



DAVID EVANS
AND ASSOCIATES INC.

Technical Memorandum – Supplement 1

DATE: August 31, 2016

TO: Ryan Countryman
Snohomish County

FROM: Kirk Harris, PE, PMP
David Evans and Associates, Inc.

SUBJECT: Transportation Analysis Methods and Assumptions

PROJECT: Point Wells Mixed-Use Development Project

PROJECT NO.: PARA0000-0004

Cc: Gary Huff, Karr Tuttle Campbell

The purpose of this memorandum is to supplement and amend specific sections of the Technical Memorandum dated March 29, 2016 that was prepared to summarize the methods and assumptions used for the transportation analysis for the Point Wells Mixed-Use Development Project (Project).

The following sections of the March 29, 2016 memo have been modified as follows:

2.4 Traffic Operations

Insert the following after the first bulleted section:

The attached **Exhibit 1** includes a summary of the 64 intersections analyzed for this project along with the limiting factors associated with analyzing the traffic for specific intersections using the HCM 2010 methodology. The numbers of intersections with limitations for the traffic analysis are: three (3) with more than four approaches, seven (7) with non-NEMA or custom phasing, four (4) with clustered intersections, two (2) with a turning movement with shared and exclusive lane group, and one (1) with a U-turn movement. Therefore, seventeen (17) of the sixty-four (64) total intersections provide a significant challenge for having a consistent traffic analysis for the project using the HCM 2010 methodology.

It should also be noted that the City of Shoreline provided the traffic analysis team with traffic signal timing files to be incorporated in the analysis in a specific version of traffic modeling software (Synchro 7) that uses the HCM 2000 methodology.

The approach the traffic analysis team has taken for the project by using HCM 2000 is consistent with how the City models and adapts signal timings for its intersections.



The following attachments of the March 29, 2016 memo have been modified as part of this document:

- Attachment P – Urban Center Alternative – Summary of Cumulative Trip Generation and Phase Trip Generation by Project Phase
- Attachment Q – Urban Village Alternative – Summary of Cumulative Trip Generation, and Phase Trip Generation by Project Phase

The descriptions for both Attachments P and Q have been revised to clarify that data for Net Trip Reductions reflect reductions for both transit mode share and internal capture as calculated by the NCHRP 684 Trip Capture Estimation Tool. Specific details about reduction values for both transit and internal capture is provided in Attachment O. A summary of the transit mode share inputs is provided in Table 3 of the memo. A summary of Internal Capture percentages, which was determined using the NCHRP 684 Trip Capture Estimation Tool, has been added to this memo as Attachment U.

The following elements have been added to be a part of the March 29, 2016 document:

- Attachment U – Summary of Internal Capture Percentages
- Attachment V – Owner’s Commitment to Supplemental Transit Service

Exhibit 1

Intersections Analyzed for Point Wells

No	Intersection Name	Jurisdiction / Standard	Control Type	Intersection with more than 4 intersection approaches					Intersections that require analysis using HCM 2000 (using Synchro 7 version)	HCM 2000 or 2010
				Intersection with non-NEMA or custom phasing		Intersection clustered with another, shared controller		Intersection with shared and exclusive lane group		
1	NW 196th St & Richmond Beach Dr	Shoreline / LOS D	2-Way Stop							○
2	NW 195th Pl & Richmond Beach Dr	Shoreline / LOS D	2-Way Stop							○
3	NW 195th Pl & 24th Ave NW	Shoreline / LOS D	2-Way Stop							○
4	NW 196th St NW & 20th Ave NW	Shoreline / LOS D	4-Way Stop	●						
5	NW 195th St & 15th Ave NW	Shoreline / LOS D	2-Way Stop			●				
6	N Richmond Beach Rd & 15th Drwy	Shoreline / LOS D	4-Way Stop			●				
7	NW 190th St & N Richmond Beach Rd	Shoreline / LOS D	2-Way Stop							○
8	N Richmond Beach Rd & 8th Ave NW	Shoreline / LOS D	Signal	●						
9	N Richmond Beach Rd & 3rd Ave NW	Shoreline / LOS D	Signal		●					
10	N Richmond Beach Rd & Dayton Ave N	Shoreline / LOS D	Signal				●			
11	N Richmond Beach Rd & Fremont Ave N	Shoreline / LOS D	Signal		●					
12	244th St SW & 100th Ave W	Shoreline / LOS D	2-Way Stop							○
13	244th St SW & Firdale Ave	Shoreline / LOS D	2-Way Stop							○
14	244th St SW & 3rd Ave NW	Shoreline / LOS D	2-Way Stop							○
15	244th St SW & Fremont Ave N	Shoreline / LOS D	2-Way Stop							○
16	N 175th St & 6th Ave NW	Shoreline / LOS D	2-Way Stop							○
17	St Luke Pl N & Dayton Ave N	Shoreline / LOS D	2-Way Stop							○
18	N 175th St & Fremont Ave N	Shoreline / LOS D	Signal		●					
19	N 175th St & Meridian Ave N	Shoreline / LOS D	Signal		●					
20	Carlyle Hall Rd & Dayton Ave N	Shoreline / LOS D	4-Way Stop							○
21	N Innis Arden Wy & Greenwood Ave N	Shoreline / LOS D	2-Way Stop							○
22	N 160th St & Greenwood Ave N	Shoreline / LOS D	4-Way Stop							○
23	N 160th St & Dayton Ave N	Shoreline / LOS D	Signal		●					
24	N 155th St & Westminster Way N	Shoreline / LOS D	Signal		●					
25	N 145th St & Greenwood Ave N	Shoreline / LOS D	Signal							○
26	NE 145th St & 5th Ave NE	Shoreline / LOS D	Signal		●					
27	238th St SW & Timber Ln	Woodway / LOS A	4-Way Stop							○
28	238th St SW & 114th Ave W	Woodway / LOS A	4-Way Stop							○
29	S Dogwood Ln & Woodway Park Rd	Woodway / LOS A	2-Way Stop							○
30	100th Ave W & 238th St SW	Edmonds / LOS C	Signal			●				
31	228th St SW & 95th Pl W	Edmonds / LOS C	2-Way Stop							○
32	Pine St & 3rd Ave S	Edmonds / LOS C	2-Way Stop							○
33	Edmonds Way & 95th Pl W	WSDOT / LOS D	Signal							○
34	SR 104 & 100th Ave W	WSDOT / LOS D	Signal							○
35	244th St SW (WB) & Edmonds Way (SB)	WSDOT / LOS D	Signal							○
36	244th St SW (EB) & Edmonds Way (SB)	WSDOT / LOS D	Signal							○
37	244th St SW & Meridian Ave N	WSDOT / LOS D	Signal							○
38	244th St SW & I-5 SB Off-Ramp	WSDOT / LOS D	Signal							○
39	228th St SW & SR 99	WSDOT / LOS E	2-Way Stop							○
40	244th St SW & SR 99	WSDOT / LOS E	Signal							○
41	N 185th St & SR 99	WSDOT / LOS E	Signal	●						
42	N 175th St & SR 99	WSDOT / LOS E	Signal							○
43	N 160th St & SR 99	WSDOT / LOS E	Signal							○
44	N 155th St & SR 99	WSDOT / LOS E	Signal							○
45	N 145th St & SR 99	WSDOT / LOS E	Signal							○
46	N 130th St & SR 99	WSDOT / LOS E	Signal							○
47	N 175th St & I-5 SB Off-Ramp	WSDOT / LOS D	Signal			●				
48	N 130th St & 5th Ave NE	Seattle / LOS D	Signal				●			
49	NW 200th St & 8th Ave NW	Shoreline / LOS D	2-Way Stop							○
50	NW 200th St & 3rd Ave NW	Shoreline / LOS D	2-Way Stop							○
51	NW 200th St & Fremont Ave N	Shoreline / LOS D	4-Way Stop							○
52	N 200th St & SR 99	Shoreline / LOS D	Signal							○
53	NW 195th St & 8th Ave NW	Shoreline / LOS D	2-Way Stop							○
54	NW 195th St & 3rd Ave NW	Shoreline / LOS D	4-Way Stop							○
55	NW 195th St & Fremont Ave N	Shoreline / LOS D	4-Way Stop							○
56	N 192nd St & SR 99	Shoreline / LOS D	Signal							○
57	N 185th St & Meridian Ave N	Shoreline / LOS D	Signal							○
58	N 172nd St & Dayton Ave N	Shoreline / LOS D	4-Way Stop							○
59	N 165th St & Fremont Ave N	Shoreline / LOS D	2-Way Stop							○
60	N 165th St & SR 99	Shoreline / LOS D	Signal						●	
61	N 185th St & Linden Ave N	Shoreline / LOS D	Signal							○
62	N 185th St & Midvale Ave N	Shoreline / LOS D	Signal							○
63	N 175th St & Midvale Ave N	Shoreline / LOS D	Signal							○
64	PW 2nd Access Road & 116th Ave W	Woodway / LOS A	2-Way Stop							○

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**Attachment P – Urban Center Alternative
Summary of Cumulative Trip Generation and Phase Trip Generation by Project Phase**

Table 1: Urban Center Alt Cumulative Trip Generation by Project Phase_Daily (5%, 5%, 10%, 15% Transit)

Description	Phase 1			Phases 1-2			Phases 1-3			Phases 1-4		
	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out
Gross Trips	4,020	2,010	2,010	7,711	3,856	3,856	12,328	6,164	6,164	14,692	7,346	7,346
Net Trips Reduction (with Transit and Internal Capture)	730	365	365	1,780	890	890	3,148	1,574	1,574	3,986	1,993	1,993
Total Net Trips	3,289	1,645	1,645	5,932	2,966	2,966	9,180	4,590	4,590	10,706	5,353	5,353
Net Trip Reduction	18.2%			23.1%			25.5%			27.1%		

Table 2: Urban Center Alt Cumulative Trip Generation by Project Phase_AM Peak Hour (5%, 5%, 10%, 15% Transit)

Description	Phase 1			Phases 1-2			Phases 1-3			Phases 1-4		
	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out
Gross Trips	398	144	254	619	266	353	1,039	405	634	1,253	462	791
Net Trips Reduction (with Transit and Internal Capture)	51	24	27	98	48	50	202	91	111	282	117	165
Total Net Trips	347	120	227	521	218	303	837	314	523	971	345	626
Net Trip Reduction	12.8%			15.8%			19.4%			22.5%		

Table 3: Urban Center Alt Cumulative Trip Generation by Project Phase_PM Peak Hour (5%, 5%, 10%, 15% Transit)

Description	Phase 1			Phases 1-2			Phases 1-3			Phases 1-4		
	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out
Gross Trips	430	249	181	825	440	385	1,319	734	585	1,572	880	692
Net Trips Reduction (with Transit and Internal Capture)	101	51	50	250	125	125	417	214	203	499	263	236
Total Net Trips	329	198	131	575	315	260	902	520	382	1,073	617	456
Net Trip Reduction	23.5%			30.3%			31.6%			31.7%		

Table 4: Urban Center Alt Trip Generation by Project Phase_Daily (5%, 5%, 10%, 15% Transit)

Description	Phase 1			Phase 2			Phase 3			Phase 4		
	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out
Gross Trips	5,347	2,674	2,674	3,692	1,846	1,846	4,617	2,308	2,308	2,364	1,182	1,182
Net Trips Reduction (with Transit and Internal Capture)	730	365	365	1,049	525	525	1,368	684	684	838	419	419
Total Net Trips	4,617	2,309	2,309	2,642	1,321	1,321	3,249	1,624	1,624	1,526	763	763

Table 5: Urban Center Alt Trip Generation by Project Phase_AM Peak Hour (5%, 5%, 10%, 15% Transit)

Description	Phase 1			Phase 2			Phase 3			Phase 4		
	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out
Gross Trips	398	144	254	221	122	99	420	139	281	214	57	157
Net Trips Reduction (with Transit and Internal Capture)	51	24	27	47	24	23	104	43	61	80	26	54
Total Net Trips	347	120	227	174	98	76	316	96	220	134	31	103

Table 6: Urban Center Alt Trip Generation by Project Phase_PM Peak Hour (5%, 5%, 10%, 15% Transit)

Description	Phase 1			Phase 2			Phase 3			Phase 4		
	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out
Gross Trips	430	249	181	395	191	204	494	294	200	253	146	107
Net Trips Reduction (with Transit and Internal Capture)	101	51	50	149	74	75	167	89	78	82	49	33
Total Net Trips	329	198	131	246	117	129	327	205	122	171	97	74

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**Attachment Q – Urban Village Alternative
Summary of Cumulative Trip Generation and Phase Trip Generation by Project Phase**

Table 1: Urban Village Alt Cumulative Trip Generation by Project Phase_Daily (5%, 5%, 10%, 15% Transit)

Description	Phase 1			Phases 1-2			Phases 1-3			Phases 1-4		
	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out
Gross Trips	4,010	2,005	2,005	7,664	3,832	3,832	11,898	5,949	5,949	13,506	6,753	6,753
Net Trips Reduction (with Transit and Internal Capture)	728	364	364	1,765	882	882	3,106	1,553	1,553	3,797	1,899	1,899
Total Net Trips	3,282	1,641	1,641	5,899	2,950	2,950	8,792	4,396	4,396	9,708	4,854	4,854
Net Trip Reduction	18.2%			23.0%			26.1%			28.1%		

Table 2: Urban Village Alt Cumulative Trip Generation by Project Phase_AM Peak Hour (5%, 5%, 10%, 15% Transit)

Description	Phase 1			Phases 1-2			Phases 1-3			Phases 1-4		
	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out
Gross Trips	393	139	254	611	260	351	997	392	605	1,140	434	706
Net Trips Reduction (with Transit and Internal Capture)	50	23	27	95	46	49	197	89	108	263	112	151
Total Net Trips	343	116	227	516	214	302	800	303	497	877	322	555
Net Trip Reduction	12.7%			15.6%			19.8%			23.1%		

Table 3: Urban Village Alt Cumulative Trip Generation by Project Phase_PM Peak Hour (5%, 5%, 10%, 15% Transit)

Description	Phase 1			Phases 1-2			Phases 1-3			Phases 1-4		
	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out
Gross Trips	429	254	175	820	443	377	1,273	713	560	1,445	810	635
Net Trips Reduction (with Transit and Internal Capture)	101	52	49	250	124	126	413	212	201	479	251	228
Total Net Trips	328	202	126	570	319	251	860	501	359	966	559	407
Net Trip Reduction	23.6%			30.5%			32.4%			33.2%		

Table 4: Urban Village Alt Trip Generation by Project Phase_Daily (5%, 5%, 10%, 15% Transit)

Description	Phase 1			Phase 2			Phase 3			Phase 4		
	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out
Gross Trips	5,497	2,749	2,749	3,654	1,827	1,827	4,234	2,117	2,117	1,607	804	804
Net Trips Reduction (with Transit and Internal Capture)	728	364	364	1,037	519	519	1,341	671	671	691	345	345
Total Net Trips	4,769	2,385	2,385	2,617	1,309	1,309	2,892	1,446	1,446	917	458	458

Table 5: Urban Village Alt Trip Generation by Project Phase_AM Peak Hour (5%, 5%, 10%, 15% Transit)

Description	Phase 1			Phase 2			Phase 3			Phase 4		
	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out
Gross Trips	393	139	254	218	121	97	386	132	254	143	42	101
Net Trips Reduction (with Transit and Internal Capture)	50	23	27	45	23	22	102	43	59	66	23	43
Total Net Trips	343	116	227	173	98	75	284	89	195	77	19	58

Table 6: Urban Village Alt Trip Generation by Project Phase_PM Peak Hour (5%, 5%, 10%, 15% Transit)

Description	Phase 1			Phase 2			Phase 3			Phase 4		
	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out
Gross Trips	429	254	175	391	189	202	453	270	183	172	97	75
Net Trips Reduction (with Transit and Internal Capture)	101	52	49	149	72	77	163	88	75	66	39	27
Total Net Trips	328	202	126	242	117	125	290	182	108	106	58	48



Attachment U – Summary of Internal Capture Percentages

**Attachment U - Internal Capture Summary
Point Wells Mixed Use Development**

6/15/2016

AM Period		Alternative 1 Urban Center			Alternative 2 Urban Village		
Internal Capture Percentage		Total	Entering	Exiting	Total	Entering	Exiting
Analysis Year	2020	8%	11%	6%	8%	12%	6%
	2025	11%	13%	10%	11%	13%	10%
	2030	10%	13%	8%	11%	14%	9%
	2035	9%	12%	7%	10%	13%	8%
PM Period		Alternative 1 Urban Center			Alternative 2 Urban Village		
Internal Capture Percentage		Total	Entering	Exiting	Total	Entering	Exiting
Analysis Year	2020	21%	18%	25%	21%	18%	26%
	2025	28%	26%	30%	28%	25%	30%
	2030	25%	22%	29%	26%	23%	30%
	2035	21%	19%	24%	23%	20%	26%



Attachment V – Owner’s Commitment to Supplemental Transit Service

EXHIBIT C

Supplemental Transit Service

BSRE shall ensure the availability of supplemental transit service serving the Project as follows:

Section 1. Alternative Means of Providing Supplemental Transit Service.

Supplemental service shall, at BSRE's election, be provided under contract with a public transit provider (for example, contracted service provided by Metro Transit), under contract with a private transit service, or by a transit service owned and operated by BSRE or its concessionaire.

Section 2. Transit Route.

Transit service shall at a minimum be provided between the Project site and the Metro Park & Ride stop at N. 192nd and Aurora Avenue North. At such time as the Sound Transit light rail station at 185th and Aurora Avenue becomes operational, the route shall be extended to such light rail station.

Section 3. Frequency of Service.

Supplemental transit service shall commence no later than the date upon which certificates of occupancy have been issued for six hundred fifty-three (653) units within the Project which corresponds with project Phase 1. The frequency of service shall be determined in part by the demand therefor from Point Wells' residents. In addition, sufficient service shall be provided on weekday mornings between 6:00 and 9:00 (the "AM Peak Hours") and on weekday evenings between 4:00 and 7:00 (the "PM Peak Hours") so as to ensure the availability of sufficient seating capacity that the number of Project Trips shall remain within the limits established in the Memorandum of Understanding included as Exhibit A hereto. At full buildout, it is assumed during the AM and PM Peak Hours that four (4) transit vehicles with a seating capacity of not less than forty (40) seats shall depart Point Wells at least every fifteen (15) minutes.

Section 4. Priority Use by Residents of Point Wells and Service for the General Public.

Supplemental service is primarily intended for the use and convenience of the residents of Point Wells. To the extent that seating remains available, and to the extent permitted by King County Metro, Point Wells' buses may stop along Richmond Beach Road to provide service to the Richmond Beach community. Subject to the advance approval of King County Metro,

nothing herein shall prohibit BSRE or other operator of the supplemental transit service from collecting reasonable fares, either from such Point Wells residents or from members of the Richmond Beach community.

Section 5. Termination of Service.

Supplemental transit service may be terminated at such time as a Sound Transit Commuter Rail station at the project site becomes operational or when Snohomish County and the City of Shoreline deem such service to no longer be necessary.

Section 6. Successors and Assigns.

BSRE shall ensure, either by way of binding agreements with other parties or through Point Wells Master Homeowners Association, that the obligation to provide such supplemental transit service shall be perpetual unless and until service may be terminated as provided in Section 5 hereto.

DRAFT -- For Discussion Purposes Only