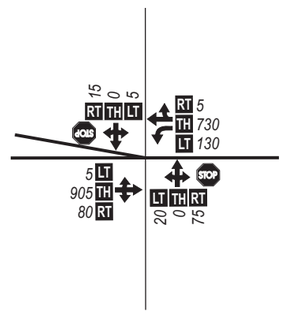
16. *US 30-Commercial St./14th St.*



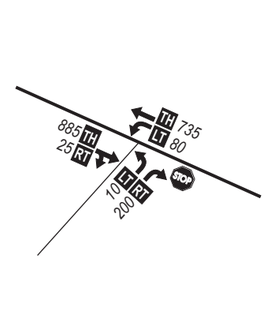
17. *US 30-Marine Dr./14th St.*



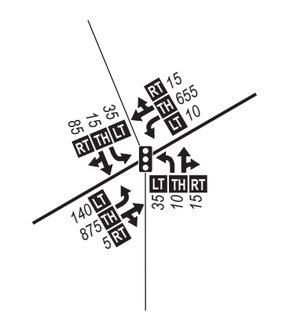
18. *US 30/16th St.*



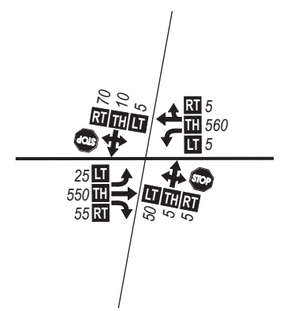
19. *US 30/Exchange St.*



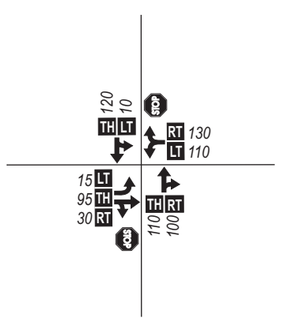
20. *US 30/33rd St.*



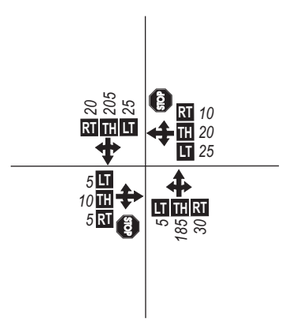
21. *US 30/Nimitz Rd.*



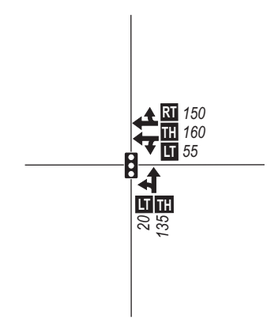
22. *Exchange St./16th St.*



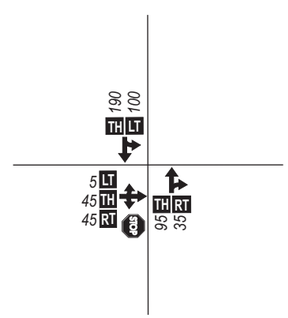
23. *Irving Av./16th St.*



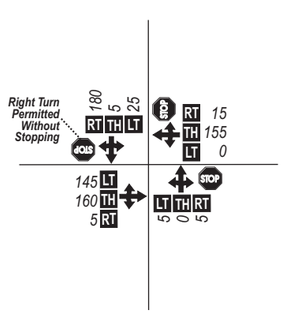
24. *Duane St./11th St.*

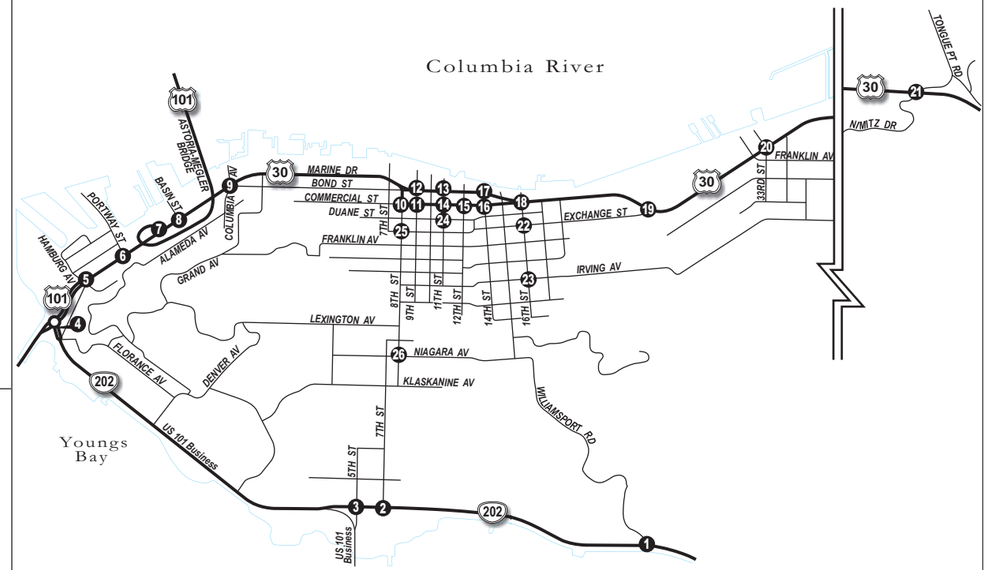


25. *Exchange St./8th St.*



26. *Niagra Av./8th St.*





LEGEND

- 00 - Study Intersection
- ← - Lane Configuration
- STOP - Stop Sign
- - Traffic Signal
- 000 - PM Peak Hour Traffic Volume
- HL LT TH RT HR - Volume Turn Movement

Hard Lt.•Left•Thru•Right•Hard Rt.

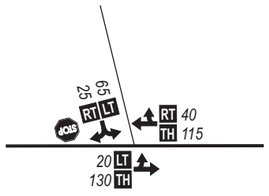
DKS Associates
TRANSPORTATION SOLUTIONS

NO SCALE

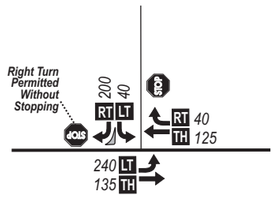
Figure 4a

2011 EXISTING 30 HV MOTOR VEHICLE VOLUMES (PM Peak Hour)

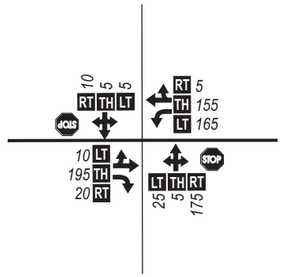
1. *OR 202/Williamsport Rd.*



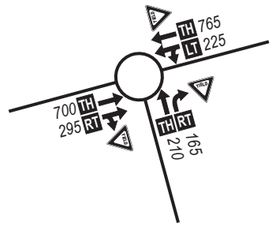
2. *OR 202/7th St.*



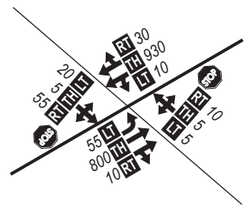
3. *OR 202/5th St.*



4. *US 101/OR 202-US 101 Business*



5. *US 101/Hamburg Ave.*

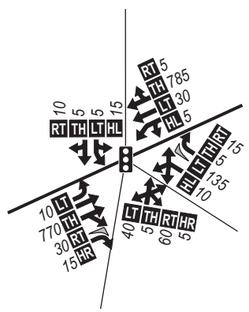


6. *US 101/Portway St.*

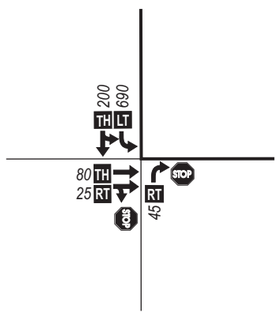
7. *US 101-30/Astoria-Megler Bridge*

8. *US 30/Basin St.*

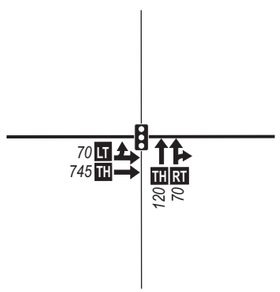
9. *US 30/Bond St-Columbia Ave.*



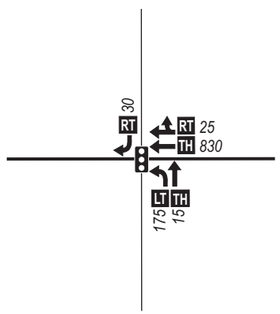
10. *US 30-Commercial St./8th St.*



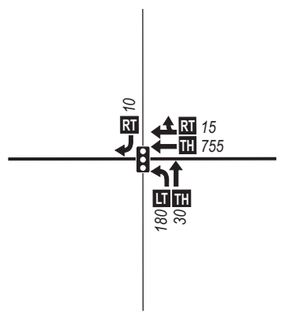
11. *US 30-Commercial St./9th St.*



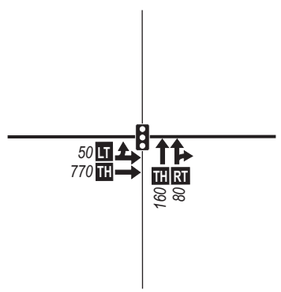
12. *US 30-Marine Dr./9th St.*



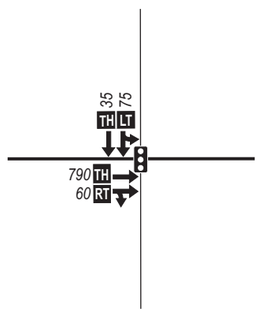
13. *US 30-Marine Dr./11th St.*



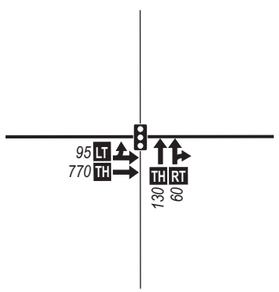
14. *US 30-Commercial St./11th St.*



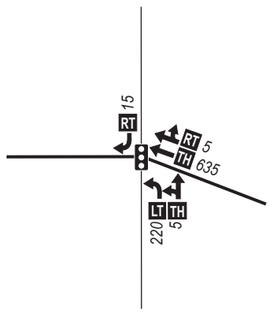
15. *US 30-Commercial St./12th St.*



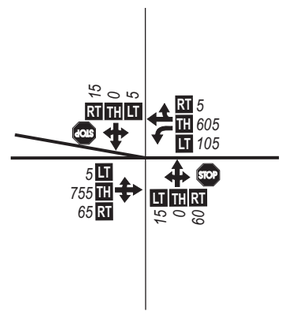
16. *US 30-Commercial St./14th St.*



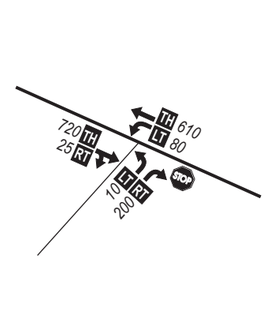
17. *US 30-Marine Dr./14th St.*



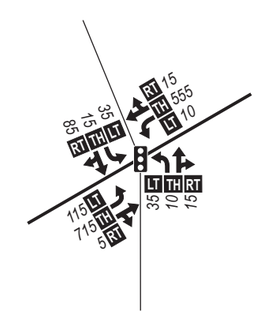
18. *US 30/16th St.*



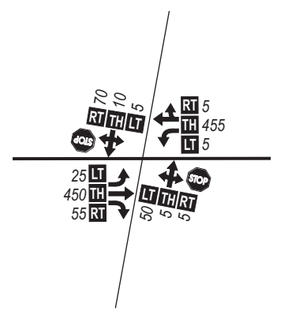
19. *US 30/Exchange St.*



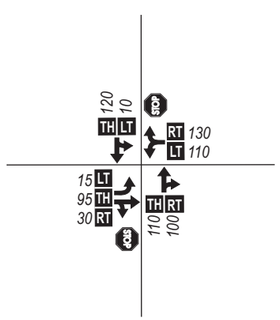
20. *US 30/33rd St.*



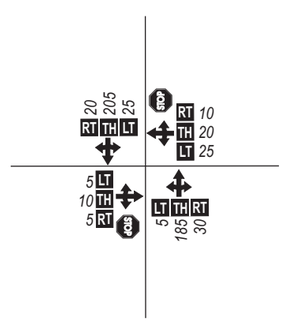
21. *US 30/Nimitz Rd.*



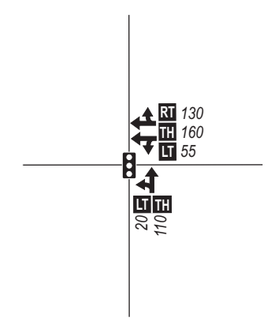
22. *Exchange St./16th St.*



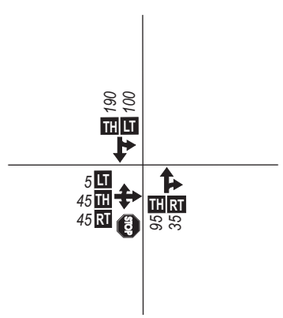
23. *Irving Av./16th St.*



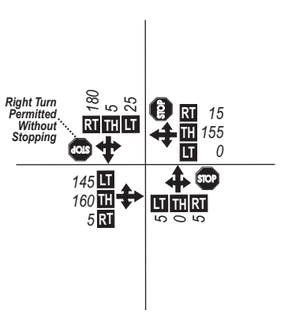
24. *Duane St./11th St.*

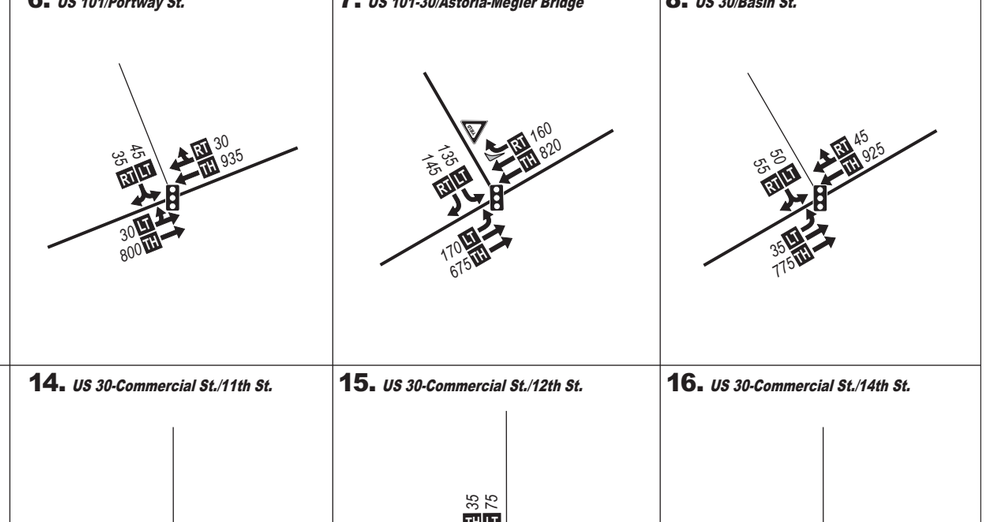


25. *Exchange St./8th St.*



26. *Niagra Av./8th St.*





LEGEND

- 00 - Study Intersection
- ← - Lane Configuration
- STOP - Stop Sign
- - Traffic Signal
- *000* - PM Peak Hour Traffic Volume
- HL LT TH RT HR - Volume Turn Movement

Hard Lt.•Left•Thru•Right•Hard Rt.

NO SCALE

DKS Associates
TRANSPORTATION SOLUTIONS

Figure 4b

2011 EXISTING AVERAGE WEEKDAY MOTOR VEHICLE VOLUMES (PM Peak Hour)

Will you have to cross a busy road or walk along a road without sidewalks? The availability of sidewalks, curb ramps to provide wheelchair access, crosswalks, and bicycle lanes increase the comfort and access of walking and biking. A lack of these facilities, particularly on higher volume/speed roadways, discourages people from utilizing non-motorized modes of transportation.

Where you work and how long it takes you to get there. Astoria residents who work outside of the City are likely to commute via motor vehicle due to travel distance and commute time. As seen in Table 3, about 38 percent of Astoria residents commute outside the City to work. Over 20 percent of these commuters travel to employment locations at least 10 miles outside of the City.

Table 3: Where Astoria Residents Work

Astoria residents who:	Percent of Astoria Workers	Distance from Astoria
Work in Astoria	**62%**	-
Work outside Astoria	**38%**	**-**
Work in Warrenton	*15%*	*3+ miles*
Work in Seaside	*7%*	*15+ miles*
Work in Portland	*1%*	*80+ miles*
Work in Other City in Oregon	*14%*	*10+ miles*
Work in Washington	*1%*	*10+ miles*

Source: 2000 Census Transportation Planning Package (CTPP)

Age and income. Demographic characteristics such as age and income will likely play a key role in determining mode of transportation. Astoria residents with lower incomes, as well as the youngest and oldest residents often account for more trips via walking, biking, and public transportation. As seen in Table 4, about a quarter (25 percent) of Astoria residents living in the western and eastern parts of the City are school-aged children, while a quarter (25 percent) of Astoria residents in central part of the City are above the retirement age. The central part of Astoria also has the lowest median household incomes (around $32,000), which is approximately $6,000 less than the other parts of Astoria.

Table 4: Key Demographics in Astoria

	West Astoria	Central Astoria	East Astoria
Age (by percent of residents)			
School aged (Under 18)	26%	12%	25%
Middle Aged (18 to 66)	64%	64%	65%
Retired Aged (67+)	10%	24%	10%
Median Household Income	$38,234	$31,941	$38,258

Source: US Census Bureau, 2005-2009 American Community Survey

Is it cold or raining? Weather could potentially play a role in determining how trips are made. Astoria experiences cool, rainy winters, with mild and generally dry summers. According to the national weather service, average temperatures in the winter months (November to March) hover around 45 degrees Fahrenheit, with measurable rainfall occurring on about 20 days each winter month. The spring and fall months (April, May, and October) are slightly warmer and dryer, with average temperatures around 50 degrees Fahrenheit, and about 15 days of measurable rainfall. The summer months (June to September) are typically very pleasant, with average temperatures around 60 degrees Fahrenheit, and less than 10 days of measurable rainfall each month.[4] The rainy weather could discourage walking and biking trips, forcing users to potentially make a trip via motor vehicle or other means, when they would otherwise walk or bike.

A rainy day in Astoria

Are you able to walk or bike on a steep hill? Topography, one of the things that makes Astoria a unique place with the sloping and hilly terrain, is generally a deterrent to walking and bicycling. The terrain makes these trips more difficult and potentially creates barriers for those with disabilities. The slopes along some roadways are often so great that stairs are required, turning a casual trip into a workout.

Steep hill with stairs in place of a sidewalk on 8th Street

[4] Climate Summary for Astoria, National Weather Service

What Transportation Infrastructure is Available?

Astoria has an abundance of existing transportation infrastructure that residents use on a daily basis. The infrastructure includes sidewalks, trails, bikelanes, roadways, and transit.

Pedestrian Facilities

Multi-use paths are used by a variety of non-motorized users, including pedestrians, bicyclists, skateboarders, and runners. Public multi-use paths are typically paved (asphalt or concrete) but may also consist of an unpaved smooth surface as long as it meets Americans with Disabilities Act (ADA) standards. Multi-use paths are usually wider than an average sidewalk (i.e., 10 – 14 feet rather than 5 – 6 feet).

- The Astoria River Trail runs along the waterfront for nearly the entire length of the north side of Astoria and serves a transportation and recreation function for both pedestrians and cyclists. A number of natural surface trails, such as the Cathedral Tree Trail, are also located in Astoria. These trails are mostly used by pedestrians, primarily for recreational purposes.

A steep walking trail near Flavel House Museum

Sidewalks are located along roadways, are generally separated from the roadway with a curb and/or planting strip, and have a hard, smooth surface, such as concrete. The ODOT standard for sidewalk width is six feet, with a minimum width of five feet acceptable on local streets. Astoria requires sidewalk widths of 5 to 6 feet on most street types, 10 feet on one-way arterial streets and 12 feet on collector streets in industrial areas[5]. The unobstructed travelway for pedestrians on a sidewalk should be clear of utility poles, sign posts, fire hydrants, vegetation, and other street furnishing.

- As indicated in Figure 5, many roadways in Astoria have sidewalks on both sides, including the downtown core and much of US 30 within the City limits. In downtown, street furniture including signs, benches, etc. are permitted on both sides of the sidewalk as long as a six foot clear zone is maintained.
- Good pedestrian access to transit improves the overall level of service provided by the transit system. It allows transit users to safely and comfortably arrive at transit stops and increases the likelihood that individuals will choose transit as a travel

[5] Astoria Typical Street Widths document 'ST-2'

mode. In Astoria, the large majority of transit routes and stations are well-served by the existing sidewalk system.

- Providing safe pedestrian and bicycle access to schools is invaluable for promoting physical fitness in school-age children and fostering travel habits that will carry into adulthood. The existing sidewalk system provides pedestrian connections between Astoria schools and nearby residential neighborhoods, although many students are bussed or driven to school due to distances.

Roadway shoulders, such as those found on OR 202 east of 7th Street, often serve as pedestrian routes in many rural Oregon communities. On roadways with low traffic volumes (i.e., less than 3,000 vehicles per day), roadway shoulders are often adequate for pedestrian travel. These roadways should have shoulders wide enough so that both pedestrians and bicyclists can use them, usually six feet or greater.

Crosswalks & ADA Ramps: As indicated in Figure 6 to this document, Astoria has installed crosswalks and ADA curb ramps at many intersections in areas with high pedestrian use. However, there remain several areas outside of the downtown core where the curb ramp network is incomplete. This includes roadways such as Lexington Avenue, 7th Street, 8th Street and Irving Avenue.

Bicycle Facilities

Shared Roadway / Signed Shared Roadway: Shared roadways include roadways where bicyclists and motorists share the same travel lane. The most suitable roadways for shared bicycle use are those with low speeds (25 mph or less) and low traffic volumes (3,000 vehicles per day or fewer). Signed shared roadways are shared roadways that are designated and signed as bicycle routes and serve to provide continuity to other bicycle facilities (e.g. bicycle lanes) or to designate a preferred route through the community. Common practice is to sign the route with standard Manual on Uniform Traffic Control Devices (MUTCD) green bicycle route signs with directional arrows. Shared roadways can also be signed with innovative signing that highlights a special touring route (e.g. Oregon Coast Bike Route) or provides directional information in terms of bicycling minutes or distance (e.g., "Library, 3 minutes, ½ mile").

- Many local streets in Astoria are low speed/low volume roadways that could be classified as shared roadways. Indeed, many residents of Astoria choose to bicycle on these local streets. Although there are no signs or pavement markings to indicate that a particular local street is a shared roadway or part of a bicycle route, these low traffic roadways often connect residential neighborhoods to commercial areas—allowing bicyclists to bypass thoroughfares with heavy traffic in favor of quieter streets.
- The hilly topography and limited site distances at intersections around Astoria neighborhoods can make cycling on some local streets a challenge. To increase cycling comfort, traffic calming measures can be implemented (such as the speed bumps installed on Klaskanine Avenue).

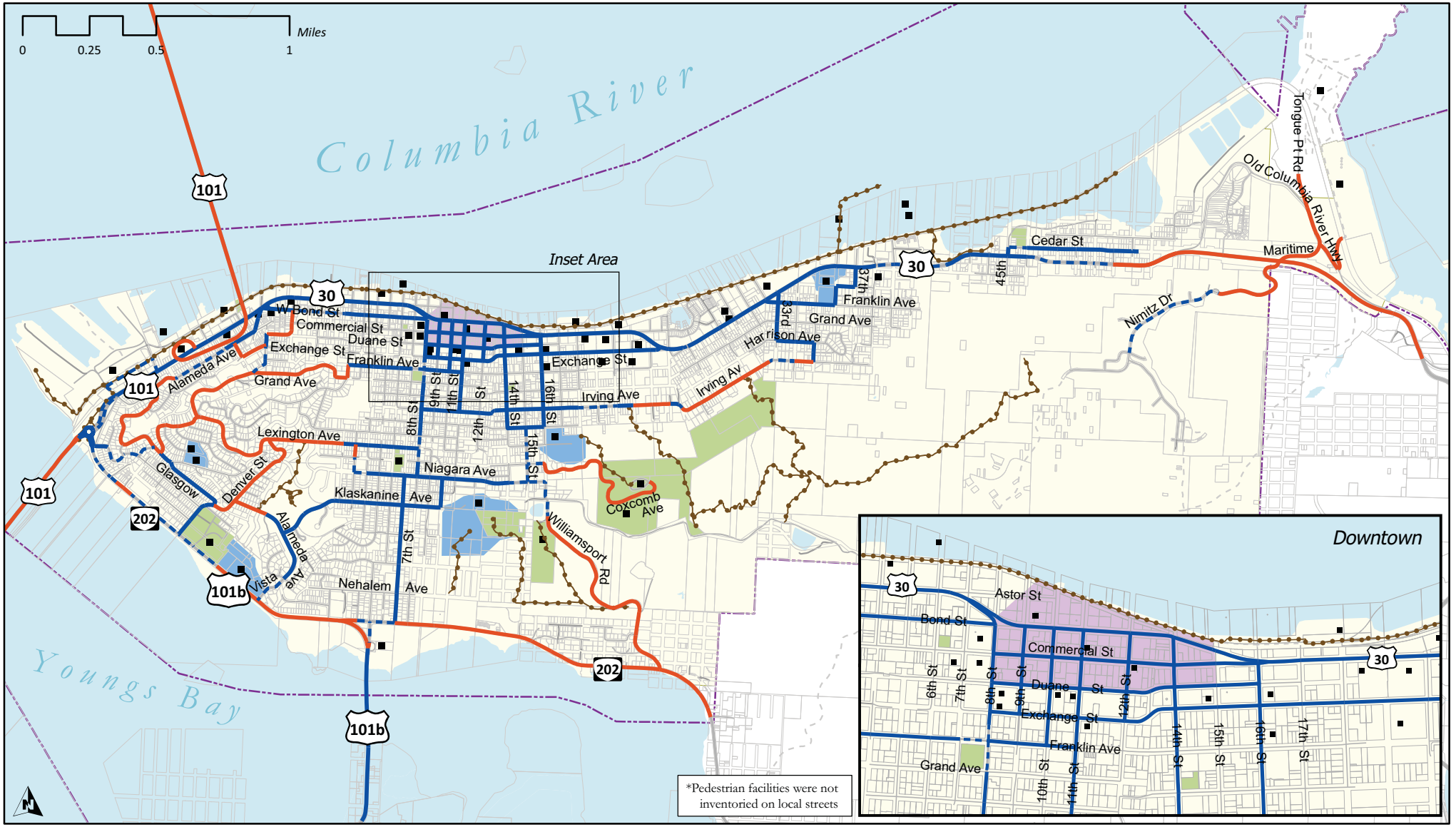


Figure 5 : Existing Pedestrian Facilities

City of Astoria

Transportation System Plan

Legend

*Sidewalk**

- One Side
- Both Sides
- No Sidewalk

- Point of Interest
- Multi-Use Trail

- Parcel
- Astoria City Limit
- Urban Growth Boundary
- Park
- School
- Water
- Downtown Shopping Area

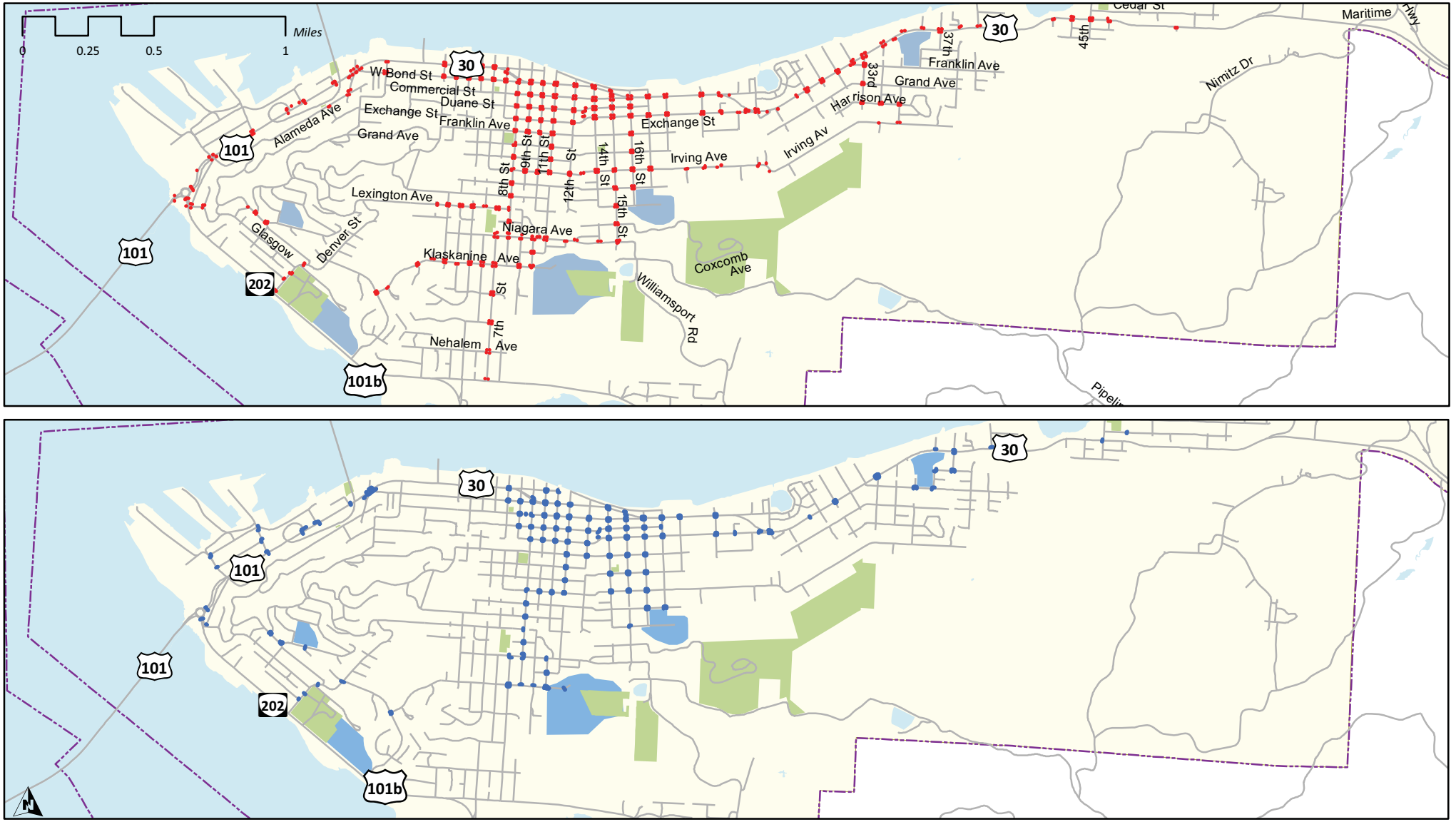


Figure 6: Existing Pedestrian Amentities

City of Astoria

Transportation System Plan

Legend

Pedestrian Amentity

- Curb Ramps
- Crosswalks

- Astoria City Limit
- Urban Growth Boundary
- Park
- School
- Water

Shoulder Bikeway: These are paved roadways that have striped shoulders wide enough for bicycle travel. ODOT recommends a six-foot paved shoulder to adequately provide for bicyclists, and a four-foot minimum width in constrained areas. Roadways with shoulders less than four feet are considered shared roadways. Sometimes shoulder bikeways are signed to alert motorists to expect bicycle travel along the roadway.

- OR 202: East of Astoria High School on OR 202, a roadway shoulder is available to bicyclists. It does not have bicycle signage or markings, but has good pavement quality and sufficient width to accommodate bicycle travel.

Bike Lane: Bike lanes are portions of the roadway designated specifically for bicycle travel with a striped lane and pavement stencils. ODOT standard width for a bicycle lane is six feet. The minimum width of a bicycle lane against a curb or adjacent to a parking lane is five feet. A bicycle lane may be as narrow as four feet, but only in very constrained situations. Astoria requires bike lanes on select street types, including one-way arterial streets (4 feet), local streets in commercial areas (7 feet, one side only) collector streets (4 ½ feet) and collector streets in industrial areas (6 feet).[6] Bike lanes are required on arterials and major collectors, where high traffic volumes and speeds warrant greater separation of the travel modes. Existing bicycle facilities in Astoria can be seen in Figure 7.

- US 30: Much of the existing bike lanes and shoulder bikeways in Astoria are limited to those found along US 30 and US 202. Five-foot bike lanes are present in both directions along US 30 in several locations, though there are segments where bike lanes are absent, of substandard width, or only present in one direction. The US 30 couplet, Commercial Street (eastbound) and Marine Drive (westbound), which serves as downtown Astoria's major thoroughfare for motor vehicles, includes bike lanes between 6th Street and 16th Street. Bike lanes are also present on both sides of US 30 to the east of the couplet from 16th Street until 33rd Street. These existing facilities provide bicycle users with access to popular local destinations such as the Liberty Theater, Fort George Brewery and the numerous small shops and eateries that thrive in Astoria's downtown core.

  Bike lanes become inconsistent on US 30 east of 33rd Street, making brief appearances for a block or two before disappearing again. East of 43rd Street the bike lanes disappear altogether and are replaced by an unmarked wide shoulder. There is a large gap just west of the downtown couplet in the area between Bay Street and 6th Street.

- OR 202-US 101 Business: South of the roundabout on OR 202- US 101 Business bike lanes exist on both sides of the street. The bike lanes are well marked and include bicycle pavement markings at regular intervals until Astoria High School.

[6] Astoria Typical Street Widths document 'ST-2'

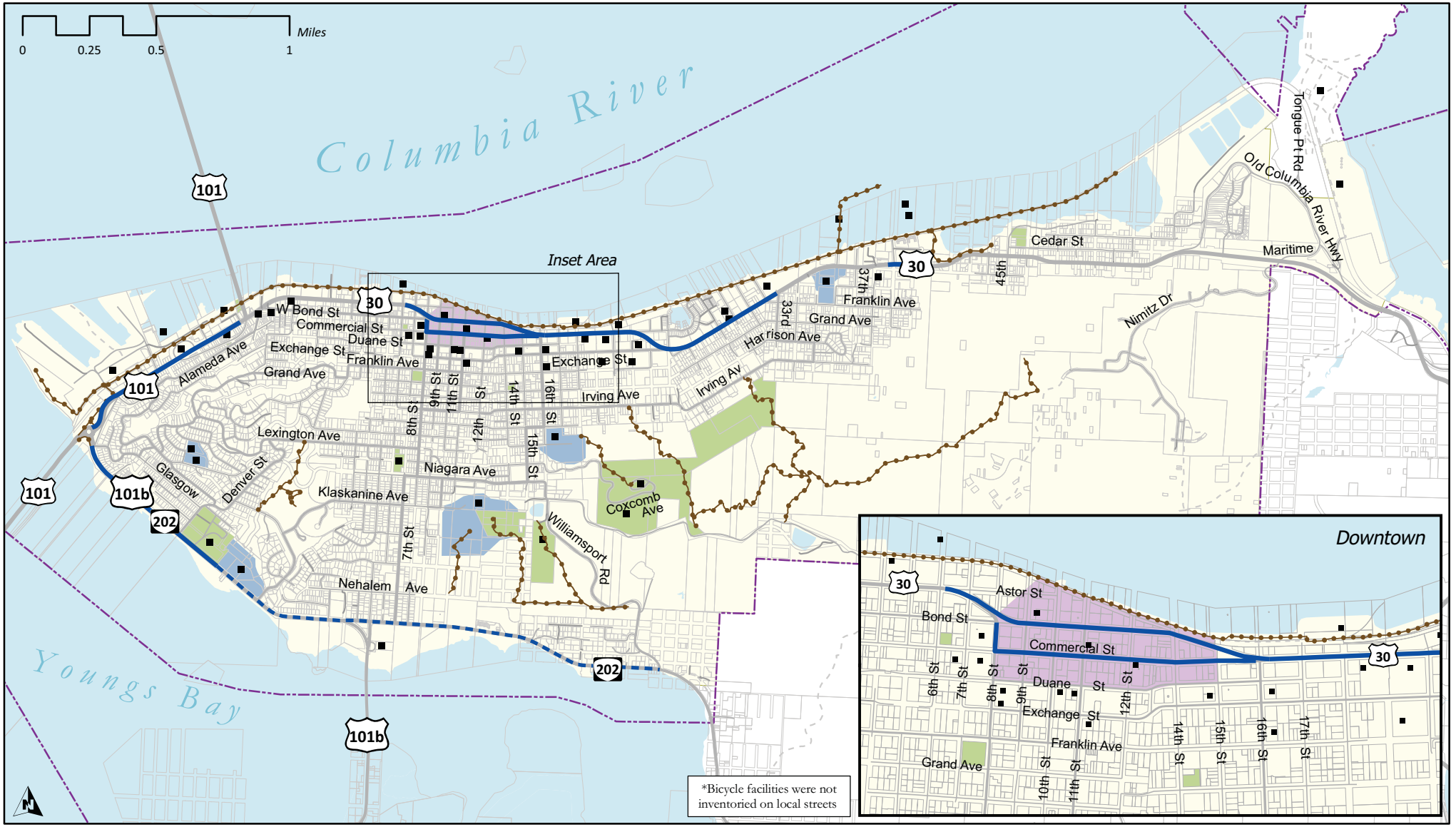


Figure 7 : Existing Bicycle Facilities

City of Astoria

Transportation System Plan

Legend

*Bicycle Facilities**

- Bicycle Lane
- Shoulder Bikeway
- Point of Interest
- Multi-Use Trail

- Parcel
- Astoria City Limit
- Urban Growth Boundary
- Park
- School
- Water
- Downtown Shopping Area

Multi-use paths suitable for bicycle travel typically have a paved or solid surface rather than a natural one. Many of the unpaved natural surface trails in Astoria are too steep for cyclists and are primarily utilized by pedestrians.

- The most prominent bikeway facility in the City is the Astoria River Trail which extends from west of Hamburg Avenue on the west side of the City to 45th Street on the east side of the City. It is popular with walkers, joggers, bikers, tourists, and residents. The trail provides access to many popular destinations including the Maritime Museum, Maritime Memorial, Safeway, Astoria Gateway Cinema, and many of the small shops and eateries located in the old cannery buildings on the waterfront. Other paved trails in Astoria are mostly used by pedestrians due to narrow widths, steep grades, and poor pavement quality.

The Astoria River Trail adjacent to shops and restaurants at 11th Street

Bicycle Parking: End-of-trip bicycle facilities are a fundamental component of a bicycle network. A lack of safe and secure parking facilities can be an obstacle to promoting bicycle riding. Bicycle parking can be broadly defined as either short-term or long-term parking:

Short-term parking intended to accommodate visitors, customers, messengers and others expected to depart within two hours; requires approved standard rack, and appropriate location and placement.

- Short-term bicycle parking is available at a number of locations downtown where "wave" style bicycle racks have been installed. These bike racks are positioned near the edge of the sidewalk so they do not obstruct pedestrian travel and in locations that do not inhibit individuals from easily getting in/out of adjacent parked vehicles. Short-term bicycle parking in Astoria is generally not covered. Many of the existing bike racks are in need of maintenance (e.g. missing bolts on the mounting plate) and/or replacement due to damage to the rack itself.

The standard "wave" bicycle rack found throughout downtown Astoria

Long-term parking is intended to accommodate employees, students, residents, commuters, and others expected to park more than two hours. This parking should be in a secure location protected from the weather.

- The City is developing plans to install long-term bicycle lockers at a number of key locations in the City. Some of these lockers will be located close to existing transit facilities to enable and encourage bike to transit trips. The City has not yet established access policies or a fee structure.

Example of a long-term bike locker parking facility

Local Transit Service

Transit service is provided in Astoria by the Sunset Empire Transportation District (SETD) via two fixed bus routes connecting Astoria to Warrenton, Seaside, and Cannon Beach, and an Americans with Disabilities Act (ADA) paratransit service. The fixed transit routes in Astoria can be seen in Figure 8. Temporary bus service is also provided for cruise ship passengers on cruise port calling days. In addition, transit service is provided to residents via the Astoria Riverfront Trolley.

Bus service is provided to Warrenton by SETD Route 10 (Red Cedar), which runs from Fred Meyer in Warrenton to the Emerald Heights/Tongue Point area in east Astoria. Key destinations along this route include the Astoria Transit Center, Columbia Memorial Hospital, Safeway, Job Corps Center, Emerald Heights, Clatsop Community College, Astoria High School, and the Department of Motor Vehicles. SETD Route 10 offers bus service with one hour headways between 6:00 a.m. to 7:00 p.m. Monday through Friday.

Bus service to Seaside and Cannon Beach. Bus service is provided to Seaside and Cannon Beach by SETD Route 101 (Pink Salmon), which runs between Tolovana Park in Cannon Beach and the Astoria Transit Center, and Clatsop Community College in Astoria. SETD Route 101 provides service Monday through Friday between 6:00 a.m. to 8:00 p.m., generally with two to three hour headways.

Bus service for Cruise Ship passengers. SETD Route 11 (Purple Seal) offers fixed route bus service on a temporary basis from Pier 1 at the Port of Astoria to Liberty Theatre, Columbia River Maritime Museum, and the Astoria Transit Center. This route only operates on cruise ship calling days, between 9:00 a.m. and 4:00 p.m.

Public Transportation for persons with disabilities. The SETD paratransit service provides public transportation to persons with disabilities who are unable to use regular fixed route buses. Curb-to-curb paratransit service, in wheelchair lift equipped mini-buses, is available Monday through Saturday between 6:00 a.m. and 8 p.m. All trips must have an origination and destination within 3/4 of a mile of a regular SETD bus route.

Passenger rail service is provided via the Astoria Riverfront Trolley. The trolley runs between Portway Street and 39th Street, and operates seven days a week during the summer, with varying service during the Fall, Winter, and Spring months.

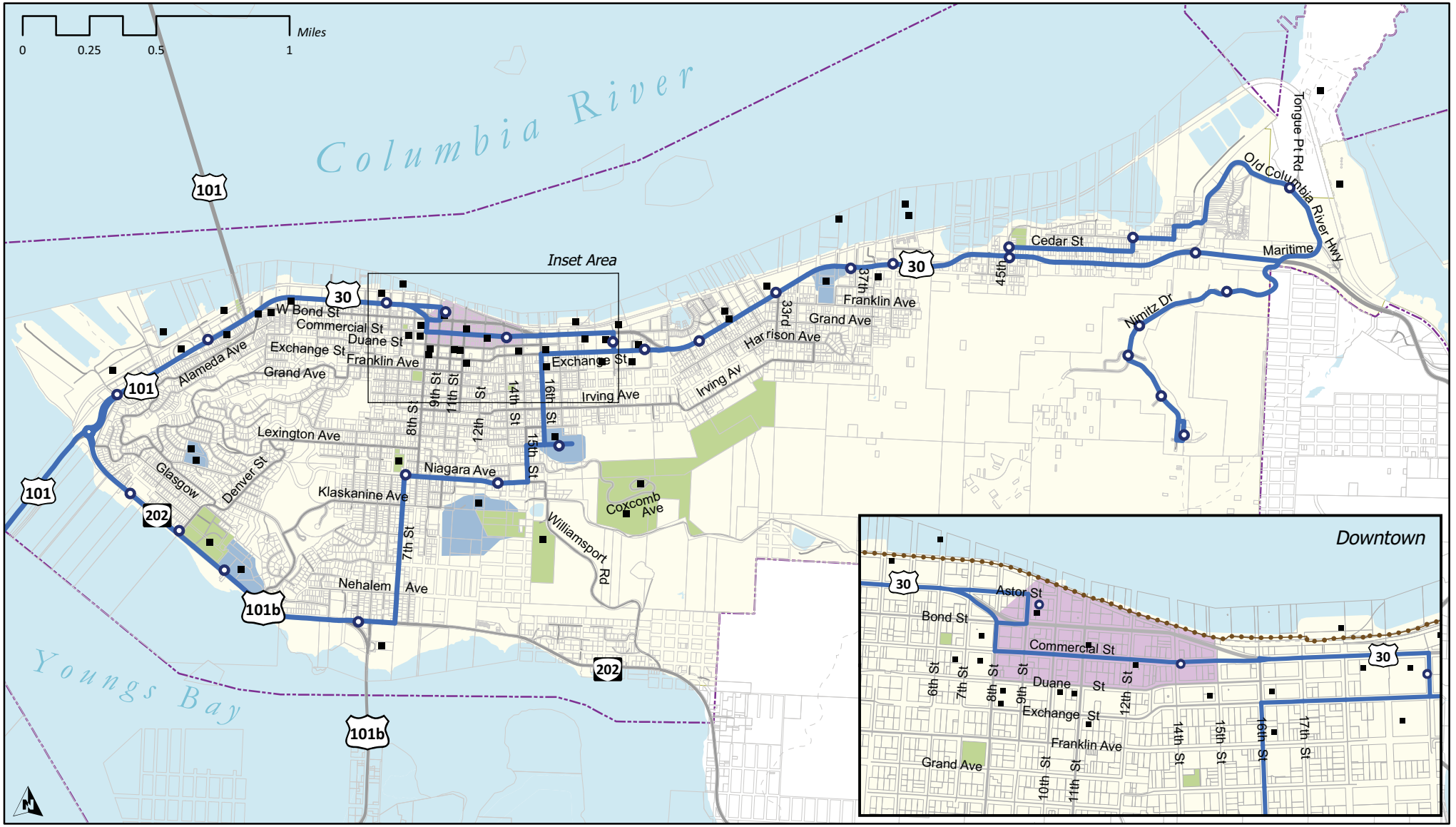


Figure 8 : Existing Transit Routes

Legend

- Bus Stop
- Bus Route
- Point of Interest
- Parcel
- Astoria City Limit
- Urban Growth Boundary
- Park
- School
- Water
- Downtown Shopping Area

City of Astoria

Transportation System Plan

Regional Transit Service

Service to Portland. NorthWest Public Oregon Intercity Transit (POINT), operated by OC&W Coachway, connects Astoria to the surrounding region, including Portland. Bus service is provided between the Astoria Transit Center and the Portland Greyhound and Portland Amtrak stations. The bus leaves the Astoria Transit Center destined for Portland at 8:00 a.m. and 5:45 p.m., and leaves Portland destined for Astoria at 9:10 a.m. and 6:00 p.m. seven days a week.

Service to Washington. Pacific Transit System (PTS) provides bus service to Washington, including Long Beach, Ilwaco, and South Bend. The bus arrives and departs the Astoria Transit Center four times per day for both Ilwaco and South Bend, twice in the morning and twice in the afternoon. Riders may transfer to PTS Route 20 in Ilwaco to reach destinations along the Washington Coast including Long Beach.

Service to Tillamook County, Oregon. Astoria residents can reach destinations in Tillamook County by transferring at Tolovana Park in Cannon Beach. The Tillamook County Transportation District provides bus service to Tillamook, Manzanita, and other cities in Tillamook County.

Transit Access and Amenities

The Astoria Transit Center, located on Marine Drive (US 30) between 9th and 10th Streets, offers a transfer point between the two SETD fixed bus routes, the Astoria Riverfront Trolley, and the regional bus service to other areas in Oregon and Washington. The transit center includes parking for motor vehicles and bikes, and has a shelter and bench for riders.

SETD bus stop with a shelter at Niagara and 8th Street

There are about 27 bus stops in Astoria including stops at Astoria High School, the Department of Motor Vehicles, Port of Astoria-Uniontown, Clatsop Community College, Columbia Memorial Hospital, Job Corps-Tongue Point, and Emerald Heights. Of the 27 bus stops, only 5 offer benches and shelter and some lack sidewalks connections to the surrounding neighborhoods and businesses. However, at any particular location in Astoria, a user is generally never more than one mile from a bus stop.

All SETD buses are equipped with either a ramp or a lift to allow wheelchair access, and include bicycle racks. If the mounted bicycle rack on the bus is full, riders are permitted to load their bicycle inside the bus (if a wheelchair is not currently aboard).

Roadways

The City classifies the roadways within Astoria based on a hierarchy according to the intended purpose of each road (as shown in Figure 9). From highest to lowest intended usage, the classifications are principal arterials, collectors, major locals and local streets. Roadways with a higher intended usage generally provide more efficient motor vehicle traffic movement (or mobility) through town, while roadways with lower intended usage provide greater access for shorter trips to local destinations such as businesses or residences.

Roadways intended to move traffic through Astoria (principal arterial roadways) are generally located at the bottom of the hill near the Columbia River or Youngs Bay. These are generally roadways that experience higher traffic volumes and connect to locations outside of the City, such as US 101 to Warrenton or US 30 towards Portland. Similarly, these are also roadways that visitors often travel to reach Astoria. Posted speed limits on these roadways are generally between 20 to 45 miles per hour, with the higher speeds posted in less developed areas and lower speeds in areas with more activity such as the downtown core.

Commercial Street (US 30) is an example of a principal arterial roadway

The roadways that often connect the neighborhoods and major activity generators in Astoria to the principal arterial roadways are classified as collectors. These roadways provide greater accessibility to neighborhoods and provide efficient through movement for local traffic. Posted speeds on collector roadways are typically 25 miles per hour.

8th Street is an example of a collector. Notice that it is direct north to south route through the City

The roadways that provide more direct access to residences in Astoria are classified as major local or local roadways. Roadways classified as major local differ from local roadways in that they generally provide more direct access to higher classified roadways or the downtown core, whereas local streets often dead end or are not continuous. These roadways are often lined with residences and are designed to serve lower volumes of traffic with posted speeds of 25 miles per hour.

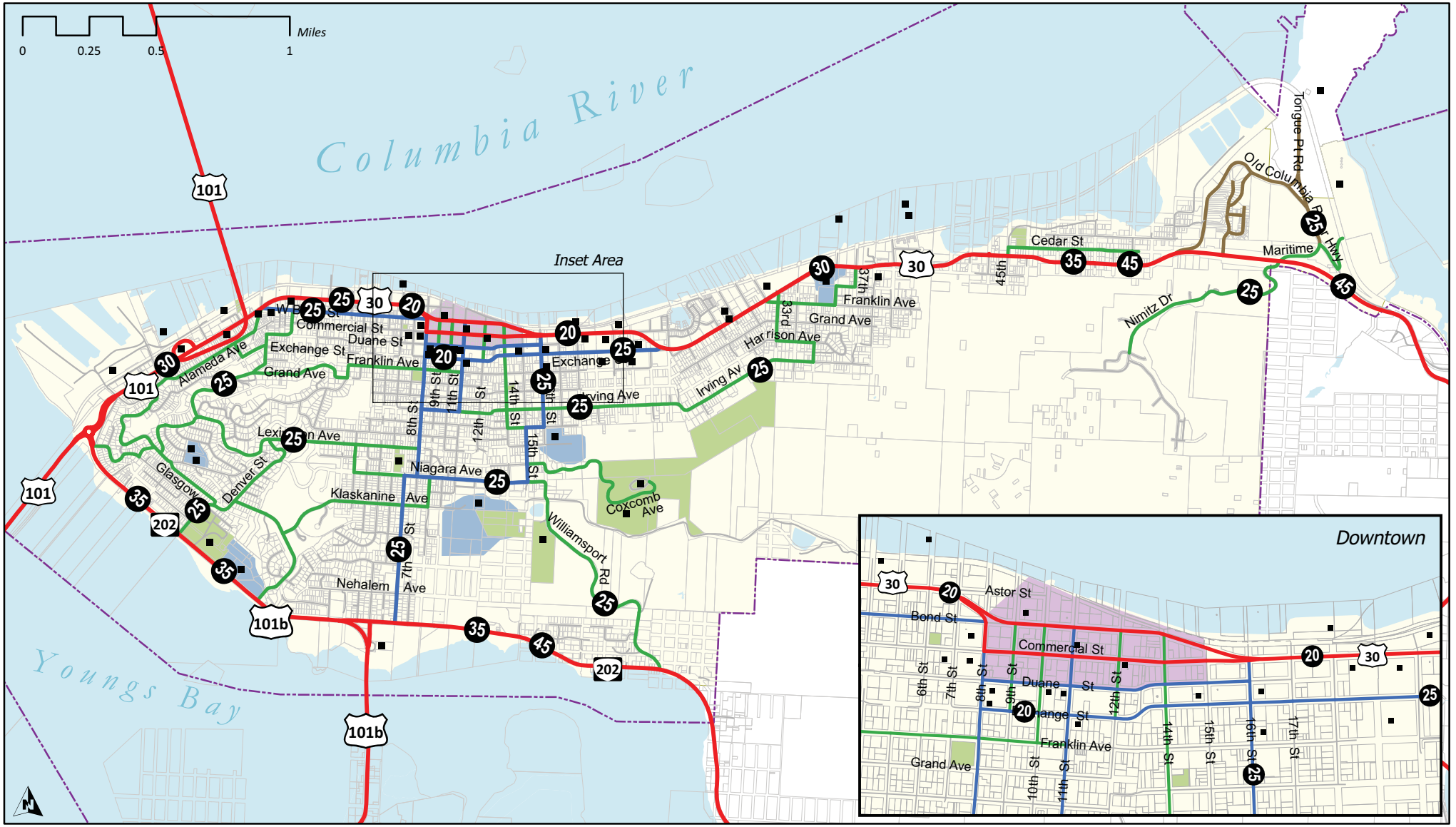


Figure 9 : Existing Functional Classification, Roadway Jurisdictions, and Posted Speed Limits

City of Astoria

Transportation System Plan

Legend

Roadway Jurisdiction and Functional Classification

- ODOT
  - Principal Arterial
- City of Astoria
  - Collector
  - Major Local
  - Other Local
- Federal Government
  - Other Local

- Posted Speed Limit
- Point of Interest
- Parcel

- Astoria City Limit
- Urban Growth Boundary
- Park
- School
- Water
- Downtown Shopping Area

ODOT also classifies roadways in Astoria under their jurisdiction. Roadways under ODOT jurisdiction include all roadways that the City classified as principal arterial (i.e. US 30, US 101, OR 202, and US 101 Business). The major characteristics of ODOT roadways in Astoria are summarized in Table 5. Most of the ODOT roadways in Astoria are classified by ODOT as Statewide Highways. The exception is OR 101 Business in southwest Astoria and OR 202 in southeast Astoria, which are classified as District Highways.

Table 5: ODOT Roadway Characteristics

Roadway (limits)	ODOT Classification*	Cross section	Posted Speed
US 101 (OR 202- OR 101 Business to Astoria-Megler Bridge)	Statewide Highway	4 lanes	30 mph
US 30 (Astoria-Megler Bridge to 8th Street)	Statewide Highway	4 to 5 lanes	25 mph
US 30- Marine Drive and Commercial Street (between 8th and 15th Street)	Statewide Highway	2 lanes	20 mph
US 30 (15th Street to east City limits)	Statewide Highway	2 to 3 lanes	30 to 45 mph
OR 202- US 101 Business (US 30 to OR 202)	Statewide Highway	2 to 3 lanes	35 mph
OR 202 (OR 202-OR 101 Business to Williamsport Road)	Statewide Highway	2 to 3 lanes	35 to 45 mph
OR 202 (Williamsport Road to east City limits)	District Highway	2 lanes	45 mph
OR 101 Business (OR 202 to south City limits)	District Highway	2 lanes	35 mph

Source: * Oregon Highway Plan (OHP), Appendix D

Bridges

Three bridges connect Astoria to areas north, south, and west of the City. The bridges include:

- **Astoria-Megler Bridge (US 101)** crosses the Columbia River to the north of Astoria, connecting Washington and Oregon. The bridge is over four-miles long and is iconic for the region. The next bridge crossing over the Columbia River into Washington is about 50 miles to the east, near Longview Washington. The bridge is open to motor vehicle, freight, and bicycle traffic only. Bicyclists must share the roadways with motor vehicles. In 2009, an estimated 7,200 vehicles crossed the bridge each day[7].

View of the Astoria-Megler Bridge from the City

- **New Youngs Bay Bridge (US 101)** crosses Youngs Bay to the west of Astoria, connecting the City to Warrenton. It is a vertical lift bridge that is open to motor vehicle, freight, and bicycle traffic only. Bicyclists must share the roadway with motor vehicles. In 2009, ODOT estimated 19,400 vehicles crossed the bridge each day[8].

- **Old Youngs Bay Bridge (US 101 Business)** crosses Youngs Bay to the south of Astoria, connecting the City to Miles Crossing and Jeffers Garden. This is a draw-bridge that is open to all transportation modes, including pedestrians. The draw-bridge portion of the bridge is too narrow to support two large trucks or buses side by side and therefore, serves as a one-way section for them. If two large trucks or buses approach the bridge from opposite sides, one must stop and

View across the Old Youngs Bay Bridge

[7] 2009 Transportation Volume Tables, ODOT Traffic Counting Program

[8] Ibid

allow the other to clear the draw-bridge section before entering. In 2009, ODOT estimated 5,800 vehicles crossed the bridge each day[9].

In addition, two bridges are located on Irving Street, one at 19th Street and another at 33rd Street. Both of these bridges cross ravines, and have weight restrictions. There is also a bridge on Franklin Avenue over 38th Street constructed in 2010, and several street end timber piers that jut out into the Columbia River. All three of these bridges are open to motor vehicle, pedestrian, and bicycle travel. The location of the bridges can be seen in Figure 10.

Freight

Much of the freight movement in Astoria is associated with Port of Astoria activities (see Figure 10). The Port of Astoria has two locations, including Uniontown in the northwest portion of the City and Tongue Point at the northeast corner of the City. Freight volumes are highest along US 101 and US 30 between OR 202-US 101-Business and Columbia Avenue-Bond Street, with volumes ranging from 70 and 90 trucks during the evening peak hour (4:15 to 5:15 p.m.). Freight volumes on US 30 through the downtown couplet (from 8th Street to 16th Street) during the evening peak hour are generally around 40 to 45 in both the eastbound (Commercial Street) and westbound (Marine Drive) directions. East of 16th Street, US 30 freight volumes generally range between 50 and 75 during the evening peak hour.

Rail

Railroad tracks are available in Astoria, just north of US 30 along the Columbia River (shown in Figure 10). The tracks are owned by Portland and Western Railroad east of Tongue Point, however, no freight service is provided. West of Tongue Point, the City owns the tracks. Local passenger rail service is provided via the Astoria Riverfront Trolley on the tracks between Portway Street and 39th Street. The railroad corridor is often utilized for multiple purposes through Astoria, with the Trolley, motor vehicles, and pedestrians and bicyclists (via the Astoria River Trail) sharing the same right-of-way in several locations.

Air

Warrenton-Astoria Regional Airport, owned and operated by the Port of Astoria, is a general aviation airport located just west of Astoria on Youngs Bay. The airport has two runways and serves an average of about 106 aircraft operations a day. The airport is also home to the United States Coast Guard. Limited commercial air service between Astoria and Portland has been provided in the past, but is not currently provided.

[9] 2009 Transportation Volume Tables, ODOT Traffic Counting Program

Waterway

Astoria is surrounded on three sides by the Columbia River and Youngs Bay waterways. These waterways not only serve recreational needs and provide scenic beauty, but provide for an economic engine for Astoria's economy. The waterways have enabled the Port of Astoria to attract marine based employment to Astoria, and has allowed the City to become a port-of-call for a growing number of cruise ships. The Port of Astoria operates three piers and a marina in the Uniontown area of northwest Astoria, one pier at 36th Street and five piers at Tongue Point in northeast Astoria (shown in Figure 11). The piers include:

- **Uniontown Pier 1** serves as a cruise ship berth and port-of-call for a variety of cruise lines and accommodates general cargo, military and industrial vessels up to 1,100 feet in length.
- **Uniontown Pier 2** serves the commercial fishing needs of port users with a multi-tenant building.
- **Uniontown Pier 3** serves as a boatyard for boat storage and haul-out.
- **West Mooring Basin** on Industry Street in Uniontown serves as a marina**.**
- **East Mooring Basin** at 36th Street serves as a marina.
- **Tongue Point** includes five piers totaling 15,000 linear feet just off the Columbia River channel.

The City also owns the 17th Street pier which is used for moorage for various tour boats, historic vessels and United States Coast Guard.

Pipeline

A natural gas pipeline serving Astoria generally parallels US 30 from Portland. It is operated by Northwest Natural Gas. There are no other major regional water or oil pipelines within the City limits.

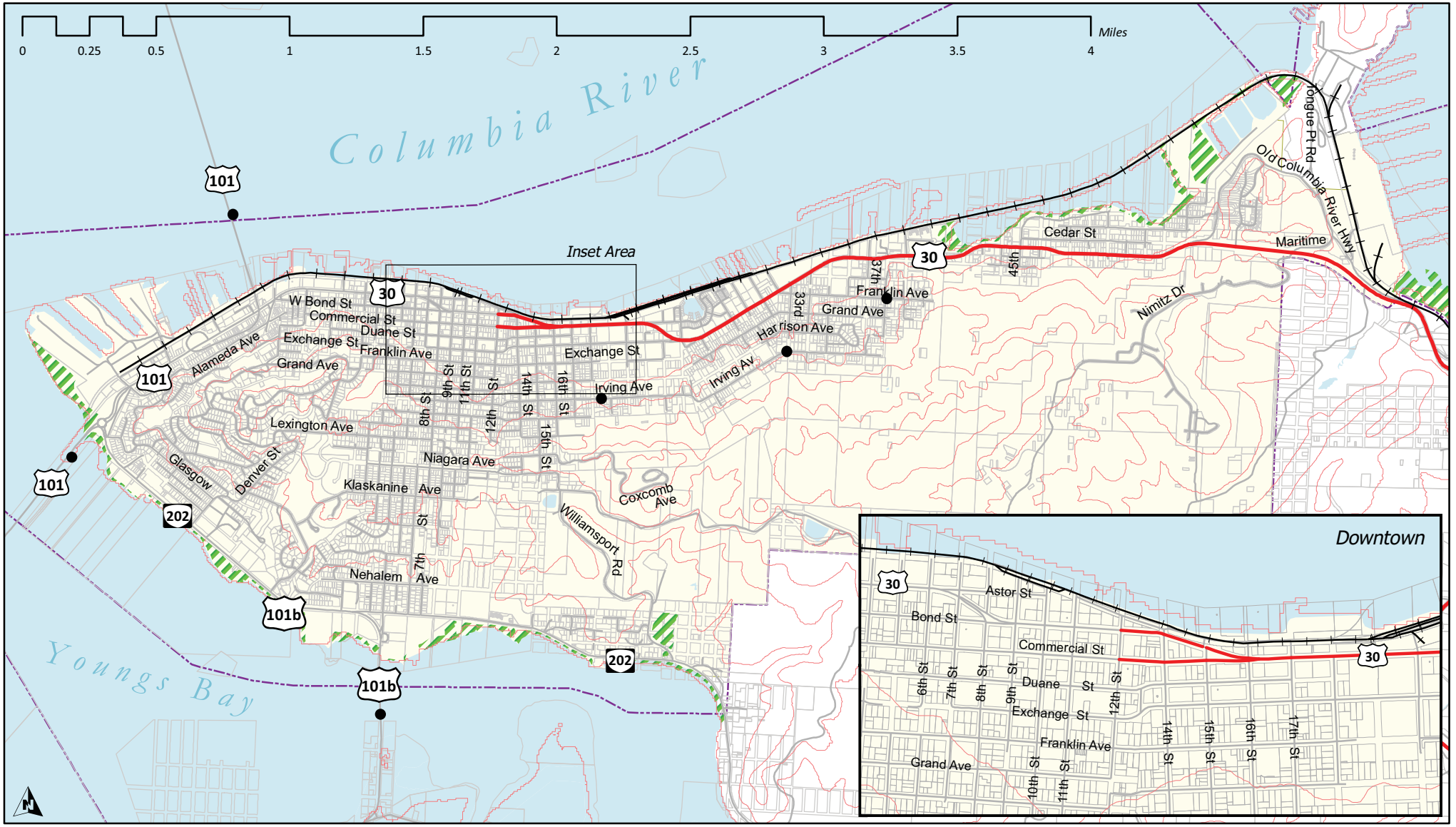


Figure 10: Transportation System Physical Constraints

City of Astoria

Transportation System Plan

Legend

Physical Constraints

- Bridges
- 100 Foot Contour
- Wetlands
- Priority 1 Lifeline Route
- Astoria City Limit
- Urban Growth Boundary
- Water
- Parcel
- Roadway
- Railroad Tracks

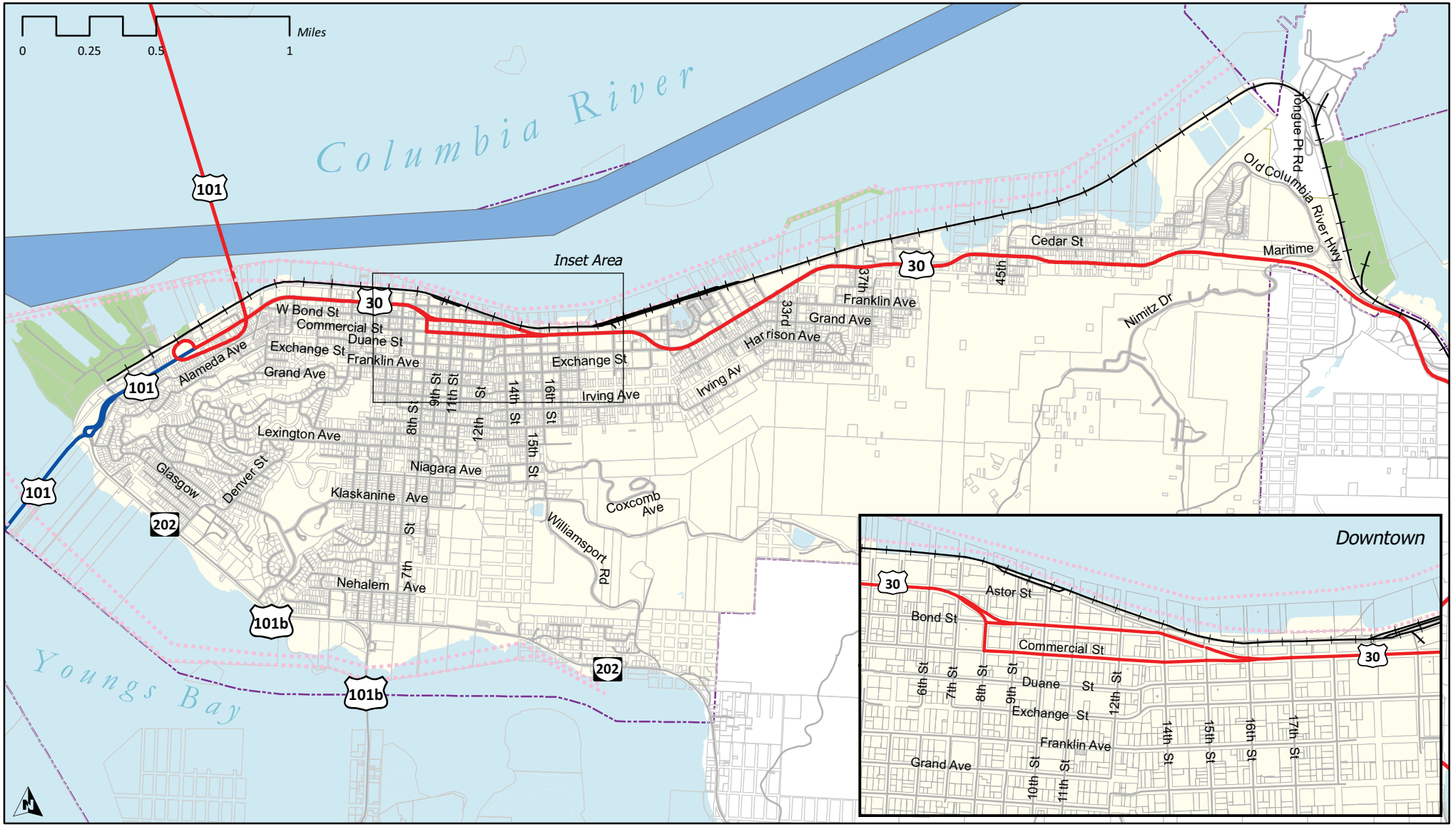


Figure 11: Freight and Water Transportation

City of Astoria

Transportation System Plan

Legend

Freight
- ODOT Freight Route
- Federal Truck Route
- Port of Astoria

Water Transportation
- Pierhead Line
- Navigable Ship Channel

- Astoria City Limit
- Urban Growth Boundary
- Water
- Parcel
- Roadway
- Railroad Tracks

How is the Transportation System Managed?

How do we ensure that the transportation infrastructure in Astoria maintains acceptable quality for Astoria residents? The transportation system is monitored with a variety of measures including:

- **Collision Evaluation:** The safety of the roadways and intersections in Astoria were monitored through collision data as part of the TSP Update. The data was reviewed to identify potential patterns for motor vehicle, pedestrian, and bicyclist collisions.
- **Pedestrian, Bicycle, and Public Transportation Facilities:** The facilities of alternative modes to motor vehicle were reviewed as part of this TSP Update to identify facility deficits or potential connectivity or access improvement opportunities.
- **Roadway Jurisdiction**: The standards and maintenance responsibilities of the various roadways in Astoria depend on the roadway's jurisdiction. In Astoria, roadways are under the jurisdiction of either Astoria, ODOT, or the Federal Government. Each responsible jurisdiction sets various standards for the roadways to maintain its intended functional classification. Jurisdictions of the roadways in Astoria are shown in Figure 9 (shown earlier in this document).
- **Intersection Mobility Standards:** The intersections in Astoria are monitored through mobility standards (or performance measures). Two methods to gauge intersection operations include volume-to-capacity (v/c) ratios and level of service (LOS).

  Volume-to-capacity (V/C) ratio: A decimal representation (between 0.00 and 1.00) of the proportion of capacity that is being used (i.e., the saturation) at a turn movement, approach leg, or intersection. It is determined by dividing the peak hour traffic volume by the hourly capacity of a given intersection or movement. A lower ratio indicates smooth operations and minimal delays. As the ratio approaches 1.00, congestion increases and performance is reduced. If the ratio is greater than 1.00, the turn movement, approach leg, or intersection is oversaturated and usually results in excessive queues and long delays. ODOT mobility standards are based on v/c ratios.

  Level of service (LOS): A "report card" rating (A through F) based on the average delay experienced by vehicles at the intersection. LOS A, B, and C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. LOS D and E are progressively worse operating conditions. LOS F represents conditions where average vehicle delay has become excessive and demand has exceeded capacity. This condition is typically evident in long queues and delays. LOS was utilized as a secondary performance measure in Astoria, but is not a standard.

All intersections in Astoria must operate at or below the adopted performance measures shown in Table 6 or mitigation would be necessary to approve future growth. The adopted intersection mobility standards vary by jurisdiction of the roadways. All intersections under State jurisdiction in Astoria must comply with the v/c ratios in the 1999 Oregon Highway Plan (OHP), while the City does not currently have an adopted performance measure for intersections under City jurisdiction. The OHP specifies v/c thresholds based on highway classification and posted speeds. The standards in Astoria range from a v/c ratio of 0.70 to 0.90.

Table 6: Intersection Mobility Standards

Roadway (Segment)	Mobility Standard	
	Signalized or all-way stop intersections, or free movements at unsignalized intersections	Stop or yield controlled movements at unsignalized intersections
US 101 (OR 202- OR 101 Business to Astoria-Megler Bridge)	0.85	0.90
US 30 (Astoria-Megler Bridge to 8th Street)	0.80	0.90
US 30- Marine Drive and Commercial Street (between 8th and 16th Street)	0.80	0.90
US 30 (16th Street to 49th Street)	0.80	0.90
US 30 (49th Street to east City limits)	0.70	0.80
OR 202- US 101 Business (US 30 to OR 202)	0.85	0.90
OR 202 (OR 202-OR 101 Business to 15th Street)	0.85	0.90
OR 202 (15th Street to Williamsport Road)	0.75	0.80
OR 202 (Williamsport Road to east City limits)	0.80	0.80
OR 101 Business (OR 202 to south City limits)	0.90	0.90
Roadways under City of Astoria Jurisdiction**	0.90	0.90

Source: Oregon Highway Plan (OHP), Policy 1F, Table 6

** Astoria does not have an adopted standard, so the ODOT standard for District/local interest roads was assumed for the existing conditions analysis

- **Access Spacing:** Access spacing is a broad set of techniques to balance the need to provide efficient, safe, and timely travel with the ability to allow access to individual destinations. Proper implementation of access management techniques will promote reduced congestion, reduced collision rates, less need for additional highway capacity, conservation of energy, and reduced air pollution. Both ODOT and Astoria have adopted access spacing standards, with each applying to roadways under their respective jurisdictions (see Table 7).

Table 7: Access Spacing Standards

Roadway	Spacing Standard
ODOT Roadways*	
US 101 (OR 202- OR 101 Business to Astoria-Megler Bridge)	720 feet
US 30- Marine Drive -Commercial Street (Astoria-Megler Bridge to Exchange Street)	520 feet
US 30 (Exchange Street to 49th Street)	720 feet
US 30 (49th Street to east City limits)	990 feet
OR 202- US 101 Business (US 30 to OR 202)	720 feet
OR 202 (OR 202-OR 101 Business to Williamsport Road)	720 feet
OR 202 (Williamsport Road to east City limits)	350 feet
OR 101 Business (OR 202 to south City limits)	350 feet
City of Astoria Roadways	
Collectors	100 feet
Major local/local	None

Source: *Oregon Highway Plan (OHP), Appendix C

ODOT access spacing standards vary depending on the highway classification and the posted speed. For Statewide Highways in Astoria, ODOT spacing standards require a minimum of 520, 720, or 990 feet (depending on posted speed) between driveways and/or roadways. For District Highways in Astoria (with posted speeds of 35 mph), ODOT spacing standards require a minimum of 350 feet between roadways and/or driveways.

Astoria access spacing standards recommend minimum spacing between driveways or roadways of 100 feet on collectors, and requires has no minimum spacing requirement on major local or local roadways.

- **Freight Routes:** Efficient truck movement plays a vital role in the economical movement of raw materials and finished products. The designation of through truck routes provides for this efficient movement, while at the same time maintaining neighborhood livability, public safety, and minimizing maintenance costs of the roadway system. ODOT has identified US 30 as a freight route through Astoria. While US 101 west of the Astoria-Megler Bridge is not classified by ODOT as a freight route, it is designated as a truck route by the Federal government. The freight and truck routes can be seen in Figure 11 above.

- **Seismic Lifeline Routes:** The Oregon Department of Transportation has designated certain routes to be maintained for emergency response in the event of an earthquake. In Astoria, US 30 east of 12th Street is classified in the 2010 ODOT Emergency Operations Plan as a Priority 1 Lifeline Route, considered essential for emergency response within the first 72 hours after an event. There are no other lifeline routes within the City. Lifeline routes are shown in Figure 10 (shown earlier in this document).

  Seismic Lifeline Routes were identified by local emergency coordinators in 1995. Based on the geological analysis available at the time, these routes were determined to most likely be available after a seismic event. The routes were initially used to help assess the need for retrofitting state and local bridges. ODOT is currently in the process of updating the list of designated routes. This effort is expected to be completed in late 2012.

  It should be noted that while US 30 may be the best route for emergency response, it has had frequent landslides in the past and includes several bridges that could potentially block the route. There are no adjacent alternate routes if blocked.

- **Revenue:** Astoria funds needed improvements to the transportation system from a number of revenue sources as listed in Table 8. These limited funds are allocated to expenditures including materials, personnel, maintenance, and system improvements. On average, the City has approximately $269,000 per year to fund system improvements, which would total approximately $6.7 million over a 25-year horizon if current funding levels are maintained.

Table 8: Astoria Transportation Funding (2011 Dollars)

Revenue Source	Average Annual Amount
Surface Transportation Program (STP)	$107,500
State Gas Tax and License Fees	$433,000
Local Gas Tax	$195,500
Transfer from Public Works Fund	$168,500
Interest	$6,500
Total Revenues (5-year Average)	***$911,000***
Expenditures	**Average Annual Amount**
Personnel Services	$202,500
Materials and Services	$248,500
Capital Outlay (i.e., maintenance)	$191,000
Total Expenditures (5-year Average)	***$642,000***
Expended Yearly Funds for Capital Improvements (Revenues-Expenditures)	**$269,000**

What Conditions do People Face?

How is the transportation infrastructure performing?

Collision Evaluation

Collision data from the most recent three years of available data (2008 to 2010) for all roadways in Astoria was obtained from ODOT and reviewed. Over the past three years, 371 collisions (an average of over 120 collisions a year) occurred in Astoria. A majority of these collisions (about 60 percent) were either rear-end or turning type collisions (see Figure 12). Four percent of the collisions involved pedestrians, and two percent involved bicycles.

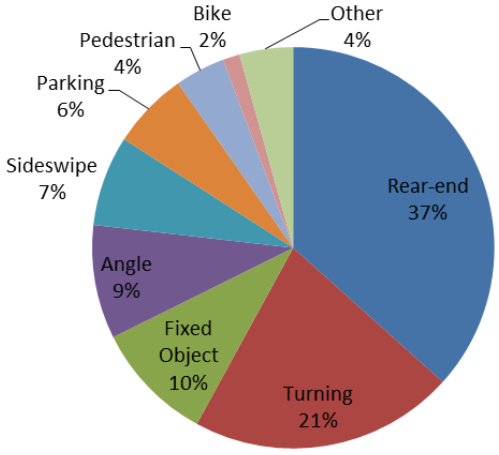


Figure 12: Astoria Collisions between 2008 and 2010 (by collision type)

The severity of the collisions in Astoria over the past three years is illustrated in Figure 13. Severities of the collisions were generally low, with 83 percent of the collisions involving either property damage only (no injuries) or minor injuries. There were no fatalities in the City over the past three years (2008 to 2010), and major injuries were involved in about one percent of the collisions.

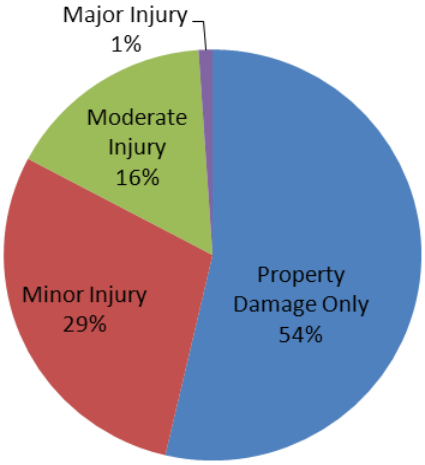


Figure 13: Astoria Collisions between 2008 and 2010 (by collision severity)

Pedestrian collisions: There were 15 collisions involving pedestrians over the past three years (two in 2008, nine in 2009, and four in 2010). Of the 15 collisions, five were along US 30 (Marine Drive or Commercial Street) between 8th Street and 12th Street through Astoria's downtown core. Four additional collisions occurred in Astoria's downtown core off the State highway: two on Duane Street, one on Bond Street, and one on Commercial Street. Three collisions occurred in south Astoria, near the OR 202-US 101 Business/OR 202 intersection. Three occurred on US 101/US 30 between the neighborhoods and the river at Portway Street, 4th Street, and 33rd Street. Most of the collisions involving pedestrians were caused by motorists failing to yield the right-of-way.

Bicycle Collisions: There were five collisions involving bicyclists over the past three years (one in 2008, one in 2009, and two in 2010). Of the five collisions, four were on US 30 with one each at Basin Street, 2nd Street, 11th Street, and Exchange Street. The other collision involving a bicycle occurred at the Harrison Avenue/34th Street intersection. Most of the

bicycle collisions were caused by a motorist failing to yield the right-of-way when turning.

Intersection Collisions: The total number of crashes experienced at an intersection is typically proportional to the number of vehicles entering it. Therefore, a crash rate describing the frequency of crashes per million entering vehicles (MEV) is used to determine if the number of crashes should be considered high. Using this technique, a collision rate of 1.0 MEV or greater is commonly used to identify when collision occurrences are higher than average and should be further evaluated.

As shown in Table 9, crash rates were calculated (based on the past three years of collision data) for each of the 26 intersections reviewed in Astoria. The crash rates at two intersections (US 101/OR 202-US 101 Business and the US 30-Commercial Street/8th Street intersection) are above the 1.0 million entering vehicles (MEV) threshold, indicating the frequency of collisions is high for the volume of traffic served. The collisions were further evaluated at these intersections to see if any trends exist.

Table 9: Intersection Collision Evaluation

Intersection	Collision Rate
OR 202/Williamsport Road	0.70
OR 202/7th Street	0.24
OR 202/5th Street	0.46
US 101/OR 202-US 101 Business	**1.39**
US 101/Hamburg Avenue	0.25
US 101/Portway Street	0.26
US 101-US 30/Astoria-Megler Bridge	0.50
US 30/Basin Street	0.24
US 30/Bond Street-Columbia Avenue	0.42
US 30-Commercial Street/8th Street	**1.01**
US 30-Commercial Street/9th Street	0.58
US 30-Marine Drive/9th Street	0.25
US 30-Marine Drive/11th Street	0.73
US 30-Commercial Street /11th Street	0.53
US 30-Commercial Street /12th Street	0.49
US 30-Commercial Street /14th Street	0.50
US 30-Marine Drive/14th Street	0.21
US 30/16th Street	0.31
US 30/Exchange Street	0.12
US 30/33rd Street	0.61
US 30/Nimitz Road	0.35
Exchange Street/16th Street	0.24
Irving Avenue/16th Street	0.17
Duane Street/11th Street	0.00
Exchange Street/8th Street	0.18
Niagara Avenue/8th Street	0.13

Bolded Red and Shaded indicates collision rate exceeds 1.0 MEV

The US 101/OR 202-US 101 Business intersection is a multi-lane roundabout which would generally be expected to have lower than average crash rates. Nearly half of the collisions at this intersection were rear-end type collisions (16 of the 34 collisions). This may indicate that drivers are unaware of the yielding patterns approaching the roundabout or that they are caught off guard by queues from the roundabout. An additional 33 percent of the collisions at this intersection are either sideswipe or turning type collisions, again

potentially indicating drivers that are unaware of the entering and circulating yielding patterns of a roundabout.

The US 30-Commercial Street/8th Street intersection has an unusual configuration that results in a left turn for the through highway traffic. Most of the collisions at this intersection involved improper turns (three of the 11 collisions) or drivers failing to yield to vehicles attempting to park (three of the 11 collisions). These collisions could be a result of the unusual intersection resulting in the left turns. Drivers may be unaware that vehicles in both travel lanes make the left turn or could be focused on making the turn without noticing parking vehicles ahead.

Roadway Segment Collisions: How do the State highways in Astoria compare to others in Oregon? Crash rates identifying the number of crashes per million vehicle-miles traveled for specified sections of State highways, as well as statewide average crash rates for various facility types, were obtained from ODOT's 2009 State Highway Crash Rate Tables.[10] For comparison against statewide averages, state highways in Astoria were classified as a non-freeway principal arterial through an urban city area. The reported crash rates are shown in Table 10.

Table 10: State Highway Collision Rate Comparison

Roadway (limits)	Crashes per Million Vehicles 2008	2009
Oregon Average Rate- Other Principal Arterial	**2.37**	**2.35**
US 101 (West City limits to Astoria-Megler Bridge)	1.37	1.60
US 30 (Astoria-Megler Bridge to 8th Street)	**3.86**	2.01
US 30- Marine Drive and Commercial Street (8th Street to Exchange Street)	**3.79**	**4.91**
US 30 (Exchange Street to 49th Street)	1.35	0.68
US 30 (49th Street to east City limits)	0.47	0.00
OR 202-US 101 Business (US 101 to US 101 Business)	1.80	0.23
OR 202 (US 101 Business to Williamsport Road)	**2.37**	1.18

Source: Astoria Collision Data (2008-2009), ODOT Crash Analysis and Reporting Unit

Bolded Red and Shaded indicates the Oregon average collision rates is reached or exceeded for the segment

The segment of US 30 from 8th Street to Exchange Street had a higher collision rate than the statewide average for each of the past two years. In addition, the collision rate along the segment of US 30 from the Astoria-Megler Bridge to 8th Street, and along OR 202 from US 101 Business to Williamsport Road equaled

[10] *2009 State Highway Crash Rate Tables*. Retrieved July 2011 from ODOT website: http://www.oregon.gov/ODOT/TD/TDATA/car/CAR_Publications.shtml\

or exceeded the statewide average in 2008, but improved to under the statewide average in 2009.

Are there any areas in Astoria that are identified as high collision locations by ODOT? Yes, in Astoria there are three locations that rank among the top ten percent of state highways in Oregon for collision frequency[11]. The identified high collision locations include:

- US 30 from Columbia Avenue-Bond Street to 11th Street

  This segment includes the high collision location at the US 30-Commercial Street/8th Street intersection and the US 30 (Marine Drive and Commercial Street) segment exceeding the statewide average collision rate. There is generally a high amount of pedestrian and bicycle activity, in addition to turning and parking maneuvers in this segment that could be contributing to the amount of collisions.

- US 30 from west of 29th Street to 30th Street

  This high collision segment generally includes several accesses over a short distance which could be contributing to the amount of collisions.

- OR 202 from US 101 Business to 8th Street

  This high collision segment includes the intersection of two State highways (OR 202 and US 101 Business) and generally includes several accesses over a short distance, both of which could be contributing to the amount of collisions.

Pedestrian Conditions

The existing sidewalk system in Astoria encourages walking trips by providing a high level of connectivity to key destinations, such as the downtown core, schools, parks and museums. While some sidewalk gaps and substandard conditions do exist, the continuous presence of sidewalks on Marine Drive, 7th/8th Street and other major thoroughfares that bisect the City encourage walking trips between residential neighborhoods and commercial, recreational or civic destinations.

Sunken sidewalk on Marine Drive between 9th and 10th Streets downtown

Despite this well-developed network of sidewalks for residents to utilize, there are a number of conditions that provide challenges to pedestrians, including people in wheelchairs. These include:

[11] 2010 ODOT Safety Priority Index System (SPIS) top 10 percent sites

Chair-wall settlement: The chairwall foundation system in many parts of the downtown core of Astoria is showing signs of fatigue and is settling. This has caused the sidewalk to sink significantly in some locations, creating a slope or step up for sidewalk users.

Curb ramps: Many street corners in Astoria have some form of curb ramp. However there remains notable gaps in the network where curb ramps are not present, mainly in the western and eastern parts of Astoria. Furthermore, rainwater does not effectively drain away from many curb ramps, particularly in the downtown core, and often puddles creating obstacales or potential barriers for walkers and those with disabilities. This condition is likely due to roadway settling or a lack of adequate stormater drainage in the vicinity of the curb ramps.

Drainage issues at a curb ramp downtown

Pedestrian roadway crossings: There are pedestrian crosswalks at a large number of intersections in Astoria, particularly in the downtown core where pedestrian activity is the highest. There are also several examples of enhanced pedestrian crossings outside of downtown, including the pedestrian crossing at the US 30/37th Street intersection and the school crossing at the Klaskanine Avenue/7th Street intersection near Astoria Middle School.

Flashing signal indicating a school crosswalk on 7th Street at Klaskanine Avenue

However, the need for further crossing enhancements was evident through field observations. Most notable is the need for additional or improved crossings of US 30. Pedestrian crossing demand is high between the residential neighborhoods and businesses on the south side of US 30 and the Astoria River Trail, transit center, and businesses along the north side of US 30.

Signalized crossing opportunities across US 30 are available at several intersections in the downtown core between 9th Street and 14th Street. West of 9th Street the one-way Marine Drive and Commercial Street couplet becomes a wider four lane roadway without a median (two lanes in each direction). This section of US 30 requires increased pedestrian crossing times compared to the downtown core due to the wider roadway width. Wider roadways often encourage drivers to travel at higher speeds. There is a gap of about one mile in

signalized pedestrian crossing opportunities across US 30 between 9th Street and Columbia Avenue-Bond Street. West of Columbia Avenue-Bond Street, several signalized crossing opportunities are available through Portway Street. Unsignalized marked crosswalks are available at the 6th Street, Bay Street, and OR 202-US 101 Business (roundabout) intersections.

East of 14th Street, the one-way Marine Drive and Commercial Street couplet become a two-way roadway at 16th Street. This section of US 30 has a three-lane cross-section with a one travel lane in each direction and a center turn lane. Signalized crossing opportunities are available at 30th Street and 33rd Street. Unsignalized marked crosswalks are available on US 30 at most intersections between 14th Street and 33rd Street, at 37th Street and at 45th Street.

Crossing US 30 is particularly complex at a few locations, including the 6th Street, 7th Street, 8th Street, and 16th Street intersections. These locations are at the edge of the downtown core near the terminus of the one-way Marine Drive and Commercial Street couplet. There are opportunities to enhance the visibility of the existing crossings, such as the one at US 30/16th Street intersection. Other areas of Astoria, such as the Exchange Street/13th Street intersection, would also benefit from a high visibility pedestrian crossing.

Curb extension on Marine Drive with vegetation obstructing the drivers view of the pedestrian

Curb extensions to enhance pedestrian visibility and shorten crossing distances have been installed at a few intersection in downtown Astoria. However, at some of these, high growing foliage and trees obstruct the ability of drivers to notice pedestrians waiting to cross the roadway. In general, landscaping in these areas should be limited to low growing foliage, lower limbs of trees should be removed and well-maintained to improve pedestrian visibility.

Bicycle Conditions

Astoria has an incomplete bikeway network with limited roadways offering bicycle facilities. With exception of the neighborhoods located near the Astoria River Trail, the majority of the residential areas lack formally designated facilities or routes to connect them to the downtown commercial core. Despite this lack of designated facilities, many Astoria residents do ride their bicycles to reach local businesses and other destinations. Many cyclists utilize Duane Street and Exchange Street to travel east and west in the downtown core, as these streets carry lower traffic volumes than Commercial Street and Marine Drive.

Astoria RiverTrail: The trail is well utilized and provides a comfortable bike ride across a large section of the City, connecting to several destinations. The trail does, however, possess a few notable safety concerns for bicyclists. The trail shares its alignment with the trolley tracks on the bridge between 1st and 2nd Street. The bridge is too narrow to allow bicyclists to ride on either side of the rails, and requires that they perform a difficult maneuver to cross one rail and ride between the tracks. In response to this issue, the City has erected signs that caution bicyclists of the approaching hazard and demonstrate how to cross the tracks. Various sections of the trail also have gaps between the trail surface and the rails (which are often significantly wider than a bicycle tire).

Wide gaps on the surface may be a safety concern for cyclists

Another issue with the trail is a lack of adequate wayfinding signage and directional cues. When traveling the trail by bike it is not always obvious where bicyclists should be riding or where the trail continues forward. For example, the section of trail between 11th Street and 17th Street drops the rider onto a street without pavement markings or signage to communicate where and how they should proceed.

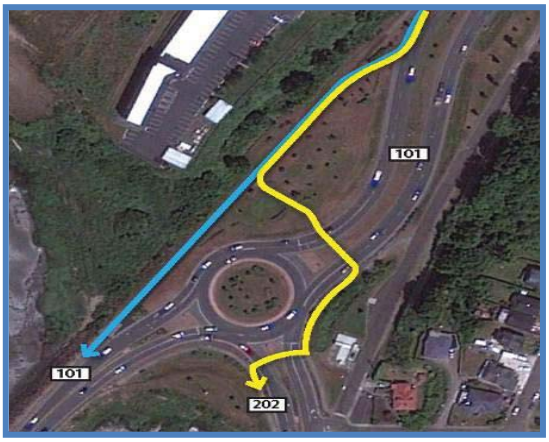
Narrow Bike Lanes: In many locations downtown bike lanes are only four feet wide, which can be uncomfortable for many bicyclists. Furthermore, there are bike lanes that are less than five feet wide and adjacent to on-street parking, which poses a potential safety concern because there is insufficient room for bicyclists to safely ride outside the "door zone" of parked cars.

Narrow Bike Lanes on Marine Drive adjacent to parked vehicles

US 30 Crossings: One of the most pertinent issues faced by bicyclists (and pedestrians) in Astoria is safe and comfortable crossings of US 30. The Astoria River Trail, just north of US 30, is a popular destination for bicyclists. However, the high traffic volumes and vehicle speeds can often make crossing US 30 difficult.

The multi-lane roundabout located west of downtown at the US 30/OR 202-US 101 Business intersection can be a difficult challenge for through traveling bicyclists. For westbound bicyclists bound for the New Youngs Bay Bridge, a paved path allows them to bypass the roundabout to a paved shoulder on the opposing side. Bicyclists traveling to OR

202-US 101 Business must make a series of turns and cross multiple roadways in advance of the roundabout to safely reach the opposing side. This transition can be cumbersome and may serve as a barrier to bicycling.



Bicycle routes at the Roundabout

Bridge Crossings: The lack of bicycle facilities to connect Astoria with areas north, south and west of the City is another barrier to bicycle travel. None of the three bridges (Astoria-Megler, New Youngs Bay, and Old Youngs Bay) provide adequate bicycle facilities and often provide only a narrow shoulder or force bicyclist to share the roadway with motor vehicles.

Motor Vehicle Conditions

The motor vehicle conditions in Astoria vary based on the time of year. During the peak seasonal period (typically in August), traffic volumes are higher than those during the average weekday (typically in the spring or fall) and therefore intersection operations are often worse. For this reason, the intersection operations were evaluated at the 26 intersections reviewed during both the peak seasonal and average weekday periods. The evaluation utilized 2000 Highway Capacity Manual methodology for all the intersections with the exception of the US 101/OR 202-US 101 Business roundabout. For this roundabout, the NCHRP Report 572 was utilized.

Peak seasonal intersection operations can be seen in Table 11. During the evening peak period, all study area intersections operate within the adopted mobility standard, with the exception of the US 101/Hamburg Avenue and US 30-Commercial Street/8th Street. The side streets at each of these intersections (Hamburg Avenue and Commercial Street) generally experience high v/c ratios due to limited capacities of the stop-controlled approach to a high volume uncontrolled roadway. These approaches typically require more time for an acceptable gap in traffic to make a left turn onto the mainline, therefore, the lane capacity of the side street is reduced.

Average weekday intersection operations (shown in Table 11) are generally better than the peak seasonal operations at all intersections reviewed. In addition, nearly all intersections comply with intersection mobility standards, with the exception of the US 30-Commercial Street/8th Street intersection. Similar to the peak seasonal conditions, the side street at this intersection (Commercial Street) generally experiences high v/c ratios due to limited capacities of the stop-controlled approach to a high volume uncontrolled roadway (US 30).

Table 11: Intersection Operations (2011 p.m. peak)

Intersection	Mobility Standard	Peak Seasonal v/c Ratio	Peak Seasonal LOS	Average Weekday v/c Ratio	Average Weekday LOS
Signalized or Roundabout Intersections under ODOT Jurisdiction					
US 101/OR 202-US 101 Business**	0.85	0.85	C	0.69	B
US 101/Portway Street	0.85	0.53	A	0.44	A
US 101-US 30/Astoria-Megler Bridge	0.80	0.64	B	0.53	B
US 30/Basin Street	0.80	0.46	A	0.39	A
US 30/Bond Street-Columbia Avenue	0.80	0.64	C	0.58	C
US 30-Commercial Street/8th Street*	0.80	**>1.00**	F	**>1.00**	F
US 30-Commercial Street/9th Street	0.80	0.47	B	0.38	B
US 30-Marine Drive/9th Street	0.80	0.51	B	0.40	A
US 30-Marine Drive/11th Street	0.80	0.45	A	0.35	A
US 30-Commercial Street /11th Street	0.80	0.51	A	0.41	A
US 30-Commercial Street /12th Street	0.80	0.41	A	0.34	A
US 30-Commercial Street /14th Street	0.80	0.46	A	0.38	A
US 30-Marine Drive/14th Street	0.80	0.35	B	0.29	B
US 30/33rd Street	0.80	0.71	B	0.64	B
Unsignalized Intersections under ODOT Jurisdiction* **					
OR 202/Williamsport Road	0.80	0.18	B	0.18	B
OR 202/7th Street*	0.90	0.23	B	0.21	B
OR 202/5th Street	0.90	0.37	C	0.34	B
US 101/Hamburg Avenue	0.90	**0.95**	F	0.55	F
US 30/16th Street	0.90	0.53	F	0.38	C
US 30/Exchange Street	0.90	0.75	E	0.59	D
US 30/Nimitz Road	0.80	0.77	F	0.50	F
Signalized Intersections under Astoria Jurisdiction					
Duane Street/11th Street	0.90	0.25	A	0.23	A
Unsignalized Intersections under Astoria Jurisdiction* **					
Exchange Street/16th Street	0.90	0.41	B	0.41	B
Irving Avenue/16th Street	0.90	0.12	B	0.12	B
Exchange Street/8th Street	0.90	0.23	B	0.23	B
Niagara Avenue/8th Street*	0.90	0.36	C	0.36	C

Note: *Intersection configuration not allowed in HCM analysis, therefore intersection configuration was modified to allow for capacity analysis
**NCHRP Report 572 Roundabout Analysis utilized
***V/C ratio and LOS reported for the stop or yield controlled approach
Bolded Red and Shaded indicates intersection exceeds mobility standard

Access Spacing

An access inventory was conducted along US 30 from the Astoria-Megler Bridge to Nimitz Drive in Astoria.,[12] comparing the number of existing approaches (driveways and public streets) to applicable ODOT access spacing standards. Table 12 shows the number of existing approaches for each segment of US 30, and compares it to the approximate number of driveway or public street approaches that would be allowed to fully comply with access spacing standards. As shown, all segments of US 30 currently have more driveway and public street approaches than allowed to comply with the access spacing standards. Some of the US 30 segments have more than double the amount of existing driveways allowable under the access spacing standards.

Table 12: US 30 Access Spacing Inventory

US 30 Roadway Segment	Segment Length	Allowed Approaches*	Number of Approaches	
			North Side	South Side
Astoria-Megler Bridge to Columbia Avenue-Bond Street	1,550 feet	3	7	17
Columbia Avenue-Bond Street to 8th Street	3,360 feet	6	12	31
Marine Drive (8th Street to 16th Street)	2,270 feet	4	8	11
Commercial Street (8th Street to 16th Street)	2,255 feet	4	6	13
16th Street to Exchange Street	2,430 feet	4	10	10
Exchange Street to 33rd Street	2,640 feet	3	9	14
33rd Street to 39th Street	2,430 feet	3	8	11
39th Street to 49th Street	4,015 feet	5	11	15
49th Street to Nimitz Drive	3,730 feet	3	5	4

*Allowed approaches = Segment length/Access Spacing Standard

[12] DKS Staff site visit, June 23, 2011

Public Parking in the Downtown Core of Astoria

A public parking survey was conducted in the downtown core of Astoria, generally bounded by the Columbia River to the north, Franklin Avenue to the south, 17th Street to the east, and 5th Street to the west (approximately 68 blocks). The parking survey resulted in an update to the existing parking occupancy data last inventoried five years ago in 2006.

The survey included both on-street and off-street parking spaces that are not reserved for private entities or properties. Parking occupancy observations were made in the early summer (Friday, June 24, 2011), during the morning (8:00 a.m. to 10:00 a.m.), midday (11:00 a.m. to 1:00 p.m.), and evening (2:00 p.m. to 4:00 p.m.) periods.

How many spaces are there?

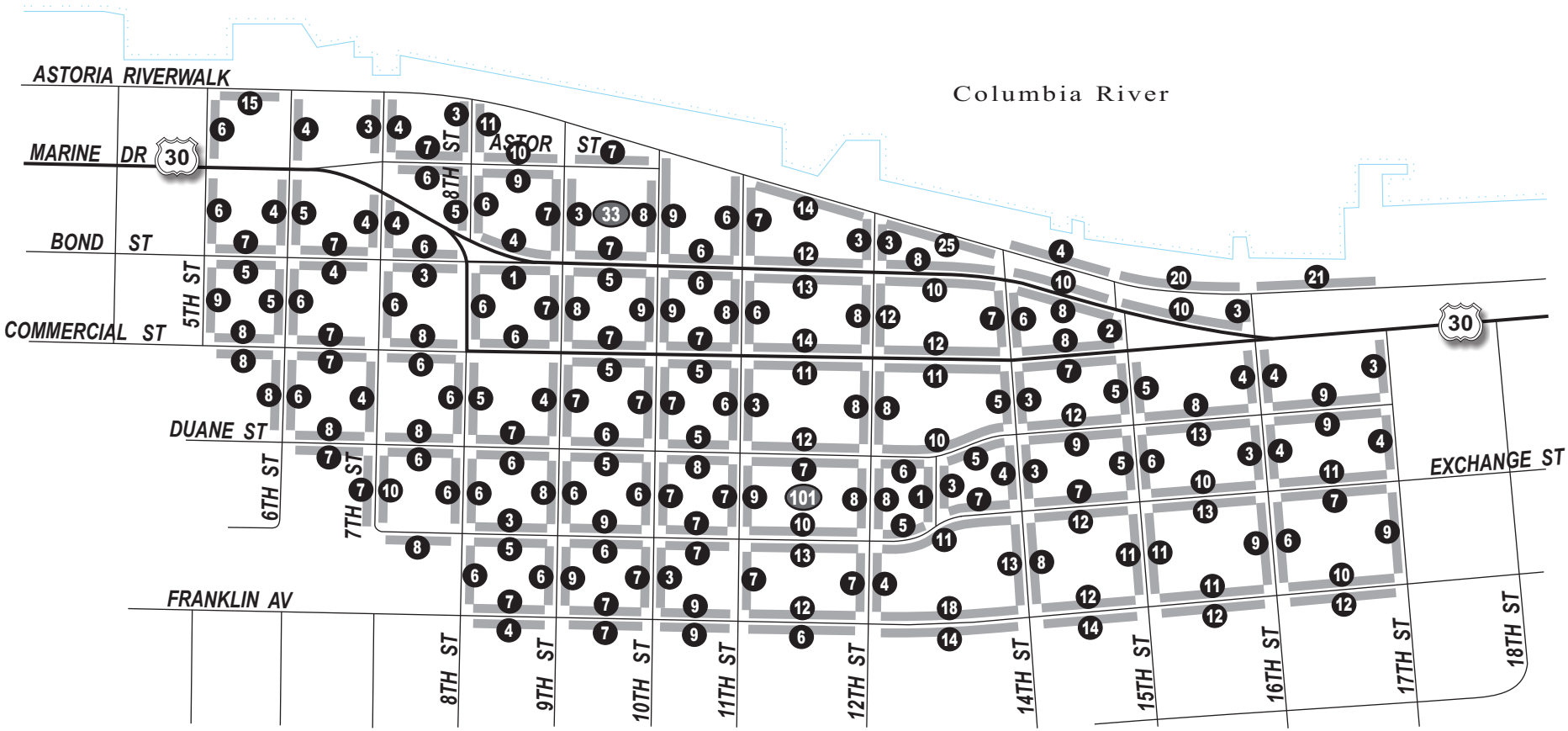
The downtown core of Astoria has a grid pattern of roadways with relatively flat topography. These characteristics provide for easily accessible and walk-able on-street parking throughout the downtown core, with parking available on four sides of most blocks. In addition, the City has public surface parking lots located in convenient locations in the downtown core. Figure 1 identifies the available public on-street and off-street parking in the downtown core.

Within the downtown core, there are approximately 1,368 on-street parking spaces available. Of the on-street parking spaces, 559 have some type of time limit (e.g. two hour) or restriction (e.g., ADA), while 809 have no limits and are open for anyone to park.

In addition, there are approximately 134 public off-street parking spaces in two lots within the downtown core. The largest off-street public parking lot, with about 101 parking spaces, is located in the block bounded by Duane Street to the north, Exchange Street to the south, 12th Street to the east, and 11th Street to the west. The other public parking lot is located adjacent to the Astoria Transit Center, on Astor Street. This lot has about 33 public parking spaces.

At any point within the downtown core, a user is generally within a quarter mile of at least 200 on-street or off-street public parking spaces. In addition, since most blocks have at least 20 on-street public parking spaces surrounding them, destinations in the downtown core are generally within one or two blocks of 40 public parking spaces.

At any point within the downtown core, a user is generally within one or two blocks of 40 public parking spaces.



LEGEND

- 0 - On-Street Available Parking Spaces
- 00 - Off-Street Available Public Parking Spaces

DKS Associates
TRANSPORTATION SOLUTIONS

NO SCALE

Figure 1

AVAILABLE PARKING
Public On-Street & Off-Street

When is the Parking Demand Highest?

Overall on-street and off-street parking utilization was highest during the midday (11:00 a.m. to 1:00 p.m.), and evening (2:00 p.m. to 4:00 p.m.) periods. During the midday, over 60 percent of the combined public parking spaces were occupied, while over 50 percent were occupied during the evening. Parking utilization was lowest in the morning, with just over 40 percent of the combined public parking spaces occupied.

Over 900 public parking spaces were utilized during the busiest observed parking period of the day (midday). During this period over 60 percent of the total public spaces were occupied (60 percent of the on-street, and over 80 percent of the public off-street spaces).

The highest demand from the 2006 parking survey was also during the midday, although the total occupancy rate of public parking spaces has generally increased around five percent over the past five years.

Where is the Parking Demand Highest?

Figures 2, 3, and 4 show the parking utilization for on-street and off-street parking in the downtown core. On-street parking demand throughout the day was generally highest in the area bounded by Commercial Street and Exchange Street from 11th to 15th Streets. During the busiest observed parking period of the day (midday), public on-street parking utilization was generally higher than 90 percent on several roadways in this area.

During the evening period, parking was most utilized in the same general areas as the midday period, although to a lesser extent.

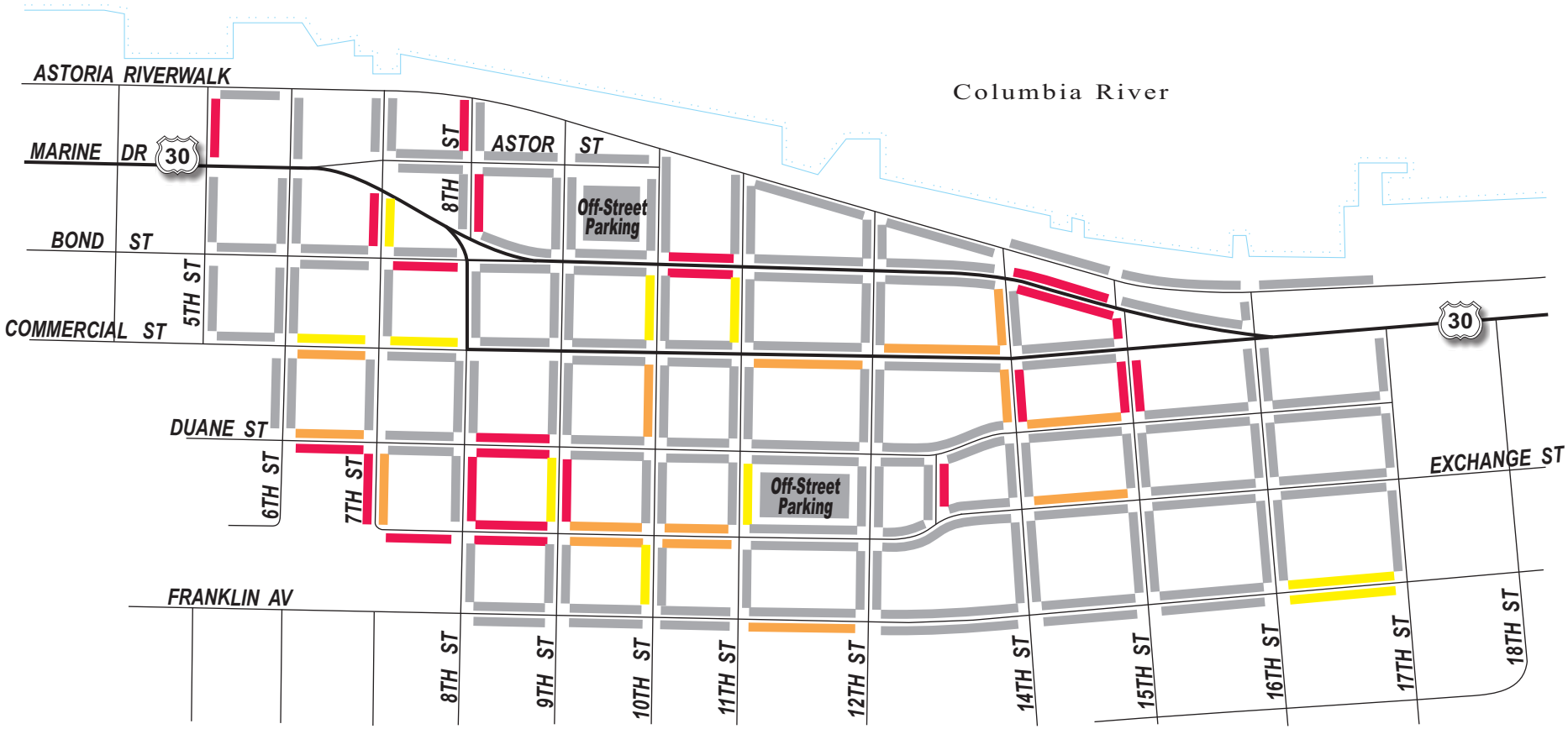
In addition, unique behavior was observed in the areas with no time limits or restrictions, including along portions of Duane Street west of 9th Street, Exchange Street west of 11th Street, Marine Drive between 14th and 15th Street, 15th Street between Marine Drive and Duane Street and roadways surrounding the 8th Street/Astor Street intersection. On-street parking spaces in these areas were generally greater than 90 percent occupied throughout the day. This trend could potentially indicate that employees of businesses in the downtown core are parking in these areas throughout the day.

During the busiest period of the day, parking demand on portions of Commercial Street and on the public surface lot between Duane and Exchange Streets has increased nearly 20 percent since 2006.

Parking Demand

The busiest observed parking period occurred during the midday (11:00 a.m. to 1:00 p.m.), in the area bounded by Commercial Street and Exchange Street from 11th to 15th Streets.

Over 900 public parking spaces were occupied during this period, which corresponds to about 60 percent utilization.



LEGEND

- <0.7
- 0.7-0.8
- 0.8-0.9
- >0.9

Note: Observed Parking Congestion Value = Occupied Spaces / Total Spaces

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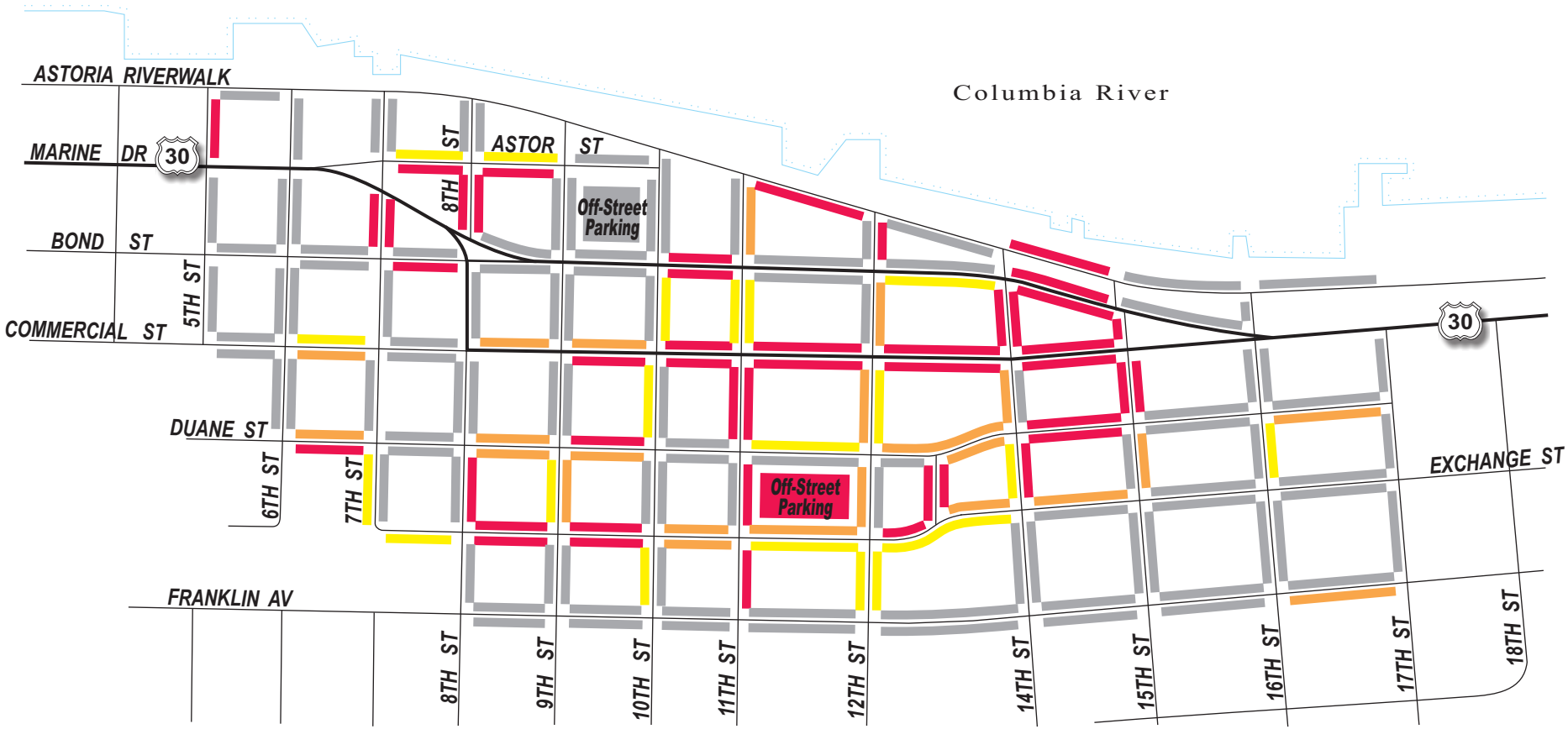
NO SCALE

Figure 2

PARKING UTILIZATION
AM Weekday Observations



LEGEND

- <0.7
- 0.7-0.8
- 0.8-0.9
- >0.9

Note: Observed Parking Congestion Value = Occupied Spaces / Total Spaces

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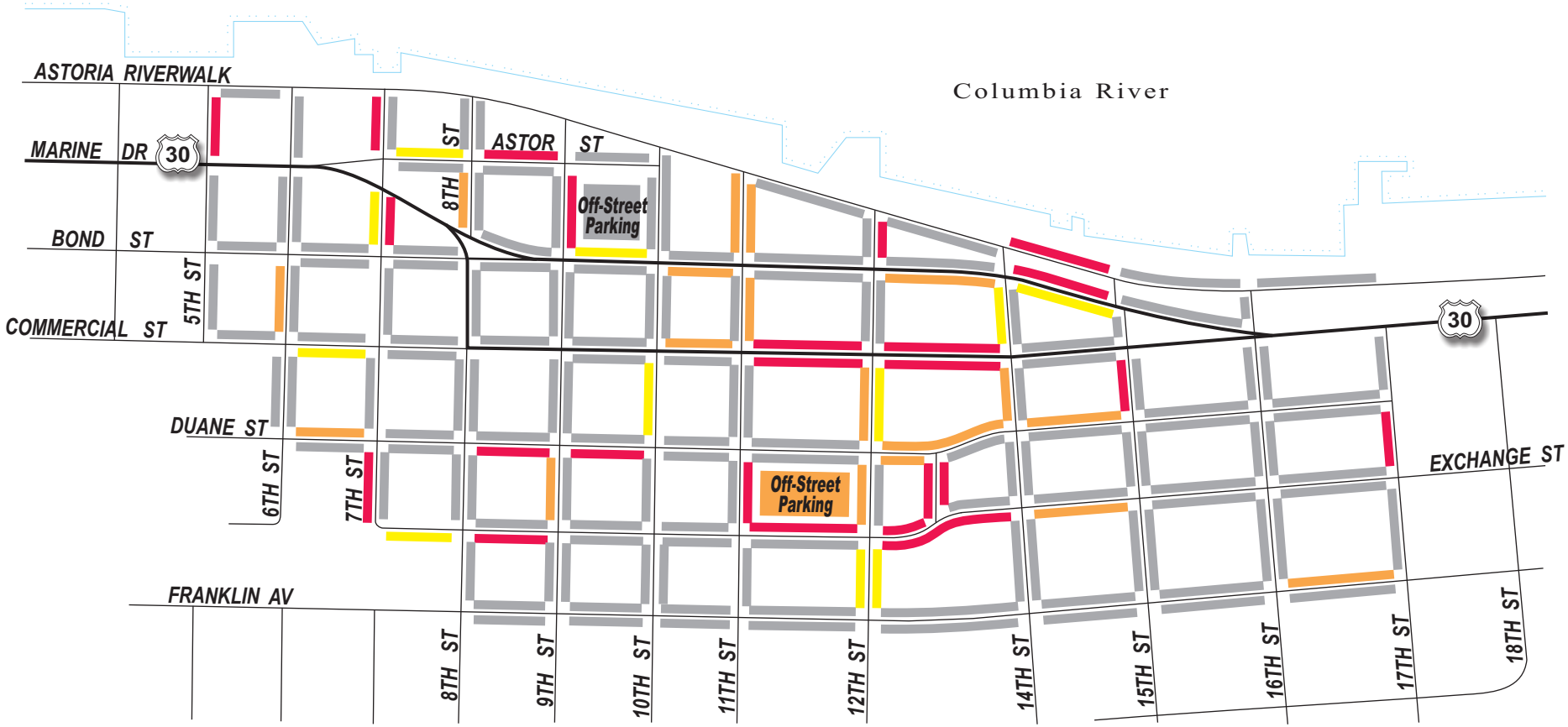
Figure 3

PARKING UTILIZATION
Midday Weekday Observations



LEGEND

- <0.7
- 0.7-0.8
- 0.8-0.9
- >0.9

Note: Observed Parking Congestion Value = Occupied Spaces / Total Spaces

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NO SCALE

Figure 3

PARKING UTILIZATION
PM Weekday Observations

What Type of Parking has the Highest Demand?

Table 1 shows the public parking usage by time limits or restriction. As shown, the highest usage of public on-street parking spaces were those with longer time limits, including two hour and no limit parking spaces. Over 40 percent of the on-street two hour and no limit public parking spaces were occupied during the morning period, over 60 percent during the midday period, and over 50 percent during the evening period.

The public on-street parking spaces with the lowest time limits (15 minutes and one hour) had the lowest occupancy throughout the day, with generally less than 25 percent of the spaces occupied.

In general, off-street parking tended to be utilized much more than on-street parking, with about 80 percent of the spaces occupied during both the midday and evening periods. On-street parking spaces during the same periods were generally half occupied. During the morning period, only about 40 percent of the on-street and 50 percent of the off-street spaces were occupied.

The highest usage of public on-street parking spaces were those with longer time limits, including two hour and no limit parking spaces.

Since 2006, off-street parking demand has generally increased 10 to 20 percent, while no-limit on-street parking demand has generally decreased 15 to 20 percent during the morning, midday, and evening periods. Demand for on-street parking spaces with restrictions has generally remained steady since 2006.

Table 1: Type of Parking in the Downtown Core of Astoria

			Morning		Midday		Evening	
Location	Space Limit	Total Spaces	Spaces Occupied	Percent Occupied	Spaces Occupied	Percent Occupied	Spaces Occupied	Percent Occupied
On-Street	2 hour	473	184	39%	325	69%	270	57%
	1 hour	64	5	8%	17	27%	11	17%
	15 minute	7	1	14%	2	28%	0	0%
	ADA	9	0	0%	0	0%	0	0%
	No Limit	809	371	46%	461	57%	425	52%
	Other	6	5	84%	2	33%	2	33%
	Total on-street	**1,368**	**566**	**41%**	**807**	**59%**	**708**	**52%**
Off-Street		**134**	**71**	**53%**	**109**	**81%**	**105**	**78%**
Total Parking		**1,502**	**637**	**42%**	**916**	**61%**	**813**	**54%**

Section G: Memo 6- Future Forecasting

Section G: Memo 6- Future Forecasting

MEMORANDUM

Date:	January 11, 2013
To:	Project Management Team
From:	Chris Maciejewski, P.E., P.T.O.E., DKS Associates
	Garth Appanaitis, DKS Associates
SUBJECT:	**Astoria Transportation System Plan Update** **Future Forecasting**

Future forecasting, or estimating future travel demand, is an important step in the transportation planning process. This memorandum documents the forecasting process, windowed-area forecasting tool development, and future forecast results for the Astoria TSP study area. Within these sections, the land use assumptions, windowed-area forecasting tool calibration, post-processing methodology, and resulting 2035 traffic volumes for average weekday traffic and the seasonal summer peak (30th HV) that will be used to analyze future transportation conditions in the project corridor are documented.

Future Forecasting Process

The process for developing future 2035 traffic volume forecasts for Astoria involved three keys components:

- The Astoria-Warrenton regional travel demand model was utilized as the primary tool to estimate future travel demand in Astoria
- Refined travel demand forecasts were developed for the Downtown Astoria area by adding local circulation characteristics in the travel demand model (using a mesoscopic windowed-area forecasting tool)
- The increment growth between the base and future year models was then added to the existing year 2011 count data (referred to as post-processing) to develop final year 2035 traffic volume forecasts for Astoria

The following sections summarize the three components of the future forecasting process.

Astoria-Warrenton Travel Demand Model

The Astoria-Warrenton regional travel demand model[1] was utilized as the primary tool to estimate future travel demand in Astoria. The model includes the major roadways in and around the cities of Warrenton and Astoria, such as US 101, OR 202, the Astoria-Megler bridge, and US 30 (see Figure 1). Land use data within the model area is divided into transportation analysis zones (TAZs), which represent the origins and destinations for traffic trips throughout the region. Estimates of trips generated from each TAZ are based on associated land use data. In addition, regional trip growth on facilities connecting to the Astoria-Warrenton area are accounted for by extrapolating historic growth trends. Forecasts were developed to estimate travel demand during both the average weekday and peak seasonal (30 HV) conditions.

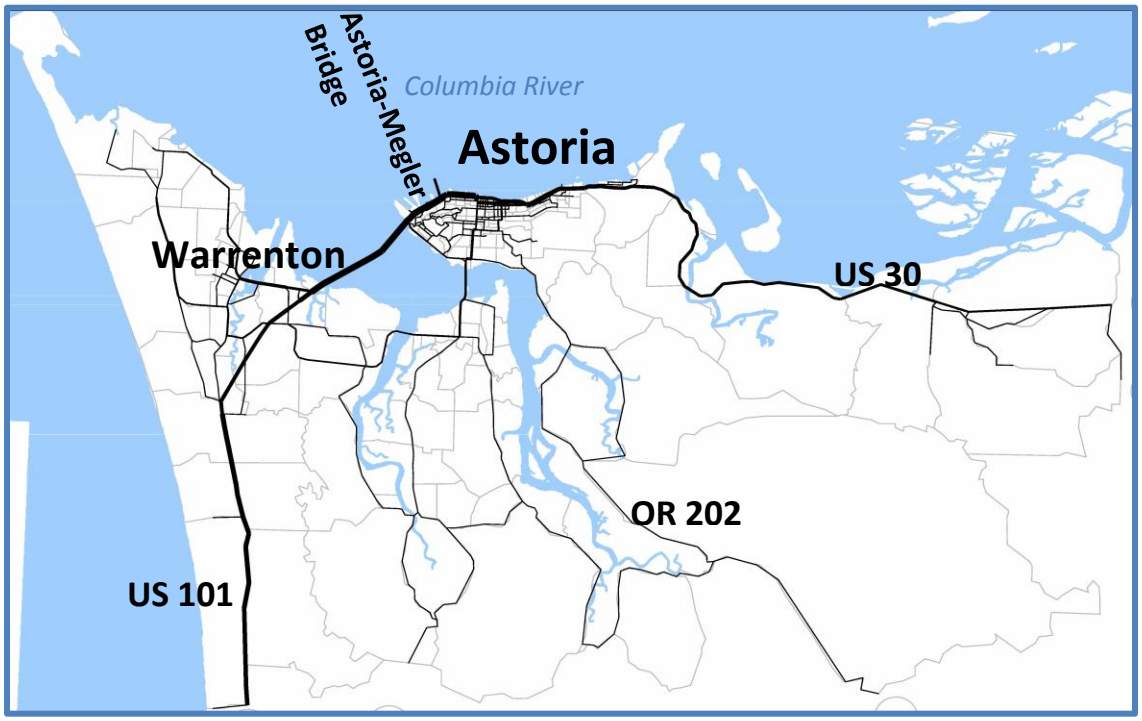

Figure 1: Astoria-Warrenton Regional Travel Demand Model Area

The 2002 base and 2035 future scenarios of the Astoria-Warrenton model were used for this study. Table 1 lists the total land use estimates for the City of Astoria Urban Growth Boundary (UGB)[2] for 2002 and 2035. Figure 2 shows the existing UGB for the City of Astoria, as well as the TAZs used in the regional travel demand model.

[1] The Astoria-Warrenton regional travel demand model is managed by the Oregon Department of Transportation (ODOT) Transportation Planning and Analysis Unit (TPAU).

[2] Land use data by individual TAZ cannot be reported due to confidentiality of employment information.

As shown in Table 1, the 2002 model included approximately 4,900 households (or nearly 10,650 people) and 5,400 employees within the Astoria UGB. With expected growth to the horizon year 2035, approximately 480 households (or about ten percent growth) are projected to be added, while the total employment is projected to grow by approximately 980 employees (eighteen percent growth).

Table 1: Astoria UGB Land Use Summary

Land Use	2002	2035	Projected Growth (2002 to 2035)
Households	**4,919**	**5,400**	**481 (+10%)**
Population	*10,645*	*11,330*	685 (+6%)
Employment (Total)	**5,400**	**6,377**	**977 (+18%)**
Agriculture Employees	*220*	*216*	-4 (-2%)
Industrial Employees	*433*	*592*	159 (+37%)
Retail Employees	*537*	*668*	131 (+24%)
Service Employees	*2,265*	*2,938*	673 (+30%)
Education Employees	*659*	*614*	-45 (-7%)
Government Employees	*799*	*847*	48 (+6%)
Other Employees	*487*	*502*	15 (+3%)

Notes: Land use summary based on travel demand model and zones that approximate the Astoria UGB

Application of Regional Demand Model

As shown in Figure 1, the Astoria-Warrenton regional travel demand model has a regional scale and the roadway network includes the primary arterial and collector roadways in the model area. Many local roadways are commonly not included in regional models because they are not significant to regional travel patterns. As a result, regional models like the Astoria-Warrenton model have limited accuracy in forecasting circulation and routing on local streets and should be used carefully. Regional models also do not typically have sufficient detail to directly forecast intersection turn movements, even on roadways included in the model. Engineering judgment and manual methods (such as evaluating screen lines) are often needed to "post-process" model results to estimate turn movement volumes and to account for circulation and routing at the local level.

In areas outside the Downtown Astoria area (10 of the 26 study intersections), the regional travel demand model was used to forecast travel demand. These intersections are generally located along major routes (US 101, OR 202, and US 30) that have little to no parallel street system to provide alternative routes. Therefore, assessing growth along these corridors is within the scope and limitations of the regional travel demand model. Intersections within the downtown core were evaluated with a refined forecasting tool, as described in the next section.

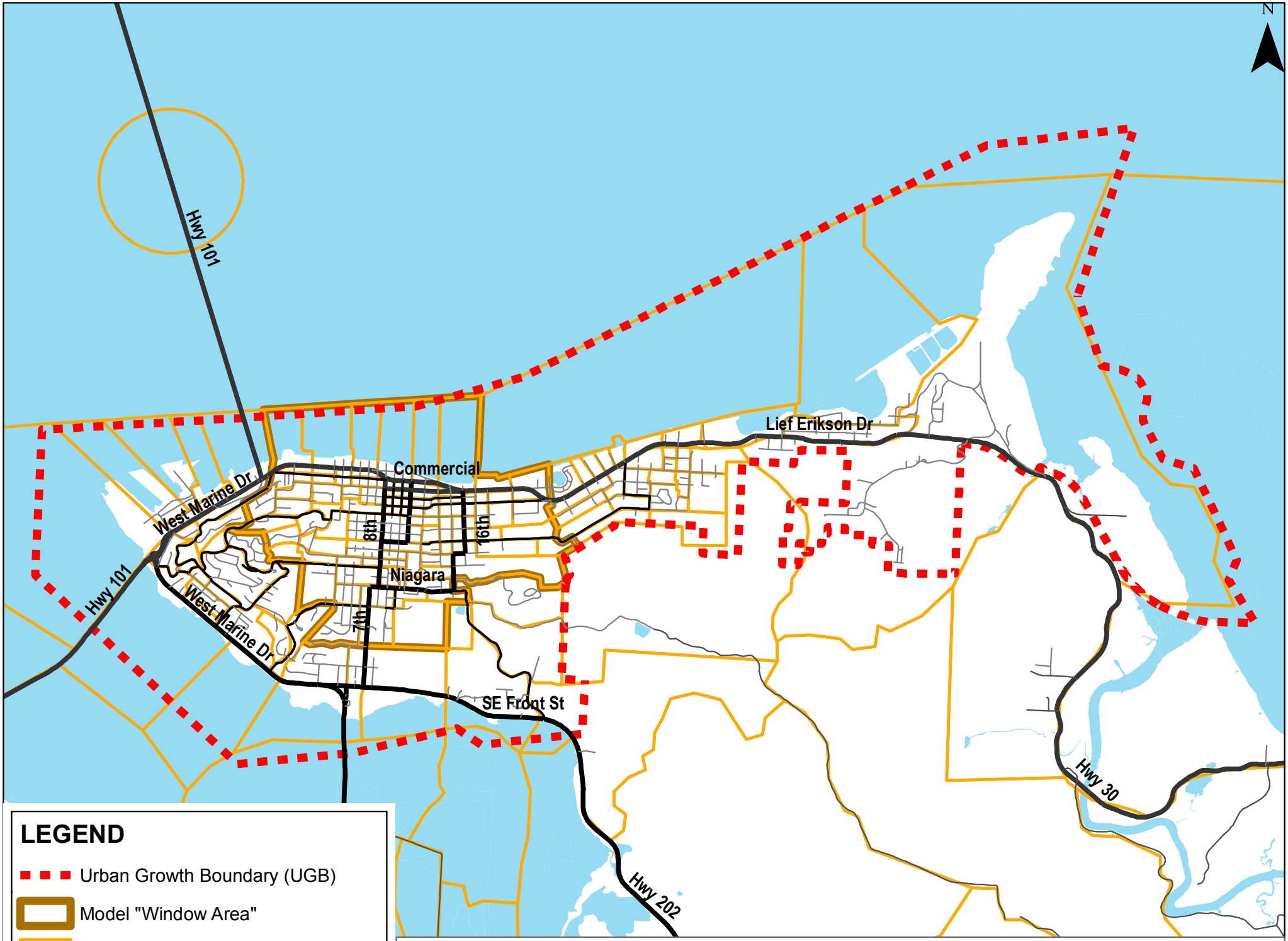

Figure 2: Astoria UGB and Model Zone Structure

Mesoscopic Windowed-Area Forecasting Tool

To assist in estimating local circulation and routing in the Downtown Astoria area, a mesoscopic[3] windowed-area forecasting tool was developed. This tool was used to capture the traffic growth and resulting circulation changes that could occur in a redundant grid system. The windowed-area includes the downtown area along US 30 as well as the residential areas on the hill to the south. The windowed area is generally bounded by the Astoria-Megler bridge (US 101) to the west, McClure Avenue to the south, undeveloped forested land and 27th Street to the east, and the Columbia River to the north. This area was selected to minimize the amount of streets in the regional travel demand model that would be cut, while allowing for a large enough area to sufficiently capture potential traffic circulation changes due to future transportation network alternatives. Figure 3 shows the roadway network and TAZ structure for the mesoscopic windowed-area forecasting tool developed for the Astoria downtown area.

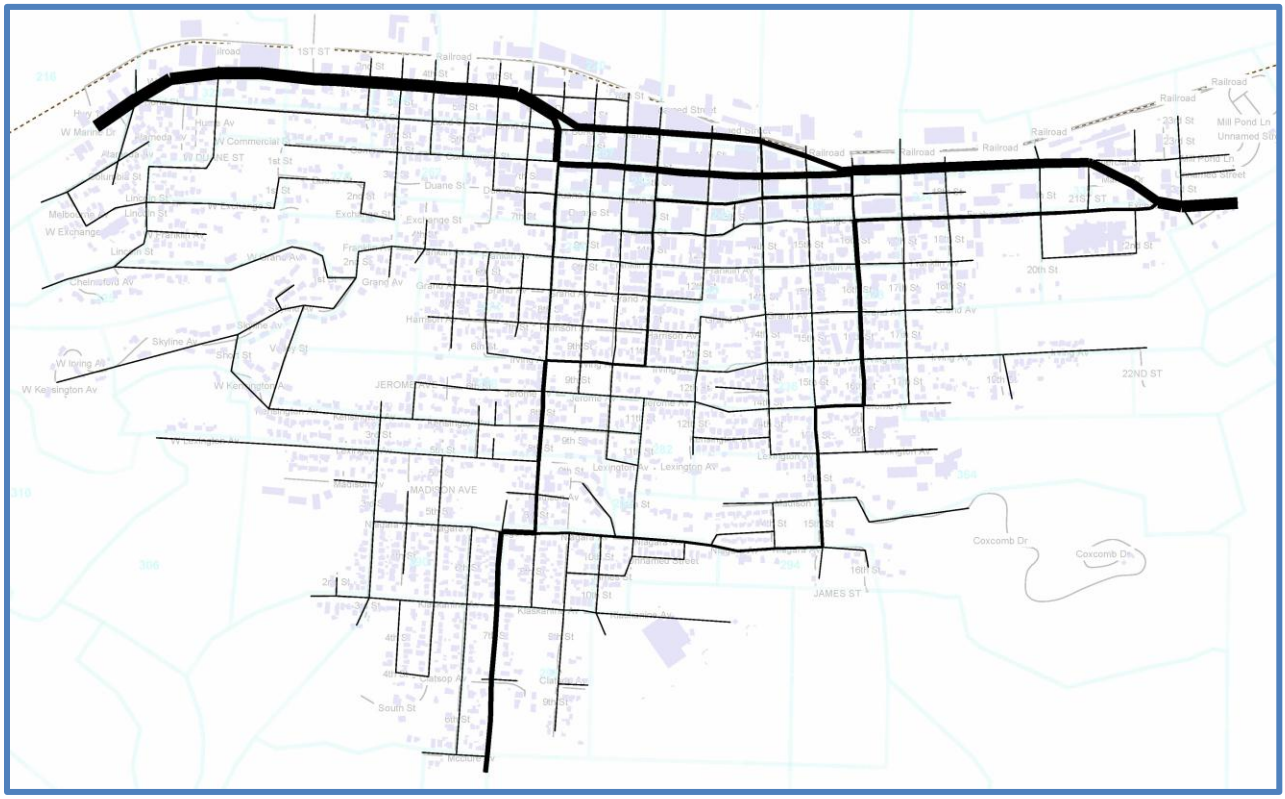

Figure 3: Mesoscopic Windowed-area Forecasting Tool Network Area

The mesoscopic forecasting tool developed for the Astoria downtown area allows more refined traffic assignment for the windowed-area than is used in the regional travel demand model. This tool includes the complete roadway network (including all local roads) within the windowed-area. The Astoria-Warrenton TAZ structure is retained within the windowed-area forecasting tool, but

[3] A "mesoscopic" model is a general term that refers to a hybrid between the traditional coarse network found in a macroscopic model (link speeds and capacity) and the refined details (such as intersection geometry and traffic control types) that would be included in a simulation-based microscopic model that included individual vehicles.

additional connectors are added for more refined traffic loading onto the roadway network based on access and parking locations. The tool includes intersection-level details such as traffic control, signal phasing, and lane geometries. VISUM modeling software[4] is used to perform an iterated traffic assignment based on estimated travel times along roadways and delays at intersection movements[5].

The resulting windowed-area tool represents route choice more accurately than manual post-processing because it is responsive to varying levels of congestion and delay as traffic patterns change. This tool enables a more comprehensive analysis of local system transportation alternatives, particularly when these alternatives may result in circulation changes or have the potential to result in cut-through traffic.

The mesoscopic windowed-area forecasting tool was developed to represent the existing transportation network and calibrated to existing traffic volumes. The 2002 base Astoria-Warrenton models (average weekday and 30 HV summer conditions) were used to generate the windowed-area trip table that assisted in development and calibration of the tool. The following sections document the roadway network and calibration for the windowed-area forecasting tool.

Windowed-Area Roadway Network

The existing roadway network included in the mesoscopic windowed-area forecasting tool for the Astoria downtown area consists of all local, collector, and arterial streets within the windowed-area. The network was built using NAVTEQ[6] files as the initial routable base. Details were added based on an existing conditions inventory that included posted speeds, traffic controls, lane geometries, and number of travel lanes for all windowed-area roadways and intersections. The purpose of the existing conditions network was to configure the windowed-area forecasting tool, act as a base in the development of the future windowed-area forecasting tool, and provide base volumes that could be used as a reference for estimating traffic growth in the future horizon year.

Windowed-Area Forecasting Tool Calibration

Calibration was performed for the mesoscopic windowed-area forecasting tool to ensure its accuracy in estimating network circulation patterns and traffic flow. The tool was calibrated using the existing 2011 average weekday and design hour traffic volumes (i.e., 30th highest hour conditions) at the Astoria downtown area study intersections. While the Astoria-Warrenton model is based on year 2002 demand, the existing 2011 traffic counts at the windowed-area model cordons on US 30 were generally within approximately ten percent of the demand (the largest deviation was eleven percent) as listed in Table 2. The similarities in travel demand at the cordon locations allowed for calibration of the model without additional scaling of the travel demand.

[4] VISUM is a transportation travel demand modeling software developed by PTV Vision.
[5] Roadway travel times were calculated based on distance and travel speed. Intersection movement delays were calculated using Highway Capacity Manual (HCM) methodology for signalized and unsignalized intersections. Detailed lane geometry, traffic control, and roadway travel speed information is required for model accuracy.
[6] NAVTEQ is a provider of Geographic Information System (GIS) data that is used for mapping applications

Table 2: Travel Demand in 2002 Window-Area Model and 2011 Traffic Counts at Cordon Locations

Scenario & Location	2011 Traffic Count	2002 Model Volume	Difference [(Model – Count) /Count]
Average Weekday Conditions			
US 30 west of Columbia Ave (westbound)	970	890	-8%
US 30 west of Columbia Ave (eastbound)	825	770	-7%
US 30 east of Exchange St (westbound)	690	650	-6 %
US 30 east of Exchange St (eastbound)	920	875	-5 %
30 HV (Summer Peak) Conditions			
US 30 west of Columbia Ave (westbound)	1,180	1,045	-11 %
US 30 west of Columbia Ave (eastbound)	1,000	965	-3 %
US 30 east of Exchange St (westbound)	815	750	-8 %
US 30 east of Exchange St (eastbound)	1,085	995	-8 %
Average	**-**	**-**	**-7 %**

In order to calibrate the traffic circulation in the windowed-area, the traffic assignment in the model was reviewed. In addition to qualitative assessment of traffic flows to/from key gateways using "flow bundle" analysis, a quantitative analysis of turn volumes at study intersections was used to verify that traffic circulation within the model was adequately represented. While regional models typically consider link volumes to measure calibration performance, the fidelity of the windowed-area model allowed for a comparison of the turn volumes. These qualitative and quantitative analyses were performed using both the average weekday and 30 HV (summer) traffic data and windowed-area forecast tools.

Figure 4 shows a plot comparing all study intersection turn movements from the existing 2011 traffic counts to 2002 volumes from the calibrated mesoscopic windowed-area forecasting tool for the average weekday scenario. The slope of the best-fit line is 0.9433, indicating that overall the scale of model volumes are within approximately six percent of the existing counts. The best-fit line's R^2 value of 0.963 is very close to 1.00, indicating that the model volumes are generally representative of a 1:1 relationship with the target volumes - as indicated by the clustering along the best-fit line. Therefore, the calibrated windowed-area forecasting tool is expected to reasonably predict trip patterns and traffic flow during average weekday conditions on the downtown Astoria windowed-area.

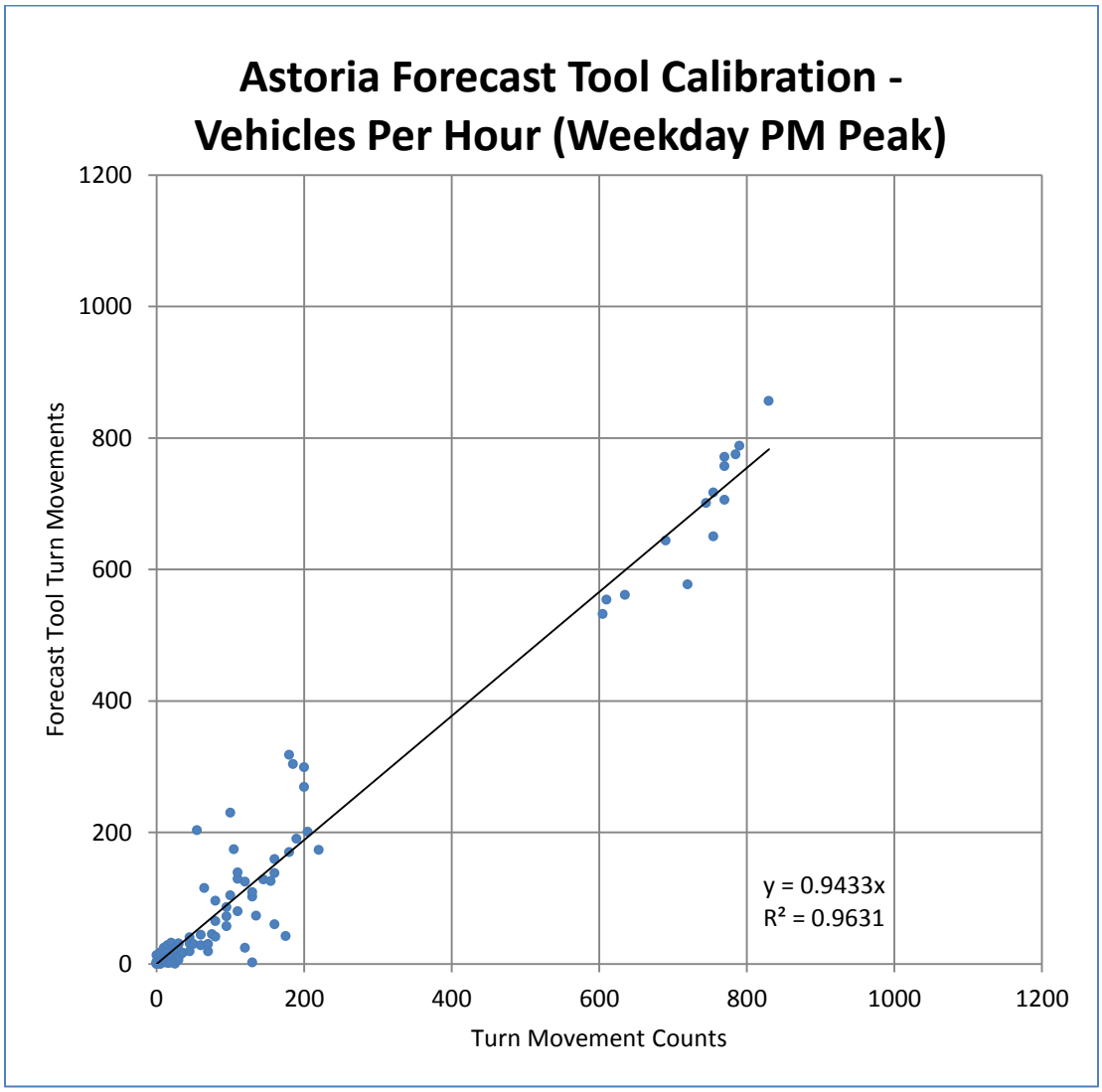

Figure 4: 2002 Average Weekday Model vs. 2011 Average Weekday Turn Movements

Figure 5 shows a plot comparing all study intersection turn movements from the existing 2011 traffic counts to the 2002 volumes from the calibrated mesoscopic windowed-area forecasting tool for the 30 HV (summer) scenario. The slope of the best-fit line is 0.921, indicating that overall the scale of model volumes are within approximately eight percent of the existing counts. The best-fit line's R^2 value of 0.971 is very close to 1.00, indicating that the model volumes are generally representative of a 1:1 relationship with the target volumes - as indicated by the clustering along the best-fit line. Therefore, the calibrated windowed-area forecasting tool is expected to reasonably predict trip patterns and traffic flow during peak summer conditions on the downtown Astoria windowed-area.

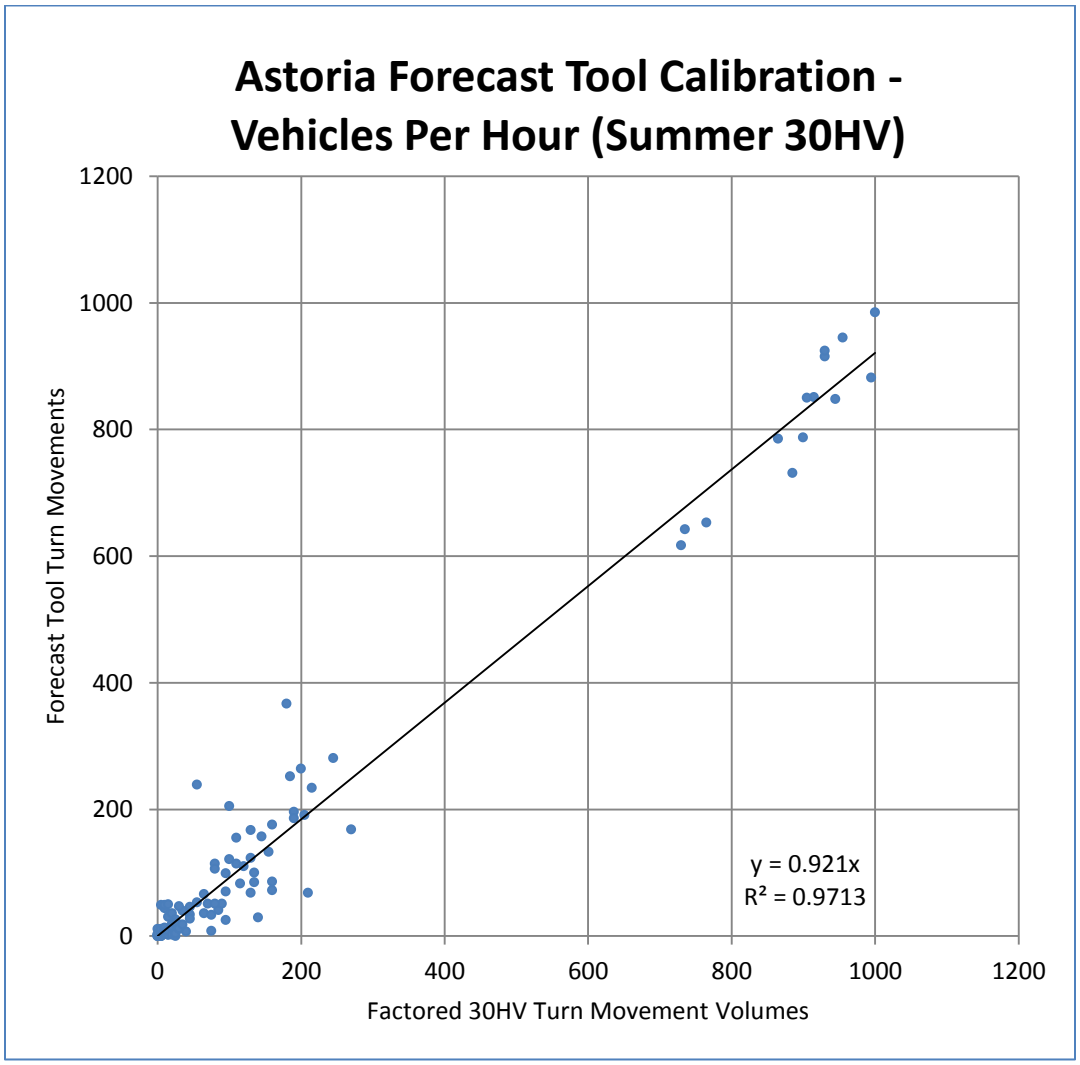

Figure 5: 2002 Peak Seasonal Model vs. 2011 30th HV Turn Movements

Post-Processing

While the travel demand models were calibrated to local conditions and volumes, raw volumes from the travel demand model were not used for capacity analysis. Rather, motor vehicle turn movement volume forecasts were developed using post-processing methods consistent with the ODOT Procedures Manual[7]. This approach is derived from methodologies outlined in the National Cooperative Highway Research Program (NCHRP) Report 255, *Highway Traffic Data for Urbanized Area Project Planning and Design*.

The post-processing methodology involves estimating model growth (i.e., volume differences between base and future models), scaling the growth by the number of forecast years (i.e., forecast years divided by difference in model years), and adding these volumes to existing traffic counts[8]. Traffic growth on links in the travel demand models were applied to individual turn movements using a Fratar method to account for growth on both inbound and outbound links. Engineering judgment is used as part of the post-processing methodology, with the routing decisions identified by the windowed-area forecasting tool serving as a helpful starting point in making volume adjustments. The result of this process are future year forecasts derived from the Astoria-Warrenton regional travel demand model and mesoscopic windowed-area forecasting tool that are calibrated to observed data.

Future Forecasting Results

The primary purpose of forecasting 2035 traffic volumes is to allow analysis of future traffic conditions to identify operational needs and potential transportation improvements in the City of Astoria. This following sections document the future forecasting methodology, roadway network changes, and 2035 traffic volume forecasts.

Future Forecast Tool Preparation

The methodology used to create the 2035 windowed-area forecasting tool is similar to the steps described for the base year tool. The Astoria-Warrenton 2035 future year model scenario was used as the basis for travel demand estimation, with the same windowed-area being cut to provide corresponding trip tables for use in the mesoscopic windowed-area forecasting tool. The trip table was then assigned to the mesoscopic windowed-area forecasting tool network.

Roadway Network Changes

The 2035 future year windowed-area network was created using the calibrated 2002 base year network. Because there are no additional transportation capacity projects with committed funding (e.g., STIP or CIP), no network changes were applied within the study windowed-area or in the regional Astoria-Warrenton model.

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[7] *Analysis Procedures Manual (APM)*, Oregon Department of Transportation (ODOT) Transportation Planning Analysis Unit (TPAU), Last Updated June 2010, pgs. 91-92

[8] The traffic counts for the Astoria TSP study intersections were collected in 2011 and adjusted to average weekday and 30th highest hour (summer peak) conditions, as documented in *Technical Memorandum #5 (Existing Conditions)*.

2002 to 2035 Traffic Volume Growth

Figure 6 illustrates the regional traffic growth on links from year 2002 to year 2035, and Figure 7 shows the link traffic growth within the windowed-area during average weekday conditions. The figures indicate that much of the link growth is primarily expected to occur on major regional gateways to the City – US 101, US 30, OR 202, and US 101 Business. In addition, higher link growth is expected along portions of 7th Street, 8th Street and Irving Avenue. Figures 8 and 9 indicate a similar pattern of growth on regional facilities connecting to the City during the 30HV (summer peak) conditions.

Post processed turn movement volumes at study intersections are provided in Figure 10 for the 2035 average weekday PM peak hour and Figure 11 for the 2035 30 HV (summer peak) scenario. Forecasted through traffic volumes along US 30 and US 101 would generally increase by 50 to 150 during the PM peak hour of an average weekday. This increase would generally be higher in the eastbound direction (approximately 100 to 150 vehicles per hour) than the westbound direction (50 to 100 vehicles per hour) during the PM peak hour. The remaining movements at study intersections would generally change by 50 vehicles or less during the PM peak hour, with some movements increasing and others decreasing. The decrease in some turn movements is likely related to land use changes (reductions listed in Table 1) in some parts of the City. Future traffic growth during the 30HV (summer peak) would generally be similar to the average weekday growth, however the increase in through traffic along major corridors (US 30 and US 101) would be about 20 to 50 vehicles per hour less than the increase during the average weekday condition.

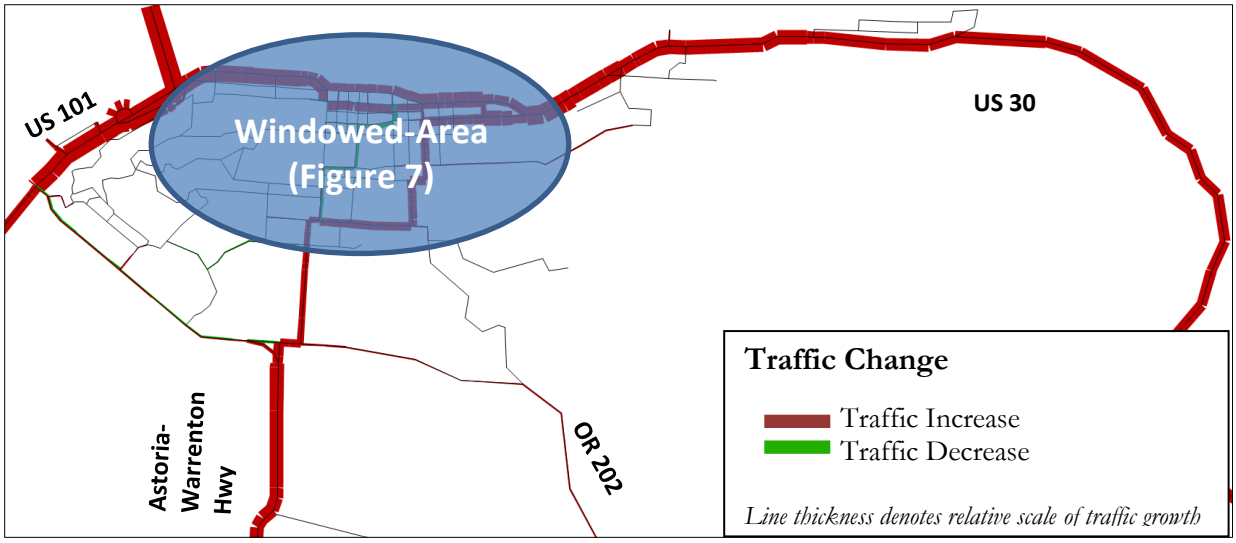


Figure 6: 2002 to 2035 Regional Model Growth (Average Weekday)

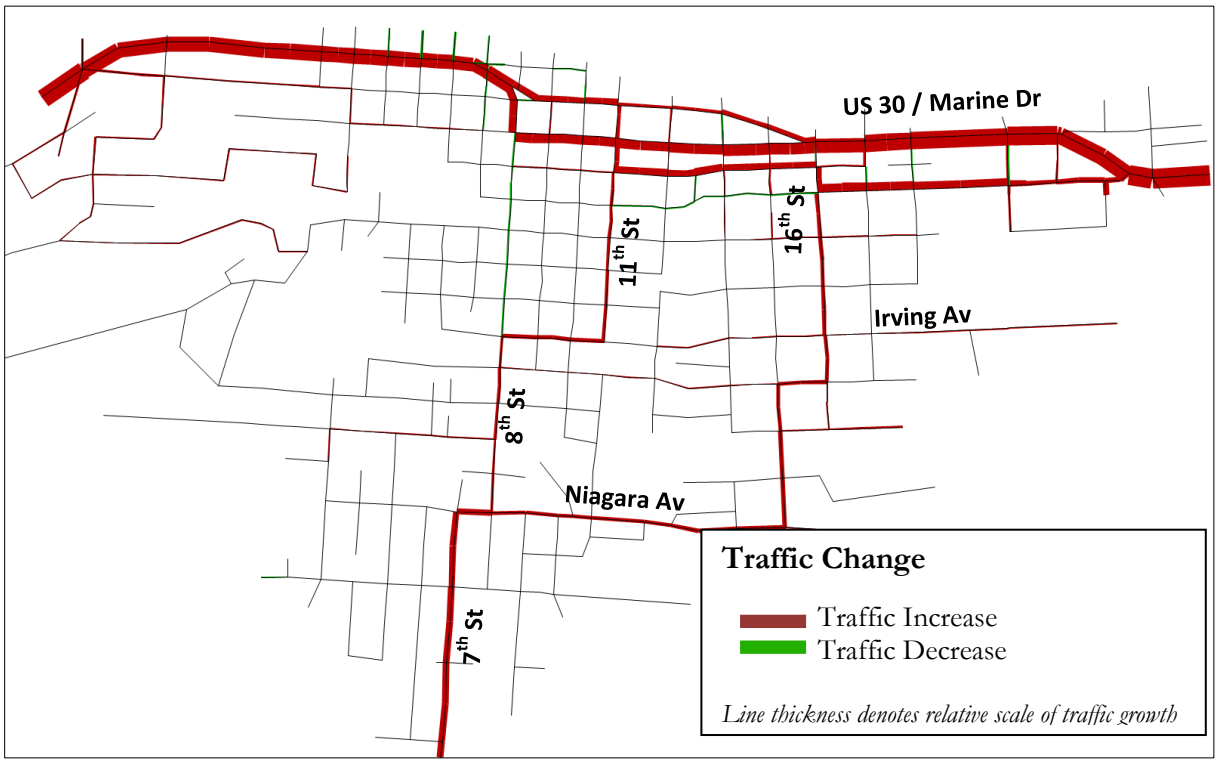


Figure 7: 2002 to 2035 Windowed-Area Growth (Average Weekday)

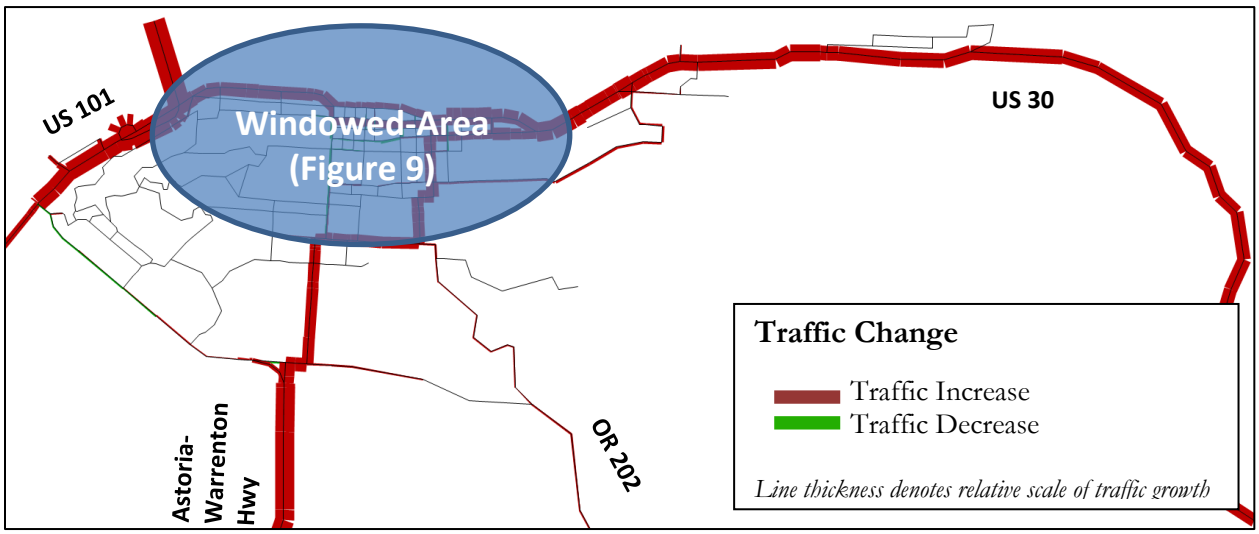


Figure 8: 2002 to 2035 Regional Model Growth (30 HV - Summer)

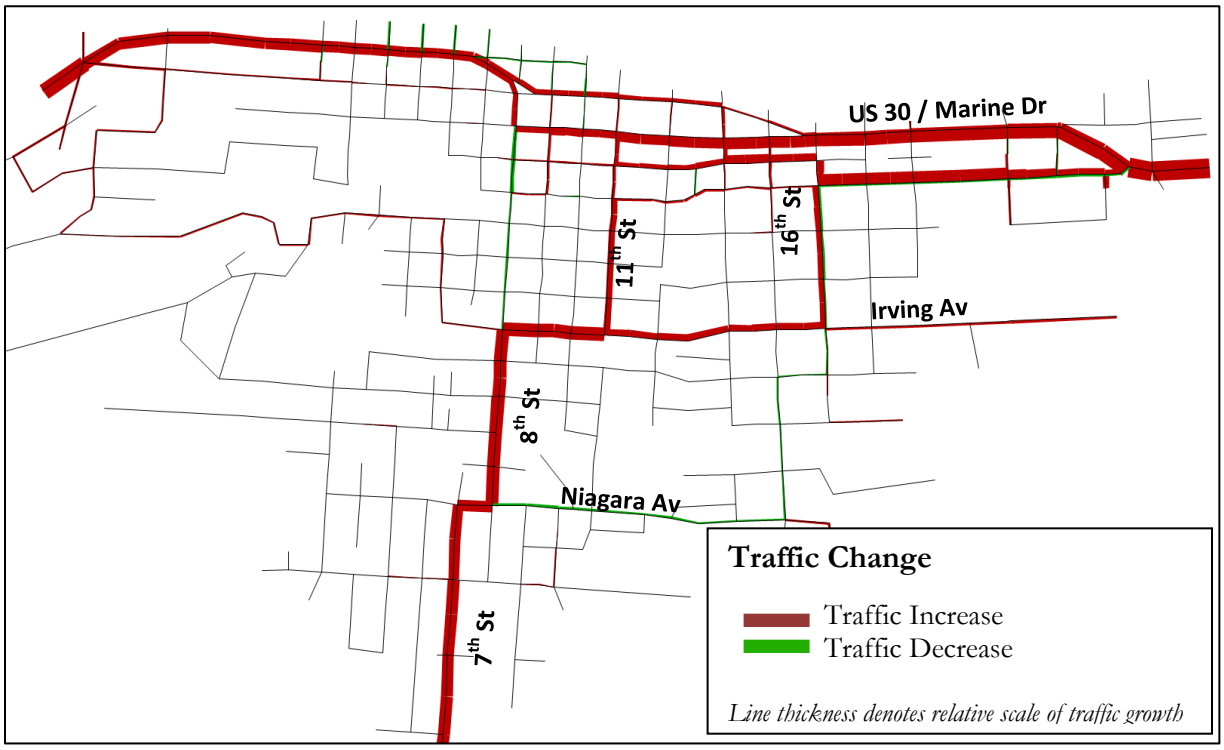
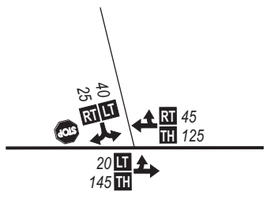
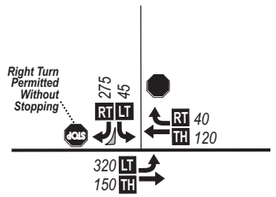


Figure 9: 2002 to 2035 Windowed-Area Growth (30 HV - Summer)

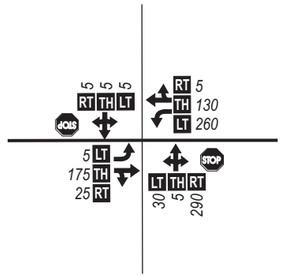
1. *OR 202/Williamsport Rd.*



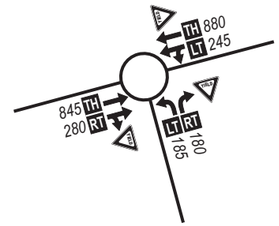
2. *OR 202/7th St.*



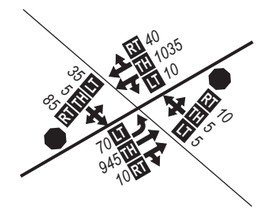
3. *OR 202/5th St.*



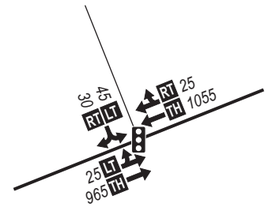
4. *US 101/OR 202-US 101 Business*



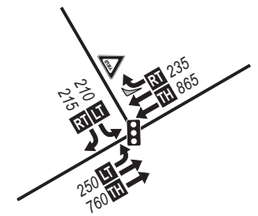
5. *US 101/Hamburg Ave.*



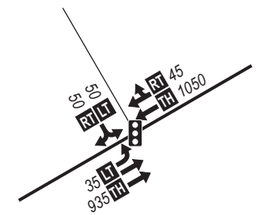
6. *US 101/Portway St.*



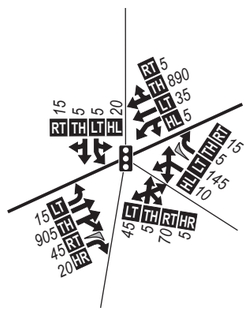
7. *US 101-30/Astoria-Megler Bridge*



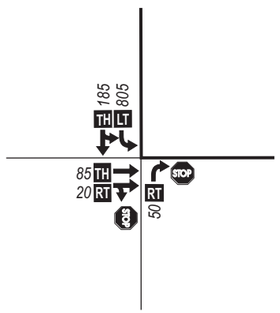
8. *US 30/Basin St.*



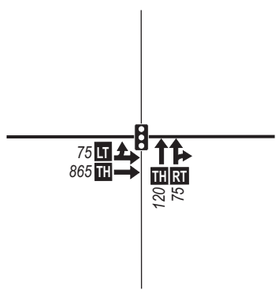
9. *US 30/Bond St-Columbia Ave.*



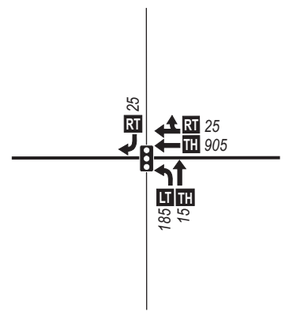
10. *US 30-Commercial St./8th St.*



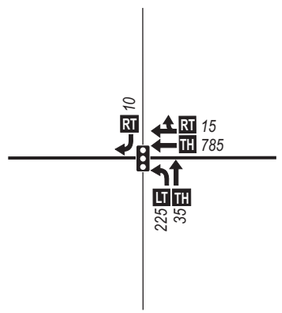
11. *US 30-Commercial St./9th St.*



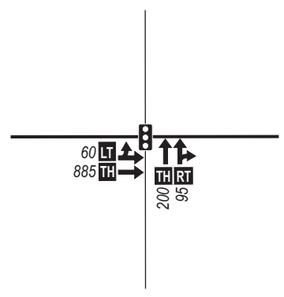
12. *US 30-Marine Dr./9th St.*



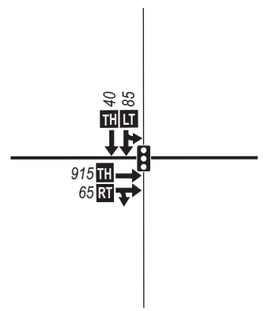
13. *US 30-Marine Dr./11th St.*



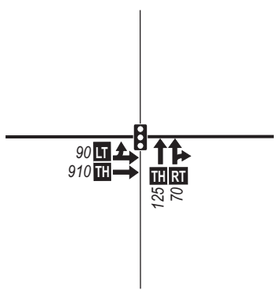
14. *US 30-Commercial St./11th St.*



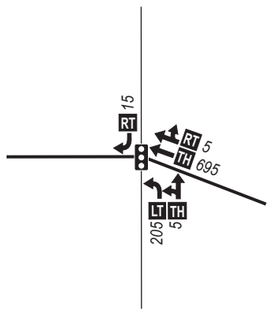
15. *US 30-Commercial St./12th St.*



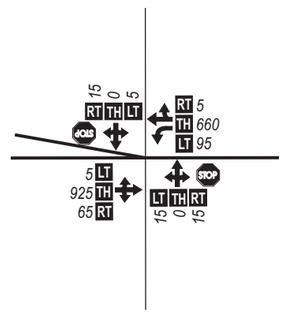
16. *US 30-Commercial St./14th St.*



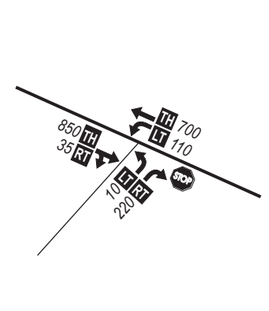
17. *US 30-Marine Dr./14th St.*



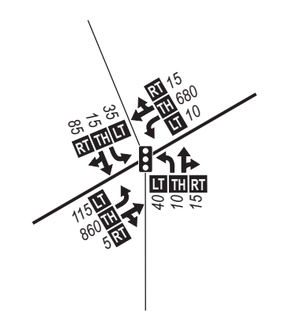
18. *US 30/16th St.*



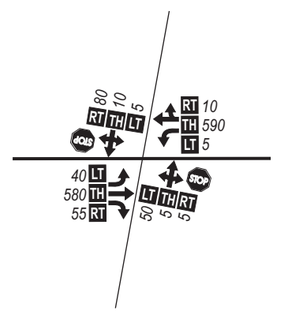
19. *US 30/Exchange St.*



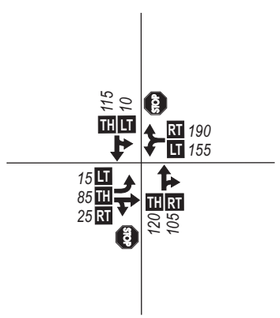
20. *US 30/33rd St.*



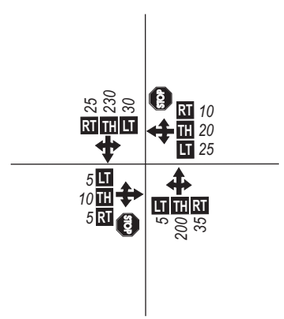
21. *US 30/Nimitz Rd-Maritime Rd.*



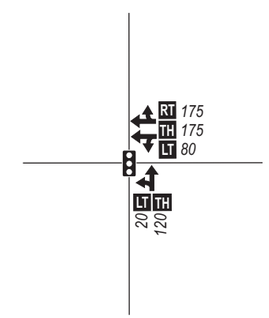
22. *Exchange St./16th St.*



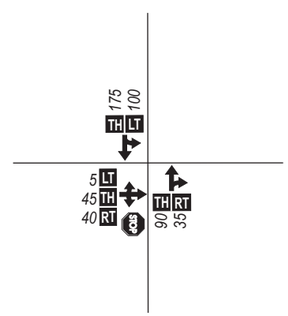
23. *Irving Av./16th St.*



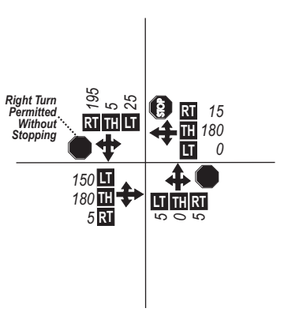
24. *Duane St./11th St.*

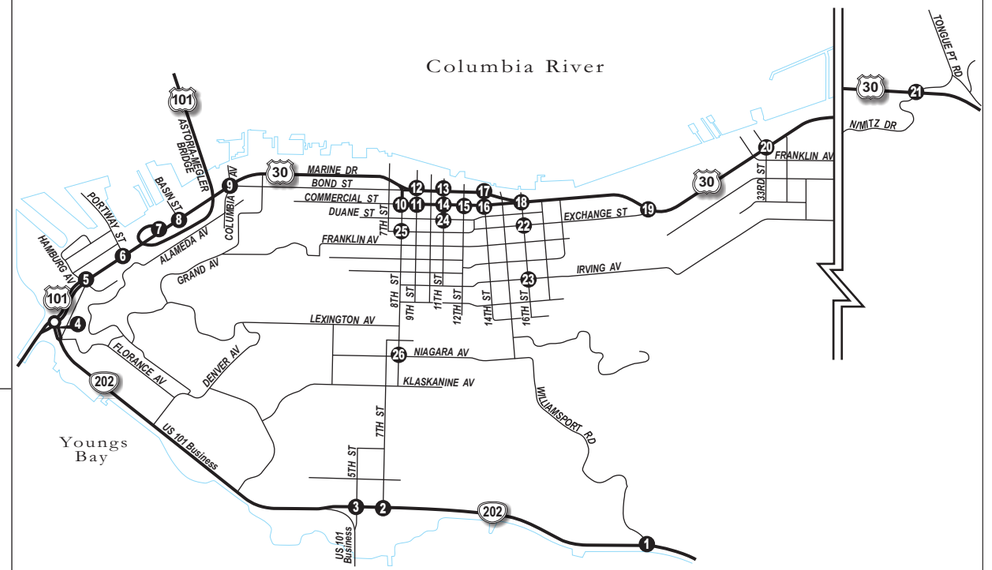


25. *Exchange St./8th St.*



26. *Niagra Av./8th St.*





LEGEND

- 00 - Study Intersection
- ← - Lane Configuration
- ⬢ - Stop Sign
- 🚦 - Traffic Signal
- *000* - PM Peak Hour Traffic Volume
- HL LT TH RT HR - Volume Turn Movement

Hard Lt.•Left•Thru•Right•Hard Rt.

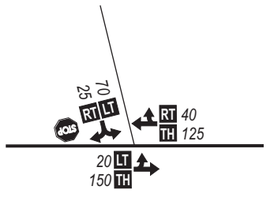
NO SCALE

DKS Associates
TRANSPORTATION SOLUTIONS

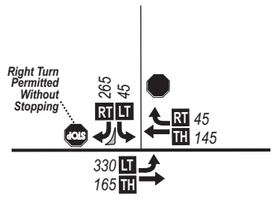
Figure 10

2035 BASELINE AVERAGE WEEKDAY MOTOR VEHICLE VOLUMES (PM Peak Hour)

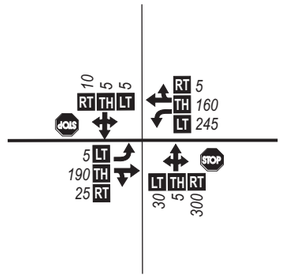
1. *OR 202/Williamsport Rd.*



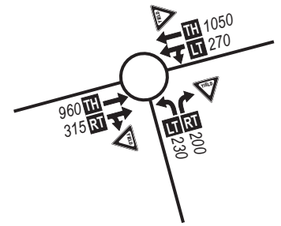
2. *OR 202/7th St.*



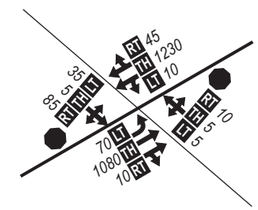
3. *OR 202/5th St.*



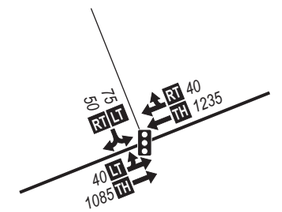
4. *US 101/OR 202-US 101 Business*



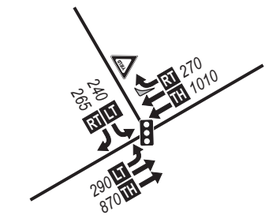
5. *US 101/Hamburg Ave.*



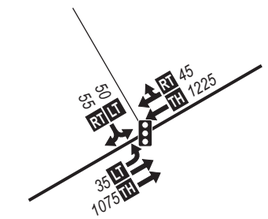
6. *US 101/Portway St.*



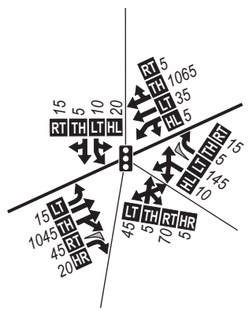
7. *US 101-30/Astoria-Megler Bridge*



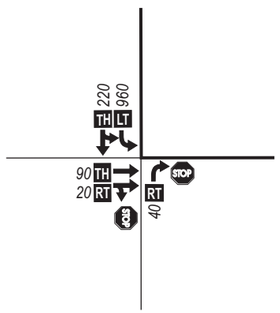
8. *US 30/Basin St.*



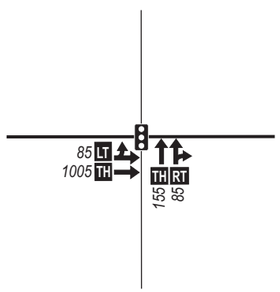
9. *US 30/Bond St-Columbia Ave.*



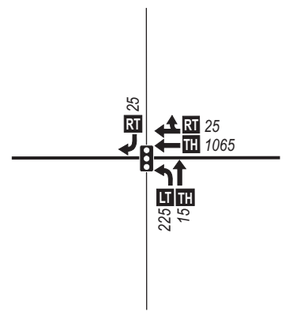
10. *US 30-Commercial St./8th St.*



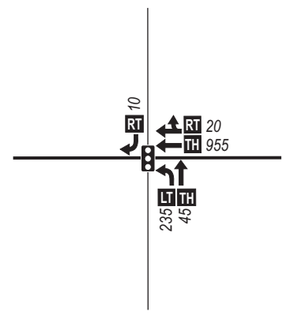
11. *US 30-Commercial St./9th St.*



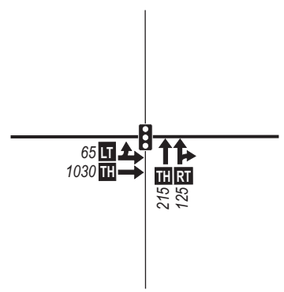
12. *US 30-Marine Dr./9th St.*



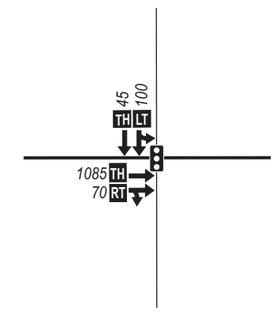
13. *US 30-Marine Dr./11th St.*



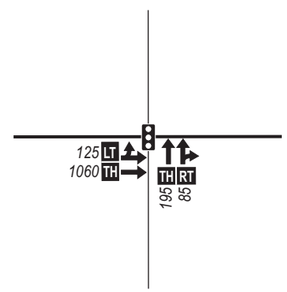
14. *US 30-Commercial St./11th St.*



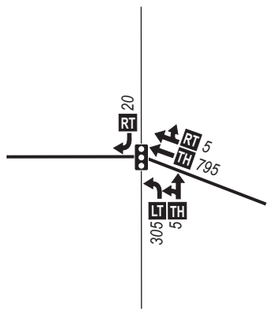
15. *US 30-Commercial St./12th St.*



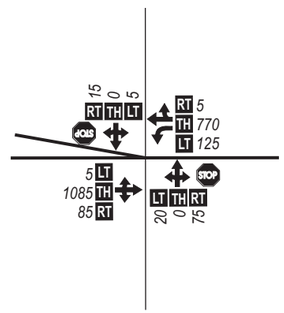
16. *US 30-Commercial St./14th St.*



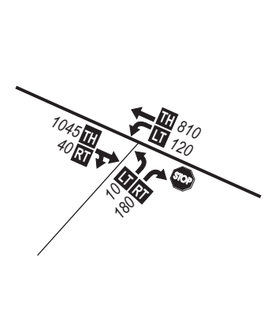
17. *US 30-Marine Dr./14th St.*



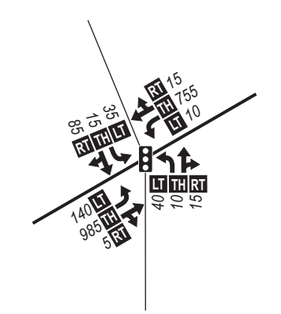
18. *US 30/16th St.*



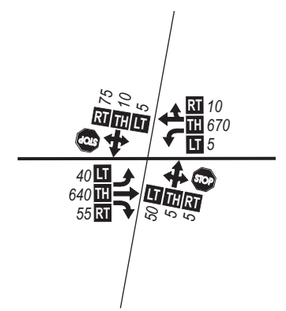
19. *US 30/Exchange St.*



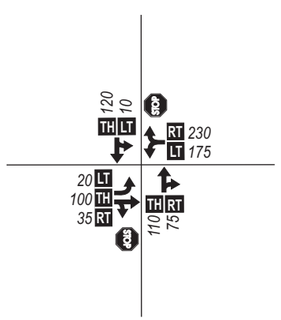
20. *US 30/33rd St.*



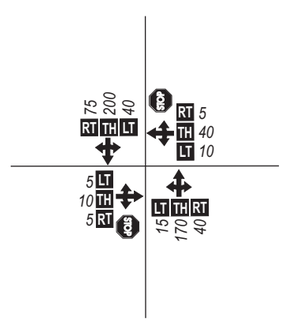
21. *US 30/Nimitz Rd-Maritime Rd.*



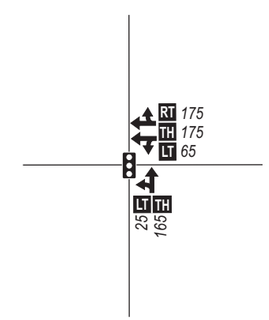
22. *Exchange St./16th St.*



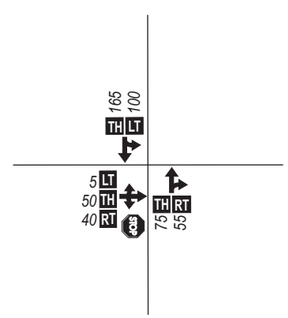
23. *Irving Av./16th St.*



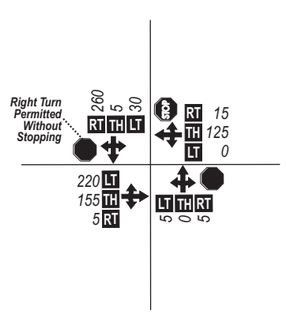
24. *Duane St./11th St.*

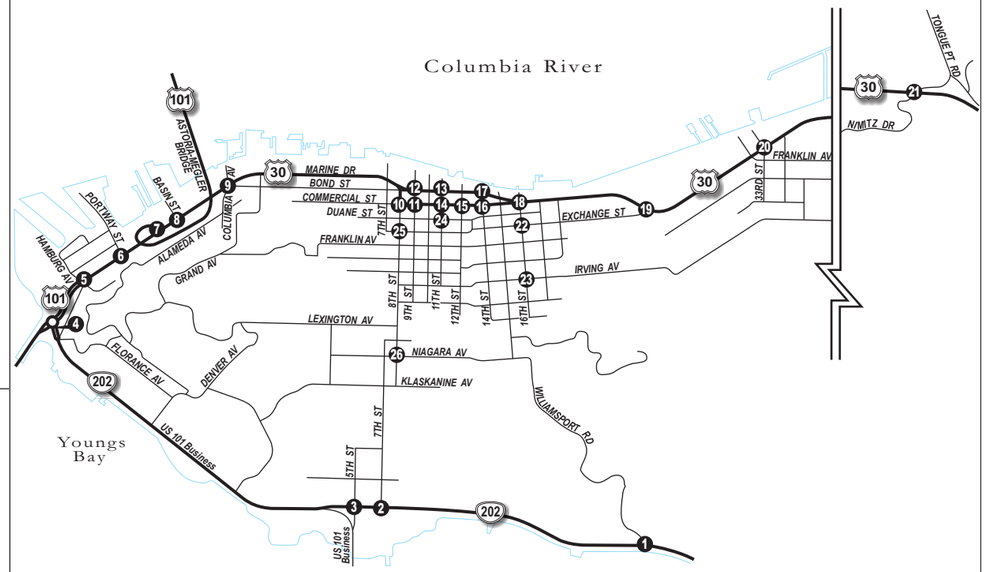


25. *Exchange St./8th St.*



26. *Niagra Av./8th St.*





LEGEND

- 00 - Study Intersection
- ← - Lane Configuration
- ⬢ - Stop Sign
- ▮ - Traffic Signal
- *000* - PM Peak Hour Traffic Volume
- HL LT TH RT HR - Volume Turn Movement

Hard Lt.•Left•Thru•Right•Hard Rt.

DKS Associates
TRANSPORTATION SOLUTIONS

NO SCALE

Figure 11

2035 BASELINE 30 HV MOTOR VEHICLE VOLUMES (PM Peak Hour)

Section H: Memo 7- Future Transportation System Needs Analysis

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Memorandum #7

Date:	January 11, 2013
To:	Astoria TSP Update Project Management Team
From:	Chris Maciejewski, P.E., P.T.O.E., DKS Associates Kevin Chewuk and Ben Fuller, DKS Associates
Subject:	**Astoria Transportation System Plan Update** **Future Needs Analysis**

This document details the 2035 transportation conditions in Astoria if no new investments are made to the existing transportation system. Included is a summary of how the future transportation needs are determined, a depiction of what travel in 2035 could look like in Astoria, a detail of where transportation investments are needed, and an outline of potential improvements to consider.

How do we Determine Future Transportation System Needs?

The objective of the transportation planning process is to provide the information necessary for making decisions about how and where improvements should be made to provide a safe and efficient transportation system that provides travel options. Before determining what investments are needed for the City's transportation system, we first look at the existing travel conditions and then use the latest planning assumptions to forecast what future growth and travel trends might look like in 2035. We begin by assuming that no new investments will be made into the transportation infrastructure beyond what is already funded for construction and consider how the system will change with planned growth. The following sections explain where growth is expected, how the transportation system will perform, and where solutions will be needed. Solutions for addressing the transportation system needs will be explored in Technical Memorandum #8.

Estimating Future Travel

A determination of future transportation system needs in Astoria requires the ability to accurately forecast travel demand resulting from estimates of future population and employment for the City, and forecast travel patterns based on decisions and preferences demonstrated by existing residents, employers and institutions around the region. Travel demand models are mathematical tools used to help understand future commuter, school, and recreational travel patterns including information about the length and time of day a trip will be made. Comparing outputs with observed counts and behaviors on the local system refines model forecasts. This refinement step is completed before any evaluation of system performance is made. Once the traffic forecasting process is complete, the 2035 volumes are applied to determine the areas of the street network that are expected to be congested and that may need future investments to accommodate growth.

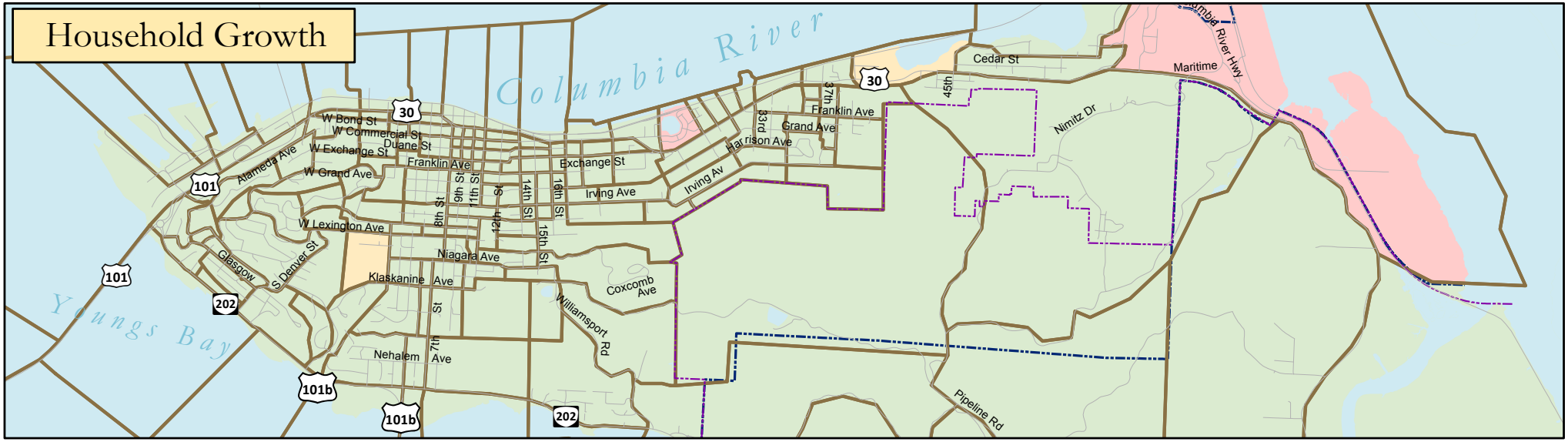
Snapshot of Astoria in 2035

Today, Astoria is home to over 5,000 households and accounts for over 5,600 jobs. Between now and 2035, employment growth is expected to increase about one percent a year, slightly outpacing the rate of household growth over the same period (less than ½ percent). Astoria is expected to be home to about 5,400 households and over 6,300 jobs by 2035, a 7 and 13 percent increase respectively from 2011. With more people and more jobs in Astoria, in addition to increased port and tourism activity, the transportation network will face increased demand through 2035.

More People, More Jobs

As shown in Figure 1, much of the population and employment growth is expected to occur north of US 101 and US 30 along the Columbia River. Employment growth is expected to be highest in and around downtown Astoria, generally between 8th Street and 23rd Street. High employment growth is also anticipated to occur at the Port of Astoria in Uniontown in the northwestern corner of the City.

Household growth is expected to be highest just to the east of downtown Astoria, between US 30 and the Columbia River near Mill Pond. High household growth is also expected to occur on the east side of the City near Tongue Point, generally north of US 30 between 39th Street and Nimitz Drive-Maritime Road.



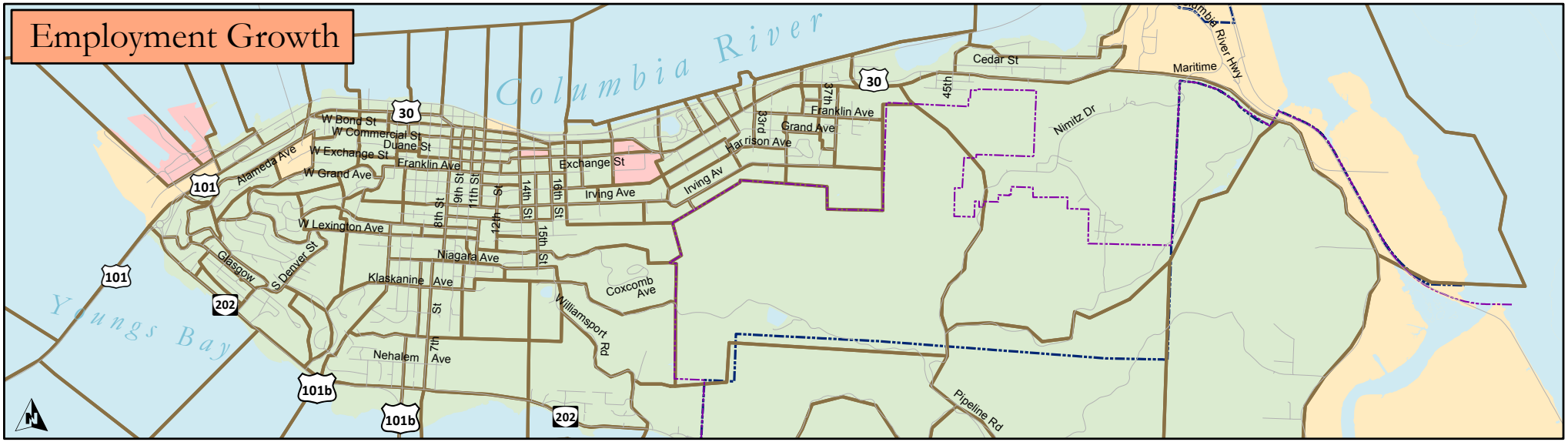


Figure 1 : Household and Employment Growth (2011 - 2035)

City of Astoria

Transportation System Plan

Legend

Household Growth between 2011 and 2035 (by Zone)
- Increase of less than 25 households
- Increase between 25 and 50 households
- Increase of more than 50 households

Employment Growth between 2011 and 2035 (by Zone)
- Increase of less than 25 jobs
- Increase between 25 and 50 jobs
- Increase of more than 50 jobs

- Astoria City Limit
- Astoria Urban Growth Boundary
- Traffic Analysis Zone

More Travel

With more jobs and people, in addition to increased through travel, the street network in Astoria must cope with an additional 1,200 motor vehicle trips during the evening peak hour on an average weekday and 1,500 trips during the summer. Today, the street network in Astoria handles an estimated 8,200 average weekday and 9,900 summer evening peak hour trips. However, the evening peak hour motor vehicle trips are expected to increase about one percent a year, surpassing 9,400 average weekday and 11,400 summer trips by 2035. Figure 2 illustrates how the population and employment growth through 2035 translates into motor vehicle travel by zone during the evening peak hour. As shown, much of the increased travel is expected to begin or end in zones located in major residential and/or employment growth areas, including around downtown Astoria and along US 30 just to the east and west of downtown.

2035 motor vehicle volumes for both summer and average weekday conditions were utilized to determine areas on the roadway network that will be congested and may require future investments to accommodate forecasted growth. The network was analyzed under Baseline conditions, which reflects the street network performance assuming we build the transportation projects that already have secured funding or are reasonably likely to be funded but assumes no additional improvements. In Astoria, no major projects have secured funding or are reasonably likely to be funded. Therefore the 2035 Baseline street network matched that of the existing system in 2011.

The 2035 Baseline motor vehicle volumes for study intersections can be found in Figure 3a and Figure 3b. Motor vehicle volumes in 2035 are expected to be highest along the regional roadways, such as US 101 and US 30. These roadways serve trips entering and leaving the city, as well as provide direct routes to the downtown area. Other roadways that are expected to see significant traffic increases include OR 202 and Exchange Street.

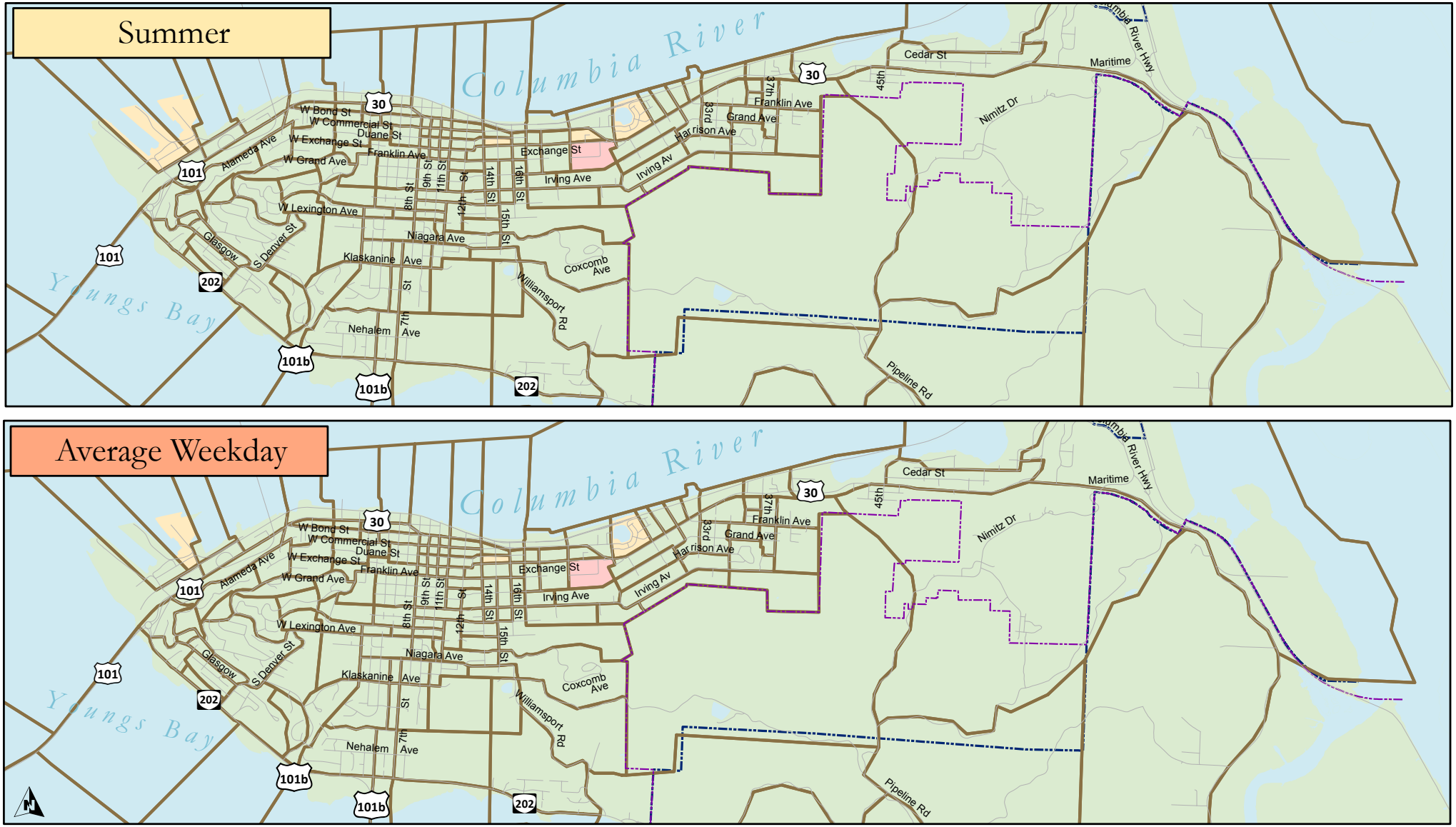


Figure 2 : Traffic Volume Growth by Zone (2011 - 2035)

City of Astoria

Transportation System Plan

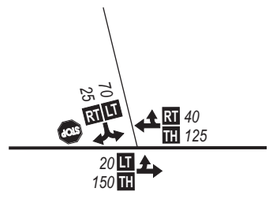
Legend

Change in Traffic Volumes to and from Zone between 2011 and 2035

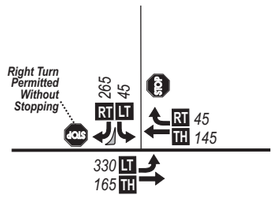
- Increase of less than 50 vehicles during the p.m. peak hour
- Increase between 50 and 100 vehicles during the p.m. peak hour
- Increase of more than 100 vehicles during the p.m. peak hour

- Astoria City Limit
- Astoria Urban Growth Boundary
- Traffic Analysis Zone

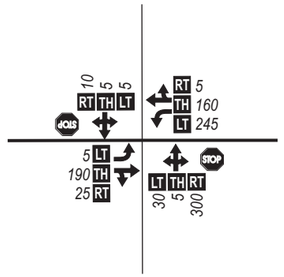
1. *OR 202/Williamsport Rd.*



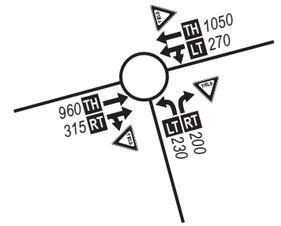
2. *OR 202/7th St.*



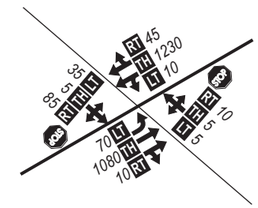
3. *OR 202/5th St.*



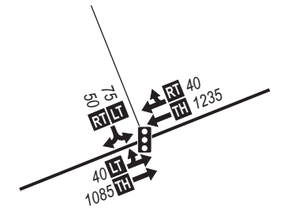
4. *US 101/OR 202-US 101 Business*



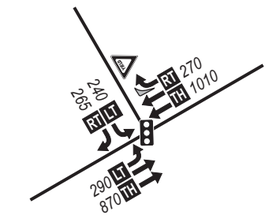
5. *US 101/Hamburg Ave.*



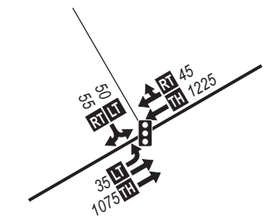
6. *US 101/Portway St.*



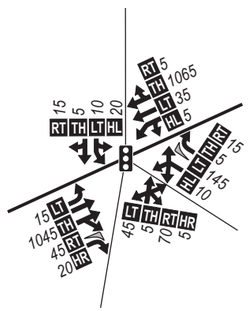
7. *US 101-30/Astoria-Megler Bridge*



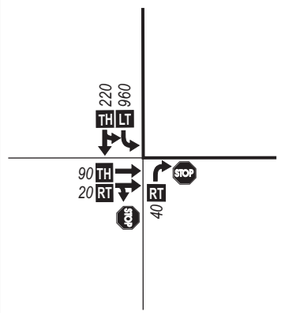
8. *US 30/Basin St.*



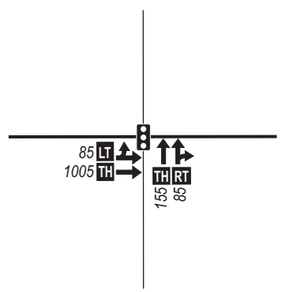
9. *US 30/Bond St-Columbia Ave.*



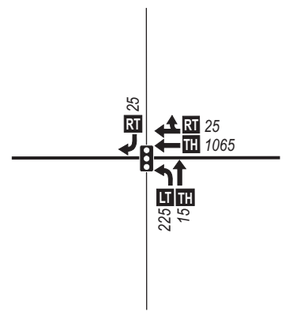
10. *US 30-Commercial St./8th St.*



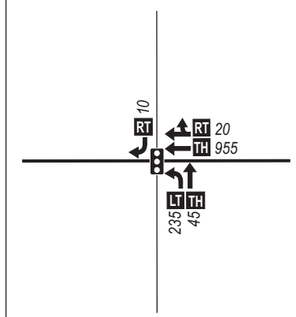
11. *US 30-Commercial St./9th St.*



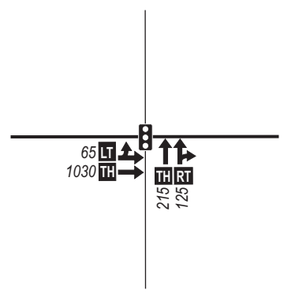
12. *US 30-Marine Dr./9th St.*



13. *US 30-Marine Dr./11th St.*



14. *US 30-Commercial St./11th St.*



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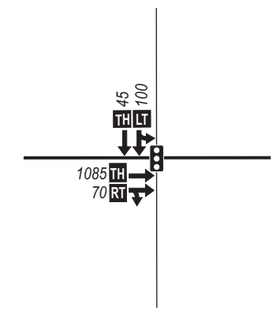
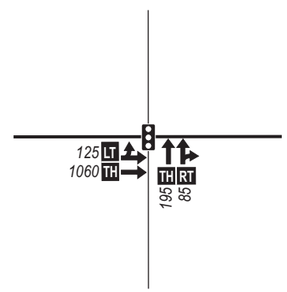


16. *US 30-Commercial St./14th St.*



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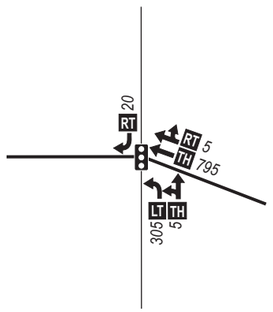
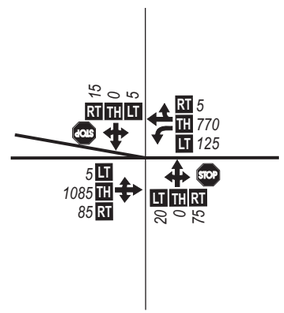
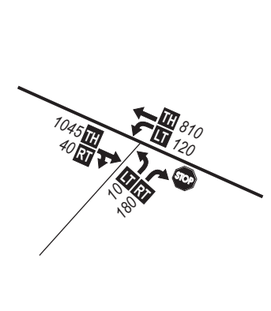


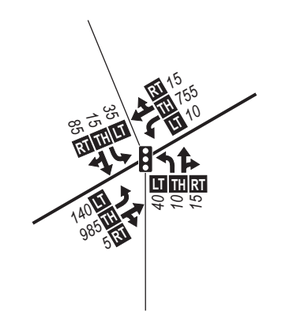
18. *US 30/16th St.*



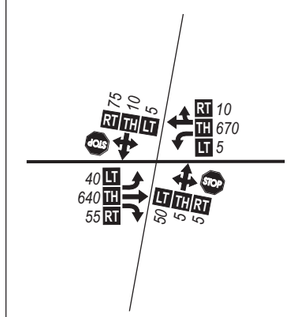
19. *US 30/Exchange St.*



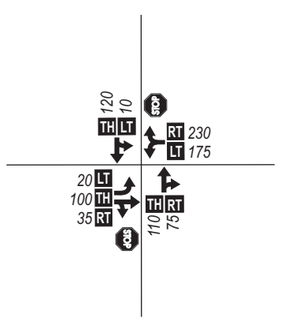
20. *US 30/33rd St.*



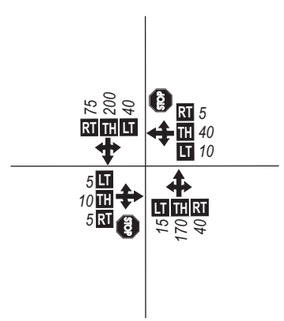
21. *US 30/Nimitz Rd./Maritime Rd.*



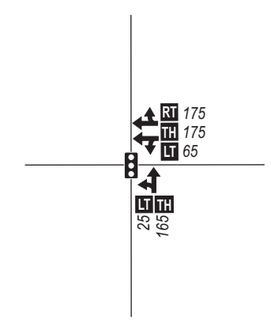
22. *Exchange St./16th St.*



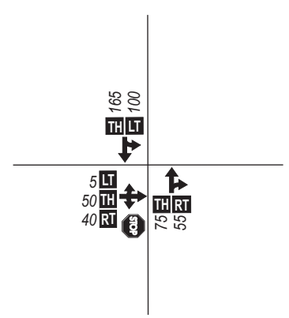
23. *Irving Av./16th St.*



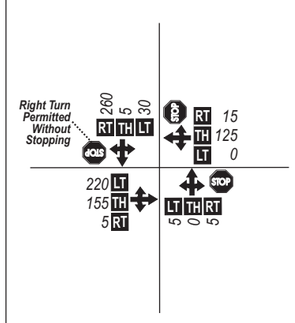
24. *Duane St./11th St.*

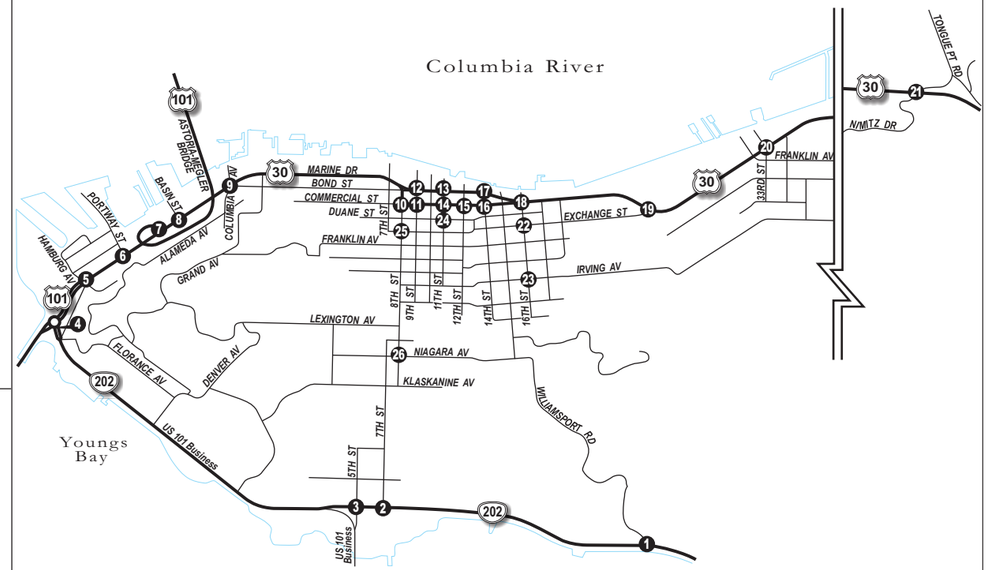


25. *Exchange St./8th St.*



26. *Niagra Av./8th St.*





LEGEND

- 00 - Study Intersection
- ← - Lane Configuration
- STOP - Stop Sign
- - Traffic Signal
- 000 - PM Peak Hour Traffic Volume
- HL LT TH RT HR - Volume Turn Movement

Hard Lt.•Left•Thru•Right•Hard Rt.

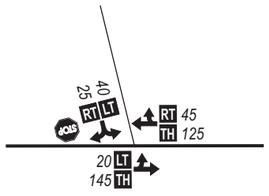
DKS Associates
TRANSPORTATION SOLUTIONS

NO SCALE

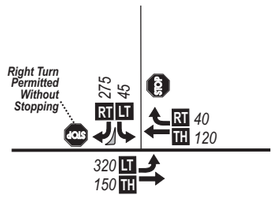
Figure 3a

2035 BASELINE SUMMER (DHV) MOTOR VEHICLE VOLUMES (PM Peak Hour)

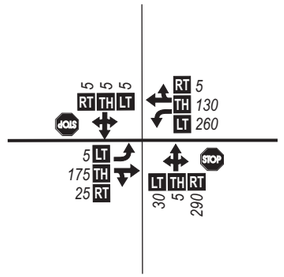
1. *OR 202/Williamsport Rd.*



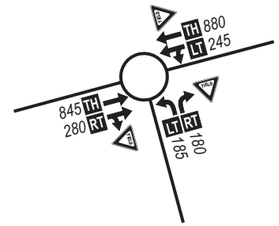
2. *OR 202/7th St.*



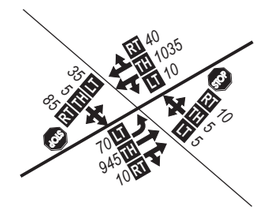
3. *OR 202/5th St.*



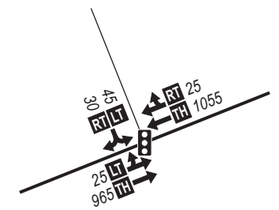
4. *US 101/OR 202-US 101 Business*



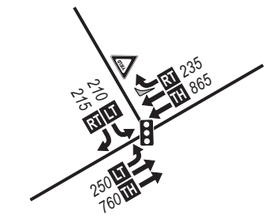
5. *US 101/Hamburg Ave.*



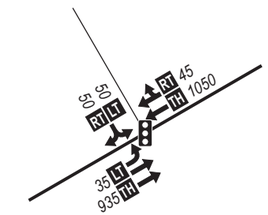
6. *US 101/Portway St.*



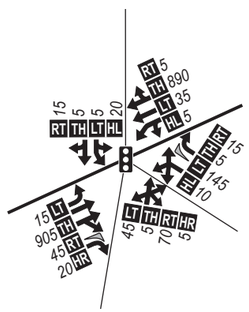
7. *US 101-30/Astoria-Megler Bridge*



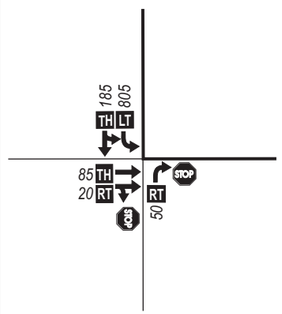
8. *US 30/Basin St.*



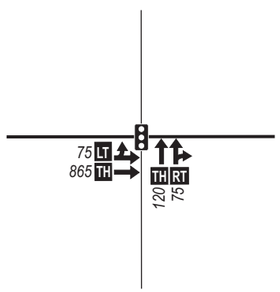
9. *US 30/Bond St-Columbia Ave.*



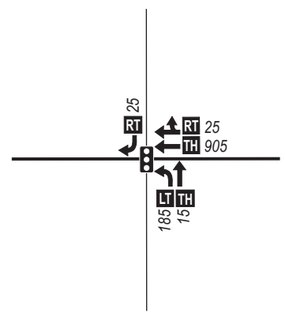
10. *US 30-Commercial St./8th St.*



11. *US 30-Commercial St./9th St.*



12. *US 30-Marine Dr./9th St.*



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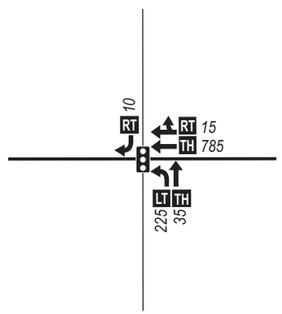
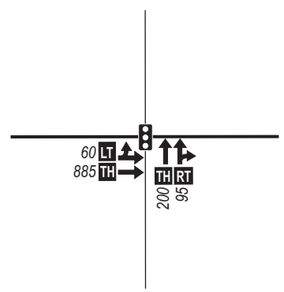
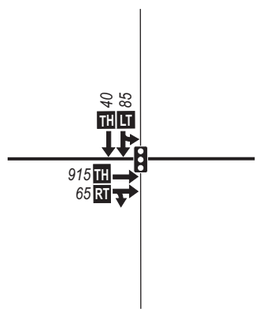


14. *US 30-Commercial St./11th St.*



15. *US 30-Commercial St./12th St.*



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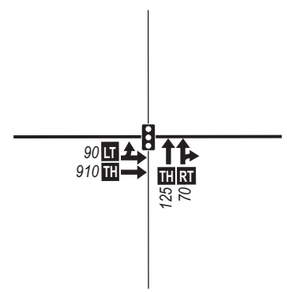

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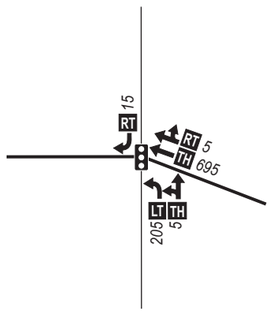

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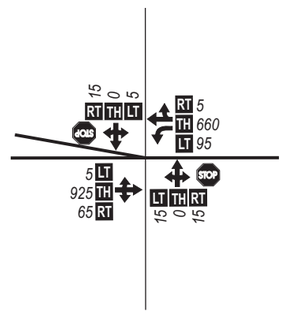

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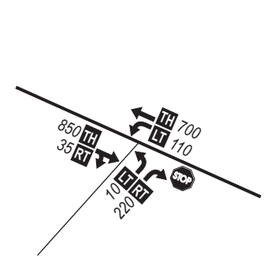

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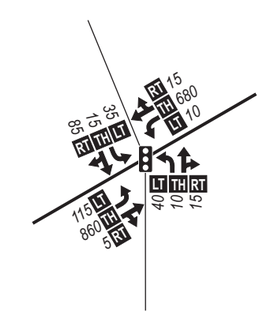
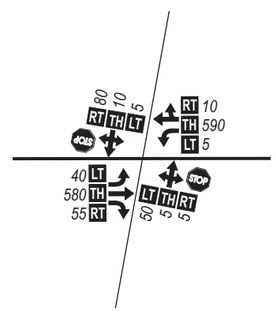
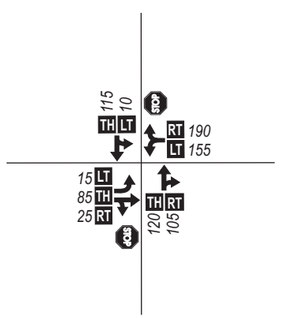


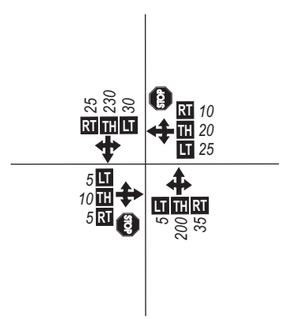
21. *US 30/Nimitz Rd./Maritime Rd.*



22. *Exchange St./16th St.*



23. *Irving Av./16th St.*



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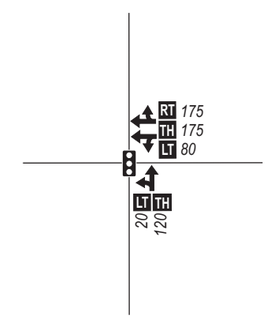

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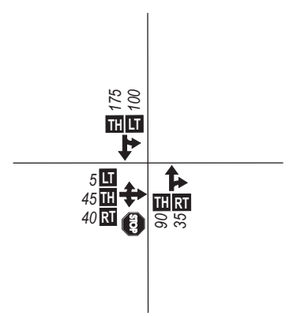

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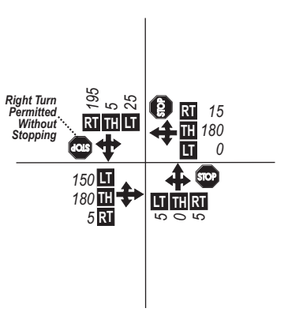
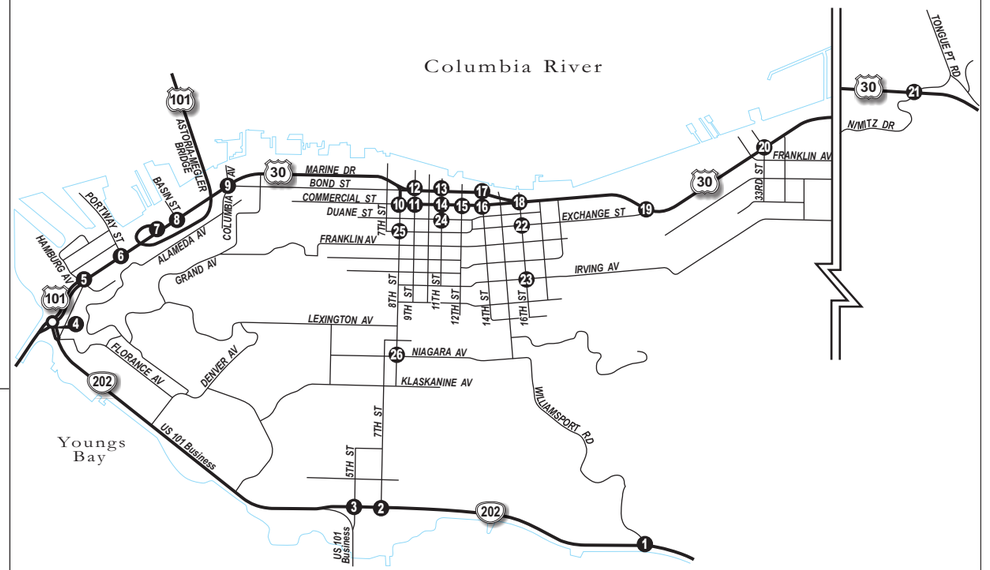




LEGEND

- 00 - Study Intersection
- ← - Lane Configuration
- STOP - Stop Sign
- - Traffic Signal
- 000 - PM Peak Hour Traffic Volume
- HL LT TH RT HR - Volume Turn Movement

Hard Lt.•Left•Thru•Right•Hard Rt.

DKS Associates
TRANSPORTATION SOLUTIONS

NO SCALE

Figure 3b

2035 BASELINE AVERAGE WEEKDAY MOTOR VEHICLE VOLUMES (PM Peak Hour)

More Congestion

An increase in motor vehicle travel leads to an increase in congestion. Travel activity, as reflected by evening peak hour motor vehicle trips beginning or ending in Astoria, is expected to increase by 15 percent through 2035. Through travel, or trips that do not begin or end in Astoria, is also expected to increase through 2035 and is generally representative of increased tourism activity and growth in neighboring cities such as Warrenton. Figure 4 shows that most of the congestion is expected to occur along US 30 east of downtown Astoria, generally between 16th Street and 45th Street. The bridges over Youngs Bay are also expected to be congested, including the New Youngs Bay Bridge (US 101) and Old Youngs Bay Bridge (US 101 Business).

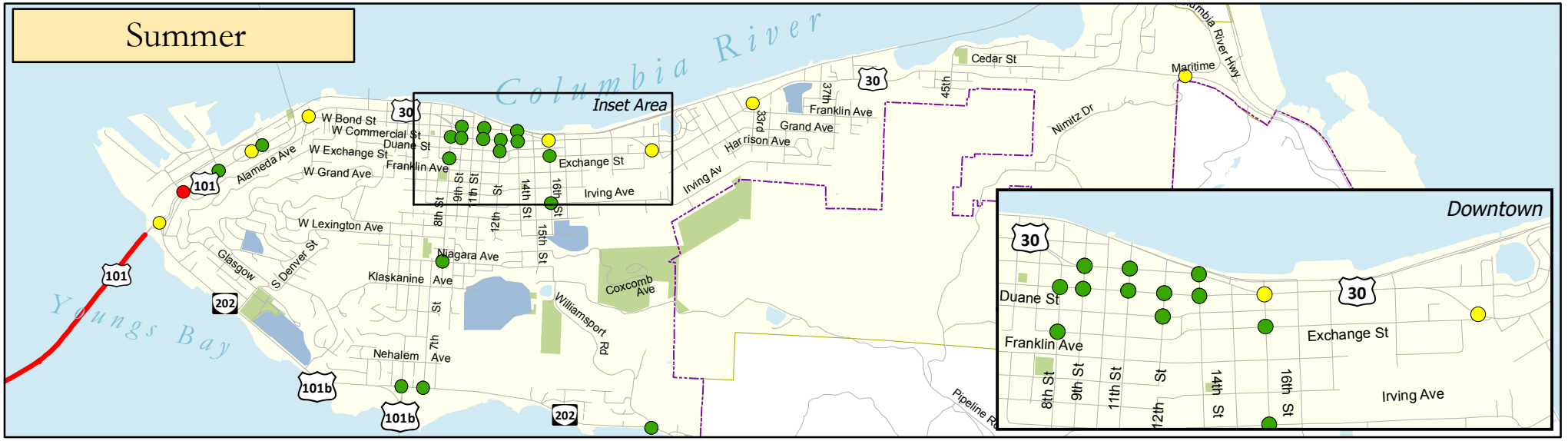
2035 Baseline Summer intersection operations can be seen in Table 1 and summarized in Figure 4. With the increased street network congestion, one of the reviewed intersections (US 101/ Hamburg Avenue) is expected to be substandard by 2035 during the evening peak period. As this intersection is unsignalized and along a State highway, the side streets generally experience high delay due to steady volumes on the uncontrolled roadway. These approaches typically require more time for an acceptable gap in traffic to make a left turn onto the mainline, therefore, the delay of the side street is high and the intersection becomes substandard. In addition, the US 30-Commercial Street/8th Street, US 30/16th Street, US 30/Exchange Street, and US 30/Nimitz Drive-Maritime Road intersections are expected to operate with a level of service "F" for the side street, even though they are expected to meet ODOT's v/c target. This will likely cause high delays for the side streets, potentially encouraging drivers to be more aggressive when attempting to turn onto the mainline.

2035 Baseline Average Weekday intersection operations (shown in Table 1) are generally better than the peak seasonal operations at all intersections reviewed. Nearly all intersections comply with intersection mobility targets, with the exception of the US 101/Hamburg intersection. Similar to the summer conditions, the side street at this intersection (Hamburg Avenue) generally experiences a high v/c ratio due to limited capacities of the stop-controlled approach to a high volume uncontrolled roadway (US 101).

Table 1: Intersection Operations (2035 p.m. peak)

Intersection	Mobility Target	Summer v/c Ratio	Summer LOS	Average Weekday v/c Ratio	Average Weekday LOS
Signalized or Roundabout Intersections under ODOT Jurisdiction					
US 101/OR 202-US 101 Business**	0.85	0.84	C	0.72	B
US 101/Portway Street	0.85	0.61	A	0.48	A
US 101-US 30/Astoria-Megler Bridge	0.85	0.81	C	0.70	C
US 30/Basin Street	0.85	0.51	A	0.44	A
US 30/Bond Street-Columbia Avenue	0.85	0.65	C	0.61	C
US 30-Commercial Street/9th Street	0.85	0.52	B	0.41	B
US 30-Marine Drive/9th Street	0.85	0.56	B	0.45	B
US 30-Marine Drive/11th Street	0.85	0.49	A	0.40	A
US 30-Commercial Street /11th Street	0.85	0.55	A	0.46	A
US 30-Commercial Street /12th Street	0.85	0.47	A	0.39	A
US 30-Commercial Street /14th Street	0.85	0.54	A	0.43	A
US 30-Marine Drive/14th Street	0.85	0.37	A	0.30	B
US 30/33rd Street	0.85	0.80	B	0.73	B
Unsignalized Intersections under ODOT Jurisdiction* **					
OR 202/Williamsport Road	0.90	0.15	B	0.10	B
OR 202/7th Street*	0.95	0.27	B	0.22	B
OR 202/5th Street	0.95	0.49	C	0.47	D
US 101/Hamburg Avenue	0.95	**>1.20**	F	**>1.20**	F
US 30-Commercial Street/8th Street	0.95	0.38	F	0.26	E
US 30/16th Street	0.95	0.74	F	0.41	D
US 30/Exchange Street	0.95	0.77	F	0.72	E
US 30/Nimitz Drive-Maritime Road	0.90	0.85	F	0.66	F
Signalized Intersections under Astoria Jurisdiction					
Duane Street/11th Street	0.95	0.28	B	0.25	A
Unsignalized Intersections under Astoria Jurisdiction* **					
Exchange Street/16th Street	0.95	0.68	C	0.58	C
Irving Avenue/16th Street	0.95	0.14	C	0.13	B
Exchange Street/8th Street	0.95	0.20	B	0.19	B
Niagara Avenue/8th Street*	0.95	0.37	C	0.42	C

Note: *Intersection modified to allow for HCM capacity analysis
**NCHRP Report 572 Roundabout Analysis utilized
***V/C ratio and LOS reported for the stop or yield controlled approach
Bolded Red and Shaded indicates intersection exceeds mobility standard



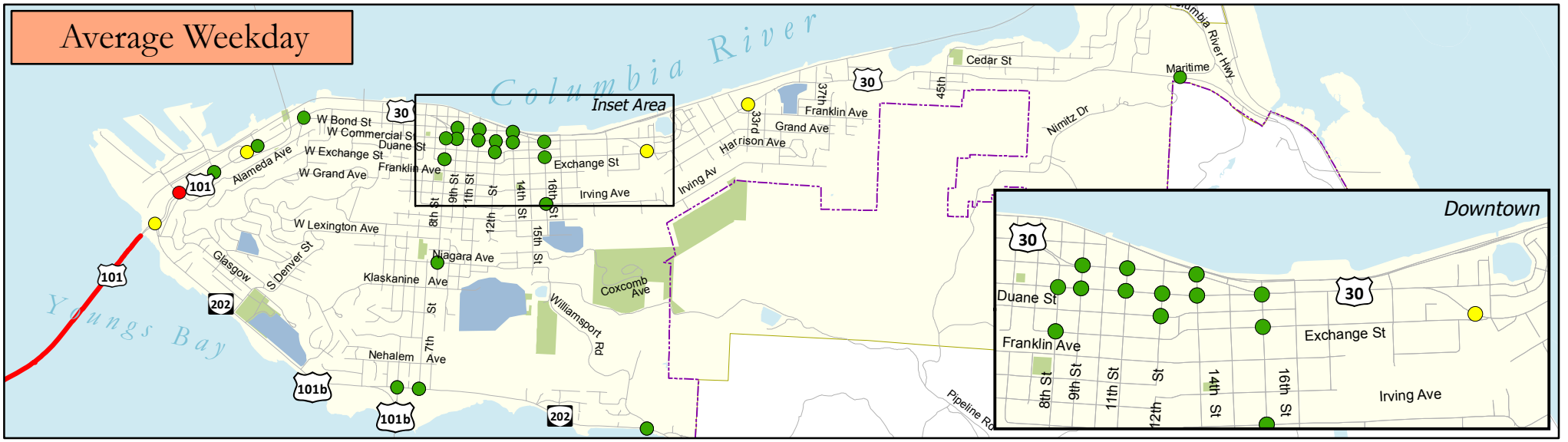


Figure 4: 2035 Motor Vehicle Operating Conditions (PM Peak)

City of Astoria

Transportation System Plan

Legend

2035 Baseline Intersection Operations

- Good
- Marginal
- Substandard

2035 Baseline Roadway Needs

- Substandard Roadway

- Astoria City Limit
- Astoria Urban Growth Boundary
- Park
- School

Where are Transportation Improvements Needed?

After reviewing the expected growth throughout the City and considering existing gaps and deficiencies of the transportation system, locations needing improvements were identified to meet the expected travel demand. Walking and biking needs were previously identified in a supplemental memorandum, and therefore will not be discussed here.

Driving Needs during an Average Weekday

Intersection capacity deficiencies during an average weekday (see Table 1 for more detail) are expected at the US 101/Hamburg Avenue intersection by 2035 (see Figure 4).

In addition, the US 30/Nimitz Drive-Maritime Road intersection is expected to operate with a level of service "F" for the side streets.

Street capacity deficiencies[1] **during an average weekday** are expected by 2035 along New Youngs Bay Bridge (US 101) between Astoria and Warrenton (see Figure 4). However, no street capacity deficiencies are expected to occur within the City limits of Astoria.

Driving Needs during the Summer

Intersection capacity deficiencies during an average weekday (see Table 1 for more detail) are expected at the US 101/Hamburg Avenue intersection by 2035 (see Figure 4).

In addition, the US 30-Commercial Street/8th Street, US 30/16th Street, US 30/Exchange Street, and US 30/Nimitz Drive-Maritime intersections are expected to operate with a level of service "F" for the side streets.

Street capacity deficiencies[2] **during the summer** are expected by 2035 along New Youngs Bay Bridge (US 101) between Astoria and Warrenton (see Figure 4). However, no street capacity deficiencies are expected to occur within the City limits of Astoria.

Alternate Mobility Targets

The US 101/Hamburg Avenue intersection is expected to be substandard by 2035 (as detailed in the previous sections). However, there are improvements for this location (e.g., traffic control or local street circulation changes) that could allow mobility targets to be met. As all other study facilities were found to meet mobility targets under the 2035 No-Build conditions, alternate mobility targets are not recommended to be pursued at this time.

[1] The raw model v/c plots for the evening peak periods were reviewed as a qualitative assessment but detailed link capacity analysis was not performed.

[2] Ibid

Through the alternatives evaluation process for this plan, the community may desire exploring significant changes to traffic circulation, roadway function, and/or roadway design to address goals such as promoting the downtown business core or improving the pedestrian/bicycle environment. Through that evaluation there may be a need to discuss acceptable levels of congestion and mobility targets and how they balance the other desires of the community. At that time, alternate mobility standards or other state facility designations (e.g., a Special Transportation Area) may be part of a community-preferred solution.

Safety Needs

The crash rates at two intersections (US 101/OR 202-US 101 Business and US 30-Commercial Street/8th Street) were identified as high collision locations. In addition, the following locations were identified as a high collision roadway segments (top ten percent of State highways in Oregon). All of the following roadways are owned and maintained by ODOT:

- **US 30 from Columbia Avenue-Bond Street to 11th Street:** This segment includes the high collision location at the US 30-Commercial Street/8th Street intersection and the US 30 (Marine Drive and Commercial Street) segment exceeding the Statewide average collision rate. There is generally a high amount of pedestrian and bicycle activity, in addition to turning and parking maneuvers in this segment that could be contributing to the amount of collisions.
- **US 30 from west of 29th Street to 30th Street:** This high collision segment generally includes several accesses over a short distance which could be contributing to the amount of collisions.
- **OR 202 from US 101 Business to 8th Street:** This high collision segment includes the intersection of two State highways (OR 202 and US 101 Business) and generally includes several accesses over a short distance, both of which could be contributing to the amount of collisions.

Transit Needs

- **Limited number of bus stops with shelters and other amenities:** Of the 22 bus stops in Astoria, 14 provide shelter from weather. Given the rainy climate of the Pacific Northwest Coast, additional sheltered bus stops and route schedules on signs would increase the comfort of existing riders and encourage others to take transit.
- **Transit service gaps and frequency:** The residential areas of Astoria south and west of downtown are outside of comfortable walking or biking distance to transit stops. Also, with bus headways of an hour or greater, transit use can be difficult.
- **Transit service in growth areas:** Areas of the City located in a major residential and/or employment growth area should incorporate transit amenities and ensure pedestrian and bicycle connectivity in preparation for transit service.

Transit priority locations were identified to determine potential investments in the network that would enhance access to bus stops. Figure 5 shows the location of bus stops in Astoria and includes a ¼ mile buffer around each stop to indicate the areas of the City within comfortable walking distance to existing bus stops. As shown, many Astoria residents live greater than ¼ mile walking distance from a bus stop. While biking can increase access to transit for people living in neighborhoods distant from bus stops, gaps in the existing bicycle network and a lack of bicycle parking near stops limits the attractiveness of biking to transit.

The availability of roadway crossing opportunities is another factor that could limit access to transit. The existing bus stops in Astoria are not always located near an enhanced pedestrian crossing. Bus

stops throughout the City could benefit from enhanced crossings and would increase the general pedestrian friendliness of the streets.

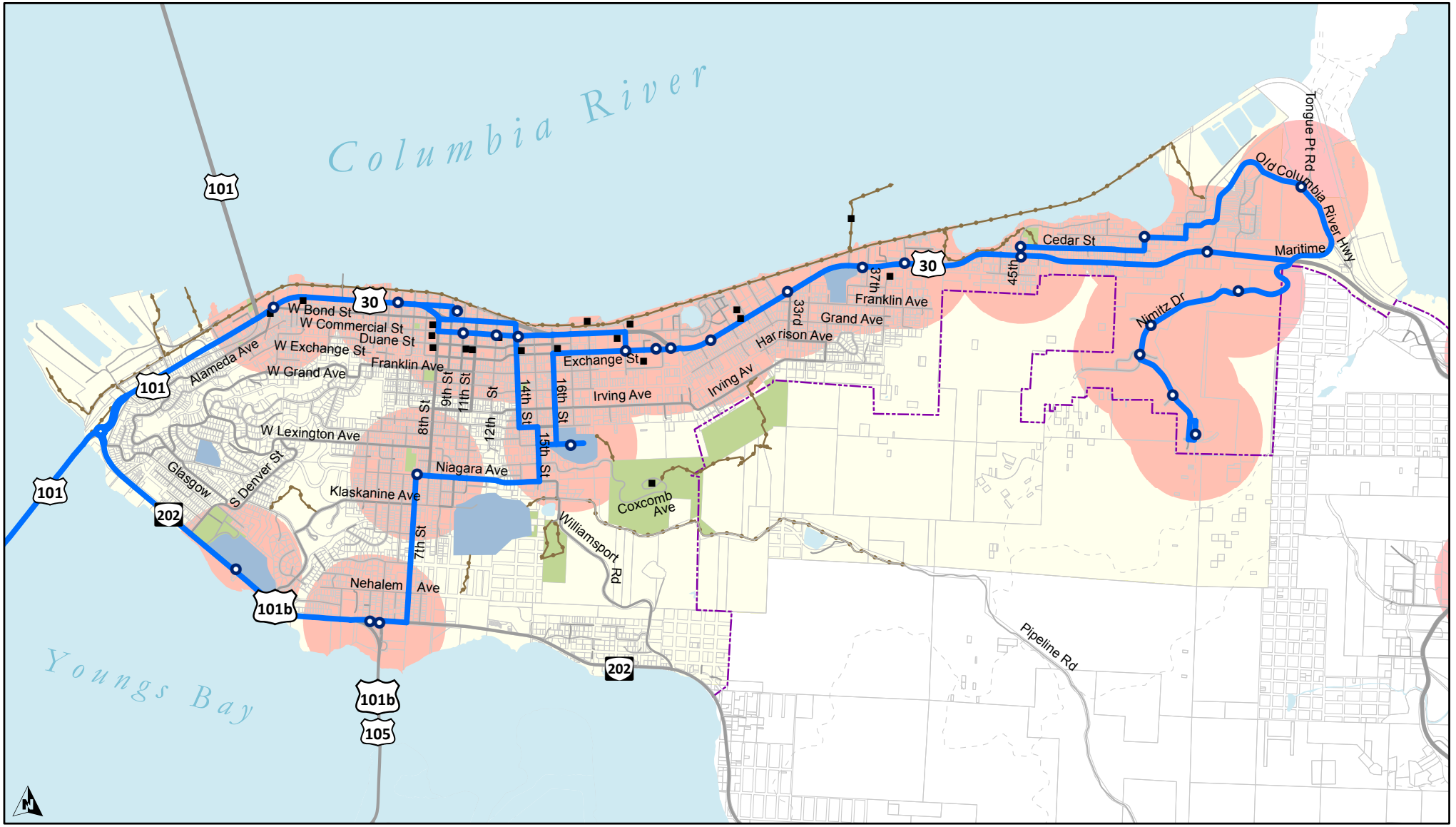


Figure 5 : Transit Priority Locations

City of Astoria

Transportation System Plan

Legend

- Bus Stop
- Bus Route
- 1/4 - Mile Buffer
- Parcel
- Point of Interest
- Astoria City Limit
- Astoria Urban Growth Boundary
- Park
- School
- Multi-Use Path

Freight Needs

Portions of the US 30 State freight route/Federal truck route and the New Youngs Bay Bridge federal truck route (US 101) are expected to exceed capacity during the evening peak hour by 2035 (as dictated by the forecasted 2035 traffic volumes). In addition, improved truck access to the Port of Astoria, Uniontown, and Tongue Point locations are needed, including at the US 101/Hamburg Avenue, US 101/Portway Street, and US 30/Nimitz Drive-Maritime Road intersections.

Circulation improvements are also needed at the US 30-Commercial Street/8th Street intersection. This intersection has an unusual configuration that results in a left turn for the through highway traffic. This maneuver is difficult for trucks without occupying both travel lanes.

Transportation System Management and Operations Needs

Performance of the existing transportation infrastructure could be improved through a combination of transportation system management (TSM) and transportation demand management (TDM) strategies and programs.

Transportation System Management (TSM): Astoria has several regional roadway facilities that serve the City and neighboring communities (US 101, US 30, and OR 202). These roadways could benefit from improved TSM infrastructure. Opportunities include:

- Expanding the communications infrastructure along streets or at intersections concurrent with capacity or other improvements (such as fiber optic cable).
- Updating or incorporating coordinated time of day traffic signal control plans at intersections along US 30.
- Improving access spacing along major roadways. An access inventory was conducted along US 30 from the Astoria-Megler Bridge to Nimitz Drive-Maritime Road in Astoria, comparing the number of existing approaches (driveways and public streets) to applicable ODOT standards. Each of the segments along US 30 has more driveways and public street approaches than allowed to comply with the access spacing standards.

Transportation Demand Management: Opportunities to expand TDM measures in Astoria include:

- Improved street connectivity
- Investing in pedestrian/bicycle facilities
- Improved amenities and access for transit stops

Air, Rail, Pipeline and Water Needs

Astoria is surrounded on three sides by the Columbia River and Youngs Bay waterways. These waterways not only serve recreational needs and provide scenic beauty, but provide for an economic engine for Astoria's economy. The Port of Astoria operates three piers and a marina in the Uniontown area of northwest Astoria, one pier at 36th Street and five piers at Tongue Point in northeast Astoria.

Railroad tracks are available in Astoria, just north of US 30 along the Columbia River. The tracks are owned by Burlington Northern Sante Fe east of Tongue Point, however, no freight service is provided. West of Tongue Point, the City owns the tracks through the Federal Rails-to-Trails Act. Local seasonal passenger rail service is provided via the Astoria Riverfront Trolley on the tracks between Portway Street and 39th Street. However, in order to provide service through 2035, improvements to the existing rail facilities are needed. The Port of Astoria would like to reintroduce freight rail to Tongue Point. This would require sidings for loading and unloading of the rail cars, and a possible engine front/back or engine turnaround. In addition, improvements to the track would be needed to accommodate the freight rail service.

There were no system investment needs identified for Astoria's air or pipeline system through 2035.

Menu of Potential Solutions

A variety of potential improvements to address the needs of the transportation system through 2035 are displayed in Table 2. Blue shading indicates potential solutions for improving transit and green shading indicates potential solutions for improving driving in Astoria.

Table 2: Menu of Potential Solutions for the Transportation System

Transit Stop Enhancements Provision of passenger amenities at bus stops creates a more pleasant and attractive environment for bus riders and may encourage people to use the transit system. Common amenities include: shelters, benches, trash cans, and bus route information. Shelters should be placed at least 2 feet from the curb when facing away from the street and at least 4 feet away when facing toward it. The adjacent sidewalk must still have a 5-foot clear passage. Orientation of the shelter should consider prevailing winter winds.	
Construct Bus Pullouts Bus pullouts allow transit vehicles to pick up and drop off passengers in an area outside the traveled way and are generally provided on high-volume and/or high-speed roadways. They are frequently constructed at bus stops with a high number of passenger boardings such as large shopping centers and office buildings. By removing stopped buses from travel lanes, delay to traffic is considerably reduced and safety is enhanced by removing an obstruction from the traveled way. They also help better define bus stop locations, can be used for bus layovers, and create a more relaxed environment for loading and unloading.	

Construct Turn Lanes to separate Turning Vehicles from Through Traffic

The provision of turn lanes (left or right) removes slowing or stopped vehicles attempting to turn off of a roadway from faster moving through traffic. This not only provides significant safety benefits, but also enhances system capacity.

Modernization to meet Design Standards

The modernization of a roadway generally refers to upgrading elements to meet current design standards and capacity needs. Outdated roadway designs may not be serving present day demands due to insufficient number and width of lanes, poor geometry, or failure to accommodate a particular mode of travel (e.g., no bike lanes).

Intersection or Roadway Capacity Enhancements

Capacity improvements may include roadway widening, intersection control modification (such as installation of a roundabout), or other capacity enhancements.

Modify Intersection Approach Geometry

When the configuration of through and turn lanes at intersection approaches does not properly reflect the demand for these movements, the right of way at signalized intersections cannot be efficiently utilized. Also, poor alignment of opposing lanes or mismatched left turn treatments often require signal phasing that may not be the most effective option for maximizing through capacity. By reconfiguring the number and type of lanes approaching a signalized intersection, significant improvements in capacity can be achieved.

Signal Timing Enhancements

The assignment of right of way to competing movements at an intersection plays a critical role in the overall capacity of that intersection and the roadway itself. Old signal timing plans may not be appropriately serving current demands or may not be designed to accommodate fluctuating demands throughout the day or week. Also, timing plans can be created based on specific priorities, such as giving preference to the mainline during peak travel periods. Coordinated timing plans may allow for better progression through mainline corridors. In some situations, signal timing may be adequate, but adjacent signals are not equipped to communicate with each other or are too close together to coordinate properly.

Intelligent Transportation Systems (ITS)

Intelligent Transportation Systems (ITS) come in many forms and have numerous applications. In general, they include any number of ways of collecting and conveying information regarding roadway operations to agency staff managing the facility or even to motorists. This can allow both operators and motorists to make informed decisions based on real-time information, leading to quicker responses to incidents, diversion away from congestion, and increased efficiencies in roadway operation.

Restriction of Left Turns at Traffic Signals

Because left turn and through movements are often competing for limited right of way, the removal of left turns from an intersection, either completely or during a specific time of day, can significantly improve through traffic capacity.

Restrict Turning Movements at Approaches

The number of conflict points on a roadway introduced by a particular approach can be significantly reduced by restricting turn movements, such as allowing only right-in and right-out movements, allowing only right-in movements, or prohibiting only left-out movements (as shown in graphic).

Construct Non-traversable Medians

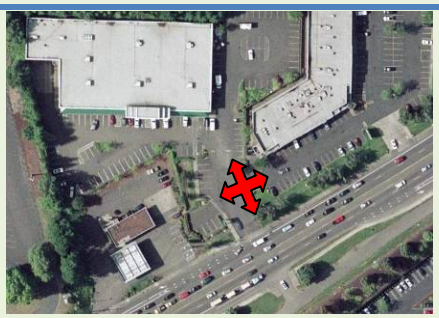
The construction of non-traversable medians is a means of reducing the number of conflict points introduced on a roadway by approaches. Non-traversable medians can be simple concrete islands or barriers or can be constructed to include landscaping or other decorated treatments. Stamping colored concrete with a brick or rock pattern is a simple median treatment that may be more aesthetically pleasing than plain concrete. They can also be used to accommodate pedestrian refuges or can have breaks allowing for limited or full turning movements.

Provide Alternate Access through Improved Local Street Connectivity

Reasonable alternate access can be provided where it does not currently exist by constructing new roadways adjacent to properties that abut a high volume roadway. Such roadways can take the form of frontage roads, backage roads, or can simply be new collector or local streets.

Move Approaches to Lower Volume Facilities

This treatment is often a good option for properties fronting high volume streets (such as US 30) and that have frontage along an alternate roadway of a lower volume. However, where existing site circulation or building locations create a dependency for the pre-existing access, the ability to change site access may require total or partial site redevelopment. Also, before access is reestablished to a side street, it should be confirmed that there would be adequate separation between the new driveway and the intersection with the high volume roadway to avoid turning conflicts or frequent obstruction by vehicle queues.

Consolidate Multiple Approaches to Single Properties A common method of reducing approach density is to eliminate multiple approaches to a single property where feasible. This can be done where it has been determined that the property can adequately be served with fewer approaches than it currently maintains. However, where existing site circulation or building locations create a dependency for the pre-existing roadway access, the ability to change site access may require total or partial site redevelopment.	
Create Shared Approaches to Properties using Easements Sharing an approach to a roadway is a means of consolidating approaches while providing direct access to properties that might not otherwise have it. This tool is most advantageous when applied between two "landlocked" properties that have no other means of reasonable access than to a high volume roadway. Such properties would typically be provided their own approach. However, when a shared approach can be arranged, the end result is only one approach to the roadway rather than two.	

Section I: Memo 8- Stakeholder Interview Summary #1

Section I: Memo 8- Stakeholder Interview Summary #1

Draft Memorandum

Date:	June 20, 2012
To:	Astoria TSP Update Project Management Team
From:	Chris Maciejewski, P.E., P.T.O.E., DKS Associates Kevin Chewuk, DKS Associates
Subject:	**Astoria Transportation System Plan Update** **Stakeholder Interviews #1**

Stakeholder Interviews

Project staff met face to face with eleven Astoria residents between May 14th and 15th 2012. The purpose of the meetings was to identify the transportation needs that stakeholders feel are the most important in Astoria and to gather input on potential improvements that are needed to the transportation system. This document summarizes the outcome of those meetings, with input provided from the following eleven residents:

- Andy Rasmussen, Engineer with National Park Service and Bicycle advocate
- Dulcye Taylor, Astoria Downtown Historic District Association
- Erik Thorsen, Columbia Memorial Hospital
- Herb Florer, Port of Astoria
- Jim Scheller, Trails and Pedestrian and Bicycle advocate
- Kurt Englund, Business Owner- England Marine and Industrial Supply
- Mitch Mitchum, Astoria Trolley
- Rae Goforth, President of Uniontown Association
- Skip Hauke, Chamber of Commerce
- Tita Montero, Tongue Point Job Corps Center
- Zetty McKay, Astoria Traffic Safety Committee and Planning Commission President

Downtown

Downtown Walking and Biking

Stakeholders feel the following locations need to be reviewed for walking and biking improvements:

- Consider sight distance improvements or advanced pedestrian walk indications for side streets downtown.
- Sidewalks in downtown are in decent shape, except along Marine Drive near 9th Street.
- The Commercial Street/8th Street intersection is a problem for pedestrians. Trucks sometimes drive onto the sidewalk when attempting to make the turn.
- Long-term bike parking, such as bike lockers, are not in convenient locations and not well signed.
- Bikers often have conflicts with drivers parking downtown.

Downtown Parking

Stakeholders made the following comments and/or suggestions regarding parking downtown:

- Diagonal parking would be desirable, such as along Duane Street.
- The surface parking lot bounded by 11th, 12th, Duane, and Exchange Streets will be removed with the development of Heritage Square.
- Consider improving the surface parking lots at the northeast end of downtown, with improved way finding signage. Consider charging for the surface parking lots or creating a program that enables downtown businesses to validate parking costs for customers.
- The current fine for exceeding parking limits downtown is only $5. Consider increasing the fine to discourage drivers from exceeding the parking limits.
- Need to identify and develop secure, well-lit connections between downtown and the parking areas. Some employees/customers would rather pay a $5 fine than walk to parking farther away.
- Parking supply isn't a real problem; drivers just do not want to walk a few blocks to get their destinations.

Downtown Travel Speeds/Safety

Stakeholders feel the following locations need to be reviewed for safety and/or speeding:

- Need traffic control/stop lights/signal timing adjustments downtown to slow cars and trucks.
- Consider driver speed feedback signs, but need to clearly show the expected safety

benefit of the investment.

- The Commercial Street/8th Street intersection is a problem. There is limited sight distance and drivers often take the corner to fast. The intersections needs better signage to warn drivers of the sharp left-turn.
- Drivers at the US 30/16th Street and US 30/Exchange Street intersections have difficulties making northbound lefts onto US 30. Consider roundabouts at these intersections.

Downtown Travel Patterns

Stakeholders suggested that the travel patterns be modified or reviewed at the following locations:

- Consider modifying the couplet to make Duane Street one-way eastbound, with Marine Drive remaining one-way westbound. Commercial Street should be converted to two-way travel. The vacant lot at the northeast corner of the Duane Street/8th intersection can be utilized for a more manageable curve than the existing one on Commercial Street. Duane Street can reconnect with US 30 at the vacant lot between 16th and 17th Streets.
- The local one-way streets are confusing. Need a clear pattern and transition point between one-way and two-way streets.
- Bond Street should be re-opened to two-way traffic.

Walking

Street Crossings

Stakeholders want improved street crossings at the following locations:

- Between the neighborhoods and the river, including through Uniontown, near the hospital, Maritime Museum, the Mill Pond Development, and around 6th Street, 8th Street and 45th Street.
- US 30/Bay Street intersection: The flashers have helped, but many drivers still fail to yield for pedestrians.

Sidewalks

Stakeholders feel sidewalk improvements are needed at the following locations:

- Along Lexington Avenue, Grand Avenue, Coxcomb Drive and Irving Avenue.
- A signed and improved walking route is needed from downtown to the Astoria Column.

Biking

Bike Lanes/Enhanced Facilities

Stakeholders feel biking improvements or enhancements are needed at the following locations:

- Consider bicycle boulevard treatments along Bond Street and Irving Avenue.
- Incorporate bike way finding signage to destinations throughout the City.
- The Astoria Riverwalk trail surface needs to be improved for bicyclist.
- Key biking routes include the bridges, Marine Drive, 11th Street, 8th Street and Williamsport Road.
- Consider making Old Youngs Bay Bridge the main biking route across Youngs Bay, with adequate bike facility connections, signage and treatments to and along the route.
- Improved signage is needed at the US 101/OR 202 roundabout to direct bicyclists how to maneuver.

Bike Parking

Stakeholders feel long-term bike parking is needed at the following locations:

- Covered, secure long-term bike parking is needed at Clatsop Community College.
- Consider updating the City code to require long-term, covered bike parking at major destinations throughout the City.

Shared-Use Paths/Trails

Stakeholders want shared-use paths or trails to be considered at the following locations:

- Between the Astoria Riverwalk and the Astoria Column.
- Along OR 202 between 7th Street and the high school.
- Between Lexington Avenue and OR 202, near the high school.
- From the Alderbrook neighborhood and Tongue Point area of Astoria to the Astoria Riverwalk.
- Along Commercial Street between 3rd Street and Hume Avenue.

Driving

Safety

Stakeholders identified safety issues along the following streets or at the following locations:

- Marine Drive/Bay Street and Marine Drive/Hamburg Street: Drivers have a difficult time turning onto Marine Drive from these streets.
- Old US Highway 30/US 30 intersection: Turning onto US 30 is difficult. ODOT has plans to close this intersection.
- Exchange Street: It divides the Columbia Memorial Hospital Campus, consider

traffic calming to discourage through traffic.

- US 101/OR 202 roundabout: Drivers don't always yield when entering the roundabout.
- US 30/Columbia Avenue-Bond Street: Consider modifying the 5-leg intersection.

Street Extensions/Upgrades

Stakeholders would like street extensions or upgrades to be considered at the following locations:

- Gateway Street between Portway Street and Columbia Avenue, in Uniontown.
- Bay Street between US 30 and Portway Street, to support tourism in Uniontown.
- Between US 30 and Tongue Pont.
- Franklin Avenue between 26th Street and 18th Street, for improved ambulance and employee access to the Columbia Memorial Hospital Campus.

Congestion

Stakeholders identified congestion along the following street or at the following locations:

- Along US 30, between 33rd Street and 16th Street throughout the year.
- Along US 30 at the 36th Street pier: There are seasonal parking problems and associated congestion on US 30 at the 36th Street pier.
- US 30/33rd intersection: This intersection has the most congestion in the City, however, congestion is overall not bad in Astoria.

Transit

Astoria Trolley

Stakeholders provided the following information regarding the Astoria Trolley:

- The Astoria Trolley is used by approximately 10 percent of riders for transit, and 90 percent for recreation. It carries about 40,000 passengers each year and does not run on a fixed schedule. There are no significant 20 year needs or planned route extensions. Demand is high when a cruise ship is in port.
- The Astoria Trolley has a GPS tracker installed so riders can track its location.
- The shared alignment between the Astoria Trolley and the Riverfront Trail is not an issue due to low usage of the trail.
- Replacing the planks on the boardwalk would not impact the Astoria Trolley operations.

Bus Service

Stakeholders provided the following information regarding bus service in Astoria:

- The Tongue Point Job Corps Center has their own bus system, and students often rely on transit. The Sunset Empire Transportation District also offers a stop at the main gate to the Job Corps facility.
- Temporary bus service is provided connecting the cruise port to downtown when cruise ships are in.

Port of Astoria/Freight

Uniontown

Stakeholders provided the following information regarding freight travel in Uniontown:

- Trucks access the port via Hamburg Avenue and leave via Portway Street.
- The eastbound left to Hamburg Avenue can sometimes queue into the US 101/OR 202 roundabout. Consider adding a fourth leg to the US 101/OR 202 roundabout to provide an additional Uniontown access for freight.
- Portway Street and Bay Street will need upgrades to improve freight access, including turn lanes.

Tongue Point

Stakeholders provided the following information regarding freight travel in Tongue Point:

- Truck access to Tongue Point is difficult due to tight turns. The only access will be via Nimitz Drive once the east access point is closed.
- There is some interest in a major exporting cargo facility at Tongue Point. Need upgraded street connections to support development.
- Need upgraded rail connection for freight transfers between Portland and Astoria.

Other

Stakeholders provided the following information regarding freight travel throughout Astoria:

- The causeway at 36th Street needs to be replaced.
- The Port is looking to reintroduce commercial flights to the Astoria Regional Airport.
- The Commercial Street/8th Street intersection needs to be straightened out, trucks cannot make the turn.
- Better signage is needed from the highway to the Port of Astoria. Once on-site, signage is needed to the various destinations.

Section J: Memo 9- Alternative Evaluation

Section J: Memo 9- Alternative Evaluation

Memorandum #9

Date:	April 05, 2013
To:	Astoria TSP Update Project Management Team
From:	Chris Maciejewski, P.E., P.T.O.E., DKS Associates Kevin Chewuk, DKS Associates
Subject:	**Astoria Transportation System Plan Update Alternatives Evaluation**

This document details the transportation system investments needed to accommodate future travel in Astoria. Included is a summary of the process utilized to develop and analyze the solutions for the transportation system and a detail of the project scenarios identified to improve the transportation system in the city.

The Solutions Identification Process

Astoria understands that transportation funding is limited and recognizes the importance in being fiscally responsibility in its approach to enhancing the transportation system. In the past, a typical transportation planning response to congestion was to expand streets, creating significant barriers to walking and biking and detracting from the livability, health, safety and fiscal wellbeing of the community.

The Astoria approach for this update places more value on investments in smaller cost-effective solutions for the transportation system rather than larger, more costly ones where practical. The approach identifies solutions to accommodate future travel demand by following a four-step process (as shown in Figure 1) considering solutions from top to bottom until a viable solution is identified. Taking a multi-modal network-wide approach to identifying transportation system solutions, the projects fall within one of four categories, as detailed below:

- **Manage** the performance of congested or unsafe locations with strategies that reduce traffic conflicts, increase safety, and encourage more efficient usage of the transportation system.
- **Reduce** the driving demand at congested locations by improving walking, biking and transit options.
- **Extend** streets to create parallel routes that will reduce the driving demand on the congested facility.

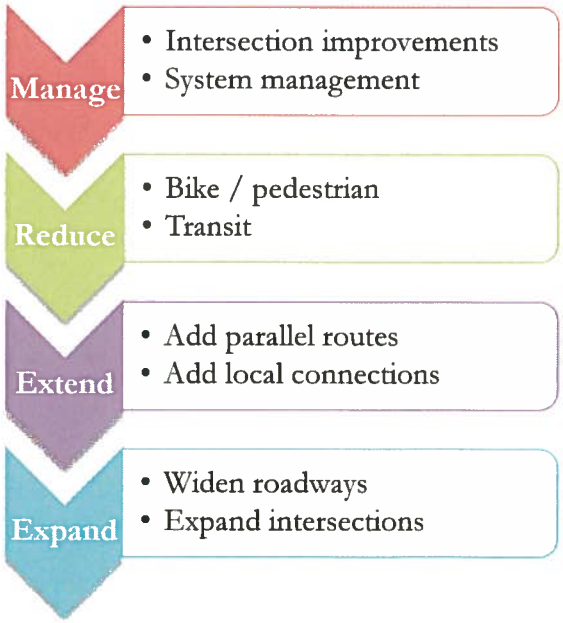


Figure 1: Solutions Identification Process

- **Expand** existing streets or intersections to increase the driving capacity of the facility.

The approach enables more cost-effective solutions to improve transportation system operations and helps to encourage multiple travel options, increase street connectivity and promote a more sustainable transportation system.

Community Priorities

The projects and/or policies in the four categories listed above aim to satisfy the goals and objectives for the Astoria TSP Update. Each transportation solution was evaluated to see how the community priorities (based on the project goals and objectives) match the perceived project benefits and shortfalls. A variety of transportation evaluation criteria and measures were derived from the community priorities and used to evaluate and compare the solutions to one another. The goals, objectives and evaluation criteria established for Astoria can be found in Technical Memorandum #3 - Goals, Objectives and Evaluation Criteria. Table 1 illustrates the relative benefit of each category in relation to the Astoria TSP goals.

Overall, as shown in Table 1, solution categories that "Manage" and "Reduce" are most important to emphasizing a livable, sustainable, and fiscally responsible transportation system. The "Extend" and "Expand" categories are most important to supporting travel choices and ensuring economic vitality.

Table 1: Relationship between TSP Goals and Solution Categories

	Transportation Solution Category			
TSP Goals	Manage	Reduce	Extend	Expand
Health and Safety	✓	✓✓	✓	✓
Travel Choices	✓	✓✓	✓✓	✓✓
Economic Vitality	✓		✓✓	✓✓
Livability	✓✓	✓✓	✓	
Sustainability	✓✓	✓✓		
Fiscal Responsibility	✓✓	✓✓	✓	✓
Compatibility	✓	✓	✓	✓

✓ Beneficial ✓✓ Most Beneficial

Planned but Unconstructed Projects

Transportation projects which were previously planned but have not been constructed were reviewed to identify overlap with the known gaps and deficiencies of the transportation system. The previously planned projects that would complement the goals and policies of the Astoria TSP Update were carried forward with this TSP update, while other projects were modified to provide a better complement. The solutions that were identified as project needs that would adequately meet the goals of this TSP update are shown in the Attachment 1. The solutions that do not complement the goals and policies of the Astoria TSP Update were not recommended as solutions in this TSP

update, and can also be found in the Attachment 1. The existing planned projects carried forward with this TSP update are also included in the aspirational scenarios detailed in the following sections.

Aspirational Scenarios

Four aspirational scenarios were developed that include a set of potential transportation projects with an unconstrained budget. The scenarios consist of a combination of new and previously planned solutions (identified in Attachment 1) for the transportation system that attempt to address the gaps and deficiencies previously identified in Technical Memorandum #7- Future Needs Analysis. The four scenarios are based on the solution categories detailed earlier in this document.

Scenario 1: Manage the transportation system

The first scenario evaluated the existing transportation system with a set of solutions and strategies that attempts to manage the performance of congested locations by reducing traffic conflicts, increasing safety, and encouraging more efficient usage of the transportation system. This scenario assumes the following:

- Transportation Systems Management strategies will be applied to improve the performance of the existing transportation infrastructure.
- Intersection safety improvements will be implemented that support the efficient use of existing infrastructure by reducing the avoidance of a given location due to safety-related incidents.
- Intersection operational deficiency improvements will be implemented that support the efficient use of existing intersections by reducing the avoidance of a given location due to congestion.
- Transportation demand management (TDM) measures will be assumed to reduce the driving demand of the transportation system. Opportunities to expand transportation demand management in Astoria include:
    - Develop requirements for long-term bicycle parking for all places of employment, transit stations, park and ride facilities and multi-family residential uses. All other land uses be encouraged to implement the long-term options.

      Long-term parking options include:

        - Lockers, individual lockers for one or two bicycles
        - Racks in an enclosed, lockable room
        - Racks in an area that is monitored by security cameras or guards (within 100 feet)
        - Racks or lockers in an area always visible to employees
    - Support alternative vehicle types by identifying potential electric vehicle plug-in stations and developing implementing code provisions

- Electrical Charging Provisions in Building Code: Include provisions in residential, commercial, and industrial building codes to accommodate future infrastructure needs, including electrical wiring and outlets in parking lots and garages to support future electric vehicle charging stations. Providing the necessary infrastructure to support future installation of electrical charging stations is significantly more economical as part of new development compared to full retrofitting costs (which are at least 25 to 35 percent higher, depending on individual circumstances).
- Level II (240 volt) Electrical Charging Stations: Encourage businesses to install Level II (240 volt) charging stations for use by employees during work hours. Also install a Level II (240 volt) charging station at the Astoria Transit Center for use by commuters who park at the park-and-ride.
- Level III (480 volt) Electrical Charging Station: Pursue grant funding that may become available through the West Coast Electric Highway Initiative or other resource to install a Level III (480 volt) DC fast charging station in downtown Astoria. Astoria can provide a quick electrical charging system for drivers traveling through the City via US 30, US 101 or OR 202. Downtown Astoria may be an ideal location due to its proximity to the regional highways and nearby amenities, which can serve patrons during the 20 to 40 minute vehicle charge times.

- Improved street connectivity (see Scenario 3)
- Investing in pedestrian/bicycle facilities (see Scenario 2)
- Improved amenities and access for transit stops (see Scenario 2)

The solutions recommended for Scenario 1 are summarized in Table 2 and illustrated in Figure 2. The street projects numbered on Figure 2 correspond with the project numbers in Table 2. The project numbers are denoted with a "D" to represent driving improvements.

Table 2: Summary of Scenario 1 Solutions to Manage the Transportation System

Project #	Project Description	Project Extent	Project Elements	Priority	Source
System Management Solutions					
D1	7th Street Road Diet	Niagara Avenue to OR 202	Re-purpose the existing street width to include one travel lane in each direction, on-street parking and bike lanes	-	New Solution
D2	US 101-US 30 Coordinated Signal Timing Plans	US 101-US 30 from Portway Street to Columbia Avenue-Bond Street	Optimize the existing traffic signals by implementing coordinated signal timing plans, upgrading traffic signal controllers or communication infrastructure or cabinets.	-	New Solution
D3	Marine Drive Coordinated Signal Timing Plans	Marine Drive from 30th Street to 33rd Street		-	New Solution
D4	US 30 Speed Warning System	US 30 east of 50th Street	Install a speed warning system that activates when a motorist approaches at a high speed.	-	New Solution
D5	Downtown Traffic Signal Upgrade	Downtown Astoria	Upgrade traffic signal controllers or communication infrastructure or cabinets in downtown Astoria.	-	New Solution
D14	Niagara Avenue Road Diet	7th Street to 15th Street; 3rd Street to 7th Street Optional.	Re-purpose the existing street width to include one travel lane in each direction, on-street parking and bike lanes. The segment from 3rd Street to 7th Street is optional.	-	New Solution
D21	Marine Drive- Columbia to 9th Circulation Option	Marine Drive from Columbia Avenue to 9th Street	Reconfigure Marine Drive to three lanes. Relocate the traffic signal from Commercial/9th Street to Commercial/10th Street	-	New Solution
D39	Downtown Circulation Feasibility Study	Downtown Astoria	Feasibility study to determine if streets in downtown Astoria should be converted to two-way travel	-	New Solution
Intersection Safety Solutions					
D6	US 30/Exchange Street/23rd Street Safety Enhancement	US 30/Exchange Street/23rd Street	Realign 23rd Street to intersect with Exchange Street at US 30; install a traffic signal or roundabout	-	Previous Plan
D7	US 30/45th Street Safety Enhancement	US 30/45th Street	Install eastbound and westbound left-turn pockets on US 30	-	Previous Plan
D8	US 30/54th Street Safety Enhancement	US 30/54th Street	Provide an eastbound left turn pocket on US 30	-	New Solution
D9	US 30/Nimitz-Maritime Road Safety Enhancement	US 30/Nimitz-Maritime Road	Realignment and striping to include northbound and southbound left, and right-turn lanes at US	-	Previous Plan

Table 2: Summary of Scenario 1 Solutions to Manage the Transportation System

Project #	Project Description	Project Extent	Project Elements	Priority	Source
			30, and a westbound right-turn deceleration lane		
D10	US 30/Liberty Lane Safety Enhancement	US 30/Liberty Lane	Realign intersection and provide a southbound left turn pocket on US 30	-	Previous Plan
D11	OR 202/US 101 Business Safety Enhancement	OR 202/US 101 Business	Install a single-lane roundabout; close the 4th Street approach to OR 202	-	Previous Plan
D12	OR 202/7th Street Safety Enhancement	OR 202/7th Street	Modify the traffic control at the intersection to make the OR 202 east/west through movements free and the southbound 7th Street approach stop controlled. Restripe 7th Street to include a southbound left, and right-turn lane at OR 202. The vertical profile on the westbound approach of OR 202 to 7th Street may need to be modified to provide adequate sight distance.	-	New Solution
D13	OR 202/Williamsport Road Safety Enhancement	OR 202/Williamsport Road	Provide an eastbound left turn pocket on US 30	-	New Solution
D15	Irving Avenue/15th Street Safety Enhancement	Irving Avenue/15th Street	Install a stop sign on the southbound 15th Street approach to Irving Avenue.	-	New Solution
D16	Niagara Avenue/7th Street Safety Enhancement	Niagara Avenue/7th Street	Improve intersection control and guidance through signing, striping, or channelization. Consider installation of a mini-roundabout. Coordinate improvements with the Road Diet Concept on Niagara Avenue.	-	New Solution
D17	Niagara Avenue/8th Street Safety Enhancement	Niagara Avenue/8th Street	Improve intersection control and guidance through signing, striping, or channelization. Consider installation of a mini-roundabout. Coordinate improvements with the Road Diet Concept on Niagara Avenue.	-	New Solution
D18	Harrison Avenue/34th Street Safety Enhancement	Harrison Avenue/34th Street	Install a stop sign on 34th Street at Harrison Avenue.	-	New Solution
D26	Williamsport Road/ James Street Realignment	Williamsport Road/ James Street	Realign Willamsport Road at James Street to smooth out the curve	-	New Solution
Intersection Operational Solutions					
D19	US 101/Hamburg Avenue	US 101/Hamburg Avenue	Restrict access to left-in, right-in, right-out only	-	Previous Plan

Table 2: Summary of Scenario 1 Solutions to Manage the Transportation System

Project #	Project Description	Project Extent	Project Elements	Priority	Source
	Capacity Enhancement				
D20	US 30/16th Street Capacity Enhancement	US 30/ 16th Street	Install a traffic signal	-	Modified version of Previous Plan
D22	OR 202/Denver Street Capacity Enhancement	OR 202/Denver Street	Restripe Denver Street to include a southbound left, and right-turn lane at OR 202-US 101 Business	-	Previous Plan

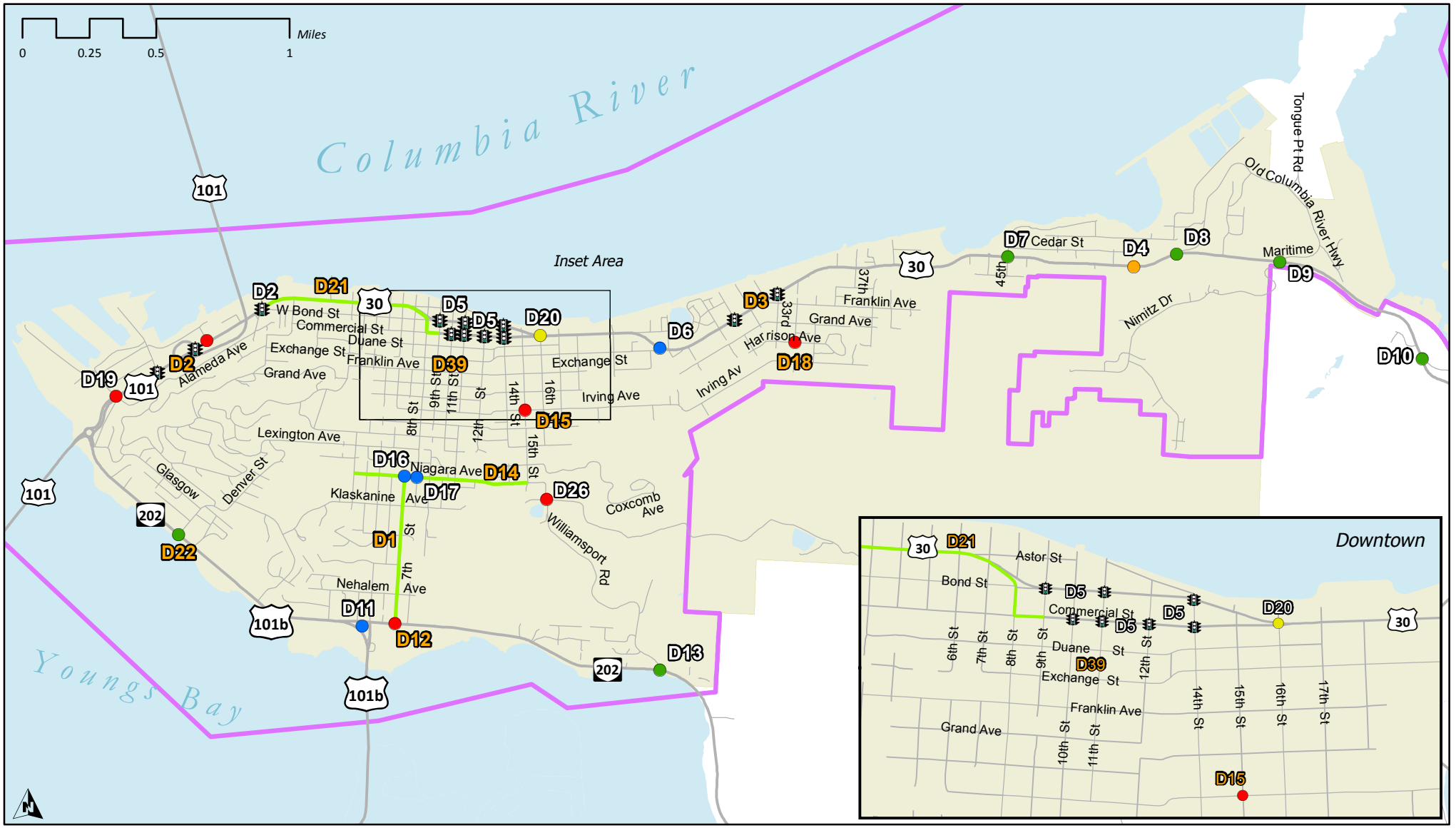


Figure 2 : Planned Street and Intersection Management Solutions

City of Astoria

Transportation System Plan

Scenario 2: Reduce driving demand

Scenario 2 evaluated the existing transportation system with solutions that will help decrease driving demand. This includes the following solutions:

- Sidewalks: Sidewalks are located along roadways, are separated from the street with a curb and/or planting strip, and have a hard, smooth surface, such as concrete. The Oregon Department of Transportation (ODOT) standard for sidewalk width is six feet, with a minimum width of five feet acceptable on local streets. The unobstructed travelway for pedestrians should be clear of utility poles, sign posts, fire hydrants, vegetation and other street furnishings.
- Bike Lanes: Bike lanes are portions of the roadway designated specifically for bicycle travel via a striped lane and pavement stencils. ODOT standard width for a bicycle lane is six feet. The minimum width of a bicycle lane against a curb or adjacent to a parking lane is five feet. A bicycle lane may be as narrow as four feet, but only in very constrained situations. Bike lanes are most appropriate on arterials and collectors, where high traffic volumes and speeds warrant greater separation of travel modes.

  Paved roadway shoulders not specifically designated for bicycle travel, such as those found on OR 202 east of 7th Street, often accommodate bicyclists traveling along rural routes in Oregon. ODOT recommends a six-foot paved shoulder to adequately provide for bicyclists, and a four-foot minimum width in constrained areas.
- Shared Use Paths: Shared-use paths are typically separated from the street and used by a variety of non-motorized users, including pedestrians, bicyclists, skateboarders, and runners. Shared-use paths are typically paved (asphalt or concrete), but unpaved smooth surfaces may also meet Americans with Disabilities Act (ADA) standards. Shared-use paths are usually wider than an average sidewalk (i.e. 10 – 14 feet). The width may be reduced to as little as eight feet where bicycle and pedestrian volumes are expected to be low, good passing opportunities can be provided, and maintenance vehicle loads are not expected to damage the pavement.
- Streetscape Improvements: Streetscape improvements include widened sidewalks, sidewalk infill, Americans with Disabilities Act (ADA) accessibility improvements, bike lanes, reconfigured travel lanes and bus stop amenities.
- Street Crossing Improvements generally provide walking and bicycling connections across major roadways. The street crossings may incorporate marked crosswalks, high visibility crossings, or curb extensions to improve the safety and convenience of street crossings, benefiting both pedestrian and bicycle travel in Astoria.
- Transit solutions to encourage more ridership and to support future transit expansion will be implemented in Astoria. The following transit solutions are recommended:
    - Basic Transit Stop Amenities: Work with Sunset Empire Transit District to add crossings, sidewalks, bus shelters, benches, and lighting at bus stops throughout Astoria.

- Pedestrian and Bicycle Crossings: Pedestrian crossing enhancements were recommended near transit stops.
- Bus Pullouts: Bus pullouts were recommended in high demand locations.
- Future transit service expansion: The planned pedestrian and bicycle network in Astoria will integrate with potential future expansion of the Astoria Riverfront Trolley or bus service.

Proposed solutions to reduce driving demand, including walking, biking and transit solutions, can be viewed in Figures 3 and 4, and are listed in Table 3 below. The projects numbered on Figures 3 and 4 correspond with the project numbers in Table 3. The project numbers are denoted with a "P" to represent pedestrian improvements, "B" to represent biking improvements, "S" for a shared-use path, "CR" for a street crossing or a "T" for a transit solution.

Table 3: Planned Walking, Biking and Transit Solutions

Project #	Project Description	Project Extent	Project Elements	Priority
Walking Solutions				
P1	15th Street Sidewalk Infill	Jerome Avenue to Niagara Avenue	Complete sidewalk gaps on west side of the street.	-
P2	16th Street Sidewalk Infill	Niagara Avenue to Williamsport Road	Complete sidewalk gaps on east of the street.	-
P3	1st Street Sidewalk Infill	W Lexington Avenue to 2nd Street	Complete sidewalk gaps on both sides of the street.	-
P4	2nd Street Sidewalk Infill	Grand Avenue to Franklin Avenue	Complete sidewalk gaps on both sides of the street.	-
P5	8th Street (South) Sidewalk Infill	Kensington Avenue to Madison Avenue	Complete sidewalk gaps on both sides of the street.	-
P6	Alameda Avenue Community Based Solution	West of Melbourne Avenue to Grand Avenue	Develop a Community Based Solution	-
P7	Bond Street Sidewalk Infill	Hume Avenue to West of 2nd Street	Complete sidewalk gaps on both sides of the street. Complete sidewalk on north side to the west of 1st Street and on the south side of to the east of 1st Street.	-
P8	Florence Avenue Sidewalk Infill	Rivington Street to Oregon Street	Complete sidewalk gaps on south of the street.	-
P9	Franklin Avenue Sidewalk Infill	7th Street to 8th Street	Complete sidewalk gaps on south of the street.	-
P10	Grand Avenue Sidewalk Infill	W Lexington Avenue to 2nd Street	Complete sidewalk gaps on both sides of the street.	-
P12	Irving Avenue Community Based Solution	13th Street to 35th Street	Develop a Community Based Solution	-
P13	Leif Erickson Drive (West) Sidewalk Infill	38th Street to 500' west of 43rd Street	Complete sidewalk gaps on south of the street.	-
P14	Leif Erickson Drive (East) Sidewalk Infill	46th Street to 54th Street	Complete sidewalk gaps on north side of the street from 46th to 50th and both sides from 50th to 54th.	-
P15	Marine Drive Sidewalk Infill	26th Street to 27th Street	Complete sidewalk gaps on south of the street.	-
P16	Niagara Avenue Sidewalk Infill	14th Street to 16th Street	Complete sidewalk gaps on both sides of the street. Add sidewalks to the south side of Niagara west of 15th and the north side of	-

Table 3: Planned Walking, Biking and Transit Solutions

Project #	Project Description	Project Extent	Project Elements	Priority
			Niagara east of 15th.	
P17	Niagara Avenue Traffic Calming	7th Street to 16th Street	Traffic calming (i.e., speed humps) to enhance comfort for pedestrians in vicinity of Astoria Middle School.	-
P18	8th Street (North) Sidewalk Infill	100' south of Exchange Street to Grand Avenue	Complete sidewalk gaps on both sides of the street. Add sidewalks to the east side north of Franklin Avenue and both sides from Franklin to Grand.	-
P19	Olney Avenue Sidewalk Infill	4th Street to 7th Street	Complete sidewalk gaps on both sides of the street.	-
P20	Oregon Street Sidewalk Infill	Florence Avenue to Alameda Avenue	Complete sidewalk on east side of the street.	-
P21	S Denver Street Community Based Solution	Clatsop Avenue to Glasgow Avenue	Develop a Community Based Solution	-
P22	Sonora Avenue Community Based Solution	W Lexington Avenue to W Niagara Avenue	Develop a Community Based Solution	-
P23	Vista Drive Sidewalk Infill	Alameda Avenue to W Marine Drive	Complete sidewalk gaps on northwest side of the street.	-
P24	W Grand Avenue Community Based Solution	W Lexington Avenue to 2nd Street	Develop a Community Based Solution	-
P25	W Lexington Avenue Community Based Solution	Alameda Avenue to 2nd Street	Develop a Community Based Solution	-
P27	W Marine Drive Sidewalk Infill	Florence Avenue to 4th Street	Complete sidewalk gaps on both sides of the street. Sidewalks are present on portions of the north side. In the short term, since there are no destinations on the south side, completing gaps on the north side is a higher priority.	-
P28	W Niagara Avenue Sidewalk Infill	Glasgow Avenue to East of Alameda Avenue	Complete sidewalk gaps on both sides of the street. Add sidewalks to the south side of W Niagara Ave between Glasgow and Alameda. East of Alameda, complete sidewalks on the north side.	-
P29	W Niagara Avenue Community	W Clatsop Avenue to Sonora Avenue	Develop a Community Based solution	-

Table 3: Planned Walking, Biking and Transit Solutions

Project #	Project Description	Project Extent	Project Elements	Priority
	Based Solution			
P30	Williamsport Road Sidewalk Infill	16th Street to SE Front Street	Complete sidewalk gaps on west side of the street. Due to topographical constraints, this corridor can be served by sidewalks on one side.	-
P31	Alameda Avenue Sidewalk Infill	Existing shared use path to Bridgeview Court	Complete sidewalk gaps on both sides of the street.	-
Biking Solutions				
B1	11th Street (South) Shared Roadway Enhancements	Exchange Street to Irving Street	Add wayfinding and shared lane markings.	-
B2	11th Street (North) Shared Roadway Enhancements	Astoria River Trail to Exchange Street	Add wayfinding and shared lane markings.	-
B3	15th Avenue Shared Roadway Enhancements	Commercial Street to Irving Avenue	Add wayfinding and shared lane markings.	-
B4	7th Street Bike Lane / Shared Roadway Enhancements	Niagara Avenue to OR 202	Add uphill bike lane and downhill shared lane markings.	-
B5	29th Street Shared Roadway Enhancements	Mill Pond Lane to Marine Drive	Add wayfinding and shared lane markings.	-
B6	33rd Street Shared Roadway Enhancements	Leif Erickson Drive to Harrison Avenue	Add wayfinding and shared lane markings.	-
B7	35th Street Shared Roadway Enhancements	Irving Avenue to Harrison Avenue	Add wayfinding and shared lane markings.	-
B8	36th Street Shared Roadway Enhancements	Duane Street to Franklin Avenue	Add wayfinding and shared lane markings.	-
B9	37th Street Shared Roadway Enhancements	Leif Erikson Drive to Duane Street	Add wayfinding and shared lane markings.	-
B10	45th Street Shared Roadway Enhancements	Cedar Street to Leif Erikson Drive	Add wayfinding and shared lane markings.	-
B11	51st Street Shared Roadway Enhancements	Birch Street to Cedar Street	Add wayfinding and shared lane markings.	-
B12	6th Street Shared Roadway Enhancements	Astoria River Trail to Duane Street	Add wayfinding and shared lane markings.	-
B13	8th Street Bike Lane / Shared	Niagara Avenue to Irving Avenue	Add uphill bike lane and downhill shared lane	-

Table 3: Planned Walking, Biking and Transit Solutions

Project #	Project Description	Project Extent	Project Elements	Priority
	Roadway Enhancements		markings.	
B14	Alameda Avenue (North) Shared Roadway Enhancements	W Marine Drive to Oregon Street	Add wayfinding and shared lane markings.	-
B15	Alameda Avenue (South) Shared Roadway Enhancements	Oregon Street to W Klaskanine Avenue. Route utilizes the existing paved trail west of S Denver Street.	Add wayfinding and shared lane markings.	-
B16	Birch Street Shared Roadway Enhancements	51st Street to 53rd Street	Add wayfinding and shared lane markings.	-
B17	Bond Street Shared Roadway Enhancements	Entire length	Add wayfinding and shared lane markings.	-
B18	Cedar Street Shared Roadway Enhancements	45th Street to 51st Street	Add wayfinding and shared lane markings.	-
B20	Denver Street Shared Roadway Enhancements	Glasgow Avenue to OR 202	Add wayfinding and shared lane markings.	-
B21	Duane Street (West of 8th) Shared Roadway Enhancements	6th Street to 8th Street	Add wayfinding and shared lane markings.	-
B22	Duane Street (East of 8th) Shared Roadway Enhancements	8th Street to 17th Street	Add wayfinding and shared lane markings.	-
B23	Florence Avenue Shared Roadway Enhancements	Oregon Street to Denver Street	Add wayfinding and shared lane markings.	-
B33	Duane Street (East) Shared Roadway Enhancements	36th Street to 37th Street	Add wayfinding and shared lane markings.	-
B34	Exchange Street Shared Roadway Enhancements	16th Street to Marine Drive	Add wayfinding and shared lane markings.	-
B35	7th Street/Exchange Street Shared Roadway Enhancements	Duane Street to 16th Street	Add wayfinding and shared lane markings.	-
B36	Florence Avenue/Oregon Street Shared Roadway Enhancements	W Marine Drive to Alameda Avenue	Add wayfinding and shared lane markings.	-
B37	Franklin Avenue (East) Shared Roadway Enhancements	33rd Street to 36th Street	Add wayfinding and shared lane markings.	-
B38	Franklin Avenue (West) Shared Roadway Enhancements	2nd Street to 11th Street	Add wayfinding and shared lane markings.	-

Table 3: Planned Walking, Biking and Transit Solutions

Project #	Project Description	Project Extent	Project Elements	Priority
B39	Glasgow Avenue Shared Roadway Enhancements	Alameda Avenue to Denver Street	Add wayfinding and shared lane markings.	-
B40	Harrison Avenue Shared Roadway Enhancements	33rd Street to 35th Street	Add wayfinding and shared lane markings.	-
B41	OR 202/W Marine Drive Bike Lanes	High School to Williamsport Road	Re-stripe roadway to include bike lanes.	-
B42	US 30 Bike Lanes	From the eastern extent of the existing bike lane between 39th and 43rd to the eastern City Limits (near Old Hwy 30)	Re-stripe roadway to include bike lanes.	-
B43	Irving Avenue (East) Shared Roadway Enhancements	17th Street to 35th Street	Add wayfinding and shared lane markings.	-
B44	Irving Avenue (West) Shared Roadway Enhancements	8th Street to 17th Street	Add wayfinding and shared lane markings.	-
B47	Klaskanine Avenue/W Klaskanine Avenue/Alameda Avenue/Vista Drive Shared Roadway Enhancements	7th Street to OR 202	Add wayfinding and shared lane markings.	-
B48	Leif Erikson Drive Bike Lanes	33rd Street to 39th Street	Re-stripe roadway to include bike lanes.	-
B49	Lexington Avenue/5th Street/Clatsop Avenue Shared Roadway Enhancements	8th Street to 7th Street	Add wayfinding and shared lane markings.	-
B50	Marine Drive/W Marine Drive Bike Lanes	Bay Street to 6th Street	Re-stripe roadway to include bike lanes.	-
B52	W Marine Drive Bike Lanes	Roundabout to Hamburg Avenue	Re-stripe roadway to include bike lanes.	-
B53	Mill Pond Lane Shared Roadway Enhancements	23rd Street to 29th Street	Add wayfinding and shared lane markings.	-
B54	Niagara Avenue Bike Lanes	17th Street to 15th Street	Re-stripe roadway to include bike lanes.	-
B55	Taylor Avenue Shared Roadway Enhancements	Hamburg Avenue to Florence Avenue	Add wayfinding and shared lane markings.	-
Shared-Use Path Solutions				
S1	Middle School Connector Bicycle	James Street to Middle School	Develop Multi-use Trail	-

Table 3: Planned Walking, Biking and Transit Solutions

Project #	Project Description	Project Extent	Project Elements	Priority
	and Pedestrian Trail			
S2	Commercial Connection Bicycle and Pedestrian Trail	Commercial Street western terminus to Alameda Avenue	Develop Multi-use Trail	-
Street Crossing Solutions				
CR-01	US 30 and Bay Street Crossing Enhancements	US 30 and Bay Street	Upgrade existing crossing to the highest level pedestrian actuated beacon approved by ODOT. Consider restricting parking near crossing to improve visibility.	-
CR-02	US 30 and 45th Street Crossing Enhancements	US 30 and 45th Street	Upgrade existing crossing to the highest level pedestrian actuated beacon approved by ODOT.	-
CR-03	US 30 and 37th Street Crossing Enhancements	US 30 and 37th Street	Upgrade existing rectangular rapid flash beacon at crossing to the highest level pedestrian actuated beacon approved by ODOT.	-
CR-04	OR202 and 7th Street Intersection Enhancements	OR202 and 7th Street	Install signage to clarify behavior of all users at intersection that road users report as being confusing.	-
CR-05	Niagara between 8th and 9th Crossing Enhancements	Niagara between 8th and 9th	Re-install concrete median and pedestrian refuge crossing.	-
CR-06	OR202 and 4th St Crossing Enhancements	OR202 and 4th Street	Install high visibility crossing with pedestrian refuge.	-
CR-07	OR202 just east of Hannover Street Crossing Enhancements	OR202 just east of Hannover Street	Install high visibility crossing with pedestrian refuge to serve planned housing development.	-
CR-08	US 30 and 6th Street Crossing Enhancements	US 30 and 6th Street	Enhanced pedestrian crossing. Crossing type to be determined as part of motor vehicle alternatives analysis.	-
CR-09	US 30 and 8th Street Crossing Enhancements	US 30 and 8th Street	Enhanced pedestrian crossing. Crossing type to be determined as part of motor vehicle alternatives analysis.	-
CR-10	Commercial and 8th Street Crossing Enhancements	Commercial and 8th Street	Pedestrian crossing improvements to be considered as part of motor vehicle alternatives analysis.	-
CR-11	Exchange and 13th Street	Exchange and 13th Street	Extend curb on northeast corner to reduce	-

Table 3: Planned Walking, Biking and Transit Solutions

Project #	Project Description	Project Extent	Project Elements	Priority
	Crossing Enhancements		roadway width and shorten crossing distance. Alternatively, install a traffic diverter or refuge island between the two travel lanes.	
CR-12	US 30 and 17th Street Crossing Enhancements	US 30 and 17th Street	Enhance existing crosswalk with high visibility zebra striping. Consider restricting left turns onto 17th to allow for a pedestrian refuge island.	-
CR-13	US 30 and 16th Street Crossing Enhancements	US 30 and 16th Street	Enhance existing refuge crossing with high visibility zebra striping, widen refuge island and provide advance warning signage.	-
CR-14	US 30 and 18th Street Crossing Enhancements	US 30 and 18th Street	Enhance existing crosswalk with high visibility zebra striping and adequate lighting.	-
CR-15	US 30 and 20th Street Crossing Enhancements	US 30 and 20th Street	Enhance existing crosswalk with high visibility zebra striping. Consider restricting left turns onto 20th to allow for a pedestrian refuge island.	-
CR-16	Commercial at 10th, 11th and 12th Crossing Enhancements	Commercial at 10th, 11th and 12th	Enhance pedestrian safety by improving visibility (exact solution to be determined through further coordination with the community).	-
CR-17	Roundabout Enhancements	Roundabout enhancements	Provide additional signage at roundabout to clarify expected behavior for bicyclists or consider alternate route using Taylor Avenue.	-
Transit Solutions				
T1	Bus Stop Amenity Enhancement	Citywide	Add amenities at bus stops as needed, including bus shelters, landing pads, benches, trash/recycling receptacles and lighting	-
T2	OR 202/US 101 Business Transit Pullout	OR 202/US 101 Business	Provide a transit pullout at the west leg of the OR 202/US 101 Business intersection	-

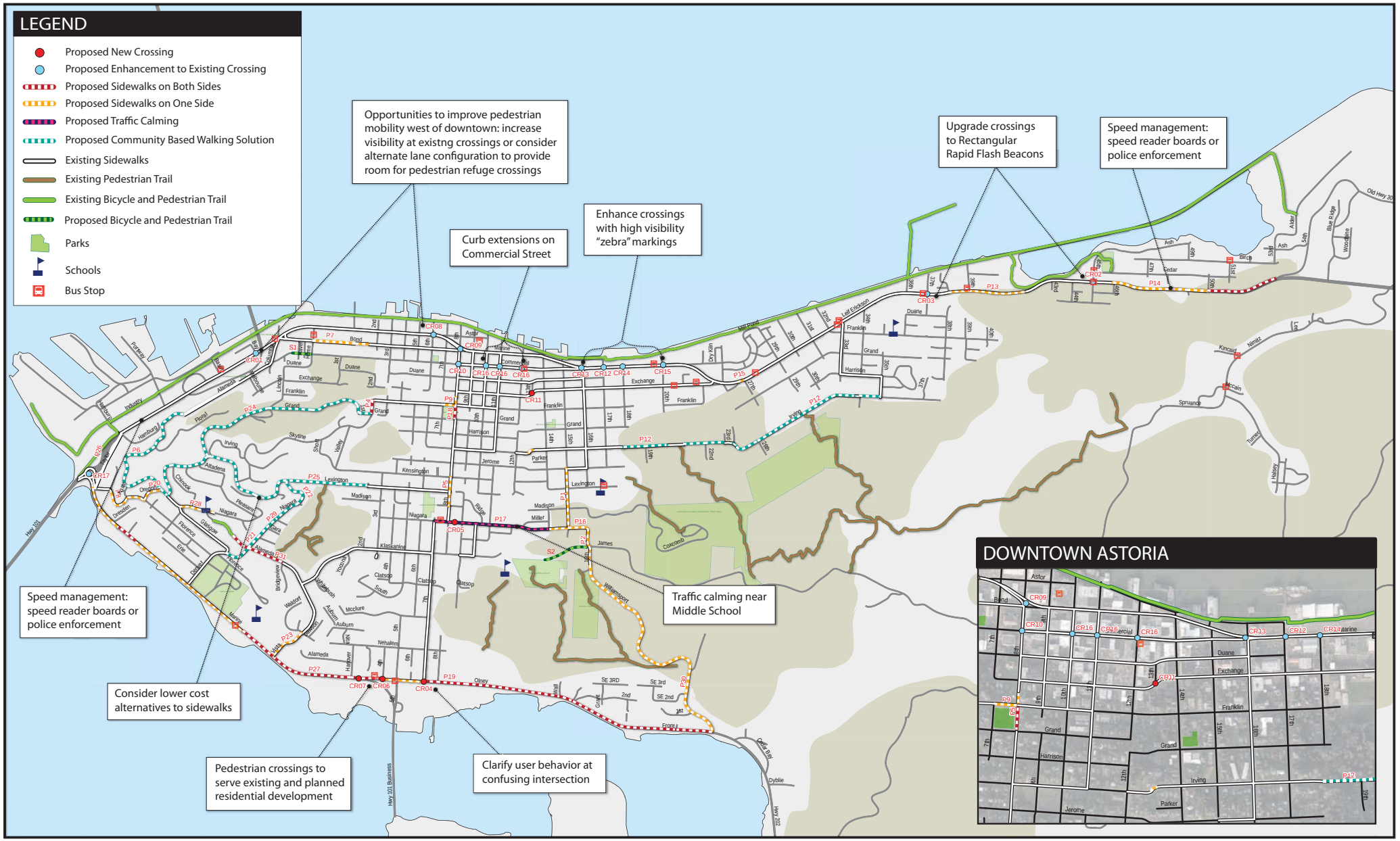


FIGURE 4: PLANNED WALKING SOLUTIONS

ASTORIA TRANSPORTATION SYSTEM PLAN
Date: April, 2013
Author: DM, Alta Planning + Design

0 0.5 1 Miles

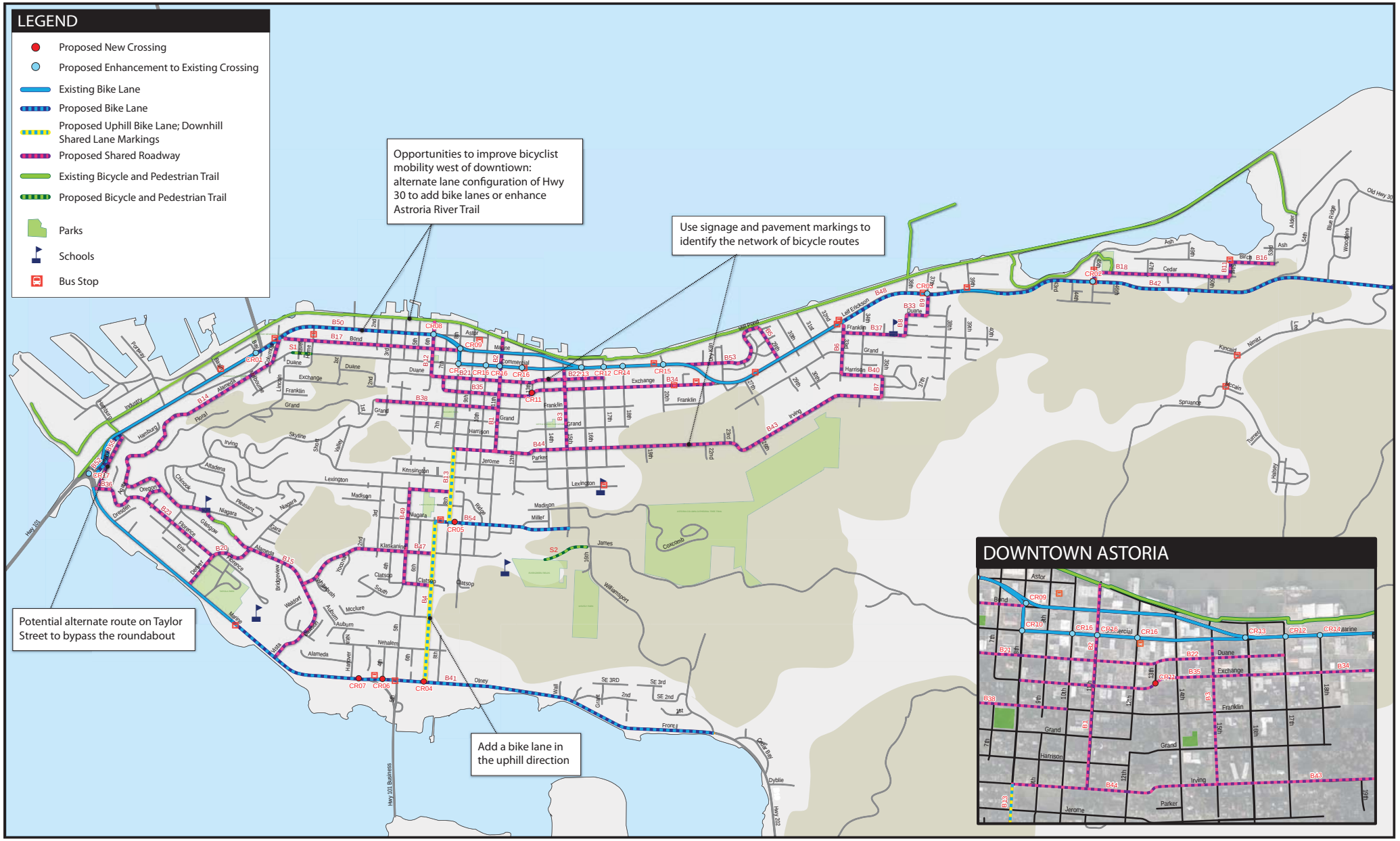


FIGURE 5: PLANNED BIKING SOLUTIONS

ASTORIA TRANSPORTATION SYSTEM PLAN
Date: April, 2013
Author: DM, Alta Planning + Design

Citywide and Programmatic Improvements: Several types of bicycle and pedestrian needs in Astoria are not related to specific corridors, but pertain to city policy or conditions found in widespread locations. The improvement alternatives listed in Table 4 below address these types of bicycle and pedestrian needs.

Table 4: Shared Walking/Bicycle System - Citywide and Programmatic Improvements

Name	Description	Cost Estimate
Sidewalk Code Enforcement	Remind local residents of their responsibility to keep sidewalks clear of vegetation and debris (i.e., to maintain routes into downtown such as 8th Street).	City staff time
Adopt-A-Trail Program	Work with local residents to develop an Adopt-A Trail Program to clear out growth and inform Public Works when maintenance is needed on its trails.	Volunteer program
Pedestrian and Bicycle Wayfinding Signage	Implement signage to identify walking routes to destinations and transit stops. Bicycle signage should assist bicyclists in choosing comfortable routes and help visiting bicyclists navigate through the city. Signage can also be placed at trail entrances indicating destinations served, such as the Astoria Column.	Example: Cost TBD.
Traffic Signal Timing	Evaluate traffic signal timing at downtown intersections to ensure an adequate walk phase.	City staff time
Countdown Signal Retrofit Program	Develop a program to install countdown signals at all signalized crossings. Work with ODOT to upgrade pedestrian signal heads at signalized intersections on state-owned roads.	Example: $500 per pedestrian signal head to upgrade existing pedestrian signal head to countdown signal
Targeted Police Enforcement	Target police enforcement at areas with known speeding issues, particularly at either end of the downtown couplet, which lack the visual cues that naturally alert motorists to expect pedestrians and slow down and/or yield.	Example: Overtime pay for four officers eight hours per month, which can be offset by traffic safety grant.
Road Safety Awareness Campaign	Develop marketing campaigns aimed at roadway safety issues such as speeding, giving way to pedestrians at crossings, and drinking and driving.	Example: $10,000 per year to develop campaigns and disseminate in print and/or media format
Walking and Trails Maps	Develop an Astoria walking map. A downtown inset can identify key walking destinations. This map can be provided to hotels to encourage visitors to walk for short trips, thus reducing vehicles on the roadway network. Many trails would be included on the walking map, but a separate trails map can also be developed if desired.	Example: $5,000 per print, which could be offset by advertising or sponsorship.
Bicycling Map	Update the Astoria bicycle map. The map should include the existing network as well as the Shared Roadways (i.e., signed routes) identified in the TSP.	Example: $5,000 per print, which could be offset by advertising or sponsorship.
Trail Improvements Plan	Develop a Trail Improvements Plan for the Astoria River Trail that inventories existing conditions and identifies conceptual design solutions and costs.	Example: $30,000 to develop a Trail Improvements Plan for the Astoria River Trail

Name	Description	Cost Estimate
Sidewalk Infill Program	Capital program to systematically design and construct missing sidewalks along prioritized pedestrian routes. Provide sidewalks on local, residential streets that lead to roadways with transit service. This program could be designed to include City matching funds for private property owners willing to undertake sidewalk improvements along their property frontage (e.g., a 50/50 program).	Example: $10,000/year. Fixed or percentage amount annually for capital improvements.
ADA/Curb Ramp Upgrade Program	Upgrade curb ramps and eliminate gaps in ADA access along prioritized pedestrian routes near key destinations.	Example: $10,000/year. Fixed or percentage amount annually for capital improvements.
Bicycle Parking Program	Amend development code to include short term (bicycle rack) and long term (secure, covered) parking design and placement standards. Review development applications for compliance; coordinate with sidewalk installation completed by development or City projects.	Example: $5,000/year. Can be funded through fees for developments requesting related design variances.
Safe Routes to Schools Curriculum	Leverage ODOT Safe Routes Program with local investment to bring Safe Routes curriculum to all area K-8 schools.	Example: $50,000/year. Fixed or percentage amount annually for capital improvements.

Scenario 3: Extend Streets

Scenario 3 evaluated the existing transportation system after extending several streets. These street extensions provide alternate routes to alleviate congestion on major streets in the City and enhance multi-modal connectivity by reducing out-of-direction travel for walking and biking. This scenario assumes the following:

- Local Street Connectivity: Local street extensions were assumed in developing or redeveloping areas of the City to accommodate future development, and to support a connected, multi-modal transportation system.
- Two-Way Street Conversions: Several local streets were assumed to be converted to two-way travel.

The solutions recommended for Scenario 3 are summarized in Table 5 and illustrated in Figure 5. The street projects numbered on Figure 5 correspond with the project numbers in Table 5. The project numbers are denoted with a "D" to represent driving improvements.

Table 5: Summary of Scenario 4 Solutions to Extend Streets

Project #	Project Description	Project Extent	Project Elements	Priority	Source
D23	Bond Street Two-Way	Hume Avenue to 7th Street	Re-open Bond Street to two-way travel and implement traffic calming	-	New Solution
D24	Industry Street Extension	Basin Street to Bay Street Extension	Extend Industry Street from Basin Street to the Bay Street extension as a local street	-	Previous Plan
D25	Bay Street Extension	North of US 30 to Industry Street Extension	Extend Bay Street to the Industry Street extension as a local street	-	Previous Plan
D27	Log Bronc Way Extension	30th Street to 32nd Street	Extend Log Bronc Way from 30th Street to 32nd Street as a local street	-	Previous Plan
D28	Abbey Lane Extension	36th Street to 39th Street	Extend Abbey Lane from 36th Street to 39th Street as a local street	-	Previous Plan
D29	Maritime Road Extension	Old US Highway 30 to Railroad	Extend Maritime Road to Railroad Avenue as a major local street	-	New Solution
D30	Irving Avenue Extension	38th Street to Nimitz Drive-Spruance Road	Extend Irving Avenue to Nimitz Drive-Spruance Road as a major local street	-	Previous Plan

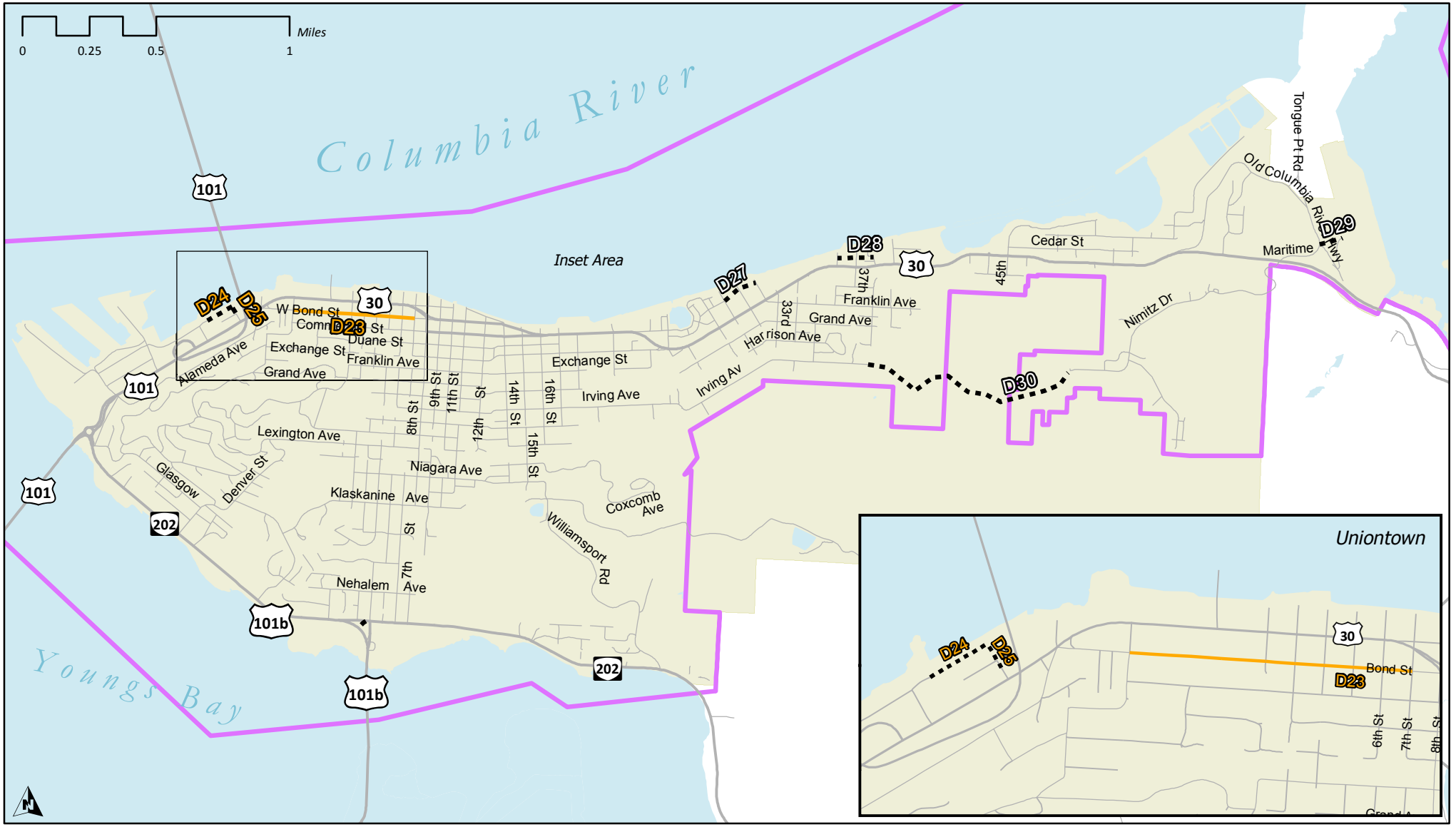


Figure 5 : Planned Street Extensions

Legend

Planned Street Extensions (Conceptual Alignment)

- Planned Street
- Planned Two-Way Street

- Likely Funded Transportation System Project # (See Attachment 1 of Memorandum #12)
- Not Likely Funded Transportation System Project # (See Attachment 1 of Memorandum #12)

- City Limit
- Urban Growth Boundary

City of Astoria

Transportation System Plan

Scenario 4: Expand existing streets or intersections

Scenario 4 evaluated the existing transportation system with a set of solutions that widens existing streets or intersections to accommodate future travel demand and improve safety. This scenario assumes the following:

- Corridor safety improvements will be implemented to address safety deficiencies along street segments.
- Corridor capacity improvements will be implemented to accommodate the expected 2035 travel demand.

The solutions recommended for Scenario 4 are summarized in Table 6 and illustrated in Figure 6. The street projects numbered on Figure 6 correspond with the project numbers in Table 6. The project numbers are denoted with a "D" to represent driving improvements.

Table 6: Summary of Scenario 5 Solutions to Expand Streets and Intersections

Project #	Project Description	Project Extent	Project Elements	Priority	Source
D31	US 30 Safety Enhancement	US 30 from 27th Street to Franklin Avenue	Add a center turn lane/median; will require removal of some on-street parking	-	Previous Plan
D32	OR 202 Safety Enhancement	OR 202 from 8th Street to SE 2nd Street	Add a center turn lane/median. Combine SE 2nd Street and Kearney Street into one access to OR 202	-	Previous Plan
D33	US 101 Business Capacity Enhancement	US 101 Business from OR 202 south to Miles Crossing	Widen to a three lane, 62' cross-section, with two 12' travel lanes, a 14' center turn lanes, and 6' sidewalks and bike-lanes on both sides	-	Previous Plan
D34	Portway Street Capacity Enhancement	Portway Street from US 101 to Industry Street	Improve to a major local street cross-section. Move Portway Street centerline to the west to accommodate trucks making westbound right turns; requires right-of-way acquisition from parcel at northwest corner of intersection. Modify the approach to US 101 to include separate left and right turn lanes	-	Previous Plan
D35	Bay Street Upgrade	US 30 to northern terminus	Improve to a major local street cross-section	-	Previous Plan
D36	Tongue Point Road Upgrade	Old US Highway 30 to Pier Street	Improve to a major local street cross-section	-	Previous Plan
D37	54th Street-Old US Highway 30 Upgrade	US 30 to Tongue Point Road	Improve to a major local street cross-section	-	Previous Plan
D38	Maritime Road-Old US Highway 30 Upgrade	Tongue Point Road to US 30	Improve to a major local street cross-section	-	Previous Plan

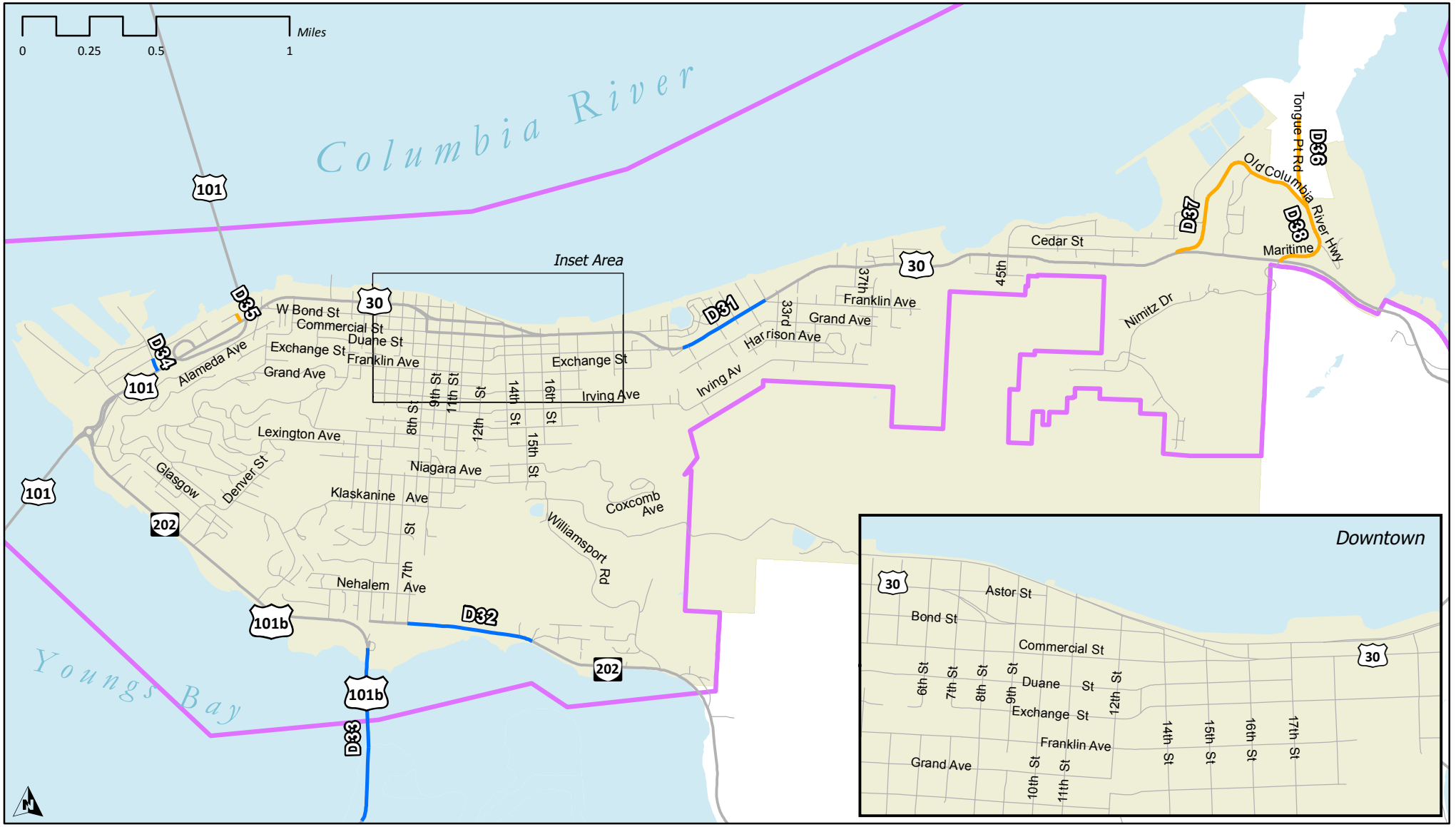


Figure 6 : Planned Street and Intersection Expansions

City of Astoria

Transportation System Plan

Legend

Planned Street and Intersection Expansion Solutions

- Planned Street Upgrade
- Planned Street Widening

Likely Funded Transportation System Project # (See Attachment 1 of Memorandum #12)

Not Likely Funded Transportation System Project # (See Attachment 1 of Memorandum #12)

City Limit

Urban Growth Boundary

Evaluating Alternatives

The Astoria TSP update has identified the need for circulation, capacity or safety enhancements along several street segments with constrained right-of-way or other development limitations. The following sections are intended to evaluate and compare multiple improvement options to help provide the community direction in developing recommended solutions for these street segments. Further community input and collaboration is needed before a recommended solution is determined and incorporated into the aspirational scenarios detailed earlier in this document.

Downtown Circulation Options

Thirteen circulation options were evaluated through downtown Astoria along three potential routes. These alternatives are summarized below.

Option A: Existing couplet

Three options were evaluated along the existing couplet. Marine Drive would remain one-way westbound (blue line) and Commercial Street one-way eastbound (green line). The following options were considered:

- Option A1: Do nothing

  No improvements are constructed.

- Option A2: Two-way local streets downtown (see Figure 7)

  Most local streets would be converted to two-way travel downtown (red lines).

- Option A3: Two-way local streets; shift the curve at the 8th Street intersection east (see Figure 8)

  All local streets would be converted to two-way travel downtown (red lines). The curve at Commercial

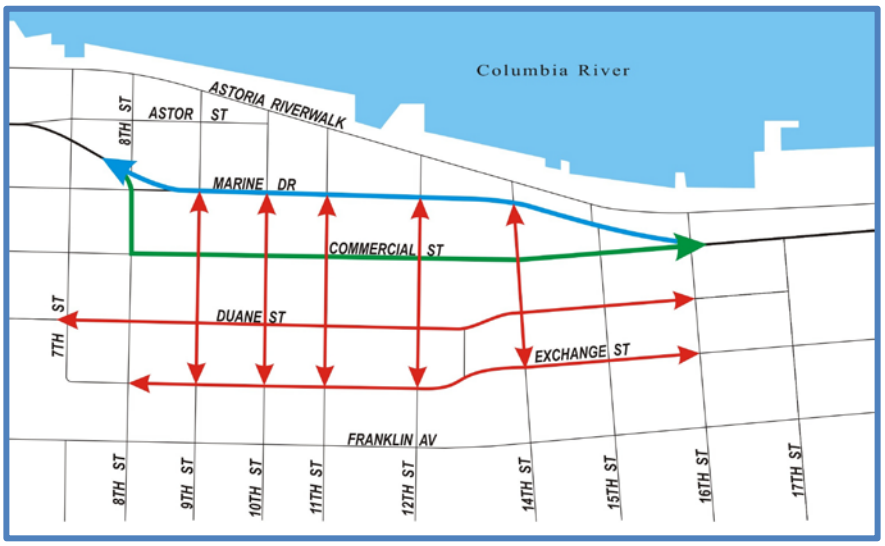


Figure 7: Existing Couplet with Two-way Local Streets

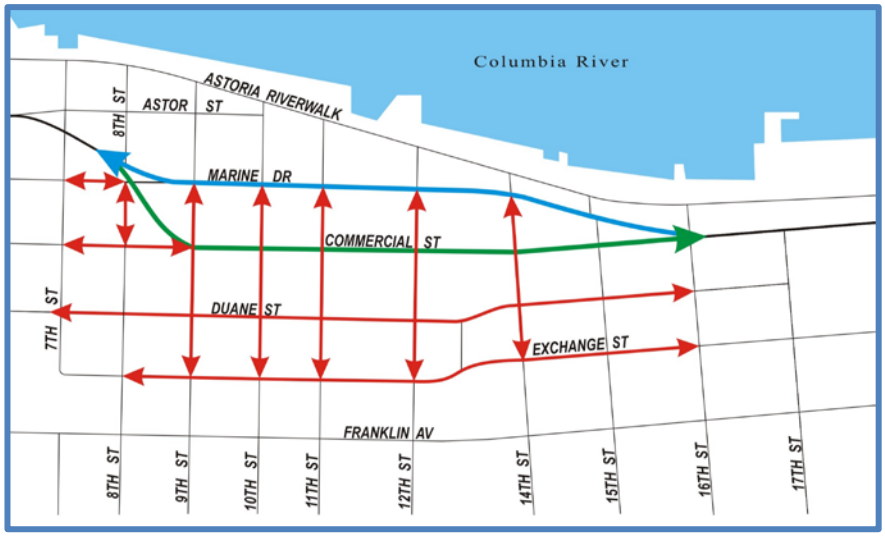


Figure 8: Existing Couplet with Two-way Local Streets and Curve at the 8th Street intersection shifted east

Street/8th Street intersection would be shifted east between 8th and 9th Streets

Option B: Eastbound couplet shifted to Duane Street, with two-way local streets (see Figure 9)

One option was evaluated that would shift the eastbound couplet to Duane Street (green line), serving highway traffic. Marine Drive would remain one-way westbound (blue line). Most local streets (including Commercial Street) would be converted to two-way travel downtown (red lines).

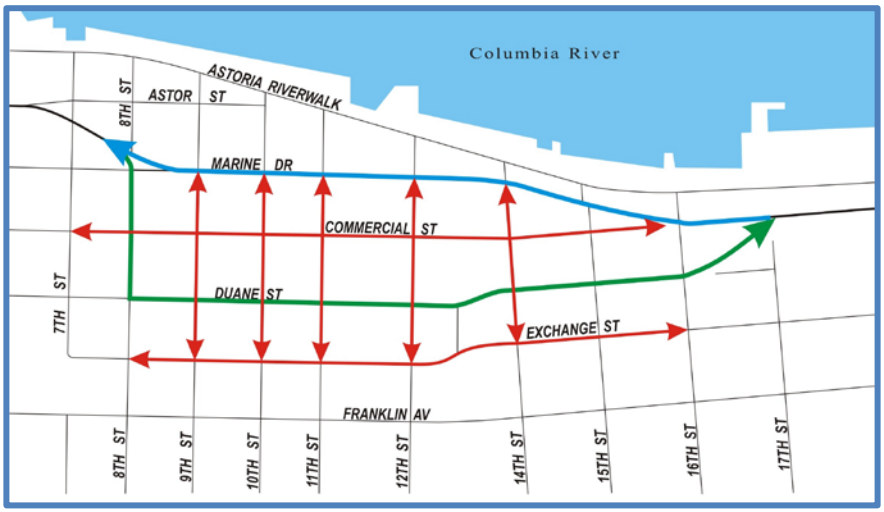


Figure 9: Eastbound couplet shifted to Duane Street, with two-way local streets

Option C: Two-way Marine Drive, with two-way local streets (see Figure 10)

Nine options were evaluated along Marine Drive. Marine Drive would be converted to two-way travel (blue line). All local streets (including Commercial Street) would be converted to two-way travel downtown (red lines). The following options were considered:

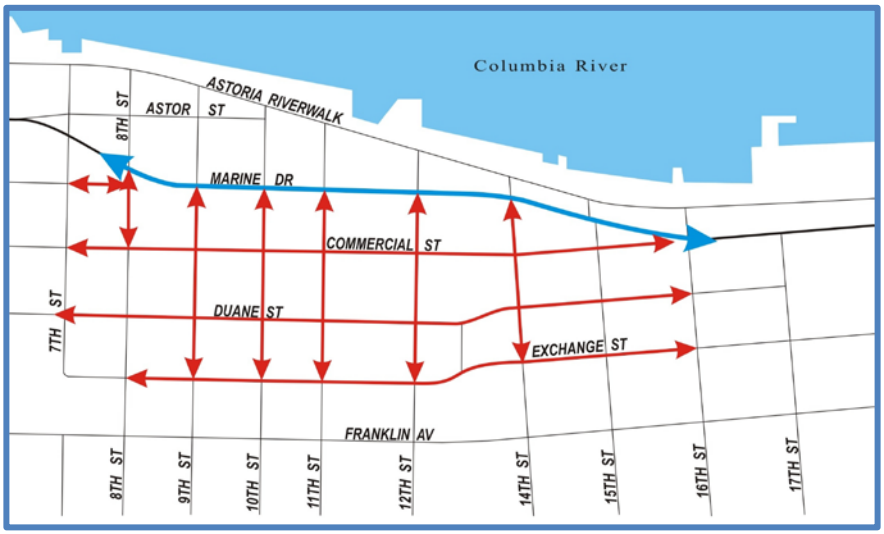


Figure 10: Two-Way Marine Drive, with two-way local

- Option C1, C2, and C3: Two lane Marine Drive with left-turns at all intersections, at some intersections, and with no left-turns at intersections respectively
- Option C4, C5, and C6: Three lane Marine Drive with left-turns at all intersections, at some intersections, and with no left-turns at intersections respectively
- Option C7, C8, and C9: Four lane Marine Drive with left-turns at all intersections, at some intersections, and with no left-turns at intersections respectively

Evaluation of Downtown Circulation Options: Using the TSP goals (see Technical Memorandum #3 - Goals, Objectives and Evaluation Criteria), the circulation options were evaluated and compared to one another (see Table 7). Greater value was placed on the goals stakeholders felt were most important to the community. Overall, several of the circulation options had similar evaluation scores, with the top four options scoring within four points of one another. The following alternatives were determined to have the greatest likelihood to meet the TSP goals:

- Three lane Marine Drive with left-turns at all intersections
- Three lane Marine Drive with left-turns at some intersections
- Existing couplet with two-way local streets downtown
- Existing couplet with two-way local streets; shift the curve at the 8th Street intersection east

The Do Nothing option ranked lowest of the alternatives. Overall the primary differences in scoring of the options were related to the impacts from trucks downtown, cost, and multi-modal safety, mobility and accessibility through downtown.

Overall, support for one-way versus two way streets downtown was evenly split based on extensive community input and feedback during the TSP update process. Instead of proceeding with a recommendation within this TSP, the city decided it would do further research to gain better consensus via a future feasibility study for downtown circulation.

Fatal Flaw: Seven of the circulation options were determined to have fatal flaws under the "Travel Choices" or "Economic Vitality" goals. The two lane Marine Drive circulation options would not adequately accommodate future travel demand, while the four lane Marine Drive circulation options could not be accommodated within the existing street width on Marine Drive. In addition, the circulation option converting Marine Drive to a three-lane street with no-left turns was fatally flawed due to the difficulty of traffic along Marine Drive accessing the adjacent land use.

Table 7: Evaluation of Downtown Circulation Options

TSP Goals	Option A1: Do nothing	Option A2: Two-way local streets downtown	Option A3: Two-way local streets; shift the curve at the 8th Street intersection east	Option B: Eastbound couplet shifted to Duane Street, with two-way local streets	Options C1 to C3: Two lane, two-way Marine Drive, with two-way local streets	Options C4 to C7: Three lane, two-way Marine Drive, with two-way local streets			
						Option C4: Left-turns at all intersections	Option C5: Left-turns at some intersections	Option C6: No left-turns at intersections	Options C7 to C9: Four lane, two-way Marine Drive, with two-way local streets
Goal 1: Health and Safety	10	11	15	13	-	13	13	-	-
Goal 2: Travel Choices	10	16	15	14	FF	14	14	-	-
Goal 3: Economic Vitality	15	15	18	18	-	18	16	FF	FF
Goal 4: Livability	5	8	9	9	-	13	13	-	-
Goal 5: Sustainability	19	19	15	15	-	21	19	-	-
Goal 6: Fiscal Responsibility	16	16	14	8	-	11	11	-	-
Goal 7: Compatibility	25	25	25	25	-	25	25	-	-
Total Score	100	111	112	103	FF	115	111	FF	FF
Ranking of Alternative	6	3	2	5	FF	1	3	FF	FF

FF= Fatal Flaw

Marine Drive- Columbia to 7th Circulation Options

Four circulation options were evaluated along Marine Drive between Columbia Avenue and 7th Street, just to the west of downtown Astoria. These alternatives are summarized below.

Option A: Do Nothing

No improvements are constructed. Marine Drive maintains four to five travel lanes and Bond Street stays one-way.

Option B: Reconfigure Marine Drive to three lanes

Marine Drive would be reconfigured to three travel lanes (one lane in each direction with a center turn lane/median). Bond Street would remain one-way.

Option C: Re-open Bond Street to two-way travel

Bond Street would be re-opened to two-way travel. Traffic calming would be implemented along

Bond Street between Hume Avenue and 7th Street. Marine Drive would maintain four to five travel lanes.

Option D: Reconfigure Marine Drive to three lanes, and re-open Bond Street to two-way travel

Marine Drive would be reconfigured to three travel lanes (one lane in each direction with a center turn lane/median). Bond Street would be re-opened to two-way travel. Traffic calming would be implemented along Bond Street between Hume Avenue and 7th Street.

Evaluation of Marine Drive- Columbia to 7th Circulation Options: Using the TSP goals (see Technical Memorandum #3 - Goals, Objectives and Evaluation Criteria), the circulation options were evaluated and compared to one another (see Table 8). Greater value was placed on the goals stakeholders felt were most important to the community. Overall, Option D (Reconfigure Marine Drive to three lanes, and re-open Bond Street to two-way travel) was determined to have the greatest likelihood to meet the TSP goals. It should be noted that this planning concept potentially reduces vehicle-carrying capacity of the highway; further evaluation of the project design will be required at the time of implementation to ensure compliance with ORS 366.215.

The Do Nothing option ranked lowest of the alternatives. Reconfiguring Marine Drive to three lanes scored highest due to providing travel choices and encouraging healthy and safe lifestyles, while re-opening Bond Street to two-way travel scored higher under criteria supporting connectivity and reduced travel distances.

Table 8: Evaluation of Marine Drive- Columbia to 7th Circulation Options

TSP Goals	Option A: Do nothing	Option B: Reconfigure Marine Drive to three lanes	Option C: Re-open Bond Street to two-way travel	Option D: Reconfigure Marine Drive to three lanes, and re-open Bond Street to two-way travel
Goal 1: Health and Safety	13	25	15	25
Goal 2: Travel Choices	13	23	22	22
Goal 3: Economic Vitality	15	15	15	15
Goal 4: Livability	10	21	21	21
Goal 5: Sustainability	9	14	16	16
Goal 6: Fiscal Responsibility	5	22	27	27
Goal 7: Compatibility	25	25	25	25
Total Score	92	145	140	151
Ranking of Alternative	4	2	3	1

US 101/ US 30- Hamburg to Columbia Circulation Options

Six circulation options were evaluated along US 101/US 30 between Hamburg Avenue and Columbia Avenue. On-street parking is currently permitted along portions of this segment; therefore, a passing lane would likely be needed to allow parking maneuvers without disrupting traffic flow. These alternatives are summarized below.

Option A: Do Nothing

No improvements are constructed. US 101/US 30 would maintain four travel lanes.

Option B: Reconfigure US 101/US 30 to three travel lanes

US 101/US 30 would be reconfigured to three travel lanes (one lane in each direction with a center turn lane/median).

Option C: Reconfigure US 101/US 30 to four travel lanes

Option C1: US 101/US 30 would be reconfigured to four travel lanes (one westbound travel lane, two eastbound travel lanes, with a center turn lane/median).

Option C2: US 101/US 30 would be reconfigured to four travel lanes (one eastbound travel lane, two westbound travel lanes, with a center turn lane/median).

Option D: Widen US 101/US 30 to five lanes

US 101/US 30 would be widened to five travel lanes (two lanes in each direction with a center turn lane/median.

Option E: Widen US 101/US 30 to five lanes only at signalized intersections

US 101/US 30 would be widened at signalized intersections to provide dedicated left-turn lanes. US 101/US 30 would maintain four travel lanes, with a non-traversable median installed at mid-block locations.

Evaluation of US 101/US 30- Hamburg to Columbia Circulation Options: Using the TSP goals (see Technical Memorandum #3 - Goals, Objectives and Evaluation Criteria), the circulation options were evaluated and compared to one another (see Table 9). Greater value was placed on the goals stakeholders felt were most important to the community. Overall, several of the circulation options had similar evaluation scores, with the top three options scoring within four points of one another. The following alternatives were determined to have the greatest likelihood to meet the TSP goals:

- Reconfigure US 101/US 30 to four travel lanes
- Widen US 101/US 30 to five lanes

- Widen US 101/US 30 to five lanes only at signalized intersections

The Do Nothing option ranked lowest of the alternatives. Overall the primary differences in scoring of the options were related to the impact on existing land use, and multi-modal safety, mobility and accessibility along the street segment.

Fatal Flaw: Two of the circulation options were determined to have fatal flaws under the "Travel Choices" goal. The four lane (with two eastbound travel lanes), and the three lane US 101/US 30 circulation options would not adequately accommodate future travel demand. The protected eastbound left turns at signalized intersections along this segment of US 101/US 30 decreases the green time for the westbound through movements. For this reason, the westbound through movements at signalized intersections would likely require two through lanes to meet intersection mobility targets (unless alternate mobility targets are pursued).

Table 9: Evaluation of US 101/US 30 - Hamburg to Columbia Circulation Options

TSP Goals	Option A: Do nothing	Option B: Reconfigure US 101/US 30 to three travel lanes	Option C: Reconfigure US 101/US 30 to four travel lanes		Option D: Widen US 101/US 30 to five lanes	Option E: Widen US 101/US 30 to five lanes only at signalized intersections
			Option C1: Two eastbound travel lanes	Option C2: Two westbound travel lanes		
Goal 1: Health and Safety	6	-	-	17	21	10
Goal 2: Travel Choices	13	FF	FF	11	18	15
Goal 3: Economic Vitality	15	-	-	20	16	21
Goal 4: Livability	5	-	-	10	10	7
Goal 5: Sustainability	15	-	-	16	15	15
Goal 6: Fiscal Responsibility	5	-	-	22	16	27
Goal 7: Compatibility	25	-	-	25	25	25
Total Score	85	-	-	122	121	118
Ranking of Alternative	5	-	-	1	2	3

FF= Fatal Flaw

Walking and Biking Community Based Solution Options

The Astoria TSP update has identified the need for walking and biking facilities on several streets with constrained right-of-way or other development limitations. Simply constructing sidewalks or bike lanes along these streets would likely be challenging, if not infeasible, given the steep slopes, environmentally sensitive, rural, historic, or development limited surroundings. In some of these cases with relatively low motor vehicle speeds (expected 85th percentile speed 28 mph or less) and volume (expected daily volume less than 1,000 vehicles), alternative accommodations (referred to as "Community Based Solutions") have been suggested as either short-term or permanent improvements to address the needs of the transportation system through 2035. The following six options are intended to provide Astoria residents the opportunity to collaborate and ultimately recommend an ideal cross-section for constrained streets around the City.

- **Option 1a: Designate a section of an existing street for walking**

Striping a portion of streets could provide a dedicated area for walking without physically separating the facility from the roadway. Striped shoulders visually narrow the roadway and may slow traffic, making it more pedestrian-friendly. The designated walking area can be painted to increase visibility.

Advantages:

1. Cost-effective and easy to implement
2. No additional pavement or street widening needed
3. Provides stable surface for pedestrian travel
4. Striping will help alert drivers to expect pedestrians along the route
5. Ease of maintenance with ordinary street cleaning equipment

Disadvantages:

1. Would require improved street lighting in some areas, increasing utility costs
2. Less comfortable than separated sidewalks or shared-use paths
3. Increased maintenance with additional striping and/or painted street surface
4. On-street parking may be impacted

- **Option 1b: Designate an existing street for shared travel for bicyclists**

Shared roadways are facilities where bicyclists and motorists share the same travel lane. The most suitable roadways for shared bicycle use are those with low speeds (25 mph or less) and low traffic volumes (3,000 vehicles per day or fewer). Signed shared roadways are shared roadways that are designated and signed as bicycle routes and serve to provide continuity to other bicycle facilities (e.g. bicycle lanes) or to designate a preferred route through the community.

Common practice is to sign the route with standard Manual on Uniform Traffic Control Devices (MUTCD) green bicycle route signs with directional arrows. However, these facilities can be improved with the addition of yellow bicycle warning signs (MUTCD, W11-1) and Share the Road signage (MUTCD, W16-1P). An effective strategy for enhancing Shared Roadway facilities involves placing Shared Lane Markings (SLMs) on the roadway surface. Shared Lane Markings (also known as "sharrows") are high-visibility pavement markings that delineate where bicyclists should operate within a shared vehicle/bicycle travel lane (outside of the "door zone" on streets with on-street parking) and alert motorists to expect bicyclists on the roadway. Shared roadways can also be signed with innovative signing that highlights a special touring route (e.g. Oregon Coast Bike Route) or provides directional information in bicycling minutes or distance (e.g., "Library, 3 minutes, ½ mile").

Advantages:

1. Cost-effective and easy to implement
2. No additional pavement or street widening needed
3. Striping will help alert drivers to expect bicyclists along the route

Disadvantages:

1. May need improved street lighting in some areas, increasing utility costs
2. Less comfortable than bike lanes or shared-use paths
3. Hilly nature of some streets may increase the conflict potential between motor vehicles and slower traveling bicyclists

- **Option 2: Add pedestrian-only paths adjacent to streets**

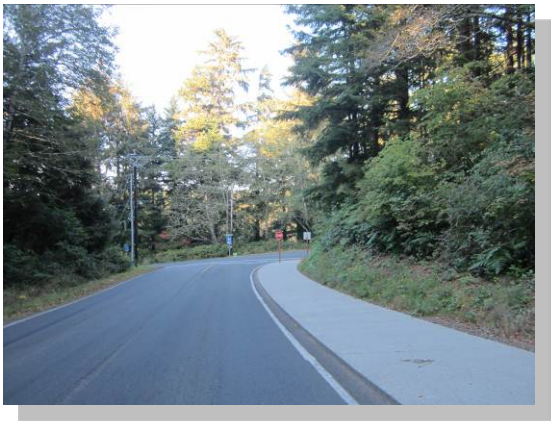
Pedestrian paths should be separated between two and six feet from the edge of roadways and do not require curb and gutter installations**.** The path can be made of asphalt or pervious materials such as decomposed granite, compacted crushed rock known as crusher fine or other universally accessible materials. Pedestrian paths should be at least five feet wide. Constricted areas may have a reduced width consistent with ADA guidelines. Pedestrian paths must be "firm and stable" to comply with ADA requirements. To retain their accessible qualities, crusher fine and decomposed granite must be maintained regularly.

Advantages:

1. More comfortable walking experience than Option 1a
2. Cost-effective option to sidewalks
3. More naturally follows the terrain and landscaping surrounding the street

Disadvantages:

1. Would not accommodate bicyclists
2. Could require additional right-of-way or removal of the landscaping strip and/or on-street parking
3. No grade separation between motor vehicles and pedestrians



- **Option 3: Add a curb-tight shared-use path**

Shared-use paths are typically paved (asphalt or concrete), but may also consist of an unpaved smooth surface as long as it meets Americans with Disabilities Act (ADA) standards. Shared-use paths are usually wider than an average sidewalk (i.e. 10 – 14 feet). The width may be reduced to as little as eight feet where bicycle and pedestrian volumes are expected to be low, good passing opportunities can be provided, and maintenance vehicle loads are not expected to damage the pavement.

Advantages:

1. Can be used by a variety of non-motorized users, including pedestrians, bicyclists, skateboarders, and runners
2. Grade separation from motor vehicles increases comfort for non-motorized users

3. All non-motorized users are separated from the travel lanes
4. Fewer conflicts between motor vehicles and non-motorized users

Disadvantages:

1. Walkers and bikers would come from directions that drivers may not be expecting
2. Could require additional right-of-way or removal of the landscaping strip and/or on-street parking
3. Difficult to maintain due to limited access of street sweeping vehicles

- **Option 4: One-way street conversion to accommodate pedestrians and bicyclists**

Streets that currently allow two-way travel but lack pedestrian and bicycle facilities can be converted to one-way travel in order to accommodate non-motorized users. Accommodations could be provided by adding a multi-use path or designated shared surfaces for walking and biking. Two-way bike travel could also be allowed with contra-flow bike lanes (as shown in the image to the right). A minimum 20-foot wide paved surface must remain to adequately accommodate emergency vehicles.

Advantages:

1. Potential to implement options 1a and 1b, or 3 (depending on the existing paved street surface) to accommodate pedestrians and bicyclists
2. Could allow contra-flow bike travel
3. Simplified street crossings for pedestrians and bicyclists

Disadvantages:

1. May encourage increased vehicle travel speeds
2. May increase out-of-direction travel for drivers
3. Would require two parallel streets to serve as one-way pairs
4. Would be required to maintain a 20-foot paved surface for emergency vehicle access

- **Option 5: Implement Neighborhood Greenways**

A network of comfortable walking and biking routes can help connect major destinations and neighborhoods in Astoria. These routes, sometimes referred to as neighborhood greenways, are an adaptation of shared roadways that modify existing low volume, low speed streets to prioritize the through movement of bicyclists and pedestrians while maintaining local access for automobiles. Neighborhood Greenways typically include wayfinding signage and pavement markings (SLMs), as well as traffic-calming features that reduce motor vehicle speeds and volumes. Where these facilities cross major roadways it is important to provide visible and safe pedestrian and bicycle crossing treatments, such as Rectangular Rapid Flash Beacons paired with a continental crosswalk.

Further enhancements may include "green street" features such as bio-swales and street trees, in addition to wider sidewalks and improved pedestrian amenities (e.g., benches and pedestrian-scale lighting). A network of Neighborhood Greenways helps encourage active transportation by providing comfortable, low-stress routes between neighborhoods and local parks, schools, and shopping areas. The Neighborhood Greenway network is generally off the main street system to attract less experienced walkers and bikers. It is generally envisioned to act like a linear park system linking parks, schools, jobs and other destinations in the City through a network of on-street shared-use streets.

Advantages:

1. Streets are modified to prioritize walking and biking
2. Cost-effective and easy to implement when compared to bike lanes and shared-use paths
3. Would provide more comfortable routes parallel to major facilities (i.e. Irving Avenue)
4. Would help encourage reduced vehicle speeds and through traffic

Disadvantages:

1. Could reduce access for emergency vehicles if motor vehicle movements for an approach are physically restricted at intersections
2. Could increase out-of-direction travel or travel times for drivers if movements are restricted at intersections

- **Option 6: Slow down or re-route drivers to enhance walking and bicycling**

Speed and volume concerns can be addressed through traffic calming installations that bring the speed differential between motor vehicles and non-motorized travelers to a more comfortable and safe level. Typical traffic calming measures in use in Astoria and other similar communities include speed humps, chicanes, and mini traffic circles. Traffic diverters can also be used to reduce motor vehicle volumes. Speed humps (top photo) are present in Astoria. Chicanes (bottom photo) are a series of raised or delineated curb extensions on alternating sides of a street forming an S-shaped curb, which reduce vehicle speeds through narrowed travel lanes.

Advantages:

1. Potential to coordinate improvement with options 1 through 5 to further enhance walking and bicycling
2. Could increase safety for pedestrians and bicyclists by encouraging slower travel speeds for motor vehicles

Disadvantages:

1. May increase out-of-direction travel or travel times for drivers
2. Could impact on-street parking

The Improved Transportation System in Astoria

2035 intersection operations with the recommended improvements from the aspirational scenarios above are shown in Table 10. With the investments, the transportation system would be expected to accommodate the expected travel demand through 2035.

Table 10: Intersection Operations (p.m. peak)

Intersection	Mobility Target	2035 Baseline Conditions v/c Ratio	2035 Baseline Conditions LOS	2035 Aspirational System Conditions v/c Ratio	2035 Aspirational System Conditions LOS	Planned Intersection Solution
Intersections under ODOT Jurisdiction						
US 101/OR 202-US 101 Business*	0.85	0.84	C	0.84	C	Restripe the northeast corner of the roundabout to route traffic in the circulating lane to the inside travel lane, rather than both lanes
US 101/Hamburg Avenue	0.95	>1.20	F	0.67	D	US 101/US 30 Option C2: Reconfigure US 101/US 30 to four travel lanes, with two westbound through lanes, and one eastbound through lane with a center turn lane.. Restrict access to Hamburg Avenue to left-in, right-in, right-out only
				0.51	B	US 101/US 30 Option D & E: Widen US 101/US 30 to five lanes. Restrict access to Hamburg Avenue to left-in, right-in, right-out only
US 101/Portway Street	0.85	0.61	A	0.80	A	US 101/US 30 Option C2: Reconfigure US 101/US 30 to four travel lanes, with two westbound through lanes, and one eastbound through lane, with a center turn lane. Add separate southbound left and right turn lanes, and implement coordinated signal timing
				0.57	A	US 101/US 30 Option D & E: Widen US 101/US 30 to five lanes. Add separate southbound left and right turn lanes, and implement coordinated signal timing
US 101-US 30/Astoria-Megler Bridge	0.85	0.81	C	0.82	C	US 101/US 30 Option C2: Reconfigure US 101/US 30 to four travel lanes, with two westbound through lanes, and one eastbound through lane, with a center turn lane. Implement coordinated signal timing
				0.78	B	US 101/US 30 Option D & E: Implement coordinated signal timing
US 30/Basin Street**	0.95	0.51	A	0.67	A	US 101/US 30 Option C2: Reconfigure US 101/US 30 to four travel lanes, with two westbound through lanes, and one eastbound through lane, with a center turn lane. Move the traffic signal to Bay Street and restrict access to Basin Street to right-in, right-out only
				0.50	B	US 101/US 30 Option D & E: Widen US 101/US 30 to five lanes. Move the traffic signal to Bay Street and restrict access to Basin Street to right-in, right-out only
US 30/Bond Street-Columbia Avenue	0.85	0.65	C	0.81	B	US 101/US 30 Option C2: Reconfigure US 101/US 30 to four travel lanes, with two westbound through lanes. Add separate eastbound through and right

Table 10: Intersection Operations (p.m. peak)

Intersection	Mobility Target	2035 Baseline Conditions v/c Ratio	2035 Baseline Conditions LOS	2035 Aspirational System Conditions v/c Ratio	2035 Aspirational System Conditions LOS	Planned Intersection Solution
						turn lanes and westbound through and through-right turn lanes at Columbia Avenue. Restrict eastbound and westbound left-turns, widen the Bond Street approach at US 30 to include a left-turn and a shared left-through-right turn lane, and implement coordinated signal timing
				0.81	B	US 101/US 30 Option D & E: Widen US 101/US 30 to five lanes, to include separate eastbound through and right turn lanes and westbound through and through-right turn lanes at Columbia Avenue. Restrict eastbound and westbound left-turns, widen the Bond Street approach at US 30 to include a left-turn and a shared left-through-right turn lane, and implement coordinated signal timing
US 30-Commercial Street/8th Street	0.95	0.38	F	0.38	F	Downtown Option A2: Existing couplet with two-way local streets downtown.
				0.08	B	Downtown Option A3: Existing couplet with two-way local streets; shift the curve at the 8th Street intersection east
				0.21	C	Downtown Option C4 & C5: Three lane, two-way Marine Drive, with two-way local streets.
US 30-Commercial Street/9th Street	0.85	0.52	B	0.42	A	Downtown Option A2: Existing couplet with two-way local streets downtown. Optimize the existing signal timing
				0.45	A	Downtown Option A3: Existing couplet with two-way local streets; shift the curve at the 8th Street intersection east. Optimize the existing signal timing
	0.95			0.23	B	Downtown Option C4 & C5: Three lane, two-way Marine Drive, with two-way local streets. Remove the existing traffic signal
US 30-Marine Drive/9th Street	0.85	0.56	B	0.47	A	Downtown Option A2 & A3: Existing couplet with two-way local streets downtown. Optimize the signal timing
				0.83	C	Downtown Option C4 & C5: Three lane, two-way Marine Drive, with two-way local streets. Optimize the signal timing
US 30-Marine Drive/11th Street	0.85	0.49	A	0.42	A	Downtown Option A2 & A3: Existing couplet with two-way local streets downtown. Optimize the signal timing
				0.67	A	Downtown Option C4 & C5: Three lane, two-way Marine Drive, with two-way

Table 10: Intersection Operations (p.m. peak)

Intersection	Mobility Target	2035 Baseline Conditions v/c Ratio	2035 Baseline Conditions LOS	2035 Aspirational System Conditions v/c Ratio	2035 Aspirational System Conditions LOS	Planned Intersection Solution
						local streets. Optimize the signal timing
US 30-Commercial Street /11th Street	0.85	0.55	A	0.47	A	Downtown Option A2 & A3: Existing couplet with two-way local streets downtown. Optimize the signal timing
	0.95			0.36	B	Downtown Option C4 & C5: Three lane, two-way Marine Drive, with two-way local streets. Remove the existing signal timing
US 30-Commercial Street /12th Street	0.85	0.47	A	0.45	A	Downtown Option A2 & A3: Existing couplet with two-way local streets downtown. Optimize the signal timing
	0.95			0.13	A	Downtown Option C4 & C5: Three lane, two-way Marine Drive, with two-way local streets. Remove the existing signal timing
US 30-Commercial Street /14th Street	0.85	0.54	A	0.58	A	Downtown Option A2 & A3: Existing couplet with two-way local streets downtown. Optimize the signal timing
	0.95			0.34	B	Downtown Option C4 & C5: Three lane, two-way Marine Drive, with two-way local streets. Remove the existing signal timing
US 30-Marine Drive/14th Street	0.85	0.37	A	0.48	B	Downtown Option A2 & A3: Existing couplet with two-way local streets downtown. Optimize the signal timing
				0.73	B	Downtown Option C4 & C5: Three lane, two-way Marine Drive, with two-way local streets. Optimize the signal timing
US 30/16th Street	0.95	>1.20	F	0.55	C	Downtown Option A2 & A3: Existing couplet with two-way local streets downtown. Restrict 16th Street access to left-in, right-in, right-out only
	0.85			0.82	B	Downtown Option C4 & C5: Three lane, two-way Marine Drive, with two-way local streets. Relocate the traffic signal from the Commercial Street/12th Street intersection to US 30/16th Street, and implement coordinated signal timing
US 30/Exchange Street	0.95	0.77	F	0.85	C	Realign 23rd Street to intersect with Exchange Street at US 30; install a traffic signal or roundabout
US 30/33rd Street	0.85	0.80	B	0.76	A	Implement coordinated signal timing
US 30/Nimitz Drive-Maritime Road	0.90	0.85	F	0.79	F	Realignment and striping to include northbound and southbound left, and right-turn lanes at US 30, and a westbound right-turn deceleration lane
OR 202/Williamsport Road	0.90	0.15	B	0.15	B	Provide an eastbound left turn pocket on US 30

Table 10: Intersection Operations (p.m. peak)

Intersection	Mobility Target	2035 Baseline Conditions v/c Ratio	2035 Baseline Conditions LOS	2035 Aspirational System Conditions v/c Ratio	2035 Aspirational System Conditions LOS	Planned Intersection Solution
OR 202/7th Street	0.95	0.27	B	0.31	B	Modify the traffic control at the intersection to make the OR 202 east/west through movements free and the southbound 7th Street approach stop controlled. Restripe 7th Street to include a southbound left, and right-turn lane at OR 202
OR 202/5th Street	0.95	0.49	C	0.30	B	Close the south leg of the OR 202/5th Street intersection once the OR 202/US 101 Business roundabout is constructed
Intersections under Astoria Jurisdiction						
Duane Street/11th Street	0.95	0.28	B	0.19	A	Downtown Option A2 & A3: Existing couplet with two-way local streets downtown. Replace the existing traffic signal with all-way stop control
				0.22	A	Downtown Option C4 & C5: Three lane, two-way Marine Drive, with two-way local streets. Replace the existing traffic signal with all-way stop control
Exchange Street/16th Street	0.95	0.68	C	0.61	C	Downtown Option A2 & A3: Existing couplet with two-way local streets downtown
				0.62	D	Downtown Option C4 & C5: Three lane, two-way Marine Drive, with two-way local streets
Irving Avenue/16th Street	0.95	0.14	C	0.14	C	N/A
Exchange Street/8th Street	0.95	0.20	B	0.09	B	Downtown Option A2 & A3: Existing couplet with two-way local streets downtown
				0.18	B	Downtown Option C4 & C5: Three lane, two-way Marine Drive, with two-way local streets
Niagara Avenue/8th Street	0.95	0.37	C	0.37	C	Install signage to clarify the traffic patterns at the intersection

Note: *NCHRP Report 572 Roundabout Analysis utilized
V/C ratio and LOS reported for the stop or yield controlled approach at unsignalized intersections
Bolded Red and Shaded indicates intersection exceeds mobility standard

Attachment 1: Planned but Unconstructed Projects

Project Description	Project Elements	Assessment	Include Project in TSP Update?
US 101 between Hamburg Avenue and Astoria-Megler Bridge	Widen US 30 to a 108' cross-section, with four travel lanes, center turn lane, bike lanes, parking and 10' sidewalks. A 90' cross-section, excluding parking and with 9' sidewalks is recommended in constrained areas	Existing access and operational issues	Solution to be identified during alternatives analysis
US 30 between Astoria-Megler Bridge and Columbia/Bond	Widen US 30 between Astoria-Megler Bridge and Columbia/Bond to a 94' cross-section, with four travel lanes, bike lanes, parking and 10' sidewalks. A 82' cross-section, excluding parking from one side and with 11' travel lanes is recommended in constrained areas	Will be reviewed with US 30 road diet alternatives analysis	Solution to be identified during alternatives analysis
US 30 between 5th Street and 8th Street	Install a turn lane and a raised pedestrian island at intersections along Marine Drive (US 30) between 5th Street and 8th Street	Pedestrian and bicycle improvement needs	Solution to be identified during alternatives analysis
Marine Drive and Commercial Street between 10th Street and 12th Street	Construct pedestrian curb extensions at the 10th, 11th, and 12th Street intersections with Marine Drive and Commercial Street within the downtown couplet	Pedestrian improvement needs	Yes
US 30 from 16th Street to Exchange Street	Extend the one-way Couplet east from the downtown area, realign US 30/Exchange Street intersection, and add a signalized pedestrian crossing at US 30/17th Street	Fatal flaw: Removed due to livability, multi-modal access and funding constraints.	No
	Or widen US 30 to five lanes from 16th Street to Exchange Street and signalize the US 30/Exchange Street intersection		No
US 30 from 39th Street to 46th Street	Extend the two-way left turn lane on US 30 from 39th Street to 46th Street	No access for most of this segment	No
US 30 between 48th Street and 50th Street	Widen US 30 between 48th Street and 50th Street to include a continuous two-way left-turn lane and 4-foot shoulders	A modified version was recommended to include speed management rather than roadway widening.	Yes

Project Description	Project Elements	Assessment	Include Project in TSP Update?
US 101/Hamburg Avenue	Restrict the southbound left and southbound through movements out of Hamburg Avenue.	Narrow street and safety concerns	No
	Long-term install traffic signal and allow all movements or add north leg to the Smith Point Roundabout	Fatal flaw: Spacing from roundabout and wetland constraints	No
US 30/Astoria-Megler Bridge	Construct two-lane roundabout	Topographic and cost constraints	No
US 30/ Basin Street	Add signs to not block intersection.	Port of Astoria no longer interested in this option	No
	Replace the traffic signal (in conjunction with the roundabout at US 30/US 101) with a flashing yellow light and restrict southbound left turns from Basin Street		
US 30/Columbia Avenue/Bond Street	Redesign intersection to include two approach lanes from Bond Street by removing the existing floating island and approximately 150 feet of parking (4-5 parking stalls) on the north side of Bond Street near the throat of the intersection	Will be reviewed with US 30 road diet alternatives analysis	Solution to be identified during alternatives analysis
US 30/7th Street	Convert 7th Street to a one-way southbound roadway between US 30 and Bond Street and add a pedestrian island to US 30	Will be reviewed with US 30 road diet alternatives analysis	Solution to be identified during alternatives analysis
US 30/Commercial Street	Realign intersection to a three-legged "T" intersection	Will be reviewed with Downtown alternatives analysis	Solution to be identified during alternatives analysis
	Shift the curve at the west end of the couplet east by traveling through portions of the block between 8th and 9th Streets, and between 9th and 10th Streets		
US 30/Exchange Street/23rd Street	Install a traffic signal	Existing access issues	Yes, as a roundabout or traffic signal
	Realign 23rd Street to intersect with Exchange Street at US 30		Yes
US 30/45th Street	Install left-turn pockets in both the eastbound and westbound directions	Safety enhancement- Reduces rear-end	Yes

Project Description	Project Elements	Assessment	Include Project in TSP Update?
		collision potential	
US 30/54th Street	Widen 54th Street north of US 30 to meet the City of Astoria's design standard	Street is under Federal Government jurisdiction. Primary access to Tongue Point.	Yes
US 30/Nimitz Road-Maritime Road	Realignment and striping including a westbound right-turn deceleration lane	Port of Astoria growth area; high speeds along US 30; sharp turn for westbound traffic turning onto Maritime Road	Yes
US 30/Liberty Lane	Realign intersection and provide a left turn pocket on US 30	Port of Astoria growth area; high speeds along US 30	Yes
US 30 from Exchange Street to 32nd Street	Add two-way left turning lane, removing parking	Several driveways along this segment; High collision segment; will require removal of some parking	Yes
OR 202 from 8th Street to Wall Street	Install a center turn lane from 8th Street to Wall Street	Several driveways along this segment and industrial uses	Yes, from 8th Street to SE 2nd Street
OR 202/Denver Street	Install left turn lane on Denver Street	Adequate width to restripe Denver Street	Yes
	Install westbound right deceleration lane on OR 202	Collision data does not support the need for deceleration lane	No

Project Description	Project Elements	Assessment	Include Project in TSP Update?
OR 202/US 101 Business/5th Street	Realign 7th Street to intersect OR 202 at US 101 Business/5th Street and form a 4-legged intersection	Fatal flaw: Removed due to funding constraints.	No
	Install a Roundabout	Existing safety issues: Most recent plan recommended a roundabout.	Yes
	Convert the northbound right-turn from US 101 Business into a free movement that merges onto OR 202		No
	Install a traffic signal		No
OR 202/Kearney Street/2nd Street	Combine Kearney Street and 2nd Street into one access to OR 202	Closely spaced driveways; primary access to residential neighborhood	Yes
	Add eastbound left-turn lane on OR 202		Yes
US 101 Business from OR 202 south to Miles Crossing	Widen to a three lane, 62' cross-section, with two 12' travel lanes, a 14' center turn lanes, and 6' sidewalks and bike-lanes on both sides	Existing capacity constraints and multi-modal needs	Yes
Taylor Avenue	Close Hamburg Avenue end of Taylor Avenue, and allow two-way traffic	Existing sight distance constraints	Yes
Portway Street	Install eastbound left turn lane on Marine Drive	Primary access to the Port and can reduce the demand at the US 30/Hamburg Avenue intersection	Yes
	Move Portway Street centerline to the west to accommodate trucks making westbound right turn; requires right-of-way acquisition from parcel at northwest corner of intersection		Yes
	Modify Portway Street to include a left-turn only and a shared left/right turn lane, with a 10' sidewalk on east side and no sidewalk on the west side of Portway Street		Yes
	Improve Portway Street to City standards between Pier 1 and Marine Drive		Yes
Bay Street	Improve Bay Street to connect with internal street system	Improves access to the Port of Astoria	Yes
	Extend Bay Street north of the trolley tracks to a turnaround near the Columbia River		
Niagara Avenue/7th and 8th	Channelization to improve sight distance for turning traffic	Reduce pavement	Yes

Project Description	Project Elements	Assessment	Include Project in TSP Update?
Street	Consider a road diet/traffic calming	width to enhance safety	Yes
Duane Street and Exchange Street	Remove the one-way designations, making Duane and Exchange streets two-way. This would involve restriping and resigning, reconfiguration of intersections, and signalization	Will be reviewed with Downtown alternatives analysis	Solution to be identified during alternatives analysis
	Extend one-way travel on Duane Street and Exchange Street to 17th Street	Will be reviewed with Downtown alternatives analysis	Solution to be identified during alternatives analysis
8th Street between Duane Street and Commercial Street	Convert Eighth Street between Duane and Commercial to one-way southbound segment and involve the restriping and resigning of the roadway	Will be reviewed with Downtown alternatives analysis	Solution to be identified during alternatives analysis
16th and 17th Street	Upgrade 17th Street to a collector street and downgrade 16th Street to a major local street between Marine Drive and Exchange Street.	Will be reviewed with Downtown alternatives analysis	Solution to be identified during alternatives analysis
	Add a traffic signal at Marine Drive/17th Street and coordinate with other existing and future signals along Marine Drive	A modified version was recommended to add a traffic signal at 16th to improve intersection capacity	Yes, with traffic signal at 16th
Irving Avenue	Extend to Nimitz Drive-Spruance Road	Topographic and cost constraints, but would provide a key alternate route to US 30	Yes
Local Streets north of Marine Drive	Construct a new east to west roadway north of Marine Drive between 29th Street and 33rd Street with a 28 to 30 foot street width, and 50 foot right-of-way	Provides a key alternate route to US 30	Yes

Project Description	Project Elements	Assessment	Include Project in TSP Update?
	Construct a parallel local roadway on the north side of US 30 between 36th Street and 39th Street in conjunction with new development	Provides a key alternate route to US 30	Yes
Tongue Point Road	Widen Tongue Point Job Corp Access Roadway to meet the City of Astoria's design standards for a major local street and accommodate projected traffic growth	Street is under Federal Government jurisdiction. Primary access to Tongue Point.	Yes
Commercial Street (near 44th Street):	Extend Commercial Street to 43rd Street in conjunction with the Franklin Street extension to 43rd Street	Topographic and cost constraints	No

Section K: Memo 10- Stakeholder Interview Summary #2

Section K: Memo 10- Stakeholder Interview Summary #2

Draft Memorandum

Date: June 12, 2013

To: Astoria TSP Update Project Management Team

From: Chris Maciejewski, PE, PTOE, DKS Associates
Kevin Chewuk, PTP, DKS Associates

Subject: **Astoria Transportation System Plan Update**
Stakeholder Interviews #2

Stakeholder Interviews

Project staff met with eleven Astoria residents to gather input on the potential improvements and circulation options outlined in the Alternative Evaluation Technical Memorandum. This document summarizes the outcome of those meetings, with input provided from the following eleven residents:

- Andy Rasmussen, Engineer with National Park Service and Bicycle advocate
- Dulcye Taylor, Astoria Downtown Historic District Association
- Tom Henderson, Columbia Memorial Hospital
- Herb Florer, Port of Astoria
- Jarrod Karnofski, Columbia Memorial Hosptial
- Kurt Englund, Business Owner- England Marine and Industrial Supply
- Mitch Mitchum, Astoria Trolley
- Rae Goforth, President of Uniontown Association
- Skip Hauke, Chamber of Commerce
- Tita Montero, Tongue Point Job Corps Center
- Zetty McKay, Astoria Traffic Safety Committee and Planning Commission President

Downtown Circulation Options

Stakeholders made the following comments regarding the downtown circulation options:

Duane Street Option

It was expressed by a stakeholder that the Duane Street couplet makes sense.

Two-Way Marine Drive Option

Stakeholders were generally divided between opening Marine Drive to two-way travel, mostly due to the issue of parking removal. The following comments were made regarding the parking issue:

- Ok with parking removal
- Parking loss on Marine Drive can't happen.
    - Would have to replace somehow.
    - Surface lots in "pockets".
    - Behind bowling alley.
- Removing parking on Marine Drive is a major flaw.
- Not an easy decision and community will be split.

One stakeholder likes that this option would remove trucks from Commercial Street. Another stakeholder was not a fan of this option because of congestion.

Other Comments

Stakeholders made the following comments regarding other items in regards to downtown circulation:

- Is it possible to take the highway off Commercial Street and make it one lane, eastbound, with diagonal parking?
- Two-way local streets make sense.
- Is traffic calming (e.g., 20 mph) an option on Exchange Street?
- Options in downtown that send more traffic on Exchange Street will be a problem for Columbia Hospital campus planning.
- A stakeholder expressed that Exchange Street would be best used for access to their properties.

Marine Drive – Columbia to 7th Circulation Options

Stakeholders made the following comments regarding the Marine Drive (Columbia to 7th) circulation options:

Road Diet

The following comments were made regarding the road diet option on Marine Drive:

- The three-lane configuration is a priority near McDonalds as there is a demand for left turn movements.
- The general consensus is that it is worthwhile. Stakeholders are okay with accepting some congestion impact to a degree.
- Can the road diet be continued further west?
- Keep 5-lane to Hume Avenue.
- Key pedestrian crossings include:
    - Mid-block crossing at Astoria Rivershore Hotel.
    - Crossing near the mini-mart.

Reopen Bond to 2-Way

One stakeholder comments that there is benefit to reopening Bond to two-way, but there needs to be a major investment to deal with slide issues.

US 101/US 30 – Hamburg to Columbia Circulation Options

Stakeholders made the following comments regarding the US 101/US 30 (Hamburg to Columbia) circulation options:

4-Lane Option

Stakeholders seem divided between this option. There is some skepticism, and the benefits are not clear. One stakeholder commented that there is pedestrian crossing demand at Portway, whereas another stakeholder commented that the need for mid-block pedestrian crossings is minimal. A stakeholder commented that property access needs are minimal.

5-Lane Option

A stakeholder commented that overall, corridor widening not worth the cost. However, widening for all the signals makes sense

Other Comments

One stakeholder commented that doing nothing is probably ok.

Walking Improvements

Stakeholders made the following comments regarding walking improvements:

- Curb extensions are needed at 14th Street.
- An enhanced crossing at Hamburg Avenue should be looked into.

Biking Improvements

Stakeholders made the following comments regarding biking improvements:

- Williamsport Road should have a bike facility—this could be a shared-use path.
- Using the roundabout is tough as a bicyclist. There needs to be a Rectangular Rapid Flashing Beacon at the crossing on the east leg, which is a high speed exit.
- Bike "rest areas" could be a bicycle improvement for the city.

Shared-Use Paths/Trails Improvements

Stakeholders made the following comments regarding shared-use paths/trail improvements:

- The link along US 202 to Williamsport Road would be very high cost. It is better to focus on improving the trail network to the sports complex (this should be the priority).
- There needs to be separate bicycle and pedestrian facilities on Coxcomb Drive to the Astoria Column—trails are not adequate for everyone.

Driving Improvements

Stakeholders made the following comments regarding driving improvements:

Solutions to Manage the Transportation System

The following comments were made in regards to D19:

- Closing the left out of Hamburg Avenue is okay.
- Signalizing the left turn at Hamburg Avenue should be explored. Queuing would also need to be reviewed to be sure that queuing would not back into the roundabout. If needed, the left turn pocket could be extended, and maybe a queuing detection system could be implemented.
- This improvement makes sense as a major cost improvement. However, is it an option to close the Portway signal, make it a minor connection, and install a new signalized intersection between Portway Street and Hamburg Avenue?

There was a lot opposition and skepticism regarding the D20 and D21 improvements. The following comments were made:

- Bay Street is narrow for a main access—it is not a good visual spot.
- It would be difficult to put through-traffic in front of Red Building.
- It would have to be combined with signal upgrades at Columbia Street as the two signals would be close together—the Columbia Street signal is the worst problem today.
- What are the impacts to Memorial?

- This would make performance worse.
- The benefits are unclear.
- The Basin Street signal is more important than a signal at Bay Street.
- There are good pedestrian connections already.
- All that is needed is a road connection from Bay Street to Basin Street. It would go through one property south of the roadway and would be good as a secondary connection.
- Basin Street should be left alone. Bay Street should continue across the railroad as a local road.

Other comments regarding solutions to manage the transportation system include:

- Exchange Street/23rd Street could work (D6). Parking may be put in the old gas station area.
- D7 makes sense.
- D11 is probably a low priority. It is mainly a truck route for logging.
- The US 202/7th Street intersection reconfiguration is fine (D12).

Solutions to Expand Streets and Intersections

The following comments were made regarding solutions to expanding streets and intersections:

- D31 is difficult because of parking.
- D34 is an important upgrade/priority as long as tenants are okay with it.

Other Comments

Other comments made regarding driving improvements include:

- Bridge narrowing on US 101b is a problem. The bridge hasn't been raised in years. The bridge deck could be widened if the lift could be removed.
- The northbound left turn at 14th Street and Marine Street is difficult for drivers and it is hard to see pedestrians. Advanced pedestrian indication should be investigated here.
- A stop sign at the 17th Street/Irving Avenue intersection may be needed.
- Franklin Avenue to 45th Street should be looked at as an improvement.
- When bridge goes up, the roundabout locks up. Could it be changed to a Reed Market style system?
- What will happen to truck volumes if aspirational improvements near the port are made? Will they quadruple?
- A policy statement will be needed if a 4th leg to the roundabout is needed in the future.
- If more intense development occurs, a signal at the US 30/Maritime-Nimitz intersection may be needed.

Section L: Memo 11- Implementing Ordinances

Section L: Memo 11- Implementing Ordinances

TECHNICAL MEMORANDUM

DATE: February 19, 2014

TO: Astoria TSP Update Project Management Team

FROM: Matt Hastie and Shayna Rehberg, Angelo Planning Group

SUBJECT: **Astoria Transportation System Plan Update**
Technical Memo #11 – Implementation Ordinances

This memorandum presents draft proposed amendments to the City of Astoria Comprehensive Plan and Development Code. They will be reviewed and considered for adoption in conjunction with the updated Transportation System Plan (TSP), as they include amendments that implement recommendations from the TSP, create consistency between the TSP and other adopted documents, and comply with State transportation planning regulations.

Proposed Amendments to the Comprehensive Plan

Proposed amendments to the Comprehensive Plan are those that can be integrated either into the existing transportation element of the Comprehensive Plan – overwriting existing transportation goals and policies in CP.350-CP.365 – or into the Goals and Policies section of the updated TSP. (The TSP itself is an element of the Comprehensive Plan.) Either way these amendments will replace and update the goals and policies from the 1999 TSP.

The following general transportation goals and objectives were developed during the TSP update process (Technical Memorandum #3), and it is recommended that they be included in the Goals and Policies section of the TSP.

Goal 1: Health and Safety

Develop a transportation system that maintains and improves individual health and safety by maximizing active transportation options, public safety and service access, and safe and smooth connects for all modes.

Goal 1 Objectives

1. Maximize active transportation options.
2. Improve safety and provide safe connections for all modes and meet applicable City and Americans with Disabilities (ADA) standards.
3. Increase public safety and service access.
4. Increase the city's ability to handle natural disasters.

Goal 2: Equity

Develop and maintain a well-connected transportation system that offers travel choices, reduces travel distance, improves reliability, and manages congestion for all modes.

Goal 2 Objectives

1. Reduce travel distance for all modes.
2. Improve travel reliability for all modes.
3. Manage congestion for all modes.
4. Enhance connectivity, and integrate all modes and destinations.
5. Increase access to the transportation system for all modes regardless of age, ability, income, and geographic location.
6. Balance the needs of citizens' viewpoints with public agency requirements.

Goal 3: Economic Vitality

Support the development and revitalization efforts of the City, Region, and State economies and create a climate that encourages growth of existing and new businesses.

Goal 3 Objectives

1. Improve the freight system efficiency, access, and capacity.
2. Integrate the Port needs for rail, freight, and river terminal facilities.

3. Manage parking efficiently and ensure that it supports downtown business needs and promotes new development.

4. Balance local access with the need to serve regional traffic on state highways.

5. Provide transportation facilities that support existing and planned land uses.

6. Enhance the vitality of the Astoria downtown area by incorporating roadway design elements for all modes.

7. Ensure that all new development contributes a fair share toward on-site and off-site transportation system improvements.

Goal 4: Livability

Customize transportation solutions to suit the local context while providing a system that supports active transportation, promotes public health, facilitates access to daily needs and services, and enhances the livability of the Astoria neighborhoods and business community.

Goal 4 Objectives

1. Protect residential neighborhoods from excessive through traffic and travel speeds.

2. Enhance connections between community amenities.

3. Balance downtown livability with highway freight and seasonal congestion pressures.

4. Design streets to serve the widest range of users, support adjacent land uses, and increase livability through street dimensions, aesthetics, and furnishings.

5. Enhance the quality of life downtown and in neighborhoods.

Goal 5: Sustainability

Provide a sustainable transportation system that meets the needs of present and future generations that is environmentally, fiscally and socially sustainable.

Goal 5 Objectives

1. Support travel options that allow individuals to reduce single-occupant vehicle trips.

2. Protect the health of the rivers and other natural areas or environments.

3. Support the reduction of greenhouse gas emissions from transportation sources.

4. Support and encourage transportation system management (TSM) and transportation demand management (TDM) solutions to congestion.

5. Protect the historic character of the community.

Goal 6: Fiscally Responsibility

Plan for an economically viable transportation system, that protects and improves existing transportation assets while cost-effectively enhancing the total system and pursuing additional transportation funding.

Goal 6 Objectives

1. Plan for an economically viable and cost-effective transportation system.

2. Identify and develop diverse and stable funding sources to implement recommended projects in a timely fashion and ensure sustained funding for transportation projects and maintenance.

3. Make maintenance and safety of the transportation system a priority.

4. Maximize the cost effectiveness of transportation improvements by prioritizing operational enhancements and improvements that address key bottlenecks.

5. Identify local street improvement projects that can be funded through ODOT grant programs.

6. Provide funding for local share (i.e., match) of capital projects jointly funded with other public partners.

7. Prioritize funding of projects that are most effective at meeting the goals and policies of the Transportation System Plan.

Goal 7: Compatibility

Develop a transportation system that is consistent with the City's Comprehensive Plan and that coordinates with County, State, and Regional plans.

Goal 7 Objectives

1. Coordinate and cooperate with adjacent jurisdictions and other transportation agencies to develop transportation projects that benefit the City, Region, and State as a whole.

2. Work collaboratively with other jurisdictions and agencies to ensure the transportation system functions seamlessly.

3. Coordinate with other jurisdictions and community organizations to develop and distribute transportation-related information.

4. Review City transportation standards periodically to ensure consistency with Regional, State, and Federal standards.

5. Coordinate with the County and State agencies to ensure that improvements to County and State highways within the City benefit all modes of transportation.

6. Participate with ODOT and Clatsop County in the revision of their transportation system plans, and coordinate land development outside of the Astoria area to ensure provision of a transportation system that serves the needs of all users.

7. Participate in updates of the ODOT State Transportation Improvement Program (STIP) and Clatsop County Capital Improvement Program (CIP) to promote the inclusion of projects identified in the Astoria TSP.

Proposed Amendments to the Development Code

Proposed amendments to the City Development Code are based on the project scope of work, requests from the City of Astoria, and issues of compliance with the Transportation Planning Rule (TPR) identified in the Background Document Review prepared earlier in this project (Task 3.2).

TPR compliance issues include access management, protection of transportation facilities, support of multi-modal transportation, and agency coordination as embodied in sections -0045 (Implementation of the Transportation System Plan) and -0060 (Plan and Land Use Regulation Amendments) of the TPR (OAR 660-012).

Proposed amendment language is based largely on that provided in the Oregon Transportation Growth Management Model Development Code for Small Cities, 3rd Edition (October 2012) ("Model Code"). Other sources of proposed language include development codes from the Cities of Milwaukie, Oregon City, Eugene, Salem, Sherwood, and Springfield. However, code language and structure have been tailored to be integrated with Astoria's Development Code.

The proposed amendments involve changes to Article 1 (General Provisions), Article 2 (Use Zones), Article 3 (Additional Use and Development Standards), Article 7 (Off-Street Parking and Loading), Article 9 (Administrative Procedures), Article 10 (Amendments), and Article 13 (Subdivisions and Land Partitions). The amendments are presented in sequential order as they would appear in the Development Code. Language is provided in "adoption-ready" format; language that is proposed to be removed appears as ~~struck through~~ and language to be added as <u>underlined</u>. Proposed amendments to the Development Code are provided in Table 1. Table 2 presents proposed amendments to other adopted City documents related specifically to vision clearance area standards. Both tables include explanations or other issues related to the amendments in a commentary column alongside the amendments.

Table 1: Proposed Amendments to the City of Astoria Development Code

Proposed Amendment	Commentary
ARTICLE 1 **BASIC PROVISIONS** ~~1.220. ASTORIA WATERFRONT PLANNING STUDY.~~ ~~There is hereby adopted by this reference, the Astoria Waterfront Planning Study, dated June, 1990, the original document of which is on file in the office of the Community Development Director of the City of Astoria.~~ ~~1.230. ASTORIA WATERFRONT REVITALIZATION PLAN.~~ ~~There is hereby adopted by this reference, the Astoria Waterfront Revitalization Plan, adopted by the City Council on February 20, 1986, the original document of which is on file in the office of the Community Development Director of the City of Astoria.~~ ~~1.235 ASTORIA TRANSPORTATION SYSTEM PLAN.~~ ~~There is hereby adopted by this reference, the Astoria Transportation System Plan, adopted by the City Council on November 15, 1999, the original document of which is on file in the office of the Community Development Director of the City of Astoria.~~ ~~1.240 ASTORIA TRAILS MASTER PLAN.~~ ~~There is hereby adopted by this reference, the Astoria Trails Master Plan, adopted by the City Council on March 20, 2006, the original document of which is on file in the office of the Parks and Community Services Director of the City of Astoria. (Section 1.240 added by Ordinance 06-04, 6-19-06)~~	The TSP, as well as other master plans and refinement plans, should be adopted as elements of the Comprehensive Plan, not the Development Code. So references should be struck here and added to the Comprehensive Plan.

~~1.245 PORT/UNIONTOWN TRANSPORTATION REFINEMENT PLAN.~~ ~~There is hereby adopted by this reference, the Port/Uniontown Transportation Refinement Plan, adopted by the City Council on February 20, 2007, the original document of which is on file in the office of the Community Development Director of the City of Astoria. *(Section 1.245 added by Ordinance 07-01, 2-20-07)*~~ ~~1.250 EAST GATEWAY TRANSPORTATION SYSTEM PLAN~~ ~~There is hereby adopted by this reference, the East Gateway Transportation System Plan, adopted by the City Council on February 20, 2007, the original document of which is on file in the office of the Community Development Director of the City of Astoria. *(Section 1.250 added by Ordinance 07-01, 2-20-07)*~~ ~~1.252 ASTORIA HISTORIC PRESERVATION PLAN~~ ~~There is hereby adopted by this reference, the Astoria Historic Preservation Plan, adopted by the City Council on April 21, 2008, the original document of which is on file in the office of the Community Development Director of the City of Astoria. (Section 1.252 added by Ordinance 08-08, 4-21-08)~~ ~~1.253 BUILDABLE LANDS INVENTORY~~ ~~There is hereby adopted by this reference, the Buildable Lands Inventory, adopted by the City Council on July 5, 2011, original document of which is on file in the office of the Community Development Director of the City of Astoria. (Section 1.253 added by Ordinance 11-06, 7-5-11)~~	

1.400. DEFINITIONS. ACCESS WAY. A walkway providing a through connection for pedestrians and bicyclists between two streets, between two lots, or between a development and a public right-of-way. It may be an access way for pedestrians and bicyclists (with no vehicle access), or a walkway on public or private property (*i.e.,* with a public access easement); it may also be designed to accommodate emergency vehicles. See also, Walkway. BLOCK: A parcel of land bounded by three or more streets in a land division. BLOCK LENGTH: The distance measured along all that part of one side of a street which is between two intersection or intercepting streets, or between an intercepting street and a railroad right-of- way, water course, body of water or unsubdivided acreage. BUILDING LINE: A line established by an ordinance to govern the placement of a building with respect to the front lot line through the setback requirements of a minimum front yard. A building line is ordinarily parallel to the front lot line and at a distance in accordance with the setback requirement. A building line indicates the limit beyond which buildings or structures may not be erected. For lots contained in an official subdivision plat recorded before December 7, 1961, the building line may be taken as shown therein. BUILDING OFFICIAL: The officer or other designated authority charged with the administration and enforcement of the Building Code, or a regularly authorized deputy. ~~As used in the Uniform Code for the Abatement of Dangerous Buildings, is the Public Works Director of the City of Astoria.~~ CITY ENGINEER: The certified official or other designated authority charged with the administration of the Engineering Division of the City's Public Works Department or his/her designee.	Definitions for Article 13, Subdivisions and Land Partition are being consolidated in Section 1.400.

COMMUNITY DEVELOPMENT DIRECTOR. The person designated as having overall responsibility for the activities of the City's Community Development Department or his/her designee.

DECLARANT: The person who files a declaration under ORS Chapter 92.

DECLARATION: The instrument by which the subdivision or partition plat was created.

DRAINAGE LAND: Land required for drainage ditches, or required along a natural stream or water course for preserving the channel and providing for the flow of water therein, to safeguard the public against flood damage or the accumulation of surface water.

EASEMENT: A grant of the right to use a portion of land for specific purposes.

INITIAL PLAN: A sketch or schematic plan presented by a subdivider or applicant to the Planning Commission for their comments. The plan may be to any size, scale, and include information deemed necessary by the applicant. Review of the initial plans places no obligation on the commission or the applicant as to the future of such plan.

LIGHT MANUFACTURING: An enterprise involved in the manufacturing of goods or products which require minimal primary processing and which have minimal off-site impacts in terms of noise, glare, odor, air and water pollution. Processing, fabricating, assembly or disassembly of items takes place wholly within an enclosed building, and requires only a small amount of raw materials, land area, power, are easy to transport, and does not require large automated production lines. Facilities typically have less environmental impact than those associated with heavy industry. Examples include food products, brewery, distillery, clothing, electronics, wood working, etc.

LOT:

REVERSED CORNER LOT: A corner lot the side street line of which is substantially a continuation of the front lot line of the first lot to its rear.

OWNER: Those individuals, partnerships, corporations or public agencies holding fee simple title to property, or a purchaser under a recorded instrument of sale. This includes an authorized agent of the owner. Owner does not include those holding easements, leaseholds, or purchasers of less than fee interest.

PARCEL: A unit of land that is created by a partitioning of land.

PARTITION: Either an act of partitioning land or an area or tract of land partitioned as defined in this Section.

MAJOR PARTITION: A partition which includes the creation of a street.

MINOR PARTITION: A partition that does not include the creation of a street.

PARTITION LAND: To divide an area of land into two or three parcels within a calendar year, but does not include:

1. A division of land resulting from a lien foreclosure, foreclosure of a recorded contract for the sale of real property or the creation of cemetery lots; or
2. An adjustment of a property line by the relocation of a common boundary where an additional unit of land is not created and where the existing unit of land reduced in size by the adjustment complies with any applicable Development Code requirement; or
3. A sale or grant by a person to a public agency or public body for State highway, County road, City street or other right of purposes provided such road or right-of-way conforms with the Comprehensive Plan and ORS 215.213(2)(g) to (s) and ORS 215.283(2)(p) to (r). However, any property divided by the sale or grant of property for State highway, county road, city street or other right-of-way purposes shall continue to be considered a single unit of land until such time as

the property is further subdivided or partitioned.

PARTITION PLAT: A final map and other writing containing all the descriptions, locations, specifications, provisions and information concerning a major or minor partition.

PATHWAY/SHARED-USE PATHWAY. A facility for pedestrian and bicycle access conforming to City standards and separated from the street right-of-way, which may or may not be within a public right-of-way.

PEDESTRIAN WAY: A right-of-way for pedestrian traffic.

PERFORMANCE AGREEMENT: A proper petition submitted to and approved by the Council for construction and improvements as required in Section 13.150; or a performance bond executed by a surety company duly licensed to do business in the State, in an amount equal to the full cost of the work to be done, and conditioned upon the faithful performance thereof.

PLAT: A final subdivision plat, replat or partition plat.

PRELIMINARY PLAT: A tentative map and plan for a land division duly submitted to the Community Development Director for Commission consideration and approval and conforming in all respects to the requirements therefore specified in this Ordinance.

PROPERTY LINE: The division line between two units of land.

PROPERTY LINE ADJUSTMENT: The relocation of a common property line between two abutting properties.

PUBLIC WORKS DIRECTOR: The duly appointed Public Works Director of the City of Astoria or his/her designee.

REPLAT: The act of platting the lots, parcels and easements in a recorded subdivision or partition plat to achieve a reconfiguration of the existing subdivision or partition plat or to increase or decrease the number of lots in the subdivision.

RESERVED STRIP: A strip of land, usually one (1) foot in width, reserved across the end of a street or alley and terminating at the boundary of a land division or a strip of land between a dedicated street or less than full width and adjacent acreage, in either case reserved or held for future street extension or widening.

REVERSED CORNER LOT: A corner lot the side street line of which is substantially a continuation of the front line of the first lot to its rear.

RIGHT-OF-WAY: The area between the boundary lines of a street or other easement.

ROADWAY: The portion of a street right-of-way developed for vehicular traffic.

SHOULD: A requirement, unless it can be shown that to comply with the requirement would be unreasonable, impractical, or unfeasible. Economic hardship alone shall not be justification for noncompliance with the requirement, but may be considered in conjunction with other reasons for noncompliance.

SIDEWALK. A paved walkway with rock or paved surfacing within a public street right-of-way that is generally located adjacent to and separated from the roadway by a curb, drainage facility (e.g., ditch or swale), or planter strip.

SINGLE-FAMILY DENSITY AREA: An area abutting a minor street not a business street, where for one block length or more all property on both sides of the street is or as determined by the Planning Commission will be occupied by no more than 4.50 families per acre exclusive of

street right-of-way.

STREET: ~~The entire width between the right-of-way lines of a public way and includes the terms "road", "highway", "avenue", "alley", and other similar designations.~~ A public or private way being the entire width from lot line to lot line that is created to provide ingress or egress for persons to one or more lots, parcels, areas or tracts of land and including the term "road", "highway", "lane", "avenue", "alley" or similar designations.

ALLEY: A narrow street through a block which affords only secondary means of access to abutting property at the rear or sides thereof.

ARTERIAL: A street of considerable continuity which is primarily a traffic artery for intercommunication among large areas

BUSINESS STREET: Any block length along any street, other than an arterial, within which there is or will be provided access to one or more commercial structures.

COLLECTOR: A street supplementary to the arterial street system and a means of intercommunication between this system and smaller area; used to some extent for through traffic and to some extent for access to abutting properties.

CUL-DE-SAC: (Dead End Street) A short street having one end open to traffic and being terminated by a vehicle turnaround.

HALF STREET: The dedication of a portion only of the width of a street, usually along the edge of a subdivision, where the remaining portion of a street has been or could be dedicated in another subdivision.

MAJOR STREET: Same as arterial.

MARGINAL ACCESS STREET: A minor street parallel and adjacent to a major arterial street, providing access to abutting properties, but protected from through traffic.

MINOR STREET: A street intended primarily for access to abutting properties.

SUBDIVIDE: To effect a land division.

SUBDIVIDE LAND: To divide an area or tract of land into four or more lots within a calendar year.

SUBDIVIDER: An owner commencing proceedings under this Chapter to effect a land division by himself or through this lawful agent.
SUBDIVISION: Either an act of subdividing land or an area or tract of land subdivided as defined in this Section.
SUBDIVISION PLAT: A final map and other writing containing all the descriptions, locations, specifications, dedications, provisions and information concerning a subdivision.

TRANSPORTATION FACILITY: ~~Highway, street, road, railroad, bridge and associated structures which provide for land transportation of motorized and/or non-motorized vehicles (excluding logging roads).~~ Transportation facilities include construction, operation, and maintenance of travel lanes, bike lanes and facilities, curbs, gutters, drainage facilities, sidewalks, transit stops, electric car charging stations (without pricing signs), landscaping, and related improvements located within public rights-of-ways controlled by a public agency, consistent with the City Transportation System Plan.

VISION CLEARANCE AREA: A triangular area of a lot at the intersection of ~~two~~ streets, railroads, ~~or a street and an~~ alleys, or driveways~~a street and a railroad~~, as defined in City code Section 6.100~~two sides of which are not lines measured from their corner intersection for a distance specified in Section 3.045 of this code. The third side of the triangle is a line across the corner of the lot joining the ends of the other two sides. Where the lot lines at intersections have rounded corners, the lot lines will be extended in a straight line to a point of intersection~~.
WALKWAY. A sidewalk or pathway, including any access way, allowing pedestrian and bicycle access and improved to City standards, or to other roadway authority standards, as applicable. See also, Access Way, Pathway, Sidewalk.

ARTICLE 2 **USE ZONES** **R-1: LOW DENSITY RESIDENTIAL ZONE** 2.020. USES PERMITTED OUTRIGHT. The following uses and their accessory uses permitted in an R-1 Zone if the Community Development Director determines that the uses will not violate standards referred to in Section 2.030 through 2.050, additional Development Code provisions, Comprehensive Plan, and other City laws: 8. Transportation facilities. **R-2: MEDIUM DENSITY RESIDENTIAL ZONE** 2.065. USES PERMITTED OUTRIGHT. The following uses and their accessory uses are permitted in the R-2 Zone if the Community Development Director determines that the uses will not violate standards referred to in Sections 2.075 through 2.095, additional Development Code provisions, Comprehensive Plan policies, and other City laws: 10. Transportation facilities.	Pursuant to the Transportation Planning Rule, OAR 660-012-0045(1)(a) and (b), transportation uses and facilities shall be either permitted outright in City zoning districts or permitted subject to standards that "do not require interpretation or the exercise of factual, policy, or legal judgment," when they will not have a significant impact on land use.

R-3: HIGH DENSITY RESIDENTIAL ZONE

2.155. USES PERMITTED OUTRIGHT.

The following uses and their accessory uses permitted in the R-3 Zone if the Community Development Director determines that the uses will not violate standards referred to in Section 2.165 through 2.185, additional Development Code provisions, Comprehensive Plan policies, and other City laws:

12. Transportation facilities.

C-1: NEIGHBORHOOD COMMERCIAL ZONE

2.305. USES PERMITTED OUTRIGHT.

The following uses and their accessory uses are permitted in the C-1 Zone if the Community Development Director determines that the uses will not violate standards referred to in Sections 2.315 through 2.335, additional Development Code provisions, the Comprehensive Plan, and other City laws:

9. Transportation facilities.

C-2: TOURIST COMMERCIAL ZONE

2.350. USES PERMITTED OUTRIGHT.

The following uses and their accessory uses are permitted in a C-2 Zone if the Community Development Director determines that the uses will not violate standards referred to in Sections 2.360 to 2.375, additional Development Code provisions, the Comprehensive Plan,

and other City laws:

6. Transportation facilities.

C-3: GENERAL COMMERCIAL ZONE

2.390. USES PERMITTED OUTRIGHT.

The following uses and their accessory uses are permitted in a C-3 Zone if the Community Development Director determines that the uses will not violate standards referred to in Sections 2.400 through 2.415, additional Development Code provisions, the Comprehensive Plan, and other City laws:

22. Transportation facilities.

C-4: CENTRAL COMMERCIAL ZONE

2.430. USES PERMITTED OUTRIGHT.

The following uses and their accessory uses are permitted in a C-4 Zone as an outright use if the Community Development Director determines that the use will not violate standards referred to in Sections 2.440 through 2.445, additional Development Code provisions, the Comprehensive Plan, and other City laws:

17. Transportation facilities.

GI: GENERAL INDUSTRIAL ZONE

2.475 USES PERMITTED OUTRIGHT.

The following uses and their accessory uses are permitted in the General Industrial Zone, subject to the provisions of 2.485, Development Standards and Procedural Requirements. 21. Transportation facilities. See Definitions. 2.485 OTHER APPLICABLE USE STANDARDS. ~~5. Traffic Generation.~~ ~~The City Engineer, in collaboration with the Oregon Department of Transportation (ODOT) and in accordance with applicable requirements of the Transportation Planning Rule and Oregon Administrative Rule (OAR) 660 Division 12, will review the level of traffic to be generated by a proposed use and the adequacy of adjacent streets to handle expected traffic. If it is determined that the level of traffic anticipated to be generated by a proposed use may substantially impact the flow of traffic on adjacent streets and the State Highway transportation facility, a Traffic Impact Study may be requested. If it is determined that adjacent streets are inadequate to handle expected traffic, improvements will be required to resolve the inadequacy.~~ **A-1: AQUATIC ONE DEVELOPMENT ZONE** 2.505. PERMITTED USES. The following uses and activities and their accessory uses and activities are permitted in the Aquatic One Development Zone, subject to the appropriate provisions of Section 2.515, Development Standards and Procedural Requirements:	Currently, the only code reference to a traffic impact study is in the GI Zone. It is recommended that this reference be removed and that a broader subsection on traffic impact studies be added in a new transportation standards section, Section 3.015.

17. Transportation facilities. **A-2: AQUATIC TWO DEVELOPMENT ZONE** 2.530. PERMITTED USES. The following uses and activities and their accessory uses and activities are permitted in the Aquatic Two Development Zone, subject to the appropriate provisions of Section 2.540 Development Standards and Procedural Requirements: 18. Transportation facilities. **A-2A: AQUATIC TWO-A DEVELOPMENT ZONE** 2.555. PERMITTED USES. The following uses and activities and their accessory uses and activities are permitted in the Aquatic Two-A Development Zone, subject to the appropriate provisions of Section 2.565, Development Standards and Procedural Requirements: 17. Transportation facilities. **A-3: AQUATIC CONSERVATION ZONE** 2.580. PERMITTED USES. The following uses and activities and their accessory uses and activities are permitted in the Aquatic Conservation Zone subject to the appropriate provisions of Section 2.590, Development Standards and Procedural Requirements:	Uses permitted in A-3, Aquatic Conservation and A-4, Aquatic Natural are managed for resource protection, preservation, restoration and recreation, with severe restrictions on the intensity and types of uses, therefore, transportation facilities are being limited by the exclusion of electric car charging stations which require parking areas.

21. Transportation facilities, excluding electric car charging stations.

A-4: AQUATIC NATURAL ZONE

2.605. PERMITTED USES.

The following uses and activities and their accessory uses and activities are permitted in the Aquatic Natural Zone subject to the appropriate provisions of Section 2.615, Development Standards and Procedural Requirements:

9. Transportation facilities, excluding electric car charging stations.

S-1: MARINE INDUSTRIAL SHORELANDS

2.655. PERMITTED USES.

The following uses and activities and their accessory uses and activities are permitted in the Marine Industrial Shorelands Zone subject to the applicable provisions of Section 2.665, Development Standards and Procedural Requirements:

9. Transportation facilities.

S-2: GENERAL DEVELOPMENT SHORELANDS ZONE

2.680. PERMITTED USES.

The following uses and activities and their accessory uses and activities are permitted in the General Development Shorelands Zone, subject to the provisions of 2.690, Development Standards and Procedural Requirements.

15. Transportation facilities. **S-2A: TOURIST-ORIENTED SHORELANDS ZONE** 2.705. PERMITTED USES. The following uses and activities and accessory uses and activities are permitted in the Tourist Oriented Shoreland Zone, subject to the provisions of 2.715. Development Standards and Procedural Requirements. 15. Transportation facilities. **S-5: NATURAL SHORELANDS ZONE** 2.735. CONDITIONAL USES. The following uses and activities and their accessory uses and activities may be permitted in the Natural Shorelands Zone as Conditional Uses when authorized in accordance with Article 11, Conditional Uses. These uses and activities are also subject to the appropriate provisions of Section 2.740, Development Standards and Procedural Requirements: 4. Transportation facilities excluding car charging stations and transit stops. **IN: INSTITUTIONAL ZONE** 2.840. USES PERMITTED OUTRIGHT. The following uses and their accessory uses are permitted in an IN Zone if the Community Development Director determines that the uses will not violate standards referred to in	Transportation uses are permitted conditionally in S-5, the Natural Shorelands Zone, which is "managed for resource protection, preservation, restoration and recreation, with severe restrictions on the intensity and types of uses." (Section 2.725)

Sections 2.835 through 2.860, additional Development Code provisions, the Comprehensive Plan, and other City laws: 12. Transportation facilities. **LR: LAND RESERVE ZONE** 2.875. USES PERMITTED OUTRIGHT. The following uses and their accessory uses are permitted in the LR Zone if the Community Development Director determines that the uses will not violate standards referred to in Section 2.880, additional Development Code provisions, Comprehensive Plan, and other City laws. 4. Transportation facilities, excluding electric car charging stations and transit stops. **PD: PLANNED DEVELOPMENT OVERLAY ZONE** 2.895. PERMITTED BUILDINGS AND USES. A. The following buildings and uses may be permitted as hereinafter provided when on sites of three acres or more. Buildings and uses may be permitted either singly or in combination provided the overall density of the planned development does not exceed the density of the parent zone as provided in this Code. 8. Transportation facilities.	Uses in the LR, Land Reserve Zone are restricted as this area is outside the UGB area. Transportation facility development could require a Goal Exception. Facilities are limited by the exclusion of electric car charging stations and transit stops as these are more urban uses.

ARTICLE 3 **ADDITIONAL USE AND DEVELOPMENT STANDARDS** 3.005. ACCESS TO STREETS. Every lot shall abut a street, other than an alley, for at least 25~~0~~ feet. 3.008 VEHICULAR ACCESS AND CIRCULATION. A. Purpose and Intent. Section 3.008 implements the street access policies of the City of Astoria Transportation System Plan. It is intended to promote safe vehicle access and egress to properties, while maintaining traffic operations in conformance with adopted standards. "Safety," for the purposes of this Section, extends to all modes of transportation. B. Applicability. Section 3.008 applies to new development and changes in land use involving a new or modified street connection. Except where the standards of a roadway authority other than the City supersede City standards, this section applies all connections to a street, and to driveways and walkways. The Community Development Director may grant adjustments of 10% or less of the quantitative standard pursuant to Class 1 variance procedures in Article 12. The Planning Commission may grant adjustments of more than 10% of the standard pursuant to Class 2 variance procedures in Article 12. For transportation facility improvement requirements, refer to Section 3.015. C. Traffic Study Requirements. The City in reviewing a development proposal or an action requiring an approach permit may require a Traffic Impact Study, pursuant to Subsection 3.015.A.5, to determine compliance with this code. D. Approach and Driveway Development Standards. Approaches and driveways taking access	It is recommended to amend Section 3.005 to specify a minimum of 25 feet of frontage to be consistent with existing subdivision requirements (Section 13.430.B). Existing Development Code language does not include site development review provisions, including provisions for vehicle access and circulation, other than for land divisions. This proposed new section implements TPR requirements related to access management, particularly OAR 660-12-0045(2)(a). The section is primarily based on Model Code language. The new section is proposed for incorporation into Article 3, rather than into subdivision code in Article 14, so that it may apply to all new development and development that involves

on City streets shall conform to all of the following development standards: 1. The number of approaches on higher classification streets (e.g., collector and arterial streets) shall be minimized; where practicable, access shall be taken first from a lower classification street. Access to single family residential development should not be provided to an arterial or collector roadway. 2. Approaches shall conform to the spacing standards of Subsections E and F below, and shall conform to minimum sight distance and channelization standards of the roadway authority. 3. Driveways shall be paved and meet applicable construction standards in the City Engineering Division Design Standards (Chapter 4 - Roadways). 4. The City Engineer may limit the number or location of connections to a street, or limit directional travel at an approach to one-way, right-turn only, or other restrictions, where the roadway authority requires mitigation to alleviate safety or traffic operations concerns. 5. Where the spacing standards of the roadway authority limit the number or location of connections to a street or highway, the Community Development Director, Planning Commission, or City Engineer as applicable may require a driveway extend to one or more edges of a parcel and be designed to allow for future extension and inter-parcel circulation as adjacent properties develop. The Community Development Director, Planning Commission, or City Engineer as applicable may also require the owner(s) of the subject site to record an access easement for future joint use of the approach and driveway as the adjacent property(ies) develop(s). Where a land division abuts or contains an existing or proposed arterial street, the Planning Commission may require marginal access streets, reverse frontage lots with	changes to street access. The new section includes a reference to a proposed new section, Section 3.015, on transportation standards, which is presented later in this table.

suitable depth, screen planting contained in a non-access reservation along the rear or side property line, or other treatment necessary for adequate protection of residential properties and to afford separation of through and local traffic. 6. Where applicable codes require emergency vehicle access, approaches and driveways shall be designed and constructed to accommodate emergency vehicle apparatus and shall conform to applicable fire protection requirements. The City Engineer may restrict parking, require signage, or require other public safety improvements pursuant to the recommendations of an emergency service provider. 7. As applicable, approaches and driveways shall be designed and constructed to accommodate truck/trailer-turning movements. 8. Residential driveways shall have a minimum depth of 16 feet between the property line and any structure to accommodate on-site vehicular parking. 9. Driveways shall be designed so that vehicle areas, including but not limited to drive-up and drive-through facilities and vehicle storage and service areas, do not obstruct any public right-of-way and do not result in vehicles stacking or backing up onto a street.. 10. Approaches and driveways shall not be wider than necessary to safely accommodate projected peak hour trips and turning movements, and shall be designed to minimize crossing distances for pedestrians. 11. As it deems necessary for pedestrian safety, the City Engineer, in consultation with the roadway authority, as applicable, may require traffic-calming features (such as speed cushions and tables, textured driveway surfaces, curb extensions, signage or traffic control devices, or other features) be installed on or in the vicinity of a site as a condition of development approval. 12. Construction of approaches along acceleration or deceleration lanes, and along	Subsection 8 helps address City concerns about residential parking that occurs in the right-of-way.

tapered (reduced width) portions of a roadway, shall be avoided; except where no reasonable alternative exists and the approach does not create safety or traffic operations concern.

13. Approaches and driveways shall be located and designed to allow for safe maneuvering in and around loading areas, while avoiding conflicts with pedestrians, parking, landscaping, and buildings.

14. Where an accessible route is required pursuant to the Americans with Disabilities Act, approaches and driveways shall meet accessibility requirements.

15. The City Engineer may require changes to the proposed configuration and design of an approach, including the number of drive aisles or lanes, surfacing, traffic-calming features, allowable turning movements, and other changes or mitigation, to ensure traffic safety and operations.

16. Where a new approach onto a State highway or a change of use adjacent to a State highway requires ODOT approval, the applicant is responsible for obtaining ODOT approval. The Community Development Director or Planning Commission may approve a development conditionally, requiring the applicant first obtain required ODOT permit(s) before commencing development, in which case ODOT will work cooperatively with the applicant and the City to avoid unnecessary delays.

17. Where an approach or driveway crosses a drainage ditch, canal, railroad, or other feature that is under the jurisdiction of another agency, the applicant is responsible for obtaining all required approvals and permits from that agency prior to commencing development.

18. Where a proposed driveway crosses a culvert or drainage ditch, the City Engineer may require the developer to install a culvert extending under and beyond the edges of the

driveway on both sides of it, pursuant to applicable City engineering design standards.

19. Except as otherwise required by the applicable roadway authority or waived by the City Engineer/Public Works Director, temporary driveways providing access to a construction site or staging area shall be paved or graveled to prevent tracking of mud onto adjacent paved streets.

E. Approach Separation from Street Intersections. Except as provided by Section 3.008.G, approach, driveway, and intersection spacing shall comply with the minimum distance standards provided in Table 1 (Spacing Standards) of the Astoria Transportation System Plan.

F. Vision Clearance. Refer to Section 6.100 (Vision Clearance Area) of the City code.

G. Exceptions and Adjustments. The City decision body may approve adjustments to the spacing standards of Subsection E above, where an existing connection to a City street does not meet the standards of the roadway authority and the proposed development moves in the direction of code compliance. The City Engineer may also approve a deviation to the spacing standards on City streets where it finds that mitigation measures, such as consolidated access (removal of one access), joint use driveways (more than one property uses same access), directional limitations (e.g., one-way), turning restrictions (e.g., right in/out only), or other mitigation alleviate all traffic operations and safety concerns, through an administrative review procedure with notice pursuant to Section 9.020.

H. Joint Use Access Easement and Maintenance Agreement. Where the City approves a joint use driveway, the property owners shall record an easement with the deed allowing joint use or cross access between adjacent properties. The owners of the properties agreeing to joint use of the driveway shall record a joint maintenance agreement with the deed defining maintenance responsibilities of property owners. The applicant shall provide a

fully executed copy of the agreement to the City for its records, but the City is not responsible for maintaining the driveway or resolving any dispute between property owners. This easement/agreement requirement shall also apply to separate properties under the same ownership.	
3.010 ON-SITE PEDESTRIAN AND BICYCLE ACCESS AND CIRCULATION A. Purpose and Intent. Section 3.010 implements the pedestrian and bicycle access and connectivity policies of City of Astoria Transportation System Plan. It is intended to provide for safe, reasonably direct, and convenient pedestrian and bicycle access and circulation. B. Applicability. Section 3.010 applies to new development and changes in land use involving a new or modified street connection. Except where the standards of a roadway authority other than the City supersede City standards, this section applies all connections to a street, and to driveways and walkways. The Community Development Director may grant adjustments of 10% or less of the quantitative standard pursuant to Class 1 variance procedures in Article 12. The Planning Commission may grant adjustments of more than 10% of the standard pursuant to Class 2 variance procedures in Article 12. For transportation facility improvement requirements, refer to Section 3.015. C. Standards. Applicable development shall conform to all of the following standards for	Existing Development Code language does not include site development provisions for pedestrian and bicycle access and circulation, other than block size and walkway provisions in Article 13 (Subdivisions and Land Partitions). This proposed new section implements TPR requirements related to pedestrian and bicycle access and circulation (OAR 660-12-0045(3)), which are intended to address development of existing plats and proposed land

pedestrian access and circulation: 1. Continuous Walkway System. A walkway system shall extend throughout the development site and connect to adjacent sidewalks, if any, and to all future phases of the development, as applicable. 2. Safe, Direct, and Convenient Walkways. Walkways within developments shall provide safe, reasonably direct, and convenient connections between primary building entrances and all adjacent parking areas, open spaces, recreational areas/playgrounds, and public rights-of-way based on all of the following criteria: a. The walkway is designed primarily for pedestrian and bicycle safety and convenience, meaning it is reasonably free from hazards and obstructions, and provides a reasonably smooth and consistent surface and direct route of travel between destinations. The Community Development Director or Planning Commission as applicable may require landscape buffering between access ways and adjacent parking lots or driveways to mitigate safety concerns. a. The walkway is reasonably direct. A walkway is reasonably direct when it follows a route that does not deviate unnecessarily from a straight line or it does not involve a significant amount of out-of-direction travel. c. The walkway network connects to all primary building entrances and, where required, meets Americans With Disabilities Act requirements. 3. Vehicle/Walkway Separation. Except as required for parking area and driveway crossings, per Subsection 4 below, where a walkway abuts a driveway it shall be raised six (6) inches and curbed along the edge of the driveway/street. Alternatively, the Community Development Director or Planning Commission may approve a walkway abutting a driveway at the same grade as the driveway if the walkway is physically	divisions. The section uses terms such as access way and walkway – both designed to provide pedestrian and bicycle access – that are included in proposed new definitions in Article 1. Block length and perimeter standards that are designed to keep blocks of walkable size, are included in the proposed new section on transportation standards, Section 3.015. Standards proposed in this section and Section 3.015 combine Model Code language and existing land division language.

separated from all vehicle-maneuvering areas; for example, a row of bollards designed for use in parking areas, with adequate minimum spacing between them to prevent vehicles from entering the walkway. 4. Parking Area and Driveway Crossings. Where a walkway crosses a parking area or driveway, it shall be clearly marked with contrasting paving materials (*e.g.,* pavers, light-color concrete inlay between asphalt, or similar contrast). The crossing may be part of a speed table to improve driver-visibility of pedestrians. Painted or thermo-plastic striping and other types of non-permanent applications are discouraged, but may be approved for lesser-used crossings not exceeding 24 feet in length. 5. Walkway Width and Surface. Walkways shall be constructed of concrete, asphalt, brick/masonry pavers, or another durable surface, as approved by the City Engineer and meeting Americans With Disabilities Act requirements, with a surface not less than six (6) feet wide. The Community Development Director or Planning Commission as applicable may require a wider walkway where pedestrian traffic warrants. 6. Mid-Block Walkways. Walkways through blocks for pedestrian and bicycle access shall be provided at least every 330 feet for blocks that exceed the spacing standards in Table 1 of the Transportation System Plan. Road crossings shall be similarly provided and these are addressed in the Transportation System Plan [and the Engineering Division Design Standards for Roadways]. 7. Shared-Use Pathways. Shared-use pathways, designed for use by bicyclists, pedestrians, and other non-motorized users, shall conform to the transportation standards of Section 3.015, and Figure 18 in the Astoria Transportation System Plan. Where approved, shared-use pathways shall be constructed of asphalt, concrete, or another durable surface, as approved by the City Engineer and meeting Americans With Disabilities Act requirements. The City may reduce the width of the paved shared-	Subsection 5 is consistent with proposed changes to subdivision code that require 10-foot walkways with at least six feet of durable surface through blocks more than 600 feet long (Section 13.440.C).The City may choose to add a section to their draft Engineering Division Design Standards that either replicates or refers to the standards for street crossings established in the TSP (Draft TSP, p. 48).

use path to a minimum of eight (8) feet in constrained areas located in steep, environmentally sensitive, rural, historic, or development- limited areas of the City.	
3.015 TRANSPORTATION STANDARDS. A. General Requirements. 1. Except as provided by waiver, deferral, and variance provisions in Subsection 7 below, and the adopted Engineering Design Standards for In-fill Development, existing substandard streets and planned streets within or abutting a proposed development shall be improved pursuant to the standards of this Section as a condition of development approval. Proposed development shall include proposed land divisions, new buildings or structures that require building permits, or substantial changes to a site, use, or structure. For the purposes of this section, "substantial change" is defined as development activity that requires a building permit and involves one or more of the following: a. A new dwelling unit. b. An increase in gross floor area of [50%] or more. c. A projected increase in vehicle trips [as determined by the City Engineer]. 2. All street improvements, including the extension or widening of existing streets and public access ways, shall conform to this Section, and shall be constructed consistent with the City of Astoria Public Works/Engineering Design Standards. 3. All new streets should be contained within a public right-of-way; pedestrian and shared-use access ways may be contained within a right-of-way or a public access easement, subject to review and approval of the Community Development Director or	This proposed new section of Development Code allows for transportation standards to exist outside of subdivision standards, as they do now, so that they may apply to all proposed development and not just subdivisions. The proposed language is mostly based on Model Code. Proposed language also draws on applicability language from the City of Milwaukie as well provisions from existing land division code (Section 13.410). This proposed new code section implements TPR provisions, particularly OAR 660-012-0045(2)(b), that require development standards that support efficient and multi-modal transportation and

Planning Commission (for land divisions) or the City Engineer (for existing plats). [The design and improvement of any street in a land division shall be subject to all requirements prescribed by this ordinance for public streets. The land divider shall provide for the permanent maintenance of any street required for access to property in a private street subdivision or a major partition.] 4. Rough Proportionality. The rough proportionality requirements of this section apply to both frontage and non-frontage improvements. A proportionality analysis will be conducted by the City Engineer for any proposed development that triggers transportation facility improvements pursuant to Section 3.015. The City Engineer will take into consideration any benefits that are estimated to accrue to the development property as a result of any required transportation facility improvements. A proportionality determination can be appealed pursuant to Section 9.040. The following general provisions apply whenever a proportionality analysis is conducted. a. Mitigation of impacts due to increased demand for transportation facilities associated with the proposed development shall be provided in rough proportion to the transportation impacts of the proposed development. When applicable, anticipated impacts will be determined by the Traffic Impact Study (TIS) pursuant to Section 3.015.A.5. When no TIS is required, anticipated impacts will be determined by the City Engineer. b. The following shall be considered when determining proportional improvements: (1) Condition and capacity of existing facilities within the impact area in relation to City standards. The impact area is generally defined as the area within a one-half (1/2) mile radius of the proposed development. If a Traffic Impact Study is required pursuant to Section 3.015.A.5, the impact area is the TIS study area.	balance the function of transportation facilities with proposed development. The section includes references to the City's Engineering Division Design Standards (Roadways). The City is in the process of completing and adopting its engineering design standards for roadways and will ensure consistency between the engineering design standards and the TSP. The proposed rough proportionality provisions in Subsection 4 are intended to ensure that required transportation facility improvements are roughly proportional to the potential impacts of the proposed development. This Development Code language is based on language adopted by the City of Milwaukie.

(2) Existing vehicle, bicycle, pedestrian, and transit use within the impact area. (3) The effect of increased demand on transportation facilities and other approved, but not yet constructed, development projects within the impact area that is associated with the proposed development. (4) Applicable Transportation System Plan goals, policies, and plans. (5) Whether any route affected by increased transportation demand within the impact area is listed in any City program including school trip safety; neighborhood traffic management; capital improvement; system development improvement, or others. (6) Accident history within the impact area. (7) Potential increased safety risks to transportation facility users, including pedestrians and cyclists. (8) Potential benefit the development property will receive as a result of the construction of any required transportation facility improvements. (9) Other considerations as may be identified in the review process.	
5. Traffic Impact Studies. In order to comply with and implement the State Transportation Planning Rule, the City shall adopt a process to coordinate the review of land use applications with roadway authorities and apply conditions to development proposals in order to minimize impacts and protect transportation facilities, which can be done by establishing requirements for traffic impact studies. a. When a Traffic Impact Study is Required. The City or other road authority with jurisdiction may require a Traffic Impact Study (TIS) as part of an application for development, a change in use, or a change in access. Based on information	An important element of this section is its provisions for Traffic Impact Studies (TISs). These provisions respond to the TPR requirement (OAR 660-012-0045(2)(e)) that the City adopt a process to coordinate the review of land use applications

	provided by the applicant about the proposed development, the City will determine when a TIS is required and will consider the following when making that determination. (1) Changes in zoning or a plan amendment designation; (2) Changes in use or intensity of use; (3) The road authority indicates in writing that the proposal may have operational or safety concerns along its facility(ies); (3) An increase in site traffic volume generation by 400 Average Daily Trips (ADT) or more; (4) Potential impact to residential or mixed-use areas; (5) Potential impacts to key walking and biking routes, including, but not limited to school routes and multimodal street improvements identified in the Transportation System Plan; (6)Location of existing or proposed driveways or access connections; (7)An increase in peak hour volume of a particular movement to and from a street or highway by 20 percent or more; (8)An increase in use of adjacent streets by vehicles exceeding the 20,000 pound gross vehicle weights by 10 vehicles or more per day; (9) Potential degradation of intersection level of service (LOS); (10)The location of an existing or proposed approach or access connection does not meet minimum spacing or sight distance requirements or is located where vehicles entering or leaving the property are restricted, or such vehicles are	with roadway authorities and apply conditions to development proposals in order to minimize impacts and protect transportation facilities, which can be done by establishing requirements for TISs. The provisions also respond to the City's request for a clearer trigger for TISs. The conditions under which TISs are required represent a mixture of those from the Model Code and new City of Milwaukie code regarding TISs.

likely to queue or hesitate at an approach or access connection, creating a safety hazard;

(11)A change in internal traffic patterns may cause safety concerns; or

(12) A TIS is required by ODOT pursuant with OAR 734-051.

b. It is the responsibility of the applicant to provide enough detailed information for the City Engineer, for existing plats, or Community Development Director, for proposed land divisions, to make a Traffic Impact Study determination.

c. A Traffic Impact Study determination is not a land use action and may not be appealed.

d. Traffic Impact Study Preparation.

(1) A professional engineer registered in the State of Oregon, in accordance with the requirements of the road authority, shall prepare the Traffic Impact Study as provided for by the applicant.

(2) The City Engineer shall determine the study area, study intersections, trip rates, traffic distribution, and required content of the Traffic Impact Study based on information provided by the applicant about the proposed development.

(3) The study area will generally comprise an area within a one-half mile radius of the development site. If the City Engineer determines that development impacts may extend more than one-half mile from the development site, a larger study area may be required.

(4) If the study area includes State facilities, the City will coordinate with ODOT in preparing the Traffic Impact Study scope.

(5) A project-specific Traffic Impact Study (TIS) Checklist will be provided by the City once the City Engineer has determined the TIS scope. A TIS shall include all of the following elements, unless waived by the City Engineer. (a) Introduction and Summary. This section should include existing and projected trip generation and a summary of transportation operations and proposed mitigation(s). (b) Existing Conditions. This section should include a study area description, including existing study intersection level of service and review of crash histories in the study area. (c) Impacts. This section should include the proposed site plan, evaluation of the proposed site plan, and a project-related trip analysis. Trip analysis will address mobility targets established in the Transportation System Plan. A figure showing the assumed future year roadway network (number and type of lanes at each intersection) should also be provided. (d) Mitigation. This section should include proposed site and area-wide specific mitigation measures. Mitigation measures shall be roughly proportional to potential impacts pursuant to Subsection 3.015.A.4. (e) Appendix. This section should include traffic counts, capacity calculations, warrant analysis, and any information necessary to convey a complete understanding of the technical adequacy of the Traffic Impact Study. e. Traffic Impact Study Mitigation (1) Transportation impacts shall be mitigated at the time of development when the Traffic Impact Study identifies an increase in demand for vehicular, pedestrian,	TIS requirements need to include at least a reference to the standards by which projected traffic conditions will be evaluated.

bicycle, or transit transportation facilities within the study area.

(2) The following measures may be used to meet mitigation requirements. Other mitigation measures may be suggested by the applicant. The City Engineer, Community Development Director, or Planning Commission as applicable shall determine if the proposed mitigation measures are adequate.

(a) On- and off-site improvements beyond required frontage improvements.

(b) Development of a transportation demand management program.

(c) Payment of a fee in lieu of construction.

(d) Correction of off-site transportation deficiencies within the study area that are not substantially related to development impacts.

(e) Construction of on-site facilities or facilities located within the right-of-way adjoining the development site that exceed minimum required standards and that have a transportation benefit to the public.

6. The City may attach conditions of approval to land use decisions as needed to satisfy the transportation facility requirements of Section 3.015 and to mitigate transportation impacts identified in the Traffic Impact Study.

7. Variances to standards in this Section of 10% or less may be granted by administrative review. Variances of more than 10% of the standards in this Section may be granted by the Community Development Director pursuant to Class 1 variance procedures in Article 12.

Standard street improvements, including sidewalk, roadway, bicycle lane, undergrounding of utilities, and/or landscaping, as applicable, may be waived or deferral may be allowed where one or more of the conditions below is met. The

Community Development Director or Planning Commission may waive or defer improvements for land divisions and the City Engineer may waive or defer improvements for existing plats. When the Community Development Director, Planning Commission, or City Engineer agrees to defer a street improvement, they shall do so only where the property owner agrees not to remonstrate against the formation of a local improvement district in the future. a. The standard improvement conflicts with an adopted capital improvement plan; b. The standard improvement would create a safety hazard; c. It is unlikely due to the developed condition of adjacent property that the subject improvement would be extended in the foreseeable future, and the improvement under consideration does not by itself significantly improve transportation operations or safety; d. The improvement under consideration is part of an approved partition in a residential zone and the proposed partition does not create any new street. B. Street Location, Alignment, Extension, Grades, and Names. 1. All new streets, to the extent practicable, shall connect to the existing street network and allow for the continuation of an interconnected street network, consistent with adopted public facility plans, including the Astoria Transportation System Plan (Figures 10-12), and pursuant to Subsection 3.015.D, Transportation Connectivity and Future Street Plans. 2. Specific street locations and alignments shall be determined in relation to existing and planned streets, topographic conditions, public convenience and safety, and in appropriate relation to the proposed use of the land to be served by such streets. As far as is practical, streets shall be in alignment with existing streets by continuations of	Subsection B.1 refers to both

the center lines thereof. Staggered street alignment resulting in "T" intersections shall, wherever practical, leave a minimum distance of 200 feet between the center lines of streets having approximately the same direction, and in no case, shall be less than 150 feet. 3. Grades of streets shall follow as closely as practicable to the original (pre-development) topography to minimize grading. Maximum grades and curves shall conform to the City Engineering Division Design Standards for Roadways (Chapter 4). Where existing conditions, particularly topography, make it otherwise impracticable to provide buildable sites, steeper grades and sharper curves may be accepted by the Community Development Director or Planning Commission (for land divisions) or by the City Engineer (for existing plats). 5. Where the locations of planned streets are shown on a local street network plan, the development shall implement the street(s) shown on the plan. 6. Where required local street connections are not shown on an adopted City street plan, or the adopted street plan does not designate future streets with sufficient specificity, the development shall provide for the reasonable continuation and connection of existing streets to adjacent potentially developable properties, conforming to the standards of this Code. 7. Existing street-ends that abut a proposed development site shall be extended with the development, unless prevented by environmental or topographical constraints, existing development patterns, or compliance with other standards in this Code; in such situations, the applicant must provide evidence that the environmental or topographic constraint precludes reasonable street connection. 8. Proposed streets and any street extensions required pursuant with this Section shall be	the TSP and Future Street Plans to provide needed connections in the city.

located, designed and constructed to allow continuity in street alignments and to facilitate future development of vacant or redevelopable land.

9. All street names shall be approved by the Planning Commission for conformance with the established pattern and to avoid duplication and confusion.

C. Street Design. The optimum street design criteria contained in the Transportation System Plan (Figures 17a-17f) and Engineering Division Design Standards for Roadways (Chapter 4) are intended to provide for streets of suitable location, width, and design to accommodate expected vehicle, pedestrian and bicycle traffic; to afford satisfactory access to law enforcement, fire protection, sanitation, and road maintenance equipment; and to provide a convenient and accessible network of streets, avoiding undue hardships to adjoining properties. Where a range of street width or improvement options is indicated, the Community Development Director or Planning Commission (for land divisions) or the City Engineer (for existing plats) shall determine requirement based on advice from a qualified professional and all of the following factors:

1. Street classification, shown in the Transportation System Plan (Figure 15), and requirements of the roadway authority if different than the City;
2. Existing and projected street operations relative to applicable standards;
3. Safety of motorists, pedestrians, bicyclists, and transit users, including consideration of accident history;
4. Convenience and comfort for pedestrians, bicyclists, and transit users;
5. Provision of on-street parking;
6. Placement of utilities;

7. Street lighting;

8. Slope stability and erosion control (minimize cuts and fills);

9. Surface water management/storm drainage requirements;

10. Emergency vehicles/apparatus and emergency access/egress, including evacuation needs;

11. Transitions between varying street widths (i.e., existing streets and new streets); and

12. Other factors related to public health, safety, and welfare.

Half streets shall be prohibited except they may be approved where essential to the reasonable development of subdivisions or partitions when in conformity with the other requirements of this Development Code, and when the Planning Commission finds it will be practical to require the dedication of the other half when the adjoining property is divided. Whenever a half street is adjacent to a tract to be divided, the other half of the street shall be platted within the tract. Reserved strips may be required to preserve the objectives of half streets.

D. Transportation Connectivity and Future Street Plans. The following standards apply to the creation of new streets:

1. Intersections. Streets shall be located and designed to intersect as nearly as possible to a right angle. Street intersection angles shall conform to the City Engineering Division Design Standards for Roadways.

2. Connectivity to Abutting Lands. The street system of a proposed development shall be designed to connect to existing, proposed, and planned streets adjacent to the proposed development. Wherever a proposed development abuts unplatted land or a future development phase of an existing development, street stubs shall be provided

to allow access to future abutting subdivisions and to logically extend the street system into the surrounding area. Street ends shall contain turnarounds constructed to Uniform Fire Code standards, as the City deems applicable, and shall be designed to facilitate future extension in terms of grading, width, and temporary barricades.

Reserved strips including street plugs may be required to preserve the objectives of street extensions. Reserved strips controlling the access to public ways will be approved when necessary for the protection of the public welfare. The control and disposal of the land comprising the strips shall be placed within the jurisdiction of the City under conditions approved by the Planning Commission.

3. Street Connectivity and Formation of Blocks. In order to promote efficient vehicular and pedestrian circulation throughout the City, subdivisions and site developments shall be served by an interconnected street network, pursuant to Table 1 (Spacing Standards) in the Transportation System Plan.

4. A cul-de-sac street shall only be used where the Community Development Director, Planning Commission, or City Engineer determines that environmental or topographical constraints, existing development patterns, or compliance with other applicable City requirements preclude a street extension. Where the City determines that a cul-de-sac is allowed, all of the following standards shall be met:

   a. The cul-de-sac shall not exceed a length of 400 feet and serve building sites for not more than 18 dwelling units, except where the Community Development Director, Planning Commission, or City Engineer determines, through a Class 1 Variance pursuant to procedures in Article 9, that topographic or other physical constraints of the site require a longer cul-de-sac; the length of the cul-de-sac shall be measured along the centerline of the roadway from the near side of the

intersecting street to the farthest point of the cul-de-sac; b. The cul-de-sac shall terminate with a circular or hammer-head turnaround meeting the Uniform Fire Code and the roadway standards in the Transportation System Plan and Public Works Engineering Design Standards for roadways. c. The cul-de-sac shall provide a pedestrian and bicycle access way between it and adjacent developable lands. Such access ways shall conform to Section 3.010.B.5. 5. Access Ways. The Community Development Director or Planning Commission, in approving a land use application with conditions, may require a developer to provide an access way where the creation of a cul-de-sac or dead-end street is unavoidable and the access way connects the end of the street to another street, a park, or a public access way. Where an access way is required, it shall be not less than ten (10) feet wide and shall consist of a minimum six (6) foot wide paved surface or other all-weather surface approved by the Community Development Director or Planning Commission. Access ways shall be contained within a public right-of-way or public access easement. 6. Alleys. When any lots or parcels are proposed for commercial or industrial usage, alleys of at least 20 feet in width may be required at the rear thereof with adequate ingress and egress for truck traffic unless alternative commitments for off-street service truck facilities without alleys are approved. Intersecting alleys shall not be permitted. 7. Future Street Plan. Where a subdivision is proposed adjacent to other developable land, a future street plan shall be filed by the applicant in conjunction with an application for a subdivision.	Limiting cul-de-sacs and connecting them to adjacent streets or developable land is required by the TPR (OAR 660-012-0045(6)).

3.035. ACCESSORY STRUCTURES. A. Fences, Walls, and Hedges. 1. Except as provided in Section 6.100~~3.045~~ of this code, fences, walls, or mature hedges not over 48 inches in height may occupy the required front yard of any lot, or the required side yard along the flanking street of a corner lot. 2. Fences or hedges located back of the required front or flanking street side yard shall not exceed a height of six (6) feet. […] 3.045. CLEAR-VISION AREA. <u>Refer to Section 6.100 (Vision Clearance Area) of the City Code.</u> ~~A. Requirements.~~ ~~A clear-vision area shall be maintained on the corners of all property adjacent to the intersection of two (2) streets or of a street and a railroad. A clear vision area shall contain no planting, fence, or other temporary or permanent obstruction exceeding two and one half (2.5) feet in height, measured from the top of the curb, or where no curb exists, from the established center line grade of the street, except that trees exceeding two and one half (2.5) feet may be permitted if all branches and foliage to a height of eight (8) feet above the top of the curb are removed.~~ ~~B. Measurement.~~ ~~A clear-vision area shall consist of a triangular area, two (2) sides of which are street lines and the third side of which is a line across the corner of the lot connecting the ends of~~	Per the City's request to make clear vision code simpler and consistent, amendments to Clear-Vision Area provisions incorporate provisions from other sections of the City Code (Section 2.350 and Section 6.100). It is recommended that regulations for clear vision be centralized in this section and that the other City code sections refer to Section 3.045 of the Development Code.

~~the other two (2) sides. The size of a clear vision area is determined by the distance from the intersection of the two (2) street lines to the third side, measured along the street. The size shall be as follows:~~ ~~1. Residential Zones. In a residential zone, the distance determining the size of a clear vision area shall be 30 feet.~~ ~~2. All Other Zones. In all other zones, the distance determining the size of a clear-vision area shall be 15 feet, except that where the angle of the intersection between streets is less than 30° , the City may require a greater distance.~~	
7.062 SPECIAL EXCEPTIONS TO OFF-STREET VEHICLE PARKING REQUIREMENTS. B. Modification of Parking Space Requirements 1. The applicant may propose a parking space standard that is different than the standard in Section 7.100, for review and action by the Community Development Director through a Class 1 variance, pursuant to Article 9. The applicant's proposal shall consist of a written request, and a parking analysis prepared by a qualified professional. The parking analysis, at a minimum, shall assess the average parking demand and available supply for existing and proposed uses on the subject site; opportunities for shared parking with other uses in the vicinity; existing public parking in the vicinity; transportation options existing or planned near the site, such as frequent bus service, carpools, or private shuttles; and other relevant factors. The Community Development Director may reduce the off-street parking standards for sites with one or more of the following features: a. Site has a bus stop with existing or planned frequent transit service (30-minute headway or less) located adjacent to it, and the site's frontage is improved with a	The City requested more options to reduce motor vehicle parking requirements. These proposed amendments are based on Model Code. Subsection (a) addresses parking

bus stop waiting shelter, consistent with the standards of the applicable transit service provider: Allow up to a 20 percent reduction to the standard number of automobile parking spaces; b. Site has dedicated parking spaces for carpool/vanpool vehicles: Allow up to a 10 percent reduction to the standard number of automobile parking spaces; c. Site has dedicated parking spaces for motorcycle and/or scooter or electric carts: Allow reductions to the standard dimensions for parking spaces and the ratio of standard to compact parking spaces; c. Available on-street parking spaces adjacent to the subject site in amounts equal to the proposed reductions to the standard number of parking spaces. d. Site has more than the minimum number of required bicycle parking spaces: Allow up to a 10 percent reduction to the number of automobile parking spaces. C. Uses in the C-4 Zone (Central Commercial) and uses between 7th and 14th Streets in the A-2 (Aquatic Two Development) and S-2A Zones (Tourist Oriented Shoreland) are not required to provide off-street parking. Exception: In the C-4 Zone, off-street parking and loading requirements shall apply to Lots 1, 2, 3, Block 40, McClure's Addition (south side of 600 Block Duane Street).	requirement reductions based on frequent transit service. If there is not currently frequent transit service, these code amendments should allow for improvements to transit service that are feasible in the future. It is recommended that Section 7.180 (Parking in the Downtown Area) be incorporated into appropriate parking and loading sections in the Development Code (Subsection C here) rather than be a stand-alone section at the end of the parking code.
7.090. OFF-STREET LOADING. A. Except as otherwise specifically provided in this ordinance, off-street loading shall be provided in amounts not less than those set forth in Section 7.160. B. A parking area meeting the requirements of Sections 7.100 through 7.110 may also be used for loading when the use does not require a delivery vehicle which exceeds a	It is recommended that Section 7.180 (Parking in the Downtown Area) be incorporated into appropriate parking and loading sections in the Development Code (Subsection C here) rather

combined vehicle and load rating of 20,000 pounds, and when the parking area is within 25 feet of the building or use which it serves. C. Uses in the C-4 Zone (Central Commercial) and uses between 7th and 14th Streets in the A-2 (Aquatic Two Development) and S-2A Zones (Tourist Oriented Shoreland) are not required to provide off-street loading. Exception: In the C-4 Zone, off-street parking and loading requirements shall apply to Lots 1, 2, 3, Block 40, McClure's Addition (south side of 600 Block Duane Street).	than be a stand-alone section at the end of the parking code.
7.100. MINIMUM PARKING SPACE REQUIREMENTS. ~~USE~~ ~~MINIMUM NO. OF SPACES~~ ~~A. Amusement.~~ ~~Indoor amusement and recreation One space per 400 square feet~~ ~~services, amusement park, of gross floor area, or one~~ ~~ball field, motion picture space per five seats or ten~~ ~~theater, stadium ten feet of bench length~~ ~~Golf course One space per green~~ ~~Library and information One space per 500 square~~ ~~center feet of gross floor area~~ ~~Meeting room One space per five seats~~ ~~Mixed use retail/indoor amusement One space per 400 square~~ ~~feet of gross floor area, plus~~ ~~one space per two employees~~ ~~Museum, art gallery One space per 600 square~~ ~~feet of gross floor area~~ ~~Tennis court, racquetball One space per court plus~~ ~~court, or handball court one space per ten feet of~~	The City requested updated code language for parking space requirements, so existing Development Code has been struck and new tables, based on Model Code and City staff recommendations, are proposed to be added.

~~bench length or five seats~~ ~~B. Automotive Services.~~ ~~Automotive and Recreational One space per 1,500 square~~ ~~Vehicle/Manufactured Home dealer feet of gross floor area~~ ~~Automotive repair, service, One space per 1,500 square~~ ~~gasoline service, and garage feet of gross floor area~~ ~~C. Business and Professional Services.~~ ~~Business office or services, One space per 500~~ ~~public office or services, square feet of gross~~ ~~professional office or services, area~~ ~~financial services, real estate~~ ~~services, insurance services,~~ ~~repair services, educational~~ ~~services not elsewhere classified~~ ~~D. Churches and Institutions.~~ ~~Correctional institution One space per 2,000 square~~ ~~feet of gross floor area~~ ~~General meeting facility One space per three seats,~~ ~~or six feet of bench length,~~ ~~or 100 square feet of gross~~ ~~floor area~~ ~~Membership organization, club Spaces to meet the combined~~ ~~or lodge requirements of the uses being~~ ~~conducted, such as hotel,~~ ~~restaurant, auditorium, etc.~~ ~~Religious organization One space per five seats, or~~	

~~ten feet of bench length, or~~ ~~100 square feet of floor area~~ ~~not containing fixed seats~~ ~~in the sanctuary~~ ~~E. Health Services~~ ~~Health services One space per 500 square~~ ~~feet of gross floor area~~ ~~Hospital 1.5 spaces per bed~~ ~~Nursing and personal care facility One space per three beds~~ ~~F. Industrial and Utilities.~~ ~~Mining, manufacturing, transportation The greater of the following:~~ ~~communications, electric, gas,~~ ~~and sanitary services 1) .75 spaces per employee~~ ~~2) 0 - 49,999 square feet of~~ ~~gross floor area - one~~ ~~space per 5,000 square~~ ~~feet~~ ~~3) 50,000 - 99,999 square~~ ~~feet of gross floor area -~~ ~~one space per 10,000~~ ~~square feet~~ ~~4) 100,000 or greater square~~ ~~feet of gross floor area -~~ ~~one space per 15,000~~ ~~square feet~~ ~~Marina One space per boat berth or~~ ~~docking space~~	

~~Wholesale, warehousing, and similar use~~ ~~One space per 1,500 square feet gross floor area~~	
~~G. Personal Services.~~	
~~Funeral service or crematory chapels~~	~~One space per three seats or six feet of bench length in~~
~~Laundry, cleaning and garment service~~	~~One space per 1,000 square feet of gross floor area~~
~~Personal services~~	~~One space per 500 square feet of gross floor area~~
~~Veterinary and animal services~~	~~One space per 500 square feet of gross floor area~~
~~H. Residential and Dwellings.~~	
~~Single-family dwelling unit, duplex, or triplex~~	~~Two spaces per dwelling unit~~
~~Multi-family dwelling containing four or more dwelling units~~	~~One and one-half spaces per dwelling unit~~
~~Multi-family dwelling restricted to one bedroom units~~	~~1.25 spaces per dwelling~~
~~Bed and breakfast or home stay lodging~~	~~One space per bedroom plus two spaces for owner/manager unit~~
~~Hotel, or motel~~	~~1.1 spaces per guest room or suite, plus two for the manager~~
~~Inn~~	~~One space per bedroom plus two spaces for owner/manager unit, plus one space per three~~

~~seats or six feet of bench length~~ ~~or 100 square feet of gross~~ ~~floor area used for conduct of~~ ~~associated business activity~~ ~~Housing designed for and used by elderly One space per four dwelling~~ ~~or special needs groups, congregate care units~~ ~~Retirement center One space per two dwelling~~ ~~units~~ ~~I. Retail.~~ ~~Building material, hardware, garden One space per 1,000 square~~ ~~supply, furniture, home furnishings feet of gross floor area~~ ~~or home equipment store~~ ~~Eating and drinking One space per 250 square~~ ~~establishment feet of gross floor area~~ ~~General merchandise store, food store, One space per 500 square~~ ~~apparel and accessory store, and feet of gross floor area~~ ~~miscellaneous retail~~ ~~J. Schools.~~ ~~College, university, One space per four students~~ ~~professional school and for which the school is~~ ~~junior college designed to accommodate~~ ~~Day care, preschool, or nursery One space per employee~~ ~~Elementary school Two spaces per classroom~~ ~~Secondary school One space per six students~~ ~~for which the school is~~ ~~designed to accommodate~~ ~~Vocational and correspondence One space per 500 square~~	

~~school, and educational services feet of gross floor area~~
~~not elsewhere classified~~
~~For any uses not listed above, the Community Development Director shall make an interpretation of the parking space requirements as per Section 7.060.~~

Table 7.100 – Off-Street Parking Space Requirements by Use.

The following are minimum off-street parking requirements by use category. The Community Development Director or Planning Commission as applicable may increase the required off-street parking based on anticipated need for a specific conditional use.

Use Categories	**Minimum Parking per Land Use** (Fractions are rounded up to the next whole number.)
RESIDENTIAL CATEGORIES	
Single-family Dwelling, including manufactured homes on individual lots, and attached dwellings such as townhomes and condominiums	2 spaces per dwelling unit
Two-family Dwelling (Duplex)	2 spaces per dwelling unit
Accessory Dwelling (second dwelling on a single-family lot)	1 additional space for the accessory dwelling unit

Manufactured Dwelling in a Park	1.5 per dwelling unit
Multi-family Dwelling including Group Housing	1.5 spaces per dwelling unit with more than one bedroom; 1.25 spaces per dwelling unit limited to one bedroom, or one bedroom group housing units; Calculation is based on specific number of each type of units within the complex.
Group living, such as nursing or convalescent homes, rest homes, assisted living, congregate care, and similar special needs housing	1 space per 8 bedrooms plus one per employee. Calculation is based on the maximum number of employees on one shift, not total employment.
Residential Home, Residential Facility, and Adult Foster Care	1 additional space per 3 beds for the home/facility
COMMERCIAL CATEGORIES	
Automotive repair & service, automotive sales	1 space per 1,000 sq. ft. gross floor area
Bed and Breakfast, Home Stay Lodging, Inn	1 additional space for each bedroom used for lodging
Daycare	Family/Home Daycare: 1 space, plus required parking for dwelling
	Daycare Center: 1 space per 400 sq. ft. of gross floor area
Educational Services, not a school (e.g., tutoring or similar services, excluding single	1 space per 300 sq. ft. gross floor area

student tutoring facilities)	
Home Occupation with customers and/or non-resident employees	1 additional space per anticipated customer/employee at a specific time beyond one person at a time
Hotels, Motels, and similar uses	1 space per guest room. See also, parking requirements for associated uses, such as restaurants, entertainment uses, drinking establishments, assembly facilities.
Laundromat and dry cleaner	1 space 350 sq. ft. gross floor area
Mortuary/Funeral Home	1 space per 300 sq. ft. gross floor area
Offices: General, medical/dental, professional	1 space per 500 sq. ft. gross floor area
Personal Services (i.e. salon, spa, barber, animal grooming)	1 space per chair, table, or booth for customers
Repair or Service other than automotive	1 space per 500 sq. ft. gross floor area
Retail Sales	General Merchandise: 1 space per 500 sq. ft. gross floor area
	Bulk with a building (lumber and construction materials, furniture, appliances, and similar sales): 1 space per 1,000 sq. ft. gross floor area
	Outdoor with no building or building of less than 200 sq. ft. (i.e. automotive, nursery, bulk retail, produce, etc.): 1

	space per 1,000 sq. ft. of site used for retail display/storage
INDUSTRIAL CATEGORIES	
Industrial Service, not otherwise categorized	1 space per 1,000 sq. ft. gross floor area
Manufacturing and Production	Light Manufacturing: 1 space per 2 employees on the largest shift Heavy Industrial, building greater than 5,000 sq. ft.: 1 space per 2,500 sq. ft. gross floor area
Marina	0.25 spaces per boat berth or docking space
Seafood Processing and Associated Uses	1 space per full-time equivalent employee plus 1 space per 10 seasonal employees. Seasonal parking may be reduced with proof that employees are bussed to site.
Wholesale, Warehouse, Freight Service, Mini-Storage	1 space per 1,500 sq. ft. gross floor area
INSTITUTIONAL CATEGORIES	
Community Service, including Government Offices and Services	Same requirement as non-institutional use for the category
Medical Center/Hospital with overnight stay	1 space per 300 sq. ft. gross floor area

Membership organization, club, lodge	Same as specified use requirement such as eating and drinking establishment, public assembly, school, etc.
Parks and Open Space	Parking based on projected parking demand for planned uses. See Recreation, outdoor.
Public Assembly	1 space per 100 sq. ft. of public assembly area where no seats provided, or 1 space per five seats where provided
Religious Institutions and Houses of Worship	1 space per 100 sq. ft. of main assembly gross floor area; additional parking is not required for associated use areas if not used at same time as main assembly area
Schools	Pre-School through Middle-School: 1.5 space per classroom
	High Schools: 7 spaces per classroom
	Colleges & Vocational: 1 space per 400 sq. ft. of gross floor area; and 1 space per 2 dorm rooms
RECREATIONAL CATEGORIES	
Aquatic center, sports club, gym, rink, recreation center, health club, bowling alley	1 space per 400 sq. ft. gross floor area
Museum, art gallery, library	1 space per 600 sq. ft. gross floor area
Outdoor recreational park	Public playground: none Commercial park: 1 space per 1,000 sq. ft. gross land area

Sports Field	1 space per 100 sq. ft. of public assembly area where no seats provided, or 1 space per five seats where provided
Theater, indoor arena	Single venue: 1 space per 3 seats Multiplex: 1 space per 6 seats
OTHER CATEGORIES	
Accessory Uses	Parking standards for accessory uses are the same as for primary uses, but are pro rated based on the percentage of estimated overall parking demand, subject to City review and approval.
Temporary Uses	Parking standards for temporary uses are the same as for primary uses, except that the Community Development Director or Planning Commission as applicable may reduce or waive certain development and designs standards for temporary uses.
Transportation and Communications Facilities (operation, maintenance, preservation, and construction)	None, except where temporary parking is required for construction staging areas

7.105. BICYCLE PARKING.

A. Standards. Bicycle parking spaces shall be provided for new development, changes of use, and major renovations, at a minimum, based on the standards in Table 7.105. Major renovation is defined as construction valued at 25% or more of the assessed value of the existing structure.

Where an application is subject to Conditional Use Permit approval or the applicant has

The TPR (OAR 660-012-0045(3)(a)) requires bicycle parking for new multi-family residential developments of four units or more, retail, office, institutional, and transit centers. Additionally, City staff is

requested a reduction to an automobile-parking standard, pursuant to Section 7.062, the Community Development Director or Planning Commission as applicable may require bicycle parking spaces in addition to those in Table 7.105.

Table 7.105: Minimum Required Bicycle Parking Spaces

Use	Minimum Number of Spaces	Long and Short Term Bicycle Parking Percentages
Multi-family Residential Dwelling (not required for parcels with fewer than 4 dwelling units)	1 bike space per 4 dwelling units	75% long term 25% short term
Commercial	1 bike spaces per primary use or 1 per 10 vehicle spaces, whichever is greater	50% long term 50% short term
Industrial	1 bike spaces per primary use or 1 per 20 vehicle spaces, whichever is greater	25% long term 75% short term
Parks (active recreation areas only greater than 10,000 sq. ft.)	4 bike spaces per 10,000 sq. ft.	100% short term
Schools (all types)	1 bike spaces per 4 classrooms	50% long term 50% short term
Institutional Uses and Places of Worship	1 bike space per 20 vehicle spaces	100% short term

interested in requiring that bicycle parking be provided by existing development. Conditions in which existing development may be required to provide bicycle parking include changes of use and major renovation, which are modeled after existing applicability standards from the Gateway Overlay Zone (Section 14.020).

The simplified categories of uses on which bicycle parking space requirements are based are drawn from the Model Code, and the space requirements themselves are based on Model Code and City staff recommendations.

The provisions for long-term bicycle parking and for design and location of parking are drawn from a combination of sources such as the cities of Milwaukie, Oregon City, Eugene,

Other Uses	2 bike spaces per primary use or 1 per 10 vehicle spaces, whichever is greater	50% long term 50% short term

B. Design and Location.

1. All bicycle parking shall be securely anchored to the ground or to a structure.
2. All bicycle parking shall be designed so that bicycles may be secured to them without undue inconvenience, including being accessible without removing another bicycle.
3. All bicycle parking should be integrated with other elements in the planter strip when in the public right-of-way.
4. Direct access from the bicycle parking area to the public right-of-way shall be provided at-grade or by ramp access, and pedestrian access shall be provided from the bicycle parking area to the building entrance.
5. Bicycle parking shall not impede or create a hazard to pedestrians or vehicles, and shall not conflict with the vision clearance standards of Section 3.045.
6. Short-term bicycle parking.
   a. Short-term bicycle parking shall consist of a stationary rack or other approved structure to which the bicycle can be locked securely.
   b. If more than 10 short-term bicycle parking spaces are required, at least 50% of the spaces must be sheltered. Sheltered short-term parking consists of a minimum 7-foot overhead clearance and sufficient area to completely cover all bicycle parking and bicycles that are parked correctly.
   c. Short-term bicycle parking shall be located within 50 feet of the main building

and Springfield.

Long-term bicycle parking is important to provide for residents, employees, students, and visitors.

entrance or one of several main entrances, and no further from an entrance than the closest automobile parking space. 6. Long-term bicycle parking. Long-term bicycle parking shall consist of a lockable enclosure, a secure room in a building on-site, monitored parking, or another form of sheltered and secure parking. C. Exemptions. This Section does not apply to single-family, two-family, and three-unit multi-family housing, home occupations, and agricultural uses. The Community Development Director or Planning Commission as applicable may exempt other uses upon finding that, due to the proximity of public bicycle parking facilities, or the nature of the use, or its location, it is unlikely to have any patrons or employees arriving by bicycle.	
7.110. PARKING AND LOADING AREA DEVELOPMENT REQUIREMENTS. All parking and loading areas required under this ordinance, except those for a detached single-family dwelling on an individual lot unless otherwise noted, shall be developed and maintained as follows: A. Location on site. Required yards adjacent to a street, for uses including residential uses other than detached single-family dwelling on an individual lot, shall not be used for ~~such~~ parking and loading areas unless otherwise specifically permitted in this ordinance. Side and rear yards which are not adjacent to a street may be used for such areas when developed and maintained as required in this ordinance. B. Surfacing. All parking and loading areas and driveways thereto shall be paved with asphalt, concrete or other hard surface approved by the City Engineer. Parking and loading areas shall be	The City requested code language to help discourage parking in front yards and driveways that extend into right-of-way. This issue is primarily addressed in proposed new code language (Section 3.008.D), and secondarily here in Section 7.110.

adequately designed, graded, and drained. C. Bumper guards or wheel barriers. Permanently affixed bumper guards or wheel barriers are required and shall be so installed that no portion of a vehicle will project into a public right-of-way or over adjoining property. The area beyond the wheel barriers or bumper guards shall be surfaced as required in Section 7.110(B) or landscaped. D. Size of parking spaces and maneuvering areas. The parking area, each parking space and all maneuvering areas shall be of sufficient size and all curves and corners of sufficient radius as determined by the City Engineer to permit the safe operation of a standard size vehicle subject to the following minimum requirements: 1. Full size parking spaces shall be nine and one half (9.5) feet wide and 20 feet long. 2. Compact parking spaces shall be eight and one half (8.5) feet wide and 16 feet long for no more than 50% of the parking spaces required. <u>An increase to 75% compact may be approved administratively by the Community Development Director upon a finding that anticipated use would not require compliance. An increase greater than 75% may be approved by the Community Development Director as a Class 1 Variance in accordance with Article 9.</u> 3. Where a landscaped area, fence, or wall is adjacent to a parking space, the parking space shall be ten (10) feet wide. 4. A maximum of 2.5' of a parking stall required length may extend beyond the wheel barrier into a landscaped area. The parking stall shall not extend into a pedestrian walkway area.	The City is concerned that parking lots do not allow enough longer parking that accommodates forestry and marine-related trucks that are common in Astoria.

7.120. DRIVEWAY DEVELOPMENT STANDARDS. All driveways providing access to parking spaces and loading areas required under this ordinance, including those for a single family dwelling on a lot, shall conform to the Astoria City Code Sections 2.050 through 2.100 and Subsection 3.008.D in addition to requirements in the Engineering Division Design Standards for Roadways.	Add a reference to new standards in new Section 3.005, Subsection D (Approach and Driveway Development Standards) as well as engineering standards.
~~7.180. PARKING IN THE DOWNTOWN AREA.~~ ~~Uses in the C-4 Zone (Central Commercial) and uses between 8th and 14th Streets in the A-2 (Aquatic Two Development) and S-2A Zones (Tourist Oriented Shoreland) are not required to provide off-street parking or loading.~~ ~~Exception: In the C-4 Zone, off-street parking and loading requirements shall apply to Lots 1, 2, 3, Block 40, McClure's Addition (south side of 600 Block Duane Street).~~	It is recommended that Section 7.180 (Parking in the Downtown Area) be incorporated into appropriate parking and loading sections – Sections 7.062 and 7.090.
ARTICLE 9 **ADMINISTRATIVE PROCEDURES** 9.010. APPLICATION INFORMATION AND PROCEDURES. E~~D~~. Multiple Requests. Where a proposed development requires more than one development permit or zone change request from the City, the applicant may request that the City consider all necessary permit and zone change requests in a consolidated manner. If the applicant requests that the City consolidate its review of the development proposal, all necessary public hearings before the	ODOT has requested that language explicitly allowing the agency to be a signatory on land use applications be integrated into development code amendments when amendments are being prepared as part of a TSP or another planning process. The proposed language is based on

applicable Commission should be held on the same date if possible. F. Applications for Development Approval 1. Applications for development approval may be initiated by one or more of the following: a. One or more owners of the property which is the subject of the application; or b. One or more purchasers or representatives of such property who submit a written approval of the property owner; or c. One or more lessees in possession of such property who submits written consent of one or more owner's to make such application; or d. Person or entity authorized by the Board or Commission; or e. A Department of the City of Astoria when dealing with land involving public works or economic development projects; or f. A public utility or transportation agency, when dealing with land involving the location of facilities necessary for public service. g. Any of the above may be represented by an agent who submits written authorization by his principal to make such application. G. Coordinated Review. 1. In addition to the general notice provisions set forth in Section 9.020, the City shall invite the Oregon Department of Transportation (ODOT) and/or any other transportation facility and service providers potentially affected by the application to pre-application conferences, as applicable. The City shall provide notice of a public hearing or an administrative action to potentially affected transportation facility and	that in the Douglas County Land Use and Development Ordinance (Section 2.040), which was recommended by ODOT.

service providers. 2. Coordinated review of applications with ODOT and/or any other applicable transportation facility and service providers may also occur through Traffic Impact Study provisions, pursuant to Subsection 3.015.A.5. HF. Staff Report. Any staff report used at the hearing shall be available at least seven (7) days prior to the hearing. If additional documents or evidence is provided in support of the application, any party shall be entitled to a continuance of the hearing. Such a continuance shall not be subject to the limitations of ORS 227.178.	Requirements for coordination with other transportation service/facility providers are pursuant to the TPR (OAR 660-012-0045(2)(f)). The requirements intend for regular public agency involvement in the application process, as needed, in order to better inform the proposed development. This codifies what is generally City practice to date.

ARTICLE 10 **AMENDMENTS** 10.070. AMENDMENT CRITERIA. B. Map Amendment. Before an amendment to a zone boundary is approved, findings will be made that the following criteria are satisfied: 1. The amendment is consistent with the Comprehensive Plan. 2. The amendment will: a. Satisfy land and water use needs; or b. Meet transportation demands. The amendment shall be reviewed to determine whether it significantly affects a transportation facility pursuant to Section -0060 of Oregon Administrative Rule (OAR) 660-012, the Transportation Planning Rule (TPR). When the City, in consultation with the applicable roadway authority, finds that a proposed amendment would have a significant effect on a transportation facility, the City shall work with the roadway authority and applicant to modify the request or mitigate the impacts in accordance with the TPR and applicable law; or c. Provide community facilities and services. 3. The land is physically suitable for the uses to be allowed, in terms of slope, geologic stability, flood hazard and other relevant considerations. 4. Resource lands, such as wetlands are protected.	Add compliance with TPR Section -0060 (Plan and Land Use Regulation Amendments) to the criteria for plan/map amendments in Astoria.

5. The amendment is compatible with the land use development pattern in the vicinity of the request.	
ARTICLE 13 **SUBDIVISION AND LAND PARTITION** **GENERAL PROVISIONS** ~~13.040. DEFINITIONS.~~ ~~BLOCK: A parcel of land bounded by three or more streets in a land division.~~ ~~BLOCK LENGTH: The distance measured along all that part of one side of a street which is between two intersection or intercepting streets, or between an intercepting street and a railroad right-of- way, water course, body of water or unsubdivided acreage.~~ ~~BUILDING LINE: A line on a plat indicating the limit beyond which buildings or structures may not be erected.~~ ~~BUTT LOT: A lot, the lot side line of which abuts the lot rear line of two or more adjoining lots.~~ ~~CITY: The City of Astoria, a municipal corporation of the State of Oregon, where the provision involves a duty owed the City in either its governmental or its corporate capacity; otherwise, that officer, department or agency of the City indicated by the context, or where the context does not clearly indicate a specific officer, department or agency, then the City Manager of said City.~~ ~~CITY ENGINEER: The duly appointed Engineer of the City of Astoria.~~ ~~COMMUNITY DEVELOPMENT DIRECTOR: The chief land use regulatory officer of the City of Astoria.~~ ~~DECLARANT: The person who files a declaration under ORS Chapter 92.~~ ~~DECLARATION: The instrument by which the subdivision or partition plat was created.~~	Definitions for Article 13, Subdivisions and Land Partition are being consolidated in Section 1.400.

~~DEVELOPMENT PLAN: Any plan adopted by the Planning Commission for the growth and improvement of the City.~~
~~DIVISION OF LAND: The creation of a lot.~~
~~DRAINAGE LAND: Land required for drainage ditches, or required along a natural stream or water course for preserving the channel and providing for the flow of water therein, to safeguard the public against flood damage or the accumulation of surface water.~~
~~EASEMENT: A grant of the right to use a strip of land for specific purposes.~~
~~FINAL DECISION: The date upon which a decision has been rendered and the Order is signed, or the final resolution of all City, State, and Federal appeals, whichever is later. *(Added by Ordinance 10-06, 4-19-10)*~~
~~INITIAL PLAN: A sketch or schematic plan presented by a subdivider or applicant to the Planning Commission for their comments. The plan may be to any size, scale, and include information deemed necessary by the applicant. Review of the initial plans places no obligation on the commission or the applicant as to the future of such plan.~~
~~LOT: A unit of land that is created by a subdivision of land.~~
~~REVERSED CORNER LOT: A corner lot the side street line of which is substantially a continuation of the front lot line of the first lot to its rear.~~
~~THROUGH LOT: A lot having frontage on two parallel or approximately parallel streets other than an alley.~~
~~LOT FRONT LINE: The property line separating the lot from the street, or other than an alley. The City shall determine the front lot line of a corner lot.~~
~~LOT REAR LINE: The property line which is opposite and most distant from the front lot line. In the case of an irregular, triangular or other shaped lot, a line 10 feet in length within the lot, parallel to and at a maximum distance from the front lot line shall determine the lot rear line.~~
~~LOT SIDE LINE: Any lot line which is not a lot front line or a lot rear line.~~
~~ORS: Oregon Revised Statutes, State Law.~~
~~OWNER: One who possesses title in property or to whom property belongs, with the requisite intent to own; this term includes an authorized agent of the owner.~~
~~PARCEL: A unit of land that is created by a partitioning of land.~~

~~PARTITION: Either an act of partitioning land or an area or tract of land partitioned as defined in this Section.~~
~~MAJOR PARTITION: A partition which includes the creation of a street.~~
~~MINOR PARTITION: A partition that does not include the creation of a street.~~
~~PARTITION LAND: To divide an area of land into two or three parcels within a calendar year, but does not include:~~
~~1. A division of land resulting from a lien foreclosure, foreclosure of a recorded contract for the sale of real property or the creation of cemetery lots; or~~
~~2. An adjustment of a property line by the relocation of a common boundary where an additional unit of land is not created and where the existing unit of land reduced in size by the adjustment complies with any applicable Development Code requirement; or~~
~~3. A sale or grant by a person to a public agency or public body for State highway, County road, City street or other right of purposes provided such road or right-of-way conforms with the Comprehensive Plan and ORS 215.213(2)(g) to (s) and ORS 215.283(2)(p) to (r). However, any property divided by the sale or grant of property for State highway, county road, city street or other right-of-way purposes shall continue to be considered a single unit of land until such time as the property is further subdivided or partitioned.~~
~~PARTITION PLAT: A final map and other writing containing all the descriptions, locations, specifications, provisions and information concerning a major or minor partition.~~
~~PEDESTRIAN WAY: A right-of-way for pedestrian traffic.~~
~~PERFORMANCE AGREEMENT: A proper petition submitted to and approved by the Council for construction and improvements as required in Section 13.150; or a performance bond executed by a surety company duly licensed to do business in the State, in an amount equal to the full cost of the work to be done, and conditioned upon the faithful performance thereof.~~
~~PERSON: A natural person, firm, partnership, association, social or fraternal organization, corporation, trust, estate, receiver, syndicate, branch of government, or any group or combination acting as a unit.~~
~~PHASED PROJECT: Project involving construction of buildings and/or sites that are not completed all at the same time. All phases of a phased project are reviewed and approved~~

~~under one preliminary plat review with a time line for phased completion. *(Added by Ordinance 10-06, 4-19-10)*~~
~~PLANNING COMMISSION: The Planning Commission of the City of Astoria.~~
~~PLAT: A final subdivision plat, replat or partition plat.~~
~~PRELIMINARY PLAT: A tentative map and plan for a land division duly submitted to the Community Development Director for Commission consideration and approval and conforming in all respects to the requirements therefore specified in this Ordinance.~~
~~PROPERTY LINE: The division line between two units of land.~~
~~PROPERTY LINE ADJUSTMENT: The relocation of a common property line between two abutting properties.~~
~~PUBLIC WORKS DIRECTOR: The duly appointed Public Works Director of the City of Astoria.~~
~~REPLAT: The act of platting the lots, parcels and easements in a recorded subdivision or partition plat to achieve a reconfiguration of the existing subdivision or partition plat or to increase or decrease the number of lots in the subdivision.~~
~~RESERVED STRIP: A strip of land, usually one (1) foot in width, reserved across the end of a street or alley and terminating at the boundary of a land division or a strip of land between a dedicated street or less than full width and adjacent acreage, in either case reserved or held for future street extension or widening.~~
~~REVERSED CORNER LOT: A corner lot the side street line of which is substantially a continuation of the front line of the first lot to its rear.~~
~~RIGHT-OF-WAY: The area between the boundary lines of a street or other easement.~~
~~ROADWAY: The portion of a street right-of-way developed for vehicular traffic.~~
~~SIDEWALK: A pedestrian walkway with rock or paved surfacing.~~
~~SINGLE-FAMILY DENSITY AREA: An area abutting a minor street not a business street, where for one block length or more all property on both sides of the street is or as determined by the Planning Commission will be occupied by no more than 4.50 families per acre exclusive of street right-of-way.~~
~~STREET: A public or private way being the entire width from lot line to lot line that is created to provide ingress or egress for persons to one or more lots, parcels, areas or tracts of land~~

~~and including the term "road", "highway", "lane", "avenue", "alley" or similar designations.~~
~~ALLEY: A narrow street through a block which affords only secondary means of access to abutting property at the rear or sides thereof.~~
~~ARTERIAL: A street of considerable continuity which is primarily a traffic artery for intercommunication among large areas~~
~~BUSINESS STREET: Any block length along any street, other than an arterial, within which there is or will be provided access to one or more commercial structures.~~
~~COLLECTOR: A street supplementary to the arterial street system and a means of intercommunication between this system and smaller area; used to some extent for through traffic and to some extent for access to abutting properties.~~
~~CUL-DE-SAC: (Dead End Street) A short street having one end open to traffic and being terminated by a vehicle turnaround.~~
~~HALF STREET: The dedication of a portion only of the width of a street, usually along the edge of a subdivision, where the remaining portion of a street has been or could be dedicated in another subdivision.~~
~~MAJOR STREET: Same as arterial.~~
~~MARGINAL ACCESS STREET: A minor street parallel and adjacent to a major arterial street, providing access to abutting properties, but protected from through traffic.~~
~~MINOR STREET: A street intended primarily for access to abutting properties.~~
~~SUBDIVIDE: To effect a land division.~~
~~SUBDIVIDE LAND: To divide an area or tract of land into four or more lots within a calendar year.~~
~~SUBDIVIDER: An owner commencing proceedings under this Chapter to effect a land division by himself or through this lawful agent.~~
~~SUBDIVISION: Either an act of subdividing land or an area or tract of land subdivided as defined in this Section.~~
~~SUBDIVISION PLAT: A final map and other writing containing all the descriptions, locations, specifications, dedications, provisions and information concerning a subdivision.~~

13.100. SUBDIVISION, PRELIMINARY PLAT - PROCEDURE FOR REVIEW. A. Conference. Prior to the filing of a preliminary plat, a subdivider shall submit to the Community Development Director, plans and other information concerning a proposed or contemplated development. The Community Development Director shall then schedule a conference with the subdivider and City Engineer on such plans and other data, and make recommendations to the subdivider as shall seem proper regarding such plans or other data, and may recommend consultation by the subdivider with other public or private agencies as may be disclosed by the plans. ODOT shall be invited to participate in the conference and consult with the subdivider.	As with the proposed amendments to Article 9 (Administrative Procedures), this proposed amendment addresses TPR requirements for coordination with other transportation service/facility providers.
13.110. SUBDIVISION, PRELIMINARY PLAT - INFORMATION ON PRELIMINARY PLAT. C. Supplemental Information. The City may require any of the following to supplement the preliminary plat: 7. A Traffic Impact Study (TIS), pursuant to Subsection 3.015.A.5.	This proposed amendment is a reference to the new subsection about TISs.
13.410. STREETS. A. General. Streets shall be planned and constructed pursuant to the Transportation Standards in Section 3.015. ~~The location, width and grade of streets shall be considered in their relation to existing and planned streets, to topographical conditions, to public convenience and safety, and to the proposed use of land to be served by the streets. The street system shall assure an adequate~~	This subdivision section on streets is recommended to be replaced by a reference to the proposed new general section on transportation standards, Section 3.015.

~~traffic circulation system with intersection angles, grades, tangents and curves appropriate for the traffic to be carried considering the terrain. Where location is not shown in a development plan, the arrangement of streets shall either:~~

~~1. Provide for the continuation or appropriate projection of existing principal streets in surrounding areas; or~~

~~2. Conform to a plan for the neighborhood approved or adopted by the Planning Commission to meet a particular situation where topographical or other conditions make continuance or conformance to existing streets impractical. B. Street Widths.~~

~~Street widths shall conform with City standards, except where it can be shown by the land divider, to the satisfaction of the Planning Commission, that the topography or the small number of lots or parcels served and the probable future traffic development are such as to unquestionably justify a narrower width. Increased widths may be required where streets are to serve commercial property, or where probable traffic conditions warrant. Approval or determination of street and area classification shall be made by the Planning Commission taking into consideration the zoning designations imposed by the Comprehensive Plan and the Development Code, the present use and development of the property in the area, the logical and~~

~~reasonable prospective development of the area based upon public needs and trends, and the public safety and welfare.~~

~~C. Alignment.~~

~~As far as is practical, streets other than minor streets shall be in alignment with existing streets by continuations of the center lines thereof. Staggered street alignment resulting in "T" intersections shall, wherever practical, leave a minimum distance of 200 feet between the center lines of streets having approximately the same direction, and in no case, shall be less~~

~~than 150 feet.~~

~~D. Future Street Extension.~~

~~Where necessary to give access to, or permit a satisfactory future division of adjoining land, streets shall extend to the boundary of the subdivision or partition, and the resulting dead-end streets may be approved without a turnaround. Reserve strips including street plugs may be required to preserve the objectives of street extensions.~~

~~E. Intersection Angles.~~

~~Streets shall intersect at angles as practical except where topography requires a lesser angle, but in no case shall the acute angle be less than 60 degrees unless there is a special intersection design. An arterial or collector street intersecting with another street shall have at least 100 feet of tangent adjacent to the intersection unless topography requires a lesser distance. Other streets, except alleys, shall have at least 50 feet of tangent adjacent to the intersection unless topography requires a lesser distance. Intersections which contain an acute angle of less than 80 degrees or which include an arterial street shall have a minimum corner radius sufficient to allow for a roadway radius of 20 feet and maintain a uniform width between the roadway and the right-of-way line. Ordinarily, the intersection of more than two streets at any one point will not be approved.~~

~~F. Existing Streets.~~

~~Whenever existing streets adjacent to or within a tract are of inadequate width, additional right-of-way shall be provided at the time of the land division.~~

~~G. Reserved Strips.~~

~~No reserved strips controlling the access to public ways will be approved unless the strips are necessary for the protection of the public welfare, and in these cases they may be required.~~

~~The control and disposal of the land comprising the strips shall be placed within the jurisdiction of the City under conditions approved by the Planning Commission.~~

~~H. Half Streets.~~

~~Half streets shall be prohibited except they may be approved where essential to the reasonable development of the subdivision or partitions when in conformity with the other requirements of these regulations, and when the Planning Commission finds it will be practical to require the dedication of the other half when the adjoining property is divided. Whenever a half street is adjacent to a tract to be divided, the other half of the street shall be platted within the tract. Reserve strips may be required to preserve the objectives of half streets.~~

~~I. Cul-de-Sac.~~

~~A cul-de-sac shall be as short as possible and shall have a maximum length of 400 feet and serve building sites for not more than 18 dwelling units. A cul-de-sac shall terminate with a circular turnaround.~~

~~J. Alleys.~~

~~When any lots or parcels are proposed for commercial or industrial usage, alleys of at least 20 feet in width may be required at the rear thereof with adequate ingress and egress for truck traffic unless alternative commitments for off-street service truck facilities without alleys are approved. Intersecting alleys shall not be permitted.~~

~~K. Grades and Curves.~~

~~Grades shall not exceed 6% on arterials, 10% on collector streets, or 12% on other streets. Center line radii of curves shall not be less than 300 feet on major arterials, 200 feet on secondary arterials, or 100 feet on other streets, and shall be to an even 10 feet. Where existing conditions, particularly the topography, make it otherwise impracticable to provide~~

~~buildable sites, the Planning Commission may accept steeper grades and sharper curves. In flat areas, allowance shall be made for finished street grades having a minimum slope, preferably, of at least .5%.~~ ~~L. Marginal Access Streets.~~ ~~Where a land division abuts or contains an existing or proposed arterial street, the Planning Commission may require marginal access streets, reverse frontage lots with suitable depth, screen planting contained in a non-access reservation along the rear or side property line, or other treatment necessary for adequate protection of residential properties and to afford separation of through and local traffic.~~ ~~M. Street Names.~~ ~~All street names shall be approved by the Planning Commission for conformance with the established pattern and to avoid duplication and confusion.~~ ~~N. Private Streets.~~ ~~The design and improvement of any private street shall be subject to all requirements prescribed by this ordinance for public streets. The land divider shall provide for the permanent maintenance of any street required for access to property in a private street subdivision or a major partition.~~	
13.440. BLOCKS. A. General. The length, width and shape of blocks shall take into account the need for adequate building site size and street width and shall recognize the limitations of the topography.	This section of subdivision code should be updated to reflect proposed new Development Code and TSP language, particularly the block standards

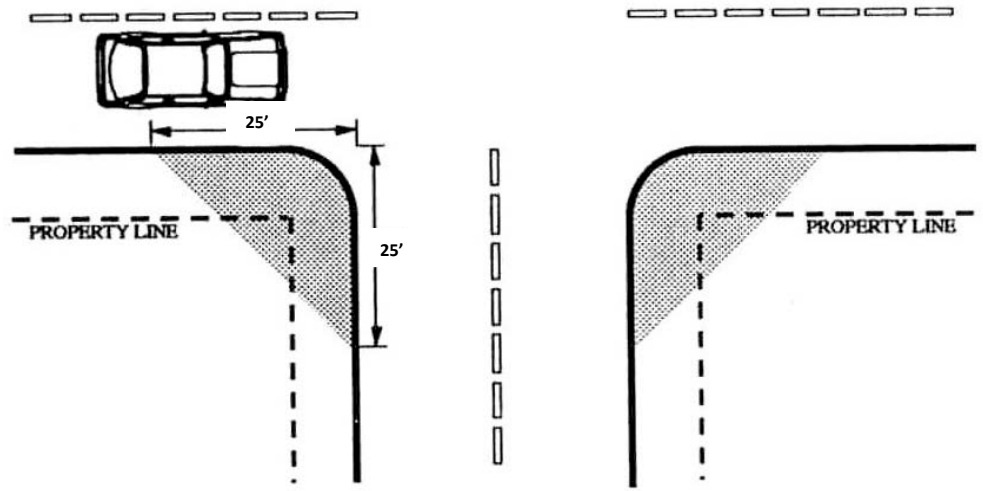
B. Size. Block size shall conform to the standards in Table 1 (Spacing Standards) of the Transportation System Plan. ~~No block shall be more than 1,000 feet in length between street corner lines unless it is adjacent to an arterial street or unless the topography or the location of adjoining streets justifies an exception. The recommended minimum length of blocks along an arterial street is 1,800 feet. A block shall have sufficient width to provide for two tiers of building sites unless topography or the location of adjoining streets justifies an exception.~~ C. Walkways. The applicant may be required to dedicate and improve ten (10) foot walkways, with at least six (6) feet of all-weather surface, at 330-foot intervals across blocks that exceed the block standards in Table 1 (Spacing Standards) in the Transportation System Plan ~~over 600 feet in length~~ or to provide access to school, park, or other public areas.	in the updated TSP and mid-block walkways addressed in the TSP and proposed code in Section 3.015.

Table 2: Proposed Amendments to Other City Documents

Proposed Amendment	Commentary
City Code **Chapter 2 Local Improvements** **2.350 Planting of Trees in Sidewalk Areas**. (1) That no person, firm, or corporation shall plant, grow, or maintain any tree, shrub, or vegetable growth upon the sidewalks or sidewalk area (area between curb and property line) in the city of Astoria, or so close thereto that they	The City requested that its vision clearance area standards be consolidated into one section in City code in addition to other revisions.

overhang said sidewalks or sidewalk areas at a height of less than nine (9) feet, except as set forth in Section (2), without first obtaining a permit to do so from the Astoria City Engineer ~~public works director~~ as hereinafter provided. (2) That potted trees placed on or in said sidewalks or sidewalk areas as authorized by Section (1) shall not overhang said sidewalks or sidewalk areas at an elevation of less than seven (7) feet and shall not extend beyond the curb line at an elevation of less than nine (9) feet. <u>These plantings are subject to the vision clearance area requirements of City Code Section 6.100.</u> (3) That upon proper application filed by applicant setting forth all relevant facts relating to the request in question, the ~~public works director~~ City Engineer may, in the exercise of his sound discretion, issue a permit or permits to persons, firms, or corporations to plant, grow, or maintain trees, shrubs, or vegetable growth in areas in which the same are prohibited by Section (1) hereof.	The City asked that tree planting be subject to vision clearance area standards.
City Code **Chapter 6 Traffic** **General Traffic Control** **6.100 Vision Clearance Area**. (1) <u>Definitions. As used in this ordinance or in the interpretation of this ordinance, the following terms will have the meanings indicated:</u> <u>Central Business District: An area bounded to the west by 7th Street, on the east by 16th Street, on the north by the Columbia River and on the south by properties abutting Exchange Street.</u>	Vision clearance area standards are proposed for consolidation in this section of City code, where existing standards were already established. It was requested that the subsection on definitions be moved to the beginning of the section. Existing vision clearance area

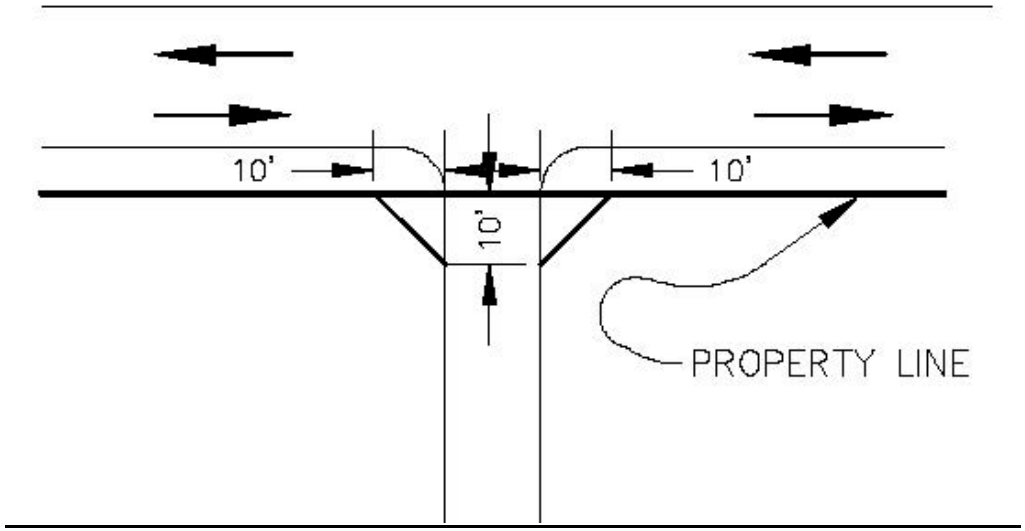
Non-Residential Zones: All zones other than the R-1, R-2, and R-3 Zones. (~~1~~2) ~~In all areas except the Central Business District and Commercial Zones, the vision clearance measured along the property line for corner lots at street intersection shall have a minimum of 25 foot legs along each street, and for alley/street intersections, the vision clearance areas shall have legs of a minimum of ten (10) feet along both alley and street.~~ Streets and railroads. A vision clearance area shall consist of a triangular area, two sides of which are 25-foot lengths along the outside curb edges of streets, or the paved area of a street without a curb, and/or edges of gravel beds of railroads and the third side of which is a line across the corner of the lot connecting the ends of the other two sides (Figure 1). **Figure 1: Vision Clearance Area for Streets and Railroads**	standards have been expanded into standards for intersections of two streets (or a street and a railroad) as well as a street and an alley or a driveway. Driveways are further differentiated into residential and non-residential. Driveway standards are generally modeled after those recently revised and adopted in the City of Salem. The provision excepting the Central Business District and Commercial Zones has been removed upon City request and for wider application of these standards. However, provisions have been added below to give clear authority to the City Engineer to modify vision clearance area standards, which may especially be needed in the Central Business District, where buildings constructed up to the property line may not necessarily meet these



Alleys and residential driveways. A vision clearance area shall consist of a triangular area, two sides of which are 10-foot lengths along the property line and edge of the driveway or alley and the third side of which is a line across the corner of the lot connecting the ends of the other two sides (Figure 2).

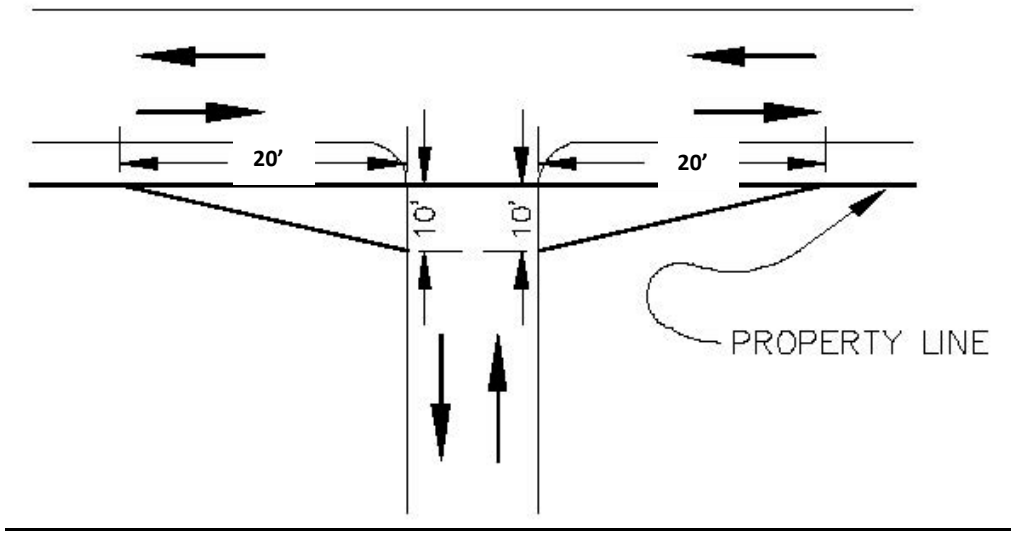
standards.

Figure 2: Vision Clearance Area for Alleys and Residential Driveways



Non-residential driveways. A vision clearance area shall consist of a triangular area, two sides of which are 20-foot and 10-foot lengths along the property line and edge of the driveway, respectively, and the third side of which is a line across the corner of the lot connecting the ends of the other two sides (Figure 3).

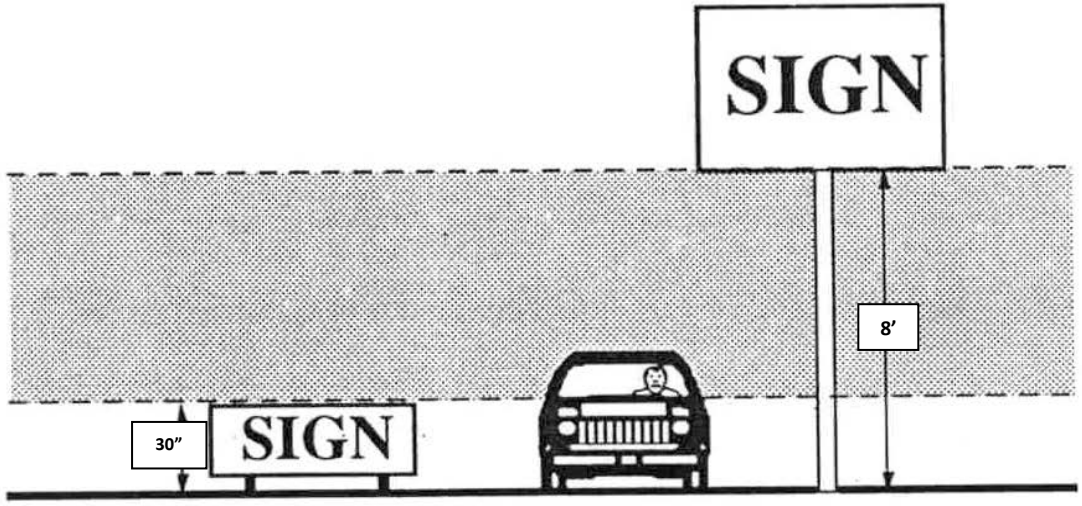
Figure 3: Vision Clearance Area for Non-Residential Driveways



The vision clearance area shall not contain any plantings, walls, structures or temporary or permanent obstructions to vision ~~exceeding~~ between thirty (30) inches and eight (8) feet in height above the street, except a supporting pillar, ~~or~~ post, or trunk not greater than twelve (12) inches in diameter or twelve (12) inches on the diagonal of a rectangular pillar or post; and further, excepting those posts or supporting members of street signs, street lights and traffic control signs installed as directed by the Department of Public Works or any other sign erected for public safety (Figure 4); and sign portion of traffic control signs installed by the Department of Public Works or Oregon Department of

Transportation in compliance with the Manual on Uniform Traffic Control Devices.

Figure 4: Vision Clearance Area Height



Vision clearance shall not be required at a height of eight~~seven~~ (8~~7~~) feet or more above the street or on hills above opposing drivers' eye level.

The City Engineer may adjust vision clearance area requirements as needed for safety, depending on intersection angle, topography, or other conditions, including the clustering of poles in an area.

(~~2~~3) In the Central Business District and ~~Commercial~~ Non-Residential Zones, no

The standard for distance between an on-street parking space and the intersection was changed to 20 feet to accommodate State statute that prohibits parking within 20 feet of a crosswalk at an intersection.

vehicle over five (5) feet in height, with shaded windows, blocked windows, or no windows shall park or stand in a marked parking space within twenty~~-five~~ (20~~5~~) feet of the intersection ~~if the vehicle is over five (5) feet in height or has shaded windows or blocked windows or no windows~~, unless the intersection is controlled by a traffic signal or the parking stall is located on the departing leg of a one-way street. ~~(3) Definitions. As used in this ordinance or in the interpretation of this ordinance, the following terms will have the meanings indicated:~~ ~~Central Business District: An area bounded to the west by 7th Street, on the east by 16th Street, on the north by Commercial Street and on the south by Exchange Street.~~ ~~Commercial Zones: An area along West Marine Drive from 7th and Commercial to 7th and Olney; an area from 16th and Commercial to 38th and Lief Erikson Drive.~~ (4) The above sections shall not be construed as a waiving or altering of any yard requirements or setback requirements that may be required by this or any other ordinance.	
City of Astoria Engineering Division Design Standards **Chapter 4 (Roadways)** **4.7 Intersections** ~~Clear vision~~Vision Clearance Area A ~~clear-vision sight triangle~~vision clearance area must be maintained at ~~all~~ intersections of	Vision clearance area provisions in other sections of the code are recommended to be simplified and generally replaced with a reference to Section 6.100.

~~streets at a~~ streets, alleys, driveways, and ~~a~~ railroads.~~, or at a driveway and a~~ street. Refer to ~~Article 3~~Section 6.100 (Vision Clearance Area) of the City Code ~~*Development Code*~~ for specific requirements.	

TECHNICAL MEMORANDUM

DATE: February 19, 2014

TO: Astoria TSP Update Project Management Team

FROM: Matt Hastie and Shayna Rehberg, Angelo Planning Group

SUBJECT: **Astoria Transportation System Plan Update**
Technical Memo #11 Supplement
Proposed Amendments to the Comprehensive Plan/Policies

This memorandum supplements Technical Memorandum #11, which presented draft proposed amendments to the City of Astoria Comprehensive Plan and Development Code. This memo refines and provides more detail about policies to be incorporated into the Astoria Comprehensive Plan and into the updated 2013 Astoria Transportation System Plan (TSP), an element of the Comprehensive Plan.

Policies developed for the 2013 TSP and from the 2013-2033 Trails Master Plan provide a community-wide policy framework related to transportation. Policies found in other local plans adopted since the last TSP include policies and objectives related to transportation as well as land use and other issues. It is recommended that goals, policies and objectives from these documents be incorporated into the TSP and Comprehensive Plan as follows.

1. Include goals, policies, and objectives from the 2013 TSP and the 2013-2033 Trails Master Plan in a policy section in Volume 2 of the 2013 TSP.

2. Integrate transportation and non-transportation policies and objectives for specific geographic areas from the Astoria Riverfront Vision Plan, Port/Uniontown Transportation Refinement Plan, and East Gateway Transportation Plan into the Area Descriptions and Policies section (CP.030 – CP.105) of the Astoria Comprehensive Plan.

2013 Astoria Transportation System Plan Volume 2 Policies

Goals, policies, and objectives from the 2013 TSP update and Astoria Trails Master Plan are proposed to be incorporated into a stand-alone policy section in Volume 2 of the 2013 TSP. It is recommended that a reference to this section be included in the goals section in Volume 1 of the TSP.

Transportation Goals and Objectives

Goal 1: Health and Safety

Develop a transportation system that maintains and improves individual health and safety by maximizing active transportation options, public safety and service access, and safe and smooth connects for all modes.

Goal 1 Objectives

1. Maximize active transportation options
2. Develop a trail network that provides trail users of all abilities and interests a variety of trail experiences
3. Improve safety and provide safe connections for all modes and meet applicable City and Americans with Disabilities (ADA) standards
4. Increase public safety and service access
5. Increase the city's ability to handle natural disasters

Goal 2: Equity

Develop and maintain a well-connected transportation system that offers travel choices, reduces travel distance, improves reliability, and manages congestion for all modes.

Goal 2 Objectives

1. Reduce travel distance for all modes
2. Improve travel reliability for all modes
3. Manage congestion for all modes
4. Enhance connectivity, and integrate all modes and destinations
5. Increase access to the transportation system for all modes regardless of age, ability, income, and geographic location
6. Balance the needs of citizens viewpoints with public agency requirements

Goal 3: Economic Vitality

Support the development and revitalization efforts of the City, Region, and State economies and create a climate that encourages growth of existing and new businesses.

Goal 3 Objectives

1. Improve the freight system efficiency, access, and capacity
2. Integrate the Port needs for rail, freight, and river terminal facilities
3. Manage parking efficiently and ensure that it supports downtown business needs and promotes new development
4. Balance local access with the need to serve regional traffic on state highways
5. Provide transportation facilities that support existing and planned land uses
6. Enhance the vitality of the Astoria downtown area by incorporating roadway design elements for all modes
7. Ensure that all new development contributes a fair share toward on-site and off-site transportation system improvements

Goal 4: Livability

Customize transportation solutions to suit the local context while providing a system that supports active transportation, promotes public health, facilitates access to daily needs and services, and enhances the livability of the Astoria neighborhoods and business community.

Goal 4 Objectives

1. Protect residential neighborhoods from excessive through traffic and travel speeds
2. Enhance connections between community amenities
3. Balance downtown livability with highway freight and seasonal congestion pressures
4. Design streets to serve the widest range of users, support adjacent land uses, and increase livability through street dimensions, aesthetics, and furnishings
5. Enhance the quality of life downtown and in neighborhoods

Goal 5: Sustainability

Provide a sustainable transportation system that meets the needs of present and future generations that is environmentally, fiscally and socially sustainable.

Goal 5 Objectives

1. Support travel options that allow individuals to reduce single-occupant vehicle trips
2. Protect the health of the rivers and other natural areas or environments
3. Support the reduction of greenhouse gas emissions from transportation sources
4. Support and encourage transportation system management (TSM) and transportation demand management (TDM) solutions to congestion
5. Protect the historic character of the community

Goal 6: Fiscally Responsibility

Plan for an economically viable transportation system that protects and improves existing transportation assets while cost-effectively enhancing the total system and pursuing additional transportation funding.

Goal 6 Objectives

1. Plan for an economically viable and cost-effective transportation system
2. Identify and develop diverse and stable funding sources to implement recommended projects in a timely fashion and ensure sustained funding for transportation projects and maintenance
3. Make maintenance and safety of the transportation system a priority
4. Maximize the cost effectiveness of transportation improvements by prioritizing operational enhancements and improvements that address key bottlenecks.
5. Identify local street improvement projects that can be funded through ODOT grant programs.
6. Provide funding for local share (i.e., match) of capital projects jointly funded with other public partners.
7. Prioritize funding of projects that are most effective at meeting the goals and policies of the Transportation System Plan.

Goal 7: Compatibility

Develop a transportation system that is consistent with the City's Comprehensive Plan and that coordinates with County, State, and Regional plans.

Goal 7 Objectives

1. Coordinate and cooperate with adjacent jurisdictions and other transportation agencies to develop transportation projects that benefit the City, Region, and State as a whole

2. Work collaboratively with other jurisdictions and agencies to ensure the transportation system functions seamlessly

3. Coordinate with other jurisdictions and community organizations to develop and distribute transportation-related information

4. Review City transportation standards periodically to ensure consistency with Regional, State, and Federal standards

5. Coordinate with the County and State agencies to ensure that improvements to County and State highways within the City benefit all modes of transportation

6. Participate with ODOT and Clatsop County in the revision of their transportation system plans, and coordinate land development outside of the Astoria area to ensure provision of a transportation system that serves the needs of all users

7. Participate in updates of the ODOT State Transportation Improvement Program (STIP) and Clatsop County Capital Improvement Program (CIP) to promote the inclusion of projects identified in the Astoria TSP

Comprehensive Plan Area Descriptions and Polices

Proposed amendments to the Plan Area Descriptions and Policies section of the Comprehensive Plan are recommended as the new sections listed below.

- CP.037 Port-Uniontown District
- CP.038 Policies
- CP.047 East Gateway Area
- CP.038 Policies
- CP.067 Astoria Riverfront Area
- CP.038 Policies

The Port-Uniontown section is language that is included in the plan itself but that has not been

physically incorporated into the Comprehensive Plan. The East Gateway Area and Astoria Riverfront Area policies were included in those respective plans but also have not been physically incorporated into the Comprehensive Plan. The area descriptions for the East Gateway Area ad Astoria Riverfront Area are new draft language. The Riverfront Area language may be modified to reflect work being done as part of a current Transportation Growth Management (TGM) code assistance project (e.g., potentially a new overlay zone).

CP.037. Port-Uniontown Overlay Area.

The Port-Uniontown Overlay Area is generally located along the Astoria Waterfront. The District boundaries extend from the Smith Point Roundabout to the Columbia/Bond intersection, from properties fronting on the south side of West Marine Drive (US 101/US 30) to and including the Columbia River. The exact area is shown in Figure 1.2, and was originally created to coincide with the boundaries of the Astor-West Urban Renewal Area, created in late 2002. It slightly overlaps with the West End General Land Use Area, an established residential neighborhood addressed in Sections CP.030 through CP.035. There is also overlap with the Uniontown-Alameda Historic District, placed on the National Register of Historic Places in 1988, which extends roughly from West Marine Drive south to West Exchange Street and between Hull Avenue on the west and Hume Avenue on the east. The Area also overlaps with the *Astoria Riverfront Vision Plan* "Bridge Vista" area which extends along the Riverfront from Pier 1 to approximately 2nd Street.

The Port-Uniontown Overlay Area is defined by the Columbia River waterfront and West Marine Drive. Existing uses associated with the riverfront include Port of Astoria operations and offices, other marine industrial sites, a marina, a hotel, and the River Trail shared-use path. Existing uses associated with West Marine Drive feature a mix of single- and multi-family residences, commercial services (including gas stations, bars and restaurants, hotels, and a market), and institutional uses such as a fire station and an ODOT facility.

Between the years of 2001 and 2006, areas of the Port-Uniontown Overlay Area were the subject of a series of planning efforts by the Port of Astoria. These earlier plans divided the waterfront into two districts: the western industrial-oriented Marine Service Center District and the eastern visitor and recreation-oriented Marina District. They envisioned development of a conference center in conjunction with the existing motel site (400 Industry), which, in part, spurred the formation of the Astor-West Urban Renewal Area. The *Port/Uniontown Transportation Refinement Plan* was adopted by Ordinance 07-01 on February 20, 2007.

The *Astor-West Urban Renewal Plan*, adopted in December 2002, was created to support redevelopment of former industrial sites within Uniontown, development of a conference center, and transportation and recreation improvements including extending the River Trail, reconstructing trolley tracks, building streets for more connectivity, and enhancing streetscapes with lighting, seating, and landscaping. The *Port-Uniontown Transportation Refinement Plan*, adopted in February 2007, developed transportation, access, and circulation improvements for roads and paths in the Overlay Area, with particular focus on West Marine Drive. The land use vision that evolved from the Refinement Plan process is the basis for the Port-Uniontown Overlay Area.

The Port-Uniontown Overlay Area is comprised of eight subdistricts with distinct character largely reflected in their names. The first two subdistricts are waterfront subdistricts identified in earlier plans, and the other six subdistricts focused around West Marine Drive were products of the visioning process conducted for the *Port/Uniontown Transportation Refinement Plan*. The eight subdistricts include:

1. Marine Service Center District
2. Marina District
3. Tourist/Visitor Oriented District
4. Neighborhood/Visitor Services District
5. Marine Services/Industrial District
6. Neighborhood Corridor District
7. Gateway/Open Space District
8. Highway Corridor District

CP.038. Port-Uniontown Overlay Area Policies.

1. The City will use the vision established in the *Port/Uniontown Transportation Refinement Plan* (2007) to direct future development in the Port- Uniontown Overlay Area. The overall Comprehensive Plan Policies are to:

   a. Promote development that complements the surrounding areas of Downtown and the West End.

   b. Enhance existing primary uses, such as Port of Astoria facilities, the marina, visitor services, open space, trails, and small businesses and neighborhoods.

   c. Support redevelopment of former industrial sites and vacant and underutilized lots

   d. Stimulate development interest by establishing complementary surrounding land uses and quality development and design, and by improving transportation conditions through road construction and connections, circulation plans, and access management plans.

   e. Establish visual and physical linkages within and around the Port-Uniontown Overlay Area, with emphasis on the Columbia River waterfront.

   f. Create a pedestrian-friendly environment through the District by increasing connectivity throughout the Port-Uniontown Overlay Area, orienting buildings toward adjacent streets and pathways, extending the River Trail, adding and improving sidewalks, and enhancing the streetscape with landscaping, human-scale lighting, seating, and other amenities.

2. The City will implement the Port-Uniontown Overlay Area element of the Comprehensive Plan through its Design Review process and amendments to the Development Code that

provide design and development standards.

3. The City, through the Development Code, will develop a set of design standards for the Port-Uniontown Overlay Area that address building massing and orientation, architecture, access and parking, streetscape, landscaping and other elements. These standards will apply to development projects in the District as defined in the Development Code.

4. To the extent possible, the design and development standards are intended to be clear and objective so that most proposed development can be evaluated administratively. The Design Review Committee, created and enabled by the Development Code, will review appeals of administrative decisions and proposals that vary from the standards and yet may still embody the spirit of the Port-Uniontown Overlay Area.

5. The City encourages public and private owners in the Port-Uniontown Overlay Area, especially large landowners such as the Port of Astoria, to continue to participate and collaborate with the City in implementing the objectives and visions established in the *Port/Uniontown Transportation Refinement Plan.*

CP.047. East Gateway Overlay Area.

The East Gateway Overlay Area is located along US 30 / Lief Erikson Drive between 33rd Street and Liberty Lane in eastern Astoria, as shown in Figure 1.3. The *East Gateway Transportation Plan* was adopted by Ordinance 07-01 on February 20, 2007. The *East Gateway Transportation Plan* was developed in order to identify improvements that are intended to reduce congestion, enhance safety, and encourage development of industrial/commercial and residential sites in a manner that will benefit both vehicular and pedestrian/cyclist travel. The Plan established both transportation and land use policies.

CP.048. East Gateway Overlay Area Policies.

1. Support the planned land use as defined in City planning documents for business parks, industrial sites, and residential sites.

2. Encourage development of commercial and industrial sites so as to provide more opportunity for employment within the City.

3. Improve vehicular access from industrial/ commercial sites to US 30 / Lief Erikson Drive.

4. Improve internal circulation and manage access for vehicular and non-motorized users in industrial / commercial sites and local street systems.

5. Improve pedestrian and bicyclist connectivity and safety across US 30 / Lief Erikson Drive.

6. Support the development of a local street network that will reduce reliance on US 30 / Lief Erikson Drive.

7. Provide improved safety and direct access to the River Trail for new developments.

8. Support the extension of the River Trail through the east end of Astoria.

9. Provide all recommended improvements in an environmentally sound and cost effective manner.

CP.067. Astoria Riverfront Vision Overlay Area.

The *Astoria Riverfront Vision Plan was accepted by the City Council on December 7, 2009.* The *Astoria Riverfront Vision Plan* was developed to address a series of land use, transportation, and scenic, natural, and historic resource issues along the Columbia riverfront in the City. The area spans from Pier 3 in the west to Tongue Point in the east along the Columbia River, and is divided into four sub-areas: the Bridge Vista Area, Urban Core Area, Civic Greenway Area, and Neighborhood Greenway Area. The Astoria Riverfront Vision Overlay Area is shown in Figure 1.4. The following sets of policies are included in the *Riverfront Vision Plan.*

CP.068. Astoria Riverfront Vision Overlay Area Policies.

1. Promote physical and visual access to the river. The overall Comprehensive Plan objectives are to:

    a. Maintain current areas of open space and create new open space areas.

    b. Provide for public access to the river within private developments.

    c. Retain public ownership of key sites along the riverfront.

    d. Protect view sheds along the river, including corridors and panoramas from key viewpoints.

    e. Use alternative development forms (e.g., clustered development, narrower, taller profiles, setbacks, stepbacks, and gaps in building frontages) to preserve views.

2. Encourage a mix of uses that supports Astoria's "'working waterfront" and the City's economy. The overall Comprehensive Plan objectives are to:

    a. Maintain the authentic feel of the riverfront.

    b. Prioritize siting of water-related businesses along the river.

    c. Allow for some residential development along the riverfront. emphasizing smaller-scale work force (moderate income) housing.

d. Allow for development that supports downtown and other commercial areas.

e. Limit development in areas with most significant impacts on open space, view or other resources.

f. Promote uses that provide jobs and support the local economy.

3. Support new development that respects Astoria's historic character. The overall Comprehensive Plan objectives are to:

a. Enhance or refine Development Code to achieve vision principles.

b. Implement design review, design standards, or other tools to guide the appearance of new development.

c. Devote resources to rehabilitating old structures.

4. Protect the health of the river and adjacent natural areas. The overall Comprehensive Plan objectives are to:

a. Protect natural areas for wildlife viewing.

b. Replace invasive plants with native species.

c. Incorporate natural elements in the design of future public and private improvements.

5. Enhance the River Trail. The overall Comprehensive Plan objectives are to:

a. Maintain, repair, extend, and enhance the River Trail.

b. Provide better pedestrian connections between the downtown and the riverfront.

c. Create amenities such as shelters, lighting, and public restrooms in targeted locations.

d. Ensure adequate parking opportunities along, adjacent to, and near the riverfront.

e. Address safety issues associated with mix of autos, pedestrians, trolley, and other activities.

f. Ensure long-term maintenance of public improvements.

Section M: Memo 12- Finance Program

Section M: Memo 12- Finance Program

Memorandum #12

Date:	June 25, 2013
To:	Astoria TSP Update Project Management Team
From:	Chris Maciejewski, P.E., P.T.O.E., DKS Associates Kevin Chewuk, PTP, DKS Associates
Subject:	**Astoria Transportation System Plan Update** **Finance Program**

This document details the transportation funding that is expected to be available through 2035. The funding assumptions will help prioritize the investments the City can make in the transportation system, and will be utilized to develop a set of transportation improvements that will likely be funded to meet identified needs through 2035.

Current Funding Sources

Three general funding sources are utilized by the City for transportation, including funds from the Surface Transportation Program (STP), State Highway Trust Fund and a local gas tax. Federal Highway Trust Funds are received from federal motor vehicle fuel tax and truck-related weight mile charges. Funds are allocated through various programs codified in the six-year Federal Transportation Authorization Act. Federal Highway Trust Funds from the Surface Transportation Program (STP) flow to the states that use them primarily for safety, highway, and bridge projects. A portion of these funds are allocated to local cities including Astoria based upon actual population.

State funds through the State Highway Trust Fund come from state motor vehicle fuel tax, vehicle registration fees, and truck weight-mile fees, and are distributed on a per capita basis. Cities and counties receive a share of State Highway Trust Fund monies. By statute, the money may be used for any road-related purpose, including walking, biking, bridge, street, signal, and safety improvements.

The state gas tax funds have previously failed to keep up with cost increases and inflation. With increased fuel efficiency of vehicles and the State's emphasis on reducing vehicle miles traveled, the real revenue collected has gradually eroded over time. In an effort to offset the relative decline in contribution of state funds, the Oregon Jobs and Transportation Act (Oregon House Bill 2001) recently passed. House Bill 2001 (adopted by the 2009 legislature) increases transportation-related fees including the state gas tax and vehicle registration fees. Oregon vehicle registration fees are collected as a fixed amount at the time a vehicle is registered with the Department of Motor Vehicles. Vehicle registration fees in Oregon recently increased from $27 to $43 per vehicle per year for passenger cars, with similar increases for other vehicle types. The gas tax in Oregon increased on January 1, 2011 by six cents, to 30 cents per gallon. This was the first increase in the state gas tax since 1993.

Revenues: Current revenue sources are expected to provide over $21 million through 2035. Over the past five years, Astoria averaged $428,670 in State gas tax and vehicle registration fee revenue, $107,500 in Surface Transportation Program revenue, and $195,500 in local gas tax revenue.

Because there is no index for cost inflation, the revenue levels will increase proportionally with the City's population growth. However, as a conservative estimate,[1] the same levels ($428,670, $107,500 and $195,500 per year) were assumed in the future. Through 2035, Astoria is expected to receive over $17.5 million in State gas tax and license fee, Surface Transportation Program and local gas tax revenue.

State law requires that a minimum of one percent of the State gas tax and vehicle registration funds received must be set aside for construction and maintenance of walking and bicycling facilities. In Astoria, this represents approximately $4,000 per year and over $103,000 through 2035.

In addition, the City received approximately $175,000 in other revenues over the past five years. Keeping this revenue level consistent, this represents about $4.2 million through 2035.

Expenditures: Current expenditures are expected to top $15 million through 2035 (based on revenue and expenditures over the past five years). The majority of the funds are spent on materials and services (nearly $6 million through 2035). In addition, over $4.5 million will be spent on both personal services and capital outlay.

Table 1: Astoria Transportation Funding (2011 Dollars)

Revenue Source	Average Annual Amount	Estimated Amount Through 2035
Surface Transportation Program (STP)	$107,500	$2,580,000
State Gas Tax and License Fees	$428,670	$10,288,080
Bikeway/Walkway (1% of State Gas Tax and License Fees)	$4,330	$103,920
Local Gas Tax	$195,500	$4,692,000
Other*	$175,000	$4,200,000
Total Revenues (5-year Average)	***$911,000***	***$21,864,000***
Expenditures	**Average Annual Amount**	**Estimated Amount Through 2035**
Personnel Services	$202,500	$4,860,000
Materials and Services	$248,500	$5,964,000
Capital Outlay (i.e., maintenance)	$191,000	$4,584,000
Total Expenditures (5-year Average)	***$642,000***	***$15,408,000***
Expended Yearly Funds for Capital Improvements (Revenues-Expenditures)	**$269,000**	**$6,456,000**

***Other revenue includes transfers from the general fund and earned interest**

Funds for Transportation Improvements: A little over $6.4 million is expected to be available for street improvement needs after reducing the estimated expenditures through 2035. These funds can potentially be spent on transportation improvement needs.

[1] The population growth rate in Astoria was assumed to be roughly the same as the cost inflation rate, therefore, existing revenues were maintained through 2035.

Aspirational Scenario Investments

The Astoria approach to developing transportation solutions for this update placed more value on investments in smaller cost-effective solutions for the transportation system rather than larger, more costly ones. The approach enabled more cost-effective solutions to increase transportation system capacity and helped to encourage multiple travel options and promote a more sustainable transportation system.

Taking the network approach to transportation system improvements, the projects in this plan fall within one of several categories:

- **Driving** projects to improve connectivity, safety and capacity throughout the City. Astoria identified 39 driving projects that will cost an estimated $35 million to complete.
- **Walking** projects for sidewalk infill, providing seamless connections for pedestrians throughout the City. Astoria identified 27 walking projects that will cost an estimated $12.7 million to complete.
- **Biking** projects including an integrated network of bicycle lanes and marked on-street routes that facilitates convenient travel citywide. Astoria identified 42 biking projects that will cost an estimated $586,000 million to complete.
- **Shared-Use Path** projects providing local off-street travel for walkers and bikers. The citywide shared-use path vision includes two projects totaling an estimated $218,000. These projects are in addition to those included in the Astoria Recreational Trails Master Plan.
- **Transit** projects to enhance the quality and convenience for passengers. Astoria identified two transit projects that will cost an estimated $175,000 to complete.
- **Crossing** project solutions, proving safe travel across streets along key biking and walking routes. A total of 18 crossing projects were identified, totaling an estimated $655,000.

Overall, Astoria identified 130 transportation solutions, totaling an estimated $49.2 million worth of investments. Based on current funding levels, the City is expected to have funding shortfall of approximately $42.8 million to fund the projects included in the aspirational scenarios of the TSP. The City may wish to consider expanding its funding options in order to provide a reasonable funding strategy so improvements can be constructed in a timely manner.

Potential Additional Funding Sources

Transportation funding options include local taxes, assessments and charges, and state and federal appropriations, grants, and loans. All of these resources can be constrained based on a variety of factors, including the willingness of local leadership and the electorate to burden citizens and businesses; the availability of local funds to be dedicated or diverted to transportation issues from other competing City programs; and the availability of state and federal funds. Nonetheless, it is important for the City to consider all opportunities for providing, or enhancing, funding for the transportation improvements included in the TSP.

The following sources have been used by cities to fund the capital and maintenance aspects of their transportation programs. There may be means to begin to or further utilize these sources, as described below, to address existing or new needs identified in the TSP.

System Development Charges

System development charges (SDC) are fees collected from new development and used as a funding source for all capacity adding projects for the transportation system. The funds collected can be used to construct or improve portions of roadways impacted by applicable development, such as the UGB expansion area. The SDC is collected from new development and is a one-time fee. The fee is based on the proposed land use and size, and is proportional to each land use's potential PM peak hour vehicle trip generation. The City of Astoria does not currently collect SDCs. The City may wish to pursue vehicle and/or pedestrian and bicycle SDC's to fund transportation projects for new developments. Many of the transportation improvements in the TSP would be 100 percent fundable through SDC's.

As of 2011, Astoria was the fourth largest city in the state without transportation SDC's.[2] In addition, 30 cities in the state with fewer residents collected transportation SDC's. Astoria is expected to grow by about 400 households and 700 jobs through 2035. As an example of the revenue an SDC fee program could generate, an SDC rate of $2,500 per peak hour trip for driving (similar the fee collected in Depoe Bay) and $500 per peak hour trip for walking and biking, the City could potentially collect an additional $3.6 million for driving projects and $254 thousand for walking and biking projects. A typical residential dwelling unit would be expected to pay around $2,200 for driving and $450 for walking and biking SDC's. If an SDC rate program is desired, a rate study would be required to determine appropriate fees based on capacity projects costs, growth potential, and local preferences.

Transportation Utility Fee

A transportation utility fee is a recurring monthly charge that is paid by all residences and businesses within the City. The fee can be based on the number of trips a particular land use generates or as a flat fee per unit. It can be collected through the City's regular utility billing. Existing law places no express restrictions on the use of transportation utility fee funds, other than the restrictions that normally apply to the use of government funds.[3] Some cities utilize the revenue for any transportation related project, including construction, improvements and repairs. However, many cities choose to place self-imposed restrictions or parameters on the use of the funds.

Assuming a flat fee of $5.00 per month per water meter for both residential and commercial uses in the City (similar to the fee charged in Bay City), the City could collect an additional $8.0 million for transportation related expenses through 2035.

[2] League of Oregon Cities SDC Survey
[3] Implementing Transportation Utility Fees, League of Oregon Cities

Local Fuel Tax

Fifteen cities (including Astoria) and two counties in Oregon have adopted local gas taxes ranging from one to five cents per gallon. The taxes are paid to the city monthly by distributors of fuel. Astoria's local gas tax is currently three cents per gallon, which brings in about $18,000 per month in revenue. The City may want to consider increasing the local gas tax or seasonally adjusting the rate. Newport, for example, increases its local gas tax during the summer months to place more of a burden on visitors stopping in the City and paying the local gas tax. This means some of the costs for the transportation improvements in the City would be shared by non-residents. Assuming Astoria increased its local gas tax to five cents per gallon during the summer months (June through October); the local gas tax could bring an additional $12,000 per month during the summer, and $60,000 annually or $1.4 million through 2035. The process for presenting such a tax to voters would need to be consistent with Oregon State law as well as the laws of the City.

ODOT Statewide Transportation Improvement Program (STIP) Enhance Funding

ODOT has modified the process for selecting projects that receive STIP funding. The new process follows a jurisdictionally blind approach, meaning local agencies can receive funding for projects off the state system. Focus projects are expected to be those that enhance system connectivity and improve multi-modal travel options. With the updated TSP, the City will be prepared to apply for STIP funding.

ODOT Highway Safety Improvement Program (HSIP) Funding

With Oregon's funding under the HSIP increased significantly and direction from the Federal Highway Administration to address safety challenges on all public roads, ODOT will increase the amount of funding available for safety projects on local roads. Safety funding will be distributed to each ODOT region, which will collaborate with local governments to select projects that can reduce fatalities and serious injuries, regardless of whether they lie on a local road or a state highway.

To maintain commitments in the current Statewide Transportation Improvement Program (STIP) for 2013-2015 and because the development of 2016-2018 STIP is well underway, a reasonable expectation is to start the jurisdictionally blind safety approach in 2017. Meanwhile ODOT intends to implement a transition plan for 2013-2016. The transition will be developed to bridge the gap. Funding for local roads will be allocated to primarily focus on a few systemic low cost fixes that can be implemented in the shorter timeframe[4].

Local Hotel/Lodging Tax

Many Oregon jurisdictions impose a local hotel tax, including Astoria which charges a ten percent lodging tax. Several jurisdictions in Oregon, including Lincoln City, dedicate some of the revenue from this tax to transportation projects. Astoria may choose to do the same to place some of the

[4] ODOT Jurisdictionally Blind Safety Program

cost burden for the transportation improvements in the City on non-residents.

General Fund Revenues

At the discretion of the City Council, the City can allocate General Fund revenues to pay for its Transportation program (General Fund revenues primarily include property taxes, use taxes, and any other miscellaneous taxes and fees imposed by the City). This allocation is completed as a part of the City's annual budget process, but the funding potential of this approach is constrained by competing community priorities set by the City Council. General Fund resources can fund any aspect of the program, from capital improvements to operations, maintenance, and administration. Additional revenues available from this source are only available to the extent that either General Fund revenues are increased or City Council directs and diverts funding from other City programs.

Urban Renewal District

An Urban Renewal District (URD) would be a tax-funded district within the City. The URD would be funded with the incremental increases in property taxes that result from construction of applicable improvements. This type of tax increment financing has been used in Oregon since 1960. Use of the funding includes, but is not limited to, transportation. Improvements are funded by the incremental taxes, rather than fees. There are currently two Urban Renewal Districts in the City. The Astor-East Urban Renewal District includes much of Downtown Astoria, while the Astor-West Urban Renewal District includes the Port of Astoria Uniontown. As of 2012, the Astor-East Urban Renewal District fund had about $880,000, while the Astor-West Urban Renewal District fund had approximately $1.87 million. These balances could potentially be spent on transportation urban renewal projects in these districts.

Local Improvement Districts

Local Improvement Districts (LIDs) can be formed to fund capital transportation projects. LIDs provide a means for funding specific improvements that benefit a specific group of property owners. LIDs require owner/voter approval and a specific project definition. Assessments are placed against benefiting properties to pay for improvements. LIDs can be matched against other funds where a project has system wide benefit beyond benefiting the adjacent properties. Fees are paid through property tax bills. LIDs are often used for sidewalks and pedestrian amenities that provide local benefit to residents along the subject street.

Debt Financing

While not a direct funding source, debt financing can be used to mitigate the immediate impacts of significant capital improvement projects and spread costs over the useful life of a project. Though interest costs are incurred, the use of debt financing can serve not only as a practical means of funding major improvements, but is also viewed as an equitable funding strategy, spreading the burden of repayment over existing and future customers who will benefit from the projects. The obvious caution in relying on debt service is that a funding source must still be identified to fulfill annual repayment obligations.

Developing the Plan

With an estimated $49.2 million worth of transportation solutions identified, Astoria must make investment decisions to develop a set of transportation improvements that will likely be funded to meet identified needs through 2035. As detailed earlier in this document, the City is expected to have approximately $6.4 million to cover the $49.2 million in project costs. Unless the City expands its funding options, most of the transportation solutions identified for the City are not reasonably likely to be funded through 2035. For this reason, the transportation solutions were split into two categories. Those reasonably expected to be funded by 2035 were included in the Likely Funded Transportation System, while the projects that are not expected to be funded by 2035 were included in the Aspirational Transportation System.

Determining the investments that made the Likely Funded Plan

Using the seven goals (see Technical Memorandum #3- Goals, Objectives and Evaluation Criteria), the transportation solutions were evaluated and compared to one another. Greater value was placed on the projects stakeholders felt were most important to the community.

Each transportation solution was assigned a time frame for the expected investment need, based on a projects contribution to achieving the transportation goals of Astoria. The investment recommendations attempted to balance implementation considerations. Complex and costly capital projects were disfavored compared with implementation of low cost projects that can have more immediate impacts and can spread investment benefits citywide.

Likely Funded Transportation System

The Likely Funded Plan identifies the transportation solutions reasonably expected to be funded by 2035 and have the highest priority for implementation. Transportation solutions within the Likely Funded Transportation System were recommended within several different priority/time horizons:

- Short-term: projects recommended for implementation in within 1 to 5 years.
- Medium-term: projects recommended for implementation in within 5 to 10 years.
- Long-term: projects likely to be implemented beyond 10 years from the adoption of this plan. These projects are important for the development of the City transportation network, but are unlikely to be funded in the next 10 years.

Over $6.2 million worth of investments are included in the Likely Funded Transportation System. Planning level cost estimates for the projects are shown in Attachment 1.

Aspirational Transportation System

The projects and actions outlined within the Likely Funded System will significantly improve Astoria's transportation system. If the City is able to implement a majority of the Likely Funded System, nearly two decades from now Astoria residents will have access to a safer, more balanced multimodal transportation network.

The Aspirational Transportation System identifies those transportation solutions that are not reasonably expected to be funded by 2035, but many of which are critically important to the transportation system. Some of the projects will require funding and resources beyond what is available in the time frame of this plan. Others are contingent upon redevelopment that makes it possible to create currently missing infrastructure, such as sidewalk connections.

The Aspirational Transportation System includes about $43 million worth of investments. Planning level cost estimates for the projects can be found in Attachment 1. Transportation solutions within the Aspirational Transportation System were recommended within several different priority/time horizons:

- Long-term Phase 2: Projects with the highest priority for implementation beyond the projects included in the Likely Funded Transportation System, should additional funding become available.
- Long-term Phase 3: Projects with the next highest priority for implementation beyond the projects included in the Likely Funded Transportation System, should additional funding become available.
- Long-term Phase 4: The last phase of projects to be implemented, should additional funding become available.

Attachment 1: Likely Funded and Aspirational Transportation System Plan

Project #	Project Description	Project Extent	Project Elements	Priority	Estimated Cost
Driving Solutions					
D1	7th Street Road Diet	Niagara Avenue to OR 202	Re-purpose the existing street width to include one travel lane in each direction, on-street parking and bike lanes	Short-term Likely Funded Plan	$103,000
D2	US 101-US 30 Coordinated Signal Timing Plans	US 101-US 30 from Portway Street to Columbia Avenue-Bond Street	Optimize the existing traffic signals by implementing coordinated signal timing plans, upgrading traffic signal controllers or communication infrastructure or cabinets.	Medium-term Likely Funded Plan	$75,000
D3	Marine Drive Coordinated Signal Timing Plans	Marine Drive from 30th Street to 33rd Street		Medium-term Likely Funded Plan	$50,000
D4	US 30 Speed Warning System	US 30 east of 50th Street	Install a speed warning system that activates when a motorist approaches at a high speed.	Long-Term Phase 4 Aspirational Plan	$25,000
D5	Downtown Traffic Signal Upgrade	Downtown Astoria	Upgrade traffic signal controllers or communication infrastructure or cabinets in downtown Astoria.	Long-Term Phase 2 Aspirational Plan	$1,492,000
D6	US 30/Exchange Street/23rd Street Safety Enhancement	US 30/Exchange Street/23rd Street	Realign 23rd Street to intersect with Exchange Street at US 30; install a single-lane roundabout or a traffic signal.	Long-Term Phase 4 Aspirational Plan	$1,547,000
D7	US 30/45th Street Safety Enhancement	US 30/45th Street	Install eastbound and westbound left-turn pockets on US 30	Long-Term Phase 3 Aspirational Plan	$323,000
D8	US 30/54th Street Safety Enhancement	US 30/54th Street	Provide an eastbound left turn pocket on US 30	Long-Term Phase 2 Aspirational Plan	$297,000
D9	US 30/Nimitz-Maritime Road Safety Enhancement	US 30/Nimitz-Maritime Road	Realignment and striping to include northbound and southbound left, and right-turn lanes at US 30, and a westbound right-turn deceleration lane	Long-Term Phase 2 Aspirational Plan	$242,000
D10*	US 30/Liberty Lane Safety Enhancement	US 30/Liberty Lane	Realign intersection and provide a southbound left turn pocket on US 30	Long-Term Phase 2 Aspirational Plan	$362,000
D11	OR 202/US 101 Business Safety Enhancement	OR 202/US 101 Business	Install a single-lane roundabout; close the 4th Street approach to OR 202	Long-Term Phase 3 Aspirational Plan	$5,291,000
D12	OR 202/7th Street Safety Enhancement	OR 202/7th Street	Modify the traffic control at the intersection to make the OR 202 east/west through movements free and the southbound 7th Street approach stop controlled. Restripe 7th Street to include a southbound left, and right-turn lane	Long-Term Phase 1 Likely Funded Plan	$160,000

Attachment 1: Likely Funded and Aspirational Transportation System Plan

Project #	Project Description	Project Extent	Project Elements	Priority	Estimated Cost
			at OR 202. The vertical profile on the westbound approach of OR 202 to 7th Street may need to be modified to provide adequate sight distance.		
D13	OR 202/Williamsport Road Safety Enhancement	OR 202/Williamsport Road	Provide an eastbound left turn pocket on US 30	Long-Term Phase 4 Aspirational Plan	$117,000
D14	Niagara Avenue Road Diet	7th Street to 15th Street; 3rd Street to 7th Street Optional.	Re-purpose the existing street width to include one travel lane in each direction, on-street parking and bike lanes. The segment from 3rd Street to 7th Street is optional.	Short-term Likely Funded Plan	$275,000
D15	Irving Avenue/15th Street Safety Enhancement	Irving Avenue/15th Street	Install a stop sign on the southbound 15th Street approach to Irving Avenue.	Long-Term Phase 1 Likely Funded Plan	$2,000
D16	Niagara Avenue/7th Street Safety Enhancement	Niagara Avenue/7th Street	Improve intersection control and guidance through signing, striping, or channelization. Consider installation of a mini-roundabout. Coordinate improvements with the Road Diet Concept on Niagara Avenue.	Long-Term Phase 4 Aspirational Plan	$238,000
D17	Niagara Avenue/8th Street Safety Enhancement	Niagara Avenue/8th Street	Improve intersection control and guidance through signing, striping, or channelization. Consider installation of a mini-roundabout. Coordinate improvements with the Road Diet Concept on Niagara Avenue.	Long-Term Phase 4 Aspirational Plan	$238,000
D18	Harrison Avenue/34th Street Safety Enhancement	Harrison Avenue/34th Street	Install a stop sign on 34th Street at Harrison Avenue.	Long-Term Phase 1 Likely Funded Plan	$2,000
D19	US 101/Hamburg Avenue Capacity Enhancement	US 101/Hamburg Avenue	Restrict access to left-in, right-in, right-out only or install a traffic signal and allow full access.	Long-Term Phase 3 Aspirational Plan	$26,000
D20	US 30/16th Street Capacity Enhancement	US 30/ 16th Street	Install a traffic signal	Long-Term Phase 3 Aspirational Plan	$319,000
D21**	Marine Drive- Columbia to 9th Circulation Option	Marine Drive from Columbia Avenue to 9th Street	Reconfigure Marine Drive to three lanes. Relocate the traffic signal from Commercial/9th Street to Commercial/10th Street	Short-term Likely Funded Plan	$446,000
D22	OR 202/Denver Street Capacity Enhancement	OR 202/Denver Street	Restripe Denver Street to include a southbound left, and right-turn lane at OR 202-US 101 Business	Long-Term Phase 1 Likely Funded Plan	$1,000

Attachment 1: Likely Funded and Aspirational Transportation System Plan

Project #	Project Description	Project Extent	Project Elements	Priority	Estimated Cost
D23	Bond Street Two-Way	Hume Avenue to 7th Street	Re-open Bond Street to two-way travel and implement traffic calming	Long-Term Phase 1 Likely Funded Plan	$702,000
D24	Industry Street Extension	Basin Street to Bay Street Extension	Extend Industry Street from Basin Street to the Bay Street extension as an Active local street	Long-Term Phase 1 Likely Funded Plan	$1,057,000
D25	Bay Street Extension	North of US 30 to Industry Street Extension	Extend Bay Street to the Industry Street extension as an Active local street	Long-Term Phase 1 Likely Funded Plan	$293,000
D26	Williamsport Road/ James Street Realignment	Williamsport Road/ James Street	Realign Willamsport Road at James Street to smooth out the curve	Long-Term Phase 2 Aspirational Plan	$270,000
D27	Log Bronc Way Extension	30th Street to 32nd Street	Extend Log Bronc Way from 30th Street to 32nd Street as a Working local street	Long-Term Phase 3 Aspirational Plan	$977,000
D28	Abbey Lane Extension	36th Street to 39th Street	Extend Abbey Lane from 36th Street to 39th Street as a Working local street	Long-Term Phase 3 Aspirational Plan	$974,000
D29	Maritime Road Extension	Old US Highway 30 to Railroad	Extend Maritime Road to Railroad Avenue as a Working local street	Long-Term Phase 2 Aspirational Plan	$876,000
D30*	Irving Avenue Extension	38th Street to Nimitz Drive-Spruance Road	Extend Irving Avenue to Nimitz Drive-Spruance Road as a Living collector street	Long-Term Phase 4 Aspirational Plan	$6,941,000
D31	US 30 Safety Enhancement	US 30 from 27th Street to Franklin Avenue	Add a center turn lane/median; will require removal of some on-street parking	Long-Term Phase 4 Aspirational Plan	$267,000
D32	OR 202 Safety Enhancement	OR 202 from 8th Street to SE 2nd Street	Add a center turn lane/median. Combine SE 2nd Street and Kearney Street into one access to OR 202	Long-Term Phase 2 Aspirational Plan	$592,000
D33*	US 101 Business Capacity Enhancement	US 101 Business from OR 202 south to Miles Crossing	Widen to a three lane, 62' cross-section, with two 12' travel lanes, a 14' center turn lanes, and 6' sidewalks and bike-lanes on both sides. Would require widening of the bridge structure.	Long-Term Phase 3 Aspirational Plan	$5,470,000
D34	Portway Street Capacity Enhancement	Portway Street from US 101 to Industry Street	Improve to a Working collector street cross-section. Move Portway Street centerline to the west to accommodate trucks making westbound right turns; requires right-of-way acquisition from parcel at northwest corner of intersection. Modify the approach to US 101 to include separate left and right turn lanes	Long-Term Phase 3 Aspirational Plan	$424,000
D35	Bay Street Upgrade	US 30 to northern terminus	Improve to a Active local street cross-section	Long-Term Phase 3	$68,000

Attachment 1: Likely Funded and Aspirational Transportation System Plan

Project #	Project Description	Project Extent	Project Elements	Priority	Estimated Cost
				Aspirational Plan	
D36	Tongue Point Road Upgrade	Old US Highway 30 to Pier Street	Improve to a Working local street cross-section	Long-Term Phase 2 Aspirational Plan	$1,119,000
D37	54th Street-Old US Highway 30 Upgrade	US 30 to Tongue Point Road	Improve to a Working collector street cross-section	Long-Term Phase 2 Aspirational Plan	$2,328,000
D38	Maritime Road-Old US Highway 30 Upgrade	Tongue Point Road to US 30	Improve to a Working collector street cross-section	Long-Term Phase 2 Aspirational Plan	$893,000
D39	Downtown Circulation Feasibility Study	Downtown Astoria	Feasibility study to determine if streets in downtown Astoria should be converted to two-way travel	Medium-term Likely Funded Plan	$100,000
Pedestrian Solutions					
P1	15th Street Sidewalk Infill	Jerome Avenue to Niagara Avenue	Complete sidewalk gaps on west side of the street.	Medium-term Likely Funded Plan	$204,000
P2	16th Street Sidewalk Infill	Niagara Avenue to Williamsport Road	Complete sidewalk gaps on east of the street.	Long-Term Phase 3 Aspirational Plan	$130,000
P3	1st Street Sidewalk Infill	W Lexington Avenue to 2nd Street	Complete sidewalk gaps on both sides of the street.	Long-Term Phase 4 Aspirational Plan	$54,000
P4	2nd Street Sidewalk Infill	Grand Avenue to Franklin Avenue	Complete sidewalk gaps on both sides of the street.	Long-Term Phase 4 Aspirational Plan	$49,000
P5	8th Street (South) Sidewalk Infill	Kensington Avenue to Madison Avenue	Complete sidewalk gaps on east side of the street.	Short-term Likely Funded Plan	$99,000
P6	Alameda Avenue Community Based Solution	West of Melbourne Avenue to Grand Avenue	Develop a Community Based Solution	Long-Term Phase 4 Aspirational Plan	$23,000
P7	Bond Street Sidewalk Infill	Hume Avenue to West of 2nd Street	Complete sidewalk gaps on both sides of the street. Complete sidewalk on north side to the west of 1st Street and on the south side of to the east of 1st Street.	Long-Term Phase 1 Likely Funded Plan	$195,000
P8	Florence Avenue Sidewalk Infill	Rivington Street to Oregon Street	Complete sidewalk gaps on south of the street.	Medium-term Likely Funded Plan	$168,000
P9	Franklin Avenue Sidewalk Infill	7th Street to 8th Street	Complete sidewalk gaps on south of the street.	Medium-term Likely Funded Plan	$46,000
P10	Grand Avenue Sidewalk Infill	W Lexington Avenue to 2nd Street	Complete sidewalk gaps on both sides of the street.	Long-Term Phase 4 Aspirational Plan	$44,000

Attachment 1: Likely Funded and Aspirational Transportation System Plan

Project #	Project Description	Project Extent	Project Elements	Priority	Estimated Cost
P12	Irving Avenue Community Based Solution	13th Street to 35th Street	Develop a Community Based Solution	Long-Term Phase 4 Aspirational Plan	$829,000
P13	Leif Erickson Drive (West) Sidewalk Infill	38th Street to 500' west of 43rd Street	Complete sidewalk gaps on south of the street.	Long-Term Phase 4 Aspirational Plan	$265,000
P14	Leif Erickson Drive (East) Sidewalk Infill	46th Street to 54th Street	Complete sidewalk gaps on north side of the street from 46th to 50th and both sides from 50th to 54th.	Long-Term Phase 4 Aspirational Plan	$488,000
P17	Niagara Avenue Traffic Calming	7th Street to 16th Street	Traffic calming (i.e., speed humps) to enhance comfort for pedestrians in vicinity of Astoria Middle School.	Included with another project D0	
P19	Olney Avenue Sidewalk Infill	4th Street to 7th Street	Complete sidewalk gaps on both sides of the street.	Long-Term Phase 3 Aspirational Plan	$2,315,000
P20	Oregon Street Sidewalk Infill	Florence Avenue to Alameda Avenue	Complete sidewalk on east side of the street.	Medium-term Likely Funded Plan	$75,000
P21	S Denver Street Community Based Solution	Clatsop Avenue to Glasgow Avenue	Develop a Community Based Solution	Long-Term Phase 2 Aspirational Plan	$49,000
P22	Sonora Avenue Community Based Solution	W Lexington Avenue to W Niagara Avenue	Develop a Community Based Solution	Long-Term Phase 3 Aspirational Plan	$25,000
P23	Vista Drive Sidewalk Infill	Alameda Avenue to W Marine Drive	Complete sidewalk gaps on northwest side of the street.	Medium-term Likely Funded Plan	$133,000
P24	W Grand Avenue Community Based Solution	W Lexington Avenue to 2nd Street	Develop a Community Based Solution	Long-Term Phase 4 Aspirational Plan	$136,000
P25	W Lexington Avenue Community Based Solution	Alameda Avenue to 2nd Street	Develop a Community Based Solution	Long-Term Phase 4 Aspirational Plan	$195,000
P27a	W Marine Drive Sidewalk Infill	Florence Avenue to 4th Street	Complete sidewalk gaps on north side of the street.	Long-Term Phase 2 Aspirational Plan	$3,700,000
P27b	W Marine Drive Sidewalk Infill	Florence Avenue to 4th Street	Complete sidewalks on south side of street.	Long-Term Phase 4 Aspirational Plan	$1,000,000

Attachment 1: Likely Funded and Aspirational Transportation System Plan

Project #	Project Description	Project Extent	Project Elements	Priority	Estimated Cost
P28	W Niagara Avenue Sidewalk Infill	Glasgow Avenue to East of Alameda Avenue	Complete sidewalk gaps on both sides of the street. Add sidewalks to the south side of W Niagara Ave between Glasgow and Alameda. East of Alameda, complete sidewalks on the north side.	Medium-term Likely Funded Plan	$126,000
P29	W Niagara Avenue Community Based Solution	W Clatsop Avenue to Sonora Avenue	Develop a Community Based solution	Long-Term Phase 2 Aspirational Plan	$191,000
P30	Williamsport Road Sidewalk Infill	16th Street to SE Front Street	Complete sidewalk gaps on west side of the street. Due to topographical constraints, this corridor can be served by sidewalks on one side.	Long-Term Phase 4 Aspirational Plan	$1,724,000
P31	Alameda Avenue Sidewalk Infill	Existing shared use path to Bridgeview Court	Complete sidewalk gaps on both sides of the street.	Medium-term Likely Funded Plan	$392,000
Biking Solutions					
B1	11th Street (South) Shared Roadway Enhancements	Exchange Street to Irving Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$6,000
B2	11th Street (North) Shared Roadway Enhancements	Astoria River Trail to Exchange Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$6,000
B3	15th Avenue Shared Roadway Enhancements	Commercial Street to Irving Avenue	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$8,000
B4	7th Street Bike Lane / Shared Roadway Enhancements	Niagara Avenue to OR 202	Add uphill bike lane and downhill shared lane markings.	Long-Term Phase 1 Likely Funded Plan	$29,000
B5	29th Street Shared Roadway Enhancements	Mill Pond Lane to Marine Drive	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$4,000
B6	33rd Street Shared Roadway Enhancements	Leif Erickson Drive to Harrison Avenue	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$5,000
B7	35th Street Shared Roadway Enhancements	Irving Avenue to Harrison Avenue	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$2,000
B8	36th Street Shared Roadway Enhancements	Duane Street to Franklin Avenue	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$2,000

Attachment 1: Likely Funded and Aspirational Transportation System Plan

Project #	Project Description	Project Extent	Project Elements	Priority	Estimated Cost
B9	37th Street Shared Roadway Enhancements	Leif Erikson Drive to Duane Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$2,000
B10	45th Street Shared Roadway Enhancements	Cedar Street to Leif Erikson Drive	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$1,000
B11	51st Street Shared Roadway Enhancements	Birch Street to Cedar Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$2,000
B12	6th Street Shared Roadway Enhancements	Astoria River Trail to Duane Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$5,000
B13	8th Street Bike Lane / Shared Roadway Enhancements	Niagara Avenue to Irving Avenue	Add uphill bike lane and downhill shared lane markings.	Long-Term Phase 1 Likely Funded Plan	$13,000
B14	Alameda Avenue (North) Shared Roadway Enhancements	W Marine Drive to Oregon Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$33,000
B15	Alameda Avenue (South) Shared Roadway Enhancements	Oregon Street to W Klaskanine Avenue. Route utilizes the existing paved trail west of S Denver Street.	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$14,000
B16	Birch Street Shared Roadway Enhancements	51st Street to 53rd Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$5,000
B17	Bond Street Shared Roadway Enhancements	Entire length	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$17,000
B18	Cedar Street Shared Roadway Enhancements	45th Street to 51st Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$13,000
B20	Denver Street Shared Roadway Enhancements	Glasgow Avenue to OR 202	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$8,000
B21	Duane Street (West of 8th) Shared Roadway Enhancements	6th Street to 8th Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$3,000
B22	Duane Street (East of 8th) Shared Roadway Enhancements	8th Street to 17th Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$14,000

Attachment 1: Likely Funded and Aspirational Transportation System Plan

Project #	Project Description	Project Extent	Project Elements	Priority	Estimated Cost
B23	Florence Avenue Shared Roadway Enhancements	Oregon Street to Denver Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$9,000
B33	Duane Street (East) Shared Roadway Enhancements	36th Street to 37th Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$2,000
B34	Exchange Street Shared Roadway Enhancements	16th Street to Marine Drive	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$23,000
B35	7th Street/Exchange Street Shared Roadway Enhancements	Duane Street to 16th Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$15,000
B36	Florence Avenue/Oregon Street Shared Roadway Enhancements	W Marine Drive to Alameda Avenue	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$9,000
B37	Franklin Avenue (East) Shared Roadway Enhancements	33rd Street to 36th Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$6,000
B38	Franklin Avenue (West) Shared Roadway Enhancements	2nd Street to 11th Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$12,000
B39	Glasgow Avenue Shared Roadway Enhancements	Alameda Avenue to Denver Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$7,000
B40	Harrison Avenue Shared Roadway Enhancements	33rd Street to 35th Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$4,000
B41	OR 202/W Marine Drive Bike Lanes	High School to Williamsport Road	Re-stripe roadway to include bike lanes.	Medium-term Likely Funded Plan	$44,000
B42	US 30 Bike Lanes	From the eastern extent of the existing bike lane between 39th and 43rd to the eastern City Limits (near Old Hwy 30)	Re-stripe roadway to include bike lanes.	Medium-term Likely Funded Plan	$89,000
B43	Irving Avenue (East)	17th Street to 35th Street	Add wayfinding and shared lane markings.	Short-term Likely	$27,000

Attachment 1: Likely Funded and Aspirational Transportation System Plan

Project #	Project Description	Project Extent	Project Elements	Priority	Estimated Cost
	Shared Roadway Enhancements			Funded Plan	
B44	Irving Avenue (West) Shared Roadway Enhancements	8th Street to 17th Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$9,000
B47	Klaskanine Avenue/W Klaskanine Avenue/Alameda Avenue/Vista Drive Shared Roadway Enhancements	7th Street to OR 202	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$22,000
B48	Leif Erikson Drive Bike Lanes	33rd Street to 39th Street	Re-stripe roadway to include bike lanes.	Medium-term Likely Funded Plan	$22,000
B49	Lexington Avenue/5th Street/Clatsop Avenue Shared Roadway Enhancements	8th Street to 7th Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$15,000
B50	Marine Drive/W Marine Drive Bike Lanes	Bay Street to 6th Street	Re-stripe roadway to include bike lanes.	Short-term Likely Funded Plan	$32,000
B52	W Marine Drive Bike Lanes	Roundabout to Hamburg Avenue	Re-stripe roadway to include bike lanes.	Short-term Likely Funded Plan	$8,000
B53	Mill Pond Lane Shared Roadway Enhancements	23rd Street to 29th Street	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$11,000
B54	Niagara Avenue Bike Lanes	17th Street to 15th Street	Re-stripe roadway to include bike lanes.	Long term Likely Funded Plan	$23,000
B55	Taylor Avenue Shared Roadway Enhancements	Hamburg Avenue to Florence Avenue	Add wayfinding and shared lane markings.	Short-term Likely Funded Plan	$5,000
Shared-Use Path Solutions					
S1	Middle School Connector Bicycle and Pedestrian Trail	James Street to Middle School	Develop Multi-use Trail	Long term Likely Funded Plan	$139,000
S2	Commercial Connection	Commercial Street western	Develop Multi-use Trail	Long term Likely	$79,000

Attachment 1: Likely Funded and Aspirational Transportation System Plan

Project #	Project Description	Project Extent	Project Elements	Priority	Estimated Cost
	Bicycle and Pedestrian Trail	terminus to Alameda Avenue		Funded Plan	
Street Crossing Solutions					
CR-01	US 30 and Bay Street Crossing Enhancements	US 30 and Bay Street	Upgrade existing crossing to the highest level pedestrian actuated beacon approved by ODOT. Consider restricting parking near crossing to improve visibility.	Long-Term Phase 1 Likely Funded Plan	$26,000
CR-02	US 30 and 45th Street Crossing Enhancements	US 30 and 45th Street	Upgrade existing crossing to the highest level pedestrian actuated beacon approved by ODOT.	Long-Term Phase 1 Likely Funded Plan	$26,000
CR-03	US 30 and 37th Street Crossing Enhancements	US 30 and 37th Street	Upgrade existing rectangular rapid flash beacon at crossing to the highest level pedestrian actuated beacon approved by ODOT.	Long-Term Phase 1 Likely Funded Plan	$26,000
CR-04	OR202 and 7th Street Intersection Enhancements	OR202 and 7th Street	Install signage to clarify behavior of all users at intersection that road users report as being confusing.	Long-Term Phase 1 Likely Funded Plan	$1,200
CR-05	Niagara between 8th and 9th Crossing Enhancements	Niagara between 8th and 9th	Re-install concrete median and pedestrian refuge crossing.	Long-Term Phase 1 Likely Funded Plan	$34,000
CR-06	OR202 and 4th St Crossing Enhancements	OR202 and 4th Street	Install high visibility crossing with pedestrian refuge.	Short-term Likely Funded Plan	$34,000
CR-07	OR202 just east of Hannover Street Crossing Enhancements	OR202 just east of Hannover Street	Install high visibility crossing with pedestrian refuge to serve planned housing development.	Long-Term Phase 1 Likely Funded Plan	$34,000
CR-08	US 30 and 6th Street Crossing Enhancements	US 30 and 6th Street	Enhanced pedestrian crossing. Crossing type to be determined as part of motor vehicle alternatives analysis.	Included with Project D21	$75,000
CR-09	US 30 and 8th Street Crossing Enhancements	US 30 and 8th Street	Enhanced pedestrian crossing. Crossing type to be determined as part of motor vehicle alternatives analysis.	Included with Project D21	$75,000
CR-10	Commercial and 8th Street Crossing Enhancements	Commercial and 8th Street	Pedestrian crossing improvements to be considered as part of motor vehicle alternatives analysis.	Included with Project D21	$100,000
CR-11	Exchange and 13th Street Crossing Enhancements	Exchange and 13th Street	Extend curb on northeast corner to reduce roadway width and shorten crossing distance. Alternatively, install a traffic diverter or refuge island between the two travel	Medium-term Likely Funded Plan	$34,000

Attachment 1: Likely Funded and Aspirational Transportation System Plan

Project #	Project Description	Project Extent	Project Elements	Priority	Estimated Cost
			lanes.		
CR-12	US 30 and 17th Street Crossing Enhancements	US 30 and 17th Street	Enhance existing crosswalk with high visibility zebra striping. Consider restricting left turns onto 17th to allow for a pedestrian refuge island.	Long-Term Phase 1 Likely Funded Plan	$17,000
CR-13	US 30 and 16th Street Crossing Enhancements	US 30 and 16th Street	Enhance existing refuge crossing with high visibility zebra striping, widen refuge island and provide advance warning signage.	Short-term Likely Funded Plan	$21,000
CR-14	US 30 and 18th Street Crossing Enhancements	US 30 and 18th Street	Enhance existing crosswalk with high visibility zebra striping and adequate lighting.	Long-Term Phase 1 Likely Funded Plan	$17,000
CR-15	US 30 and 20th Street Crossing Enhancements	US 30 and 20th Street	Enhance existing crosswalk with high visibility zebra striping. Consider restricting left turns onto 20th to allow for a pedestrian refuge island.	Long-Term Phase 1 Likely Funded Plan	$17,000
CR-16	Commercial at 10th, 11th and 12th Crossing Enhancements	Commercial at 10th, 11th and 12th	Enhance pedestrian safety by improving visibility (exact solution to be determined through further coordination with the community).	Long-Term Phase 1 Likely Funded Plan	$100,000
CR-17	Roundabout Enhancements	Roundabout enhancements	Provide additional signage at roundabout to clarify expected behavior for bicyclists or consider alternate route using Taylor Avenue.	Long-Term Phase 1 Likely Funded Plan	$1,200
CR-18	Niagara and 15th Street	Niagara and 15th Street	Enhance existing crosswalk with high visibility zebra striping and adequate lighting.	Long-Term Phase 1 Likely Funded Plan	$17,000
Transit Solutions					
T1	Bus Stop Amenity Enhancement	Citywide	Add amenities at bus stops as needed, including bus shelters, landing pads, benches, trash/recycling receptacles and lighting	Medium-term Likely Funded Plan	$100,000
T2	OR 202/US 101 Business Transit Pullout	OR 202/US 101 Business	Provide a transit pullout at the west leg of the OR 202/US 101 Business intersection	Long-Term Phase 3 Aspirational Plan	$75,000

Red text indicates the project is included in the Likely Funded Transportation System Plan

* Projects located outside the Urban Growth Boundary (UGB) are conceptual only. They are either new facilities, or improvements to existing facilities, that may be needed to (1) accommodate traffic volumes anticipated beyond the 20-year planning horizon, or (2) provide some other safety or connectivity benefit. They are not needed to accommodate traffic volumes forecasted within the planning horizon, nor has a funding source been identified. Consequently they are not considered planned facilities as referred to in OAR 660-012 and cannot be constructed without additional analysis, public review, and approval (from local and state agencies). This TSP would need to be amended. It may also be necessary to obtain an exception to statewide planning goals or expand the UGB.

** Planning concept potentially reduces vehicle-carrying capacity of the highway; further evaluation of the project design will be required at the time of implementation to

Attachment 1: Likely Funded and Aspirational Transportation System Plan

Project #	Project Description	Project Extent	Project Elements	Priority	Estimated Cost
ensure compliance with ORS 366.215.					

Section N: Memo 13- Transportation Standards

Section N: Memo 13- Transportation Standards

Draft Memorandum #13

Date:	June 25, 2013
To:	Astoria TSP Update Project Management Team
From:	Chris Maciejewski, P.E., P.T.O.E., DKS Associates Kevin Chewuk, PTP, DKS Associates
Subject:	**Astoria Transportation System Plan Update** **Transportation Standards**

This document provides an overview of the street system in Astoria. Included is a detail of the multi-modal street system, an overview of street design types and documentation of standards and regulations developed to ensure future development or redevelopment of property is consistent with the vision of the transportation system in Astoria.

Multi-Modal Street System

Traditional roadway designs focus on the safety and flow of motor vehicle traffic. The one size fits all design approach is less effective at integrating the roadway with the character of the surrounding area and addressing the needs of other users of a roadway. For instance, the design of an arterial roadway through a commercial area has often traditionally been the same as one through a residential neighborhood, both primarily focused on the movement of motor vehicles without allowing flexibility in optimizing the street for walking and biking.

Astoria recognizes that all roadways within the City should be multi-modal or "complete streets", with each street serving the needs of the various travel modes. The City also realizes that not all streets should be designed the same. To account for this, Astoria classifies the street system into a hierarchy organized by function and street type (representative of their places). These classifications ensure that the streets reflect the neighborhood through which they pass, consisting of a scale and design appropriate to the character of the abutting properties and land uses. The classifications also provide for and balance the needs of all travel modes including pedestrians, bicyclists, transit riders, motor vehicles and freight. Within these street classifications, context sensitive design may result in alternative cross-sections.

Multi-Modal Street Function

Functional classification of roadways is a common practice in the United States. Traditionally, roadways are classified based on the type of vehicular travel it is intended to serve (local versus through traffic). In Astoria, the functional classification of a roadway (shown in Figure 1) determines the level of mobility for all travel modes, defining its level of access and usage within the City and region. The street functional classification system recognizes that individual streets do not act independently of one another but instead form a network that works together to serve travel needs on a local and regional level. From highest to lowest intended usage, the classifications are arterials, collectors and local streets. Roadways with a higher intended usage generally provide more efficient

motor vehicle traffic movement (or mobility) through the City, while roadways with lower intended usage provide greater access for shorter trips to local destinations.

- **Arterial Streets** in Astoria are state highways intended to move traffic through the City and are generally located at the bottom of the hill near the Columbia River or Youngs Bay. They experience higher traffic volumes and connect to locations outside of the City, such as US 101 to Warrenton or US 30 towards Portland. Similarly, these are also roadways that visitors often travel to reach Astoria. Posted speed limits on these roadways are generally between 20 to 45 miles per hour, with the higher speeds posted in less developed areas and lower speeds in areas with more activity such as the downtown core.
- **Collector Streets** often connect the neighborhoods and major activity generators in Astoria to arterial roadways. These roadways provide greater accessibility to neighborhoods and provide efficient through movement for local traffic. Posted speeds on collector roadways are typically 25 miles per hour.
- **Local Streets** provide more direct access to residences in Astoria. These roadways are often lined with residences and are designed to serve lower volumes of traffic with posted speeds of 25 miles per hour.

Functional Classification Changes

The functional classifications of streets in Astoria were reviewed to determine the appropriateness of the classification and connectivity. To the extent possible, arterials were designated at one-mile interval and collectors at half-mile intervals. Since State Highways serve regional travel through the City, they were designated as Arterial Streets. Streets providing primary access to neighborhoods and activity generators in Astoria were designated as collectors, while all other streets were classified as locals. The updated functional classifications can be seen in Figure 1, while the classification changes are shown in the Attachment 1.

Multi-Modal Street Type

Astoria further classifies the roadways within the City based on the neighborhood it serves and the intended function for pedestrians, bicyclists and transit riders in that specific area. Within the context of Astoria's "complete street" system that will serve all modes, the street type of a roadway defines its cross-section characteristics and determines how users of a roadway interact with the surrounding land use. Since the type and intensity of adjacent land uses and zoning directly influence the level of use by pedestrians, bicyclists and transit riders, the design of a street (including its target speed, intersections, sidewalks, and travel lanes) should reflect its surroundings.

The street types attempt to strike a balance between street functional classification, adjacent land use, zoning designation and the competing travel needs by prioritizing various design elements. Three street types and a constrained street option are described below for Astoria:

- **Mixed-Use Streets** typically have a higher amount of pedestrian activity and are often on a transit route. These streets should emphasize a variety of travel choices such as pedestrian, bicycle and transit use to complement the development along the street. Since Mixed-Use

streets typically serve pedestrian oriented land uses, walking should receive the highest priority of all the travel modes. They should be designed with features such as wider sidewalks, pedestrian amenities, transit amenities, attractive landscaping, on-street parking, pedestrian crossing enhancements and bicycle lanes.

- **Residential Streets** are generally surrounded by residential uses, although various small shops may be embedded within the neighborhood. These streets often connect neighborhoods to local parks, schools and mixed-use areas. They should be designed to emphasize walking, while still accommodating the needs of bicyclists and motor vehicles. A high priority should be given to design elements such as traffic calming, landscaped buffers, walkways/pathways/trails, on-street parking and pedestrian safety enhancements.
- **Commercial/Industrial Streets** are primarily lined with retail and large employment complexes, and often serve industrial areas. These uses serve customers throughout the City and region and may not have a direct relationship with nearby residential neighborhoods. Buildings are typically set back behind parking lots. These streets are somewhat more auto-oriented, but should still accommodate pedestrians and bicyclists safely and comfortably. Roadway widths are typically wider to accommodate a high volume of large vehicles such as trucks, trailers and other delivery vehicles. Design features should include landscaped medians or a two-way left turn lane, sidewalks and bike lanes, pedestrian crossing enhancements and a buffer between the roadway and the sidewalk. On-street parking should be discouraged.

Any street type located in steep, environmentally sensitive, rural, historic, or development limited areas of the City may be considered a constrained street. These streets may require different design elements that may not be to scale with the adjacent land use. Constrained elements may include narrower or limited travel lanes, and pedestrian and bicycle facilities, or accommodations that generally match those provided by the surrounding developed land uses. To the extent possible, pedestrian and bicycle accommodations should be provided on an adjacent roadway, via a shared-use path or shared within the right-of-way using distinctive design details.

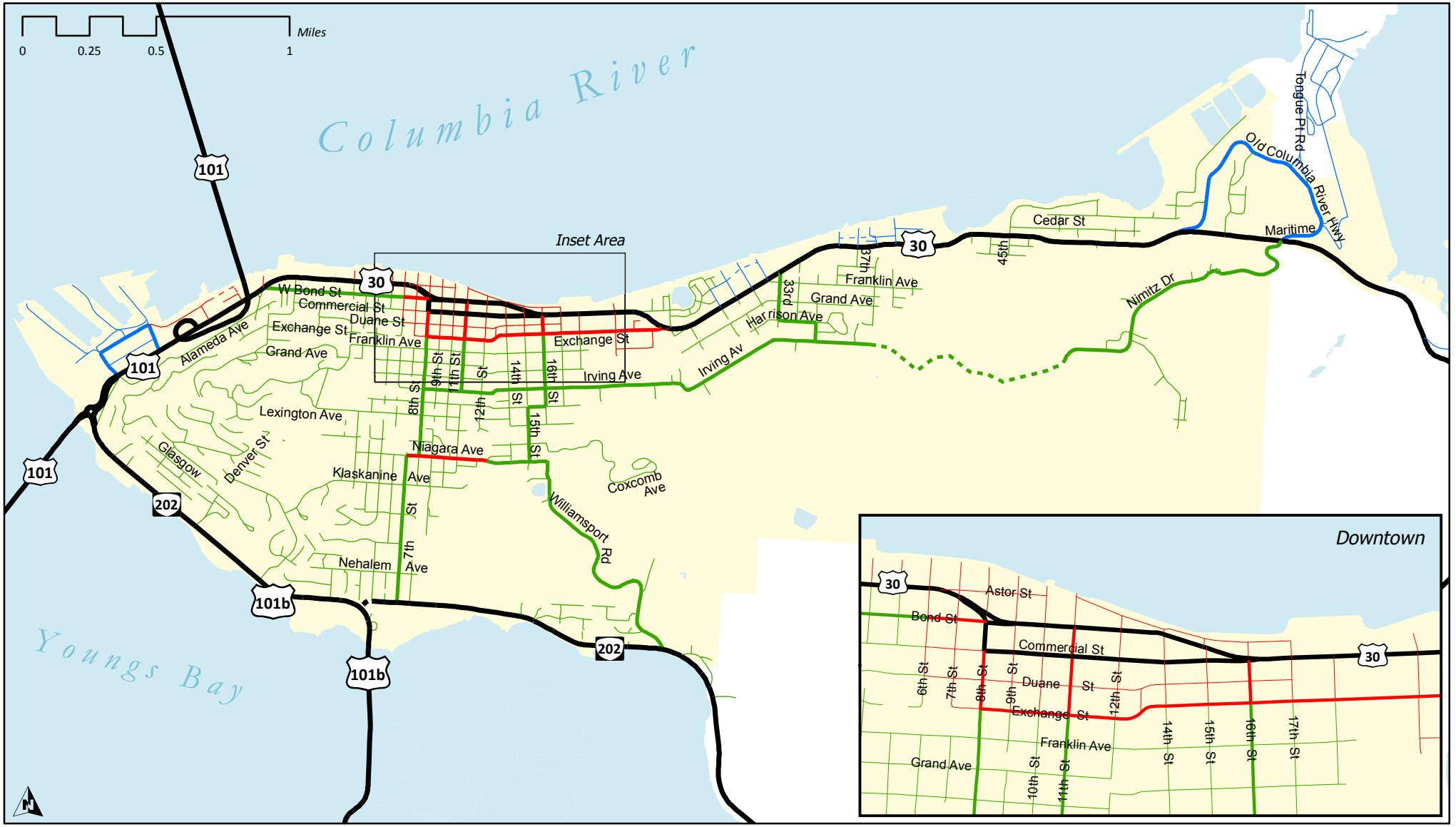


Figure 1 : Multi-Modal Street System

City of Astoria

Transportation System Plan

Legend

Multi-Modal Streets
- Residential Collector Street
- Residential Local Street
- Mixed-Use Collector Street
- Mixed-Use Local Street
- Commercial/Industrial Collector Street
- Commercial/Industrial Local Street

Planned Multi-Modal Streets (Conceptual Alignment)
- Planned Residential Collector Street
- Planned Mixed-Use Local Street
- Planned Commercial/Industrial Local Street

State Highways
- Arterial Street
- Planned Arterial Street

- Astoria City Limit
- Urban Growth Boundary

Design Types of Streets

Design of the streets in Astoria requires attention to many elements of the public right-of-way and considers how the street interacts with the adjoining properties. The four zones that comprise the cross-section of streets in Astoria, including the context zone, walking zone, biking/on-street parking zone and driving zone, are shown in Figure 2. The design of these zones varies based on the functional classification and street type. Overall, there are 6 different design types for streets, ranging from Mixed-Use Collector to Commercial/Industrial Local Street. Note that a design type is not available for Arterial Streets since they are State Highways and therefore are subject to the design criteria in the Oregon Highway Plan and ODOT Highway Design Manual. The design criteria for streets can be seen in Figures 3, 4 and 5. The City may also reduce or eliminate lower-priority design elements of the street along constrained streets located in steep, environmentally sensitive, rural, historic, or development limited areas of the City.

- **Context Zone:** The context zone is the point at which the sidewalk interacts with the adjacent buildings or private property. The purpose of this zone is to provide a buffer between land use adjacent to the street and to ensure that all street users have safe interactions.
- **Walking Zone**: This is the zone in which pedestrians travel. The walking zone is determined by the street type and should be a high priority in mixed-use and residential areas. It includes a minimum five foot clear throughway for walking, an area for street furnishings or landscaping (e.g. benches, transit stops and/or plantings) and a clearance distance between curbside on-street parking and the street furnishing area or landscape strip (so parking vehicles or opening doors do not interfere with street furnishings and/or landscaping). Streets located along a transit route should incorporate furnishings to support transit ridership, such as transit shelters and benches, into the furnishings/landscape strip adjacent to the biking/on-street parking zone.
- **Biking/On-Street Parking Zone:** This is the zone for biking and on-street parking, and is the location where users will access transit. The biking/on-street parking zone is determined by the street type and should be a high priority in mixed-use and residential areas, which should include on-street parking with a minimum 6 foot striped bike lane or 5 foot bike lane with a 2 foot buffer. Streets in commercial/employment or industrial areas should include minimum 6 foot bike lanes or 5 foot bike lane with a 2 foot buffer, with no on-street parking.
- **Driving Zone:** This is the throughway zone for drivers, including cars, buses and trucks and should be a high priority in commercial/ employment and industrial areas. The functional classification of the street generally determines the number of through lanes, lane widths, and median and left-turn lane requirements. However, the route designations (such as transit street or freight route) take presentence when determining the appropriate lane width in spite of the functional classification. Wider lanes (between 13 to 14 feet) should only be used for short distances as needed to help buses and trucks negotiate right-turns without encroaching into adjacent or opposing travel lanes. Streets that require a raised median should include a minimum 6 foot wide pedestrian refuge at marked crossings. Otherwise, the median can be reduced to a minimum of 4 feet at midblock locations, before widening at intersections for left-turn lanes (where required or needed).

Figure 2: Components of Astoria Streets

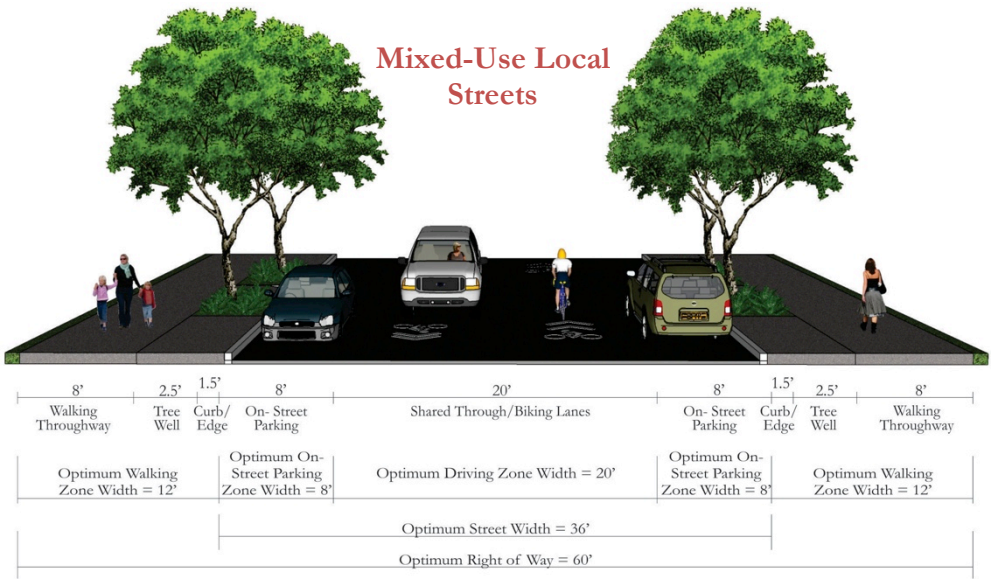
Design Types of Mixed-Use Streets

Step 1: Determine if the street is located along a transit route. If so, the through lane width should be a minimum of 11 feet, or the minimum lane width as shown in the optimum street design, whichever is higher.

Step 2: Determine if left-turn lanes are needed at intersections. Intersection design should generally try to minimize pedestrian crossing distance. If turn-lanes are warranted, consider the trade-offs between improved driving mobility and increased crossing distance.

Step 3: Compare the optimum street design to the available right-of-way. If the cross-section is wider than the right-of-way, identify whether right-of-way acquisition is necessary or reduce the width of or eliminate lower-priority elements as determined by the City.

Figure 3: Optimum Design Types of Mixed-Use Streets



Design Types of Residential Streets

Step 1: Determine if the street is located along a transit route. If so, the through lane width should be a minimum of 11 feet, or the minimum lane width as shown in the optimum street design, whichever is higher.

Step 2: Determine if left-turn lanes are needed at intersections. Intersection design should generally try to minimize pedestrian crossing distance. If turn-lanes are warranted, consider the trade-offs between improved driving mobility and increased crossing distance.

Step 3: Compare the optimum street design to the available right-of-way. If the cross-section is wider than the right-of-way, identify whether right-of-way acquisition is necessary or reduce the width of or eliminate lower-priority elements as determined by the City.

Figure 4: Optimum Design Types of Residential Streets

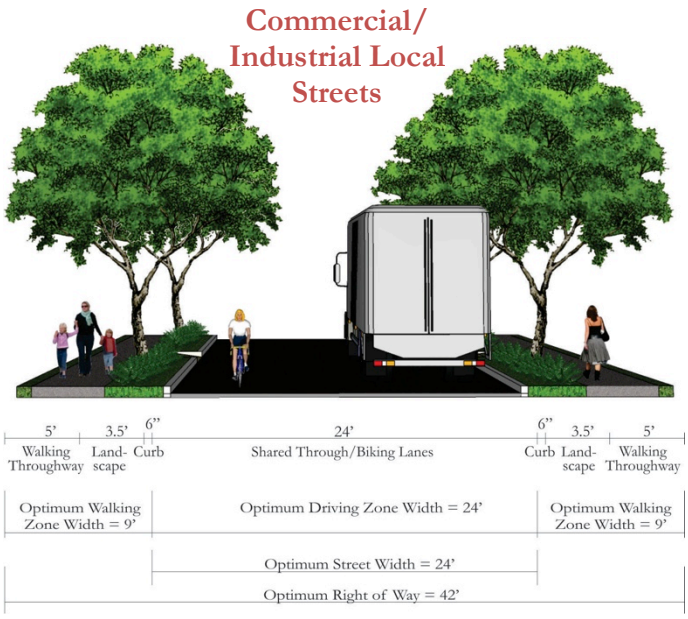
Design Types of Commercial/ Industrial Streets

Step 1: Determine if left-turn lanes are needed at intersections. Intersection design should generally try to minimize pedestrian crossing distance. If turn-lanes are warranted, consider the trade-offs between improved driving mobility and increased crossing distance.

Step 2: Determine is wider travel lanes are needed to facilitate large vehicle turning movements. Wider lanes (between 13 to 16 feet) should only be used for short distances as needed to help buses and trucks negotiate right-turns without encroaching into adjacent or opposing travel lanes.

Step 3: Compare the optimum street design to the available right-of-way. If the cross-section is wider than the right-of-way, identify whether right-of-way acquisition is necessary or reduce the width of or eliminate lower-priority elements as determined by the City.

Figure 5: Optimum Design Types of Commercial/Industrial Streets



Spacing Standards

Access spacing along Astoria streets will be managed through access spacing standards. Access management is a broad set of techniques that balance the need to provide efficient, safe, and timely travel with the ability to allow access to individual destinations. Proper implementation of access management techniques will promote reduced congestion and accident rates, and may lessen the need for additional highway capacity.

Table 1 identifies the minimum and maximum public street intersection and minimum private access spacing standards for streets in Astoria. Within developed areas of the City, streets not complying with these standards could be improved with strategies that include shared access points, access restrictions (through the use of a median or channelization islands) or closed access points as feasible. New streets or redeveloping properties must comply with these standards, to the extent practical (as determined by the City).

Table 1: Spacing Standards

	Mixed-Use or Residential Streets			Commercial/Industrial Streets		
	Arterial	Collector	Local	Arterial	Collector	Local
Maximum Block Size (Public Street to Public Street)*	See Oregon Highway Plan	530 ft.	530 ft.	See Oregon Highway Plan	530 ft.	530 ft.
Minimum Block Size (Public Street to Public Street)		265 ft.	150 ft.		300 ft.	150 ft.
Minimum Driveway Spacing (Public Street to Driveway and Driveway to Driveway)		100 ft.	25 ft.		150 ft.	25 ft.

* If the maximum block size is exceeded, mid-block pedestrian and bicycle accessways must be provided at spacing no more than 330 feet, unless the connection is impractical due to existing development, topography, or environmental constraints.

On-street Parking

On-street parking should be a high priority along Mixed-Use or Residential streets (in mixed-use and residential areas). The optimum design criteria for collector and local streets in mixed-use and residential areas (see Figures 3 and 4) calls for on-street parking on both sides of the street. On-street parking is generally discouraged along Commercial/Industrial streets, although it may be allowed if the adjacent land use would benefit from it and adequate right-of-way is available. The City may eliminate on-street parking from one or both sides along streets located in constrained areas located in steep, environmentally sensitive, rural, historic, or development limited areas of the City.

The width of on-street parking should typically be eight feet, except along Residential streets where parking turn-over is not as frequent (as shown in Table 2). Along Residential streets, the width of on-street parking can be reduced to seven feet. The typical length of the on-street parking stall should be 20 feet, but may be reduced if additional maneuvering area is available (as determined by the City).

Table 2: On-Street Parking Design Criteria

	Mixed-Use Streets	Residential Streets	Commercial /Industrial Streets
Typical Parking Stall Width	8 feet	7 feet	8 feet
Typical Parking Stall Length	20 feet	20 feet	20 feet

Traffic Calming

Traffic calming refers to street design techniques used to re-create safe, slow streets (primarily in residential and mixed-use areas) without significantly changing vehicle capacity and to mitigate the impacts of traffic on neighborhoods and business districts where a greater balance between safety and mobility is needed. Traffic calming seeks to influence driver behavior through physical and psychological means, resulting in lower vehicle speeds or through traffic volumes. Physical traffic calming techniques include:

- Narrowing the street by providing curb extensions or bulbouts, or mid-block pedestrian refuge islands
- Deflecting the vehicle path vertically by installing speed humps, speed tables, or raised intersections
- Deflecting the vehicle path horizontally with chicanes, roundabouts, and mini-roundabouts

Narrowing travel lanes and providing visual cues such as placing buildings, street trees, on-street parking, and landscaping next to the street also create a sense of enclosure that prompts drivers to reduce vehicle speeds.

Traffic calming measures must balance the need to manage vehicle speeds and volumes with the need to maintain mobility, circulation, and function for service providers (e.g. emergency response). Table 3 lists common traffic calming applications and suggests which devices may be appropriate along various streets in the City. Any traffic calming project should include coordination with emergency agency staff to ensure public safety is not compromised.

Table 3: Traffic Calming Measures by Street Functional Classification

Traffic Calming Measure	Is Measure Appropriate? (per Roadway Classification)**	
	Collector*	Local Street*
Narrowing travel lanes	Yes	Calming measures are generally supported on local streets that are lesser response routes that have connectivity (more than two accesses)
Placing buildings, street trees, on-street parking, and landscaping next to the street	Yes	
Curb Extensions or Bulbouts	Yes	
Roundabouts	Yes	
Mini-Roundabouts	Yes	
Medians and Pedestrian Islands	Yes	
Pavement Texture	Yes	
Speed Hump or Speed Table	No	
Raised Intersection or Crosswalk	No	
Speed Cushion (provides emergency pass-through with no vertical deflection)	Yes	
Choker	No	
Traffic Circle	No	
Diverter (with emergency vehicle pass through)	Yes	
Chicanes	No	

*Any traffic calming project should include coordination with emergency agency staff to ensure public safety is not compromised.
** Traffic calming may be considered for state highways but would be required to meet ODOT standards, including any ODOT approved design exceptions.

Traffic Impact Analysis (TIA)

The City or other road authority with jurisdiction may require a Traffic Impact Analysis (TIA) as part of an application for development, a change in use, or a change in access. Refer to Section 3.015 of the Astoria Development Code for TIA requirements and considerations.

Transportation System Management (TSM)

Astoria has several regional roadway facilities that serve the City and neighboring communities (US 101, US 30 and OR 202) that could benefit from transportation system management (TSM) infrastructure. Before future investments are made along these roadways, designs should be reviewed with City and ODOT staff to determine if communications or other ITS infrastructure should be addressed as part of the street design/construction.

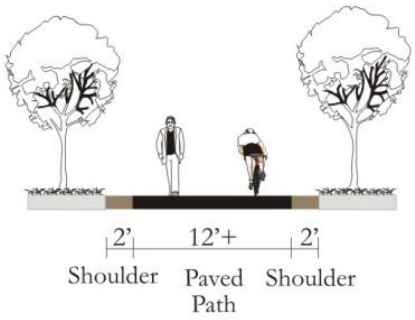
Walking and Biking Treatment Guidelines

The following sections detail various walking and biking standards and treatment guidelines.

Shared Use Paths

Shared-use paths provide off-roadway facilities for walking and biking travel. Depending on their location, they can serve both recreational and general travel needs. Shared-use path designs vary in surface types and widths. Harder surfaces are generally better for bicycle travel. Widths should provide ample space for both walking and biking and should also be able to accommodate maintenance vehicles. The design criteria for shared-use paths can be seen in Figure 6. The City may reduce the width of the paved shared-use path to a minimum of eight feet in constrained areas located in steep, environmentally sensitive, rural, historic, or development limited areas of the City. In areas with significant walking or biking demand, the paved shared-use path should be 16 feet.

Figure 6: Design Criteria for Shared-Use Paths



In addition, a variety of amenities can make a path inviting to the user. These could include features such as interpretive signs, water fountains, benches, lighting, maps, art, and shelters.

Walking and Biking Routes

A network of family friendly walking and biking routes are envisioned to connect major destinations and neighborhoods in Astoria. These routes, sometimes referred to neighborhood greenways, are an adaptation of shared roadways that modify existing low volume, low speed streets to prioritize the through movement of bicyclists and pedestrians while maintaining local access for automobiles. Neighborhood Greenways typically include wayfinding signage and pavement markings (SLMs), as well as traffic calming features that reduce motor vehicle speeds and volumes. Where these facilities cross major roadways it is important to provide safe and comfortable pedestrian and bicycle crossings.

Further enhancements may include "green street" features such as bio-swales and street trees, in addition to wider sidewalks and improved pedestrian amenities (e.g., benches and pedestrian-scale lighting). A network of Neighborhood Greenways helps encourage active transportation by providing comfortable, low-stress routes between neighborhoods and local parks, schools, and shopping areas. The Neighborhood Greenway network is generally off the main street system to attract less experienced walkers and bikers. It is generally envisioned to act like a linear park system linking parks, schools, jobs and other destinations in the City through a network of on-street shared-use streets and off-street shared-use paths.

Street Crossings

Enhanced street crossings are generally required on roadways with high traffic volumes and/or speeds in areas with nearby transit stops, residential uses, schools, parks, shopping and employment destinations. These crossings should include treatments such as marked crosswalks, high visibility crossings, and curb extensions to improve the safety and convenience of street crossings. If the maximum block size shown in Table 1 is exceeded, mid-block pedestrian and bicycle accessways must be provided at spacing no more than 330 feet, unless the connection is impractical due to inadequate sight distance, high vehicle travel speeds, or other factors that may prevent the crossing (as determined by the City). Otherwise, the crossings should be provided consistent with the block spacing standards shown in Table 1.

Section O: Bypass Position Statements

Section O: Bypass Position Statements

CITY OF ASTORIA
Founded 1811 ● Incorporated 1856

February 20, 2014

STATEMENT OF POSITION
ON
ASTORIA HIGHWAY 30 BYPASS

In 2012 to 2014, the City of Astoria developed the Astoria Transportation System Plan (TSP) to address transportation facilities for the next 20 years to 2035. At the start of the TSP process, Oregon Department of Transportation (ODOT) and the City agreed that construction of the Highway 30 Bypass was not a project likely to be funded in the next 20 years. Therefore, while both ODOT and the City recognize the importance of continued discussion about the Bypass, the TSP was developed without the Bypass (2014 TSP Volume 1, Page 6). Statements on the Bypass were prepared by both ODOT and the City to be included in the TSP.

The City of Astoria, through its City Council, has long supported the proposal to build an alternate route to the current alignment of Highway 30 through downtown Astoria. For many years, the City Council has included "Maintain advocacy activities for the Astoria Bypass" as one of its yearly goals. The City Council continues to believe strongly in the need for this project.

The Oregon Department of Transportation released a Draft Environmental Impact Statement in 1993 and completed an Extended Bypass Alignment Study in 1999. Additional studies that included discussion concerning the Astoria Bypass included the Astoria Transportation System Plan (1999), Clatsop County Transportation System Plan (2003), and Greater Astoria-Warrenton Area Regional Transportation System Refinement Plan (2007). Much work has been completed over the years studying the feasibility of constructing a Highway 30 Bypass. The City Council has consistently noted that heavy freight trucks through the Astoria downtown streets is not compatible with the pedestrian orientation of this regional commercial district. In addition, due to the age, construction design of the downtown streets, and chair walls, the infrastructure is deteriorating which is magnified by the weight and number of trucks using these transportation facilities. The proposed bypass would alleviate several major future transportation concerns. As the jurisdiction that will be the most heavily and directly impacted by the bypass project, the City, representing the citizens impacted by the project, resolutely expects that any design activity on the project shall be reviewed and approved by the City of Astoria.

The City of Astoria recognizes the complexity of the project and the significant fiscal commitment needed to construct the bypass. However, the City advocates for continued discussion, study, design, and construction of an alternate route that would serve the City, County, and regional transportation needs into the future.

ODOT's position concerning a future bypass

Overview

The scope of the Astoria Transportation System Plan (TSP) update is described in the statement of work (SOW), which was developed jointly by the City of Astoria, the Oregon Department of Transportation (ODOT) and the consultant, DKS. The SOW states specifically in Task 3.2 that a bypass around the City of Astoria connecting US 30 to US 101 will not be evaluated as part of this TSP update.

There are several reasons for this decision. (1) Evaluating a bypass would add complexity and cost to the planning effort. (2) The bypass alternative has already been studied numerous times in the past. (3) The alignment of the proposed bypass is within Clatsop County's jurisdiction and if a study were conducted it would be in conjunction with an update to the County's TSP, or as a separate refinement plan.

The bypass was studied most recently in 2007, at which time it was determined that such a bypass would (1) provide only moderate benefit in terms of relieving traffic congestion, (2) have significant environmental impacts, and (3) would be prohibitively expensive. Consequently, the 2007 study concluded it was not reasonably likely that a bypass would be constructed within the 20-year planning horizon.

Because circumstances have not changed significantly since 2007, and because the conclusions reached would not be significantly different if a bypass was studied again at this time, the City and ODOT agreed that a bypass alternative would not be evaluated as part of this Astoria TSP update. However, it was also agreed that the City and ODOT would be allowed to prepare separate position statements regarding a future bypass, recognizing that the two organizations may have some difference of opinion concerning the benefit of such a facility and the priority for funding it.

This text presents ODOT's position concerning a possible future bypass. In summary, ODOT recognizes that some type of alternate route may be needed or constructed at some time in the future. However, as outlined above, it is not reasonably likely this will occur within the next 20-years and therefore it is not necessary to evaluate this alternative any further at this time. The following is a more detailed discussion.

Previous studies

The concept of constructing a new two-lane highway through the Clatsop State Forest has been considered numerous times in the past. The alignment most commonly discussed would connect OR 202 (a.k.a. Olney Ave./Front St.) east of Williamsport Road (on the south side of Astoria) to US 30 near the John Day River Bridge (east of Astoria). Improvements would also be made to US 101 Business to connect to US 101 in Warrenton.

Previous studies include:

- Astoria Bypass Draft Environmental Impact Statement (1993)
- City of Astoria Transportation System Plan (1997)
- Application to Clatsop County for Land Use Approvals (1997, incomplete)
- City of Astoria Transportation System Plan (1999)
- Extended Bypass Alignment Study (1999)
- Clatsop County Transportation System Plan (2003)
- Greater Astoria-Warrenton Area Regional Transportation System Refinement Plan (2007)

Regional Refinement Plan (2007)

The Greater Astoria-Warrenton Area Regional Transportation System Refinement Plan describes the technical and funding challenges associated with developing a bypass. The following is a summary of the findings.

1. The benefit of a bypass is not clear

The 2007 Refinement Plan concluded that the bypass is not needed to meet current transportation needs (p.50). Because Astoria has become more of a destination than it was in the past, the amount of traffic that would actually use the bypass is not significant enough to justify its construction at this time. However, the plan acknowledges that a bypass would provide a logical connection to meet future transportation needs and reduce truck conflicts in downtown Astoria (p.50).

2. Topographical and environmental constraints

The topography along the proposed alignment is mountainous, with many steep hills and ravines. Because the bypass will be used by commercial freight vehicles, climbing lanes would most likely be needed in both directions. If it was developed as a state facility, the bypass would probably be designated as a statewide rural expressway, which according to the Oregon Highway Design Manual would require maximum grades of 6 percent, 12-foot travel and climbing lanes, 8-foot shoulders, and a 14 to 22-foot median (p.50). Because of the

topography and geometric standards, constructing the roadway would require substantial cut and fill that would increase project costs. There are also identified wetland and biological constraints on the west end of the alignment that may be difficult to mitigate.

3. The bypass would trigger the statewide goal exception process

The proposed bypass corridor is outside the City of Astoria urban growth boundary (UGB), in an area designated by Clatsop County as Conservation Forest Land. Building a road in designated forest land requires an exception to Oregon Statewide Planning Goals. Specifically, exceptions would be required for Goal 4 (Forest) because state highways are not allowed uses on forest land, and Goal 11 (Public Facilities) and Goal 14 (Urbanization) because facilities that serve urban populations are not usually allowed on rural lands. Alternatively, the UGB could be expanded to include the corridor, but it is unlikely such an expansion would meet established state criteria.

Obtaining goal exceptions would require findings that another alternative inside the UGB, which would result in less environmental impact, is not feasible. Given that the traffic analysis does not justify the need for such a facility at this time, obtaining a goal exception could be problematic.

Clatsop County and ODOT prepared an application (to Clatsop County) for land use approvals in 1997. The application was withdrawn because the 1993 DEIS that the applications were based on did not provide complete information about wetland and biology impacts.

4. The bypass is not a high priority

The Oregon Highway Plan (OHP) establishes policies for planning and designing state-owned roads. Policy 1G, the Major Improvements Policy, Action 1G1, of the OHP establishes new highway construction as the lowest priority for state transportation funding, to be pursued only when lower cost management solutions or improvements to existing facilities are not feasible or effective. The 2007 Astoria-Warrenton Refinement Plan classifies the bypass as a Priority 4 (long-term) project that would not be constructed within the 20-year planning horizon.

5. Limited funding available

Funding has not been secured for any of the projects identified in the 2007 Refinement Plan. The Refinement Plan acts only as a reference for regional and local officials to consult when considering projects to propose to the State for inclusion in the Statewide Transportation Improvement Program (STIP). Because the cost of needed transportation improvements across the state far exceeds

available funds, state officials must decide what projects to fund based on a thorough evaluation of all projects proposed statewide (p.63). The estimated cost of a bypass is at least $100 M (it could be $200 M or more). The total funding for new projects that is available for all of Region 2 for the 2015-18 STIP is approximately $75 M. A project of this magnitude would essentially require a special funding package authorized by the Legislature, which cannot be reliably predicted or anticipated.

6. The bypass is not reasonably likely to be funded

In preparing transportation plans, the Transportation Planning Rule (OAR 660-012) requires local jurisdictions and ODOT to determine whether projects identified in the plan are "reasonably likely" to be funded for construction. The 2007 Refinement Plan concluded, for all of the reasons described previously, that a bypass is not reasonably likely to be funded within the next 20 years.

More recent discussions and other alternate routes

In developing the Astoria TSP update, during the public involvement phase, a number of citizens commented on the need for a bypass. They argue that such a facility would be beneficial even if it doesn't reduce overall traffic congestion in Astoria, as concluded in the 2007 Refinement Plan. They cite the need to reduce heavy truck traffic in downtown, (1) because it's a nuisance, they say, and (2) because they believe the associated vibration is damaging buildings and sidewalks. They also cite the need to (3) provide an "escape route" in the event of a natural disaster. The following is a more detailed discussion and assessment of these and other related arguments.

1. Clatsop County could construct its own roadway

A bypass as defined in the Oregon Highway Plan is a major state-owned facility constructed to full highway design standards. Although a formal bypass is not likely to be constructed in the foreseeable future, for all the reasons described previously, it's possible some other type of roadway could be constructed by Clatsop County. Some observers have suggested that perhaps Wicks Road or some other existing rural road could be upgraded to serve as an *alternate route* connecting US 30 to US 101.

The cost of constructing a rural roadway would be less than building a full-scale bypass. However, even a rural roadway could easily exceed $100M. This is equal to the total cost of all short and medium-term projects the Astoria TSP update anticipates could be funded within the 20-year planning horizon. Additional

state funding for new highway construction of this type within the planning horizon cannot be anticipated.

Of course ODOT is not the only source of funding to construct new roadways. Some roadways are constructed by private developers. Some, like Clatsop County's new Ensign Road extension in Warrenton, are constructed by local governments. Clatsop County could refer a bond measure to the citizens and raise the funds to build a new roadway themselves.

2. An alternate route would not reduce trucks traffic in Astoria

If a bypass or other alternate route were constructed to serve as an alternate route it would not eliminate heavy truck traffic in downtown Astoria. Because the Port of Astoria and the Megler Bridge are in close proximity to downtown, trucks will continue to travel through the downtown area. The 2007 Refinement Plan suggests that a bypass would reduce truck conflicts in downtown Astoria (p.51). However, circumstances have changed since 2007. In response to increased global demand, the Port began exporting logs in 2009, which has increased truck traffic in the downtown area.

ODOT cannot restrict trucks from traveling on state facilities. It's also unlikely that trucks would voluntarily choose to use the Wicks Road route because it would not be convenient or safe for them. Rural roads have too many sharp curves and steep grades.

3. An alternate route already exists

The primary merit of an alternative route like this would be to provide a secondary option in the event the main highway was closed because of an accident, or in the event of a natural disaster like an earthquake or tsunami. (However this road would probably not survive a major earthquake either.)

Note that OR Highway 202 already provides an alternate route around Astoria, although it connects with US 26 rather than US 30, and is a much longer route. If the purpose of establishing an alternate route is primarily to provide an escape route in the event of a natural disaster, it may be a more practical option to focus on upgrading OR 202 rather than constructing a new route.

Note also that the Astoria TSP identifies the extension of Irving Street as a possible future project. This would create a through street to Emerald Heights, which would also serve as an alternate route in the event of an emergency.

4. Even a study would be expensive

In terms of even studying a bypass or other alternate route, ODOT's position is that it's not reasonably likely that such a facility will be funded within the 20-year planning horizon. Consequently, ODOT does not think it's prudent to spend taxpayer dollars identifying alternatives and studying the feasibility of such a facility. ODOT has already spent several million dollars studying various bypass concepts and issues. Consideration of an alternative route in the Clatsop County TSP update should be limited to identifying a conceptual alignment.

If Clatsop County would like to study the Wicks Road or another concept in more detail, it may need to fund its own study separate from the TSP update, which is being funded by ODOT ($236,000). Based on other recent work on environmental documents and design efforts around the state, an environmental study and preliminary design for such a roadway would cost several million dollars, at a minimum.

Future consideration

Although a bypass or other alternate route is not being considered as part of this TSP update, ODOT recognizes that such a facility could potentially advance several important state and community goals (e.g., tsunami evacuation, freight movement, and community livability) and there may be justification for either ODOT or Clatsop County studying it again in the future. The following is an outline of the steps that would be involved in further studying and potentially constructing a bypass or other alternate route. Several of these steps were discussed previously.

1. Conduct a feasibility study
2. Prepare a refinement plan to define general alignment and cross-section
3. Prepare land use applications for UGB expansion and/or goal exceptions
4. Obtain property owner authorization and environmental clearances through an Environmental Impact Study
5. Conduct construction design documents
6. Obtain funding for construction

This position statement was prepared by Bill Johnston, ODOT Area 1 Planner in Astoria, and reviewed by others at Region 2 in Salem. February 2014.

DATE: June 30, 2014

TO: Astoria TSP Update Project Management Team

FROM: Chris Maciejewski, P.E., P.T.O.E., DKS Associates
Kevin Chewuk, PTP, DKS Associates

SUBJECT: **Astoria Transportation System Plan Update**
Alternative Mobility Target Need

As part of the TSP update process, future forecasts and mobility needs were developed and documented in three memorandums: Technical Memorandum #5 (Future Forecasting), Technical Memorandum #7 (Future Needs), and Technical Memorandum #9 (Alternatives Evaluation). Through this analysis, future year (2035) 30th-highest hour operating conditions were assessed on the state highway system for comparison to the mobility targets established in the Oregon Highway Plan (OHP).

No significant corridor deficiencies were identified. However, two unsignalized (two-way, stop sign controlled) study intersections do not meet OHP mobility targets:

- US 101/Hamburg Avenue: v/c > 1.20 for the minor street left turn movement
- US 30/16th Street: v/c >1.20 for the minor street left turn movement

At each of these locations, improvements were identified and adopted as part of the "Aspirational" plan. These include turn restrictions or improvements to signalized traffic control.

These improvements were not identified as high-priority projects for inclusion in the adopted "Likely Funded" plan. However, they are within the range of funding that ODOT considers reasonable.[1] They are also at locations where surrounding development could potentially be required, by the City of Astoria, to construct or help fund the improvements.

For these reasons, it is not necessary for ODOT to adopt Alternate Mobility Targets for any state highways corridors or intersections in Astoria at this time.

[1] Based on conversation with Terry Cole, ODOT Region 2, May 29, 2014. The funding levels assumed in the TSP are conservative. ODOT considers a wider range of potential funding sources in its regional forecasts.